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## Simplification

1.  $(0.64)^{78} \div (0.512)^{39} = (0.8)^?$

- A.32
- B.42
- C.39
- D.48
- E.57

2.  $741 * 5 \div 3 + 10^2 = ? + 870$

- A.400
- B.450
- C.465
- D.470
- E.None of these

3.  $17^2 * 4913 = 17^?$

- A.5
- B.10
- C.15
- D.20
- E.None of these

4.  $3 \frac{1}{2} \text{ of } 48 + 7 \frac{1}{2} \text{ of } 184 = ?$

- A.1500
- B.1490
- C.1548
- D.1899
- E.None of these

5.  $(9 * 9 + 64 - 8 * 9)/(729 + 8^3) = ?$

- A.1/13
- B.1/15
- C.1/17
- D.1/19
- E.None of these

6.  $18\% \text{ of } 4500 - 4 * 8^2 = ?^2 - 22$

- A.12
- B.24
- C.34
- D.51
- E.None of these

7.  $20\% \text{ of } 1200 - 5 * 3^2 = ?^2 - 30$

- A.5
- B.10
- C.15
- D.20
- E.None of these

8.  $(1/4) * 3040 - (2/5) * ? = 140 * 4$

- A.450
- B.480
- C.500
- D.520
- E.540

9.  $\sqrt{2304} \div \sqrt[3]{(1728)} + \sqrt[2]{(3025)} * \sqrt{16} = ?$

- A.224
- B.228
- C.232
- D.236
- E.240

10.  $20\% \text{ of } 400 + ?\% \text{ of } 280 = 150$

- A.30
- B.35
- C.20
- D.25
- E.40

11.  $\sqrt{2809} + \sqrt{441} = \sqrt{4096} + ?$

- A.8
- B.10
- C.12
- D.15
- E.18

12.  $(3283/67) - (377/13) = ?$

- A.10
- B.15
- C.20
- D.25
- E.5

13.  $(44/395) * (79/352) * ? = 5$

- A.200
  - B.240
  - C.180
  - D.120
  - E.280
14.  $\sqrt{6561} + \sqrt{3721} - \sqrt{1369} = ?$
- A.120
  - B.125
  - C.115
  - D.105
  - E.100
15.  $30\% \text{ of } 360 + 75\% \text{ of } 80 + 83.33\% \text{ of } 240 = ?$
- A.388
  - B.368
  - C.378
  - D.358
  - E.348
16.  $22^2 - 8^2 + 18 * 31 = ? * 6$
- A.156
  - B.158
  - C.163
  - D.167

E.171

17.  $7\frac{2}{3} + 4\frac{1}{2} - \frac{1}{6} = ?/4 * 48$

- A.1
- B.35
- C.17
- D.41
- E.None of these

18.  $(123 + 82 - 42 - 18) = ?^4 + 64$

- A.1
- B.2
- C.3
- D.4
- E.None of these

19.  $420 \div 7 + 20\% \text{ of } 140 + ? * 13 = 61 * \sqrt{16}$

- A.12
- B.10
- C.13
- D.11
- E.14

20.  $18 * 19 + 45 * 5 - 23 * 12 = ?$

- A.281
- B.268
- C.254
- D.221

E.291

21.  $22^2 \div 11 \times 6 + 16^2 = 3 \times ? - 11^3$

A.593

B.645

C.687

D.729

E.None of these

22.  $35 * 8 + 30 \% \text{ of } 160 + ? * 7 = 433$

A.12

B.15

C.18

D.21

E.24

23.  $(9040 \div 113) * 12.5 = ?$

A.1000

B.1020

C.1040

D.1060

E.1200

24.  $20\% \text{ of } 400 + ?\% \text{ of } 280 = 150$

A.30

B.35

C.20

D.25

E.40

25.  $20\% \text{ of } 5000 - 3 * 5^2 = ?^2 - 36$

A.21

B.31

C.41

D.51

E.None of these

26.  $240 - 5^3 + 47^2 = ?$

a) 2694

b) 2464

c) 2766

d) 2324

e) 2456

27.  $1908 \div 18 \times 12 + 24 = ?^2$

a) 36

b) 33

c) 34

d) 35

e) 38

28.  $430\% \text{ of } 600 - 80\% \text{ of } 420 - 5.3\% \text{ of } 9000 = ?$

a) -1767

b) 424

c) 1767

d) -424

e) 972

**29.  $(6764 - 7455 + 2467) - (4273 + 2732 - 5314) = ?$**

a) 35

b) 36

c) 37

d) 85

e) 43

**30.  $(3 / 5)$  of  $(2 / 7)$  of  $(35 / 18)$  of  $? = 405$**

A.1375

B.1275

C.1285

D.1215

E.1325

**31.  $45879 + 24856 + 1245 + 214 - 101 = ?$**

A.72093

B.18581

C.26548

D.65412

E.96547

**32.  $16\%$  of  $450 * ?\%$  of  $880 = 3168$**

A.6

B.2

C.11

D.8

E.5

**33.  $32\%$  of  $1900 - (1/9)$  of  $(?) = 54$**

A.5562

B.5178

C.4986

D.4214

E.None of these

**34.  $60\%$  of  $310 + 20\%$  of  $150 + 125\%$  of  $64 = ?$**

A.290

B.293

C.286

D.276

E.296

**35.  $(21 \times 11 + 8 \times 5 + 65) \div [(12)^2 + \sqrt{576}] = ?$**

A.2

B.5

C.13

D.18

E.None of these

**36.  $4 \frac{2}{3} + 8 \frac{1}{3} = ? - 3 \frac{1}{3}$**

A.7/3

B.49/3

C.40/3

D.32/3

E.None of these

**37.  $x\%$  of 200 + 15% of 300 = 55**

A.3

B.5

C.7

D.9

E.None of these

**38.  $594 \div (22\% \text{ of } 150) + ? = \sqrt{1225}$**

A.10

B.12

C.15

D.20

E.17

**39.  $14^2 * 9 \div 7 + 8 * 12 + 25 = ?$**

A.324

B.348

C.361

D.373

E.389

**40.  $40\%$  of 900 – 164 = ? +  $8\%$  of 1200**

a) 100

b) 120

c) 150

d) 80

e) 140

**41.  $171 \div 19 * 18 - 134 = ?$**

A.28

B.22

C.20

D.27

E.29

**42.  $236 \div 4 + 308 \div 44 + 120\%$  of 280 = ?**

A.401

B.402

C.403

D.404

E.409

**43.  $150 + 1120 = 16 \times 456 \div 3 + ? - 5100$**

A.3938

B.3524

C.4156

D.4372

E.None of these

**44.  $75\%$  of 36 +  $45\%$  of 140 +  $20\%$  of 60 = ?**

A.101

B.102

C.103

D.104

E.110

45.  $1\frac{1}{3}$  of 96 +  $3\frac{2}{4} * 120 = ?$

A.210

B.320

C.486

D.548

E.None of these

46.  $850 \div 25 * 2 + 15 - 12 = ?$

A.61

B.71

C.81

D.91

E.None of these

47.  $16\%$  of 750 +  $?\%$  of 400 = 1140

A.320

B.375

C.280

D.255

E.None of these

48.  $\sqrt{529} * 4 + 45\%$  of 80 -  $19 * 5 = ?$

A.33

B.37

C.45

D.41

E.29

49.  $15\%$  of 480 +  $80\%$  of 320 +  $20\%$  of 60 = ?

A.320

B.340

C.360

D.380

E.400

50.  $85 * 25 + 75 * 12 - 60 * 23 = ?$

A.1245

B.1345

C.1445

D.1545

E.1645

## Simplification - Answer and Explanation

1. Answer: C

$$(0.64)^{78} \div (0.512)^{39} = (0.8)^?$$

$$0.8^{(78 * 2 - 39 * 3)} = (0.8)^?$$

$$? = 39$$

2. Answer: C

$$741 * 5 \div 3 + 10^2 = ? + 870$$



$$\Rightarrow 1235 + 100 - 870$$

$$\Rightarrow 465$$

**3. Answer: A**

$$17^2 * 4913 = 17^?$$

$$\Rightarrow 17^2 * 17^3 = 17^?$$

$$\Rightarrow 2 + 3 = ? = 5$$

**4. Answer: C**

$$3 \frac{1}{2} \text{ of } 48 + 7 \frac{1}{2} \text{ of } 184$$

$$\Rightarrow 7/2 * 48 + 15/2 * 184$$

$$\Rightarrow 168 + 1380$$

$$\Rightarrow 1548$$

**5. Answer: C**

$$(9 * 9 + 64 - 8 * 9)/(729 + 8^3) = ?$$

$$\Rightarrow (9^2 + 8^2 - 8 * 9)/(9^3 + 8^3)$$

$$[(a^2 + b^2 - ab)/(a^3 + b^3) = 1/(a + b)]$$

$$\Rightarrow 1/(9 + 8)$$

$$\Rightarrow 1/17$$

**6. Answer: B**

$$18\% \text{ of } 4500 - 4 * 8^2 = ?^2 - 22$$

$$\Rightarrow 810 - 256 + 22 = ?^2$$

$$\Rightarrow 554 + 22 = ?^2$$

$$\Rightarrow 24 = ?$$

**7. Answer: C**

$$20\% \text{ of } 1200 - 5 * 3^2 = ?^2 - 30$$

$$\Rightarrow 240 - 45 = ?^2 - 30$$

$$\Rightarrow 195 + 30 = ?^2$$

$$\Rightarrow 225 = ?^2$$

$$\Rightarrow 15$$

**8. Answer: C**

$$(1/4) * 3040 - (2/5) * ? = 140 * 4$$

$$760 - 560 = ? * 2/5$$

$$? = 500$$

**9. Answer: A**

$$\sqrt{2304} \div {}^3\sqrt{(1728)} + {}^2\sqrt{(3025)} * \sqrt{16} = ?$$

$$48/12 + 55 * 4 = ?$$

$$? = 224$$

**10. Answer: D**

$$20\% \text{ of } 400 + ?\% \text{ of } 280 = 150$$

$$80 + ?\% \text{ of } 280 = 150$$

$$? = 25$$

**11. Answer: B**

$$\sqrt{2809} + \sqrt{441} = \sqrt{4096} + ?$$

$$53 + 21 = 64 + ?$$

$$? = 10$$

**12. Answer: C**

$$(3283/67) - (377/13) = ?$$

$$49 - 29 = ?$$

$$? = 20$$

**13. Answer: A**

$$(44/395) * (79/352) * ? = 5$$

$$1/5 * 1/8 * ? = 5$$

$$? = 200$$

**14. Answer: D**

$$\sqrt{6561} + \sqrt{3721} - \sqrt{1369} = ?$$

$$81 + 61 - 37 = ?$$

$$? = 105$$

**15. Answer: B**

$$30 \% \text{ of } 360 + 75\% \text{ of } 80 + 83.33 \% \text{ of } 240 = ?$$

$$108 + 60 + (5/6) * 240 = ?$$

$$108 + 60 + 200 = ?$$

$$368 = ?$$

**16. Answer: C**

$$22^2 - 8^2 + 18 * 31 = ? * 6$$

$$484 - 64 + 558 = ? * 6$$

$$978 = ? * 6$$

$$? = 163$$

**17. Answer: A**

$$7 \frac{2}{3} + 4 \frac{1}{2} - \frac{1}{6} = ?/4 * 48$$

$$\Rightarrow 23/3 + 9/2 - 1/6 = ?/4 * 48$$

$$\Rightarrow 144/12 = 12 * ?$$

$$\Rightarrow 1$$

**18. Answer: C**

$$(123 + 82 - 42 - 18) = ?^4 + 64$$

$$\Rightarrow 145 - 64 = ?^4$$

$$\Rightarrow 3^4 = 81$$

**19. Answer: A**

$$420 \div 7 + 20 \% \text{ of } 140 + ? * 13 = 61 * \sqrt{16}$$

$$60 + 28 + ? * 13 = 244$$

$$? * 13 = 156$$

$$? = 12$$

**20. Answer: E**

$$18 * 19 + 45 * 5 - 23 * 12 = ?$$

$$342 + 225 - 276 = ?$$

$$? = 291$$

**21. Answer: E**

$$22^2 \div 11 \times 6 + 16^2 = 3x - 11^3$$

$$(22 * 22 * 6) / 11 + 256 + 1331 = 3x$$

$$264 + 256 + 1331 = 3x$$

$$264 + 256 + 1331 = 3x$$

$$3x = 1851$$

$$x = 1851/3 = 617$$

**22. Answer: B**

$$35 * 8 + 30 \% \text{ of } 160 + ? * 7 = 433$$

$$280 + 48 + ? * 7 = 433$$

$$? * 7 = 105$$

$$? = 15$$

**23. Answer: A**

$$(9040 \div 113) * 12.5 = ?$$

$$80 * 12.5 = ?$$

$$? = 1000$$

**24. Answer: D**

$$20\% \text{ of } 400 + ?\% \text{ of } 280 = 150$$

$$80 + ? \% \text{ of } 280 = 150$$

$$? = 25$$

**25. Answer: B**

$$20\% \text{ of } 5000 - 3 * 5^2 = ?^2 - 36$$

$$\Rightarrow 1000 - 75 = ?^2 - 36$$

$$\Rightarrow 925 + 36 = ?^2$$

$$\Rightarrow 31$$

**26. Answer: D)**

$$240 - 5^3 + 47^2 = ?$$

$$240 - 125 + 2209 = ?$$

$$2324 = ?$$

**27. Answer: A)**

$$1908 \div 18 \times 12 + 24 = ?^2$$

$$?^2 = 106 \times 12 + 24$$

$$= 1272 + 24 = 1296$$

$$? = 36$$

**28. Answer: C)**

$$430\% \text{ of } 600 - 80\% \text{ of } 420 - 5.3\% \text{ of } 9000 = ?$$

$$? = 4.3 \times 600 - 0.8 \times 420 - 0.053 \times 9000$$

$$? = 2580 - 336 - 477$$

$$? = 1767$$

**29. Answer: D)**

$$(6764 - 7455 + 2467) - (4273 + 2732 - 5314) =$$

$$?$$

$$? = 1776 - 1691$$

$$? = 85$$

**30. Answer: D**

$$(3 / 5) \times (2 / 7) \times (35 / 18) \times ? = 405$$

$$\text{Or, } ? = [(405 \times 5 \times 7 \times 18) / (3 \times 2 \times 35)] = 1215$$

**31. Answer: A**

$$45879 + 24856 + 1245 + 214 - 101 = ?$$

$$72194 - 101 = ?$$

$$= 72093$$

**32. Answer: E**

$$0.16 * 450 * ? * 880 / 100 = 3168$$

$$\Rightarrow 633.6 * ? = 3168$$

$$\Rightarrow ? = 5$$

**33. Answer: C**

$$(32/100) * 1900 - (1/9) * x = 54$$

$$608 - 54 = x/9$$

$$x/9 = 554$$

$$x = 554 * 9 = 4986$$

**34. Answer: E**

$$60\% \text{ of } 310 + 20\% \text{ of } 150 + 125\% \text{ of } 64 = ?$$

$$186 + 30 + 80 = ?$$

$$296 = ?$$

**35. Answer: A**

$$(21 \times 11 + 8 \times 5 + 65) \div [(12)^2 + \sqrt{576}] = x$$

$$X = [(231 + 40 + 65)/(144 + 24)]$$

$$X = 336/168 = 2$$

**36. Answer: B**

$$4 \frac{2}{3} + 8 \frac{1}{3} = ? - 3 \frac{1}{3}$$

$$\Rightarrow 14/3 + 25/3 + 10/3$$

$$\Rightarrow 49/3$$

**37. Answer: B**

$$x\% \text{ of } 200 + 15\% \text{ of } 300 = 55$$

$$\Rightarrow x\% \text{ of } 200 = 55 - 45 = 10$$

$$\Rightarrow x = 10/2 = 5$$

**38. Answer: E**

$$594 \div (22\% \text{ of } 150) + ? = \sqrt{1225}$$

$$18 + ? = 35$$

$$? = 17$$

**39. Answer: D**

$$14^2 * 9 \div 7 + 8 * 12 + 25 = ?$$

$$252 + 96 + 25 = ?$$

$$373 = ?$$

**40. Answer: A)**

$$40\% \text{ of } 900 - 164 = ? + 8\% \text{ of } 1200$$

$$0.40 \times 900 - 164 = ? + 0.08 \times 1200$$

$$? = 360 - 164 - 96$$

$$? = 100$$

**41. Answer: A**

$$171 \div 19 * 18 - 134 = ?$$

$$9 * 18 - 134 = ?$$

$$28 = ?$$

**42. Answer: B**

$$236 \div 4 + 308 \div 44 + 120 \% \text{ of } 280 = ?$$

$$59 + 7 + 336 = ?$$

$$402 = ?$$

**43. Answer: A**

$$150 + 1120 = (16*456)/3 + x - 5100$$

$$150 + 1120 - 2432 + 5100 = x$$

$$x = 3938$$

**44. Answer: B**

$$75 \% \text{ of } 36 + 45 \% \text{ of } 140 + 20 \% \text{ of } 60 = ?$$

$$27 + 63 + 12 = ?$$

$$102 = ?$$

**45. Answer: D**

$$1 \frac{1}{3} \text{ of } 96 + 3 \frac{2}{4} * 120 = ?$$

$$\Rightarrow 4 * 96/3 + 14/4 * 120$$

$$\Rightarrow 548$$

**46. Answer: B**

$$850 \div 25 * 2 + 15 - 12 = ?$$

$$\Rightarrow 68 + 15 - 12$$

$$\Rightarrow 71$$

**47. Answer: D**

$$16 \% \text{ of } 750 + x \% \text{ of } 400 = 1140$$

$$(16/100)*750 + (x/100)*400 = 1140$$

$$120 + 4x = 1140$$

$$4x = 1140 - 120$$

$$4x = 1020$$

$$x = 255$$

**48. Answer: A**

$$\sqrt{529} * 4 + 45 \% \text{ of } 80 - 19 * 5 = ?$$

$$92 + 36 - 95 = ?$$

$$33 = ?$$

**49. Answer: B**

$$15 \% \text{ of } 480 + 80 \% \text{ of } 320 + 20 \% \text{ of } 60 = ?$$

$$72 + 256 + 12 = ?$$

$$? = 340$$

**50. Answer: E**

$$85 * 25 + 75 * 12 - 60 * 23 = ?$$

$$2125 + 900 - 1380 = ?$$

$$? = 1645$$

## Surds and Indices Based Simplification

**1. The simplest value of  $\frac{3\sqrt{8}-2\sqrt{12}+\sqrt{20}}{3\sqrt{18}-2\sqrt{27}+\sqrt{45}} = ?$**

A.  $3\sqrt{2}$

B.  $4\sqrt{2}$

C.  $3\sqrt{9}$

D.  $4\sqrt{8}$

E.  $2\sqrt{3}$

**2.  $\frac{1}{3-\sqrt{8}} - \frac{1}{\sqrt{8}-\sqrt{7}} + \frac{1}{\sqrt{7}-\sqrt{6}} - \frac{1}{\sqrt{6}-\sqrt{5}}$  is equal to?**

A.  $4-\sqrt{2}$

B.  $4-\sqrt{3}$

C.  $4-\sqrt{5}$

D.  $3-\sqrt{5}$

E. None of these

**3.  $\frac{1}{\sqrt{2}+1} + \frac{1}{\sqrt{3}+\sqrt{2}} + \frac{1}{\sqrt{4}+\sqrt{3}} + \dots \dots \dots + \frac{1}{\sqrt{100}+\sqrt{99}} = ?$**

A. 5

B. 1

C. 9

D. 20

E. None of these

**4.  $\sqrt{64} + \sqrt{36} + \sqrt{49} - \sqrt{81} + \sqrt{121} + \sqrt{25} - \sqrt{49} + \sqrt{25} = ?$**

- A.15
- B.26
- C.48
- D.18
- E.None of these

5. Simplify:  $\frac{4+\sqrt{5}}{4-\sqrt{5}} + \frac{4-\sqrt{5}}{4+\sqrt{5}} = ?$

- A.42/11
- B.-42/11
- C.42/12
- D.-42/12
- E.None of these

6.  $2^a = 3^b = 6^{-c}$  Then find  $1/a + 1/b + 1/c = ?$

- A.1
- B.2
- C.3
- D.5
- E.0

7.  $\sqrt[6]{12}, \sqrt[3]{4}, \sqrt[4]{5}, \sqrt{3}$  -- which one is smallest?

10. The value of  $\frac{\sqrt{72} \times \sqrt{363} \times \sqrt{175}}{\sqrt{32} \times \sqrt{147} \times \sqrt{252}} = ?$

- A.55/28
- B.22/18
- C.23/29
- D.23/61
- E.24/59

11.  $\frac{\sqrt{24} + \sqrt{216}}{\sqrt{96}} = ?$

- A.3

A.all are equal

B.  $\sqrt[6]{12}$ ,

C.  $\sqrt{3}$

D.  $\sqrt[4]{5}$

E.None of these

8.  $a=3+2\sqrt{2}$  and  $ax=1$  then find  $a^2 + ax + x^2 = ?$

- A.45
- B.48
- C.35
- D.52
- E.54

9.  $2 + \frac{6}{\sqrt{3}} + \frac{1}{2+\sqrt{3}} + \frac{1}{\sqrt{3}-2}$  equals to

- A.4
- B.2
- C.3
- D.6
- E.5

B.4

C.9

D.8

E.2

12.  $\frac{\sqrt{32} + \sqrt{48}}{\sqrt{8} + \sqrt{12}} = ?$

- A.0
- B.4
- C.5

D.2

E.None of these

13.  $\frac{3\sqrt{7}}{\sqrt{5}+\sqrt{2}} - \frac{5\sqrt{5}}{\sqrt{2}+\sqrt{7}} + \frac{2\sqrt{2}}{\sqrt{7}+\sqrt{5}} = ?$

A.5

B.1

C.0

D.2

E.None of these

14.  $x = \frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}+\sqrt{2}}$  and  $y = \frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}$  then find value of

$x+y=?$

A.15

B.10

C.14

D.18

E.None of these

15. Simplify:  $\sqrt{8}-\sqrt{4}-\sqrt{2}$  equals to?

A. $\sqrt{2}-2$

B.1

C.0

D. $\sqrt{2}-1$

E.None of these

16.  $\frac{1}{1+\sqrt{2}+\sqrt{3}} + \frac{1}{1-\sqrt{2}+\sqrt{3}} = ?$

A.2

20. Simplify:  $[64^{\frac{2}{3}} * 2^{-2} \div 8^0]^{1/2}$

A.2

B.1

B.4

C.3

D.5

E.1

17. The exponential form of  $\sqrt{\sqrt{3} \times \sqrt{2}} = ?$

A. $6^{3/2}$

B.1

C. $6^{2/3}$

D. $6^{1/4}$

E.None of these

18.  $\frac{\sqrt{6}}{\sqrt{3}+\sqrt{2}} - \frac{4\sqrt{3}}{\sqrt{2}+\sqrt{6}} + \frac{3\sqrt{2}}{\sqrt{3}+\sqrt{6}} = ?$

A.5

B.4

C.0

D.2

E.1

19.  $a = \sqrt{3} + \sqrt{2}$  and  $b = \sqrt{3} - \sqrt{2}$  then the value of  $8a^2b + 8ab^2 = ?$

A. $22\sqrt{4}$

B. $16\sqrt{3}$

C. $23\sqrt{2}$

D. $23\sqrt{6}$

E. $24\sqrt{7}$

C.3

D.6

E.0

21.  $\sqrt{3}=1.732$  then find  $(2+\sqrt{3})/(2-\sqrt{3})=?$

A.13.125

B.42.236

C.39.369

D.14.369

E.13.928

22.  $x=\sqrt{\frac{\sqrt{5}+1}{\sqrt{5}-1}}$  then value of  $x^2+x-1=?$

A. $4+\sqrt{3}$

B. $4+\sqrt{5}$

C. $6\sqrt{5}$

D. $6+3\sqrt{5}$

E.None of these

23.  $x=7+4\sqrt{3}$  then find the value of  $\sqrt{x} + 1/\sqrt{x}=?$

A.5

B.1

C.4

D.2

E.None of these

24.  $x=\sqrt{3}-\sqrt{2}$  then find the value of  $x+1/x=?$

A. $\sqrt{5}$

B. $2\sqrt{3}$

C. $\sqrt{3}$

D. $8\sqrt{7}$

E.None of these

25. Which one is largest? [ $\sqrt{5}, 3\sqrt{7}, 4\sqrt{13}$ ]

A. $4\sqrt{3}$

B. $\sqrt{5}$

C. $7\sqrt{5}$

D. $9\sqrt{5}$

E.None of these

26.  $\frac{\sqrt{5}+\sqrt{3}}{\sqrt{5}-\sqrt{3}} = x + z\sqrt{15}$  then find the value of x and z?

A.12,3

B.2,7

C.3,4

D.15,0

E.4,1

27. Represent  $4+\sqrt{7}$  as a perfect square?

A. $\{\sqrt{7}-1\}^2$

B. $\{\sqrt{7}+1\}^2$

C. $\{\sqrt{7}+1\}^2$

D.  $\{\sqrt{7}+1/\sqrt{2}\}^2$ .

E.None of these

28.  $\frac{\sqrt{3}+1}{\sqrt{3}-1} + \frac{\sqrt{2}+1}{\sqrt{2}-1} + \frac{\sqrt{3}-1}{\sqrt{3}+1} + (\sqrt{2}-1)/(\sqrt{2}+1) = ?$

A.45

B.48

C.10

D.12

E.14

29.  $3^x + y = 81$  and  $81^x - y = 3$  then find the value of x?

A.22/3

B.17/8



C.23/2

D.23/6

E.24/7

30.  $[\sqrt[3]{\sqrt[6]{5^9}}]^4 \times [\sqrt[3]{\sqrt[6]{5^9}}]^4 = ?$

A.625

B.628

C.232

D.236

E.240

31.  $\sqrt{2} = 1.4142$  Then find the value  $2\sqrt{2} + \sqrt{2} +$

$\frac{1}{2+\sqrt{2}} + \frac{1}{\sqrt{2}-2} = ?$

A.3.3572

B.4.3692

C.3.3699

D.4.8369

E.2.8284

32. The quotient when  $10^{100}$  is divided by  $5^{75}$  is

A.1

B. $10^{25}$

C. $2^{75}$

D. $10^{25} \cdot 2^{75}$

E.None of these

33.  $a = 5 + 2\sqrt{6}$  then find  $1/\sqrt{a} = ?$

A. $\sqrt{2}-1$

B. $\sqrt{3}$

C. $\sqrt{3}-\sqrt{2}$

D. $2-\sqrt{5}$

E.None of these

34.  $3 + 1/\sqrt{3} + \frac{1}{3+\sqrt{3}} + 1/(3-\sqrt{3}) = ?$

A.5

B.9

C.3

D.9

E.None of these

35. Find the value of x and y?  $\frac{7+\sqrt{5}}{7-\sqrt{5}} - \frac{7-\sqrt{5}}{7+\sqrt{5}} = x +$

$7\sqrt{5} y$

A.0,1/11

B.2,1/15

C.3,1/17

D.1,1/19

E.None of these

36. Simplify  $-(\sqrt{3} + 1/\sqrt{3})^2$

A.12/5

B.24/9

C.34/7

D.51/9

E.16/3

37.  $[\sqrt[3]{2} * \sqrt{2} * \sqrt[3]{3} * \sqrt{3}] = ?$

A.5.5

B. $6^{1/3}$

C. $5^{2/3}$

D. $6^{5/6}$

E.None of these

38. By how much does  $\sqrt{12} + \sqrt{18}$  exceed  $(2\sqrt{3} + 2\sqrt{2})$ ?

- A.  $\sqrt{5}$
- B.  $\sqrt{7}$
- C.  $\sqrt{2}$
- D.  $\sqrt{3}$
- E. 540

40. Simplify:  $\sqrt{33} = 5.745$  then find the approximate value of  $\frac{\sqrt{3}}{11}$ .

- A. .5283
- B. .2428
- C. .8232
- D. .9236
- E. .8240

41. Simplify:  $\sqrt{3\sqrt{3}\sqrt{3}\sqrt{3}\sqrt{3}}$

- A. 1
- B. 2
- C. 9
- D. 8
- E. 3

42.  $4x = \sqrt{5} + 2$  then find  $x - 1/16x = ?$

- A. 00
- B. 4
- C. 5
- D. 1
- E. None of these

43.  $x = \frac{1}{\sqrt{2}+1}$  then find  $x+1 = ?$

- A.  $\sqrt{7}$

39.  $\frac{\sqrt{5} + \sqrt{3}}{\sqrt{80} + \sqrt{48} - \sqrt{45} - \sqrt{27}} = ?$

- A. 2
- B. 1
- C. 3
- D. 6
- E. 0

B.  $\sqrt{5}$

C.  $\sqrt{2}$

D. 1

E. None of these

44.  $9\sqrt{x} = \sqrt{12} + \sqrt{147}$  then find  $x = ?$

A. 5

B. 3

C. 5

D. 8

E. None of these

45. Simplify:  $\frac{\sqrt{5}-2}{\sqrt{5}+2} + \frac{\sqrt{5}+2}{\sqrt{5}-2} = ?$

A.  $-8/\sqrt{5}$

B.  $1/\sqrt{15}$

C.  $1/\sqrt{17}$

D. 1

E. None of these

46. Find the value:-  $\sqrt{9 + 2\sqrt{16}} + \sqrt[3]{512}$

A. 2

B. 4

C. 3

D.1

E.5

47. Find the value  $\sqrt{12 + \sqrt{12 + \sqrt{12} \dots \dots}}$

A.5

B.10

C.15

D.4

E.None of these

48.  $a = \sqrt{3}/2$  then find  $\sqrt{1+a} + \sqrt{1-a} = ?$

A. $\sqrt{5}$

B.1

50.  $(256)^{.16} * (16)^{.018} = ?$

A.4

B.8

C. $\sqrt{3}$

D. $\sqrt{2}$

E. $\sqrt{7}$

49.  $\sqrt{10 + \sqrt{25 + \sqrt{108 + \sqrt{154 + \sqrt{225}}}}} = ?$

A.4

B.2

C.3

D.7

E.0

C.3

D.6

E.0

## Surds and Indices - Answer and Explanation

Q1) Answer E

$$\frac{3\sqrt{8}-2\sqrt{12}+\sqrt{20}}{3\sqrt{18}-2\sqrt{27}+\sqrt{45}} = \frac{6\sqrt{2}-4\sqrt{3}+2\sqrt{5}}{9\sqrt{2}-6\sqrt{3}+3\sqrt{5}} = \frac{2(3\sqrt{2}-2\sqrt{3}+\sqrt{5})}{3(3\sqrt{2}-2\sqrt{3}+\sqrt{5})} = 2/3$$

Q2) Answer D

$$\frac{1}{3-\sqrt{8}} - \frac{1}{\sqrt{8}-\sqrt{7}} + \frac{1}{\sqrt{7}-\sqrt{6}} + \frac{1}{\sqrt{6}-\sqrt{5}} = ?$$

$$\frac{1}{3-\sqrt{8}} = \frac{3+\sqrt{8}}{(3-\sqrt{8})(3+\sqrt{8})} = \frac{3+\sqrt{8}}{9-8} = 3+\sqrt{8}$$

So the equation can be written as –

$$=(3+\sqrt{8}) - (\sqrt{8} + \sqrt{7}) + (\sqrt{7} + \sqrt{6}) - (\sqrt{6} + \sqrt{5})$$

$$=3+\sqrt{8} - \sqrt{8} - \sqrt{7} + \sqrt{7} + \sqrt{6} - \sqrt{6} - \sqrt{5} = 3 - \sqrt{5}$$

Q3) Answer C

$$\text{or, } \frac{1}{\sqrt{2}+1} = \sqrt{2} - 1$$

So whole expression can be written as

$$=\sqrt{2} - 1 + \sqrt{3} - \sqrt{2} \dots + \sqrt{99} - \sqrt{98} + \sqrt{100} - \sqrt{99}$$

$$=10-1=9$$

Q4) Answer B

$$=8+6+7-9+11+5-7+5$$

$$=26$$

**Q5) Answer A**

$$\frac{(4+\sqrt{5})^2}{11} + \frac{(4-\sqrt{5})^2}{11} = \frac{16+8\sqrt{5}+5+16-8\sqrt{5}+5}{11} = \frac{42}{11}=3.5$$

**Q6) Answer E**

$$2^a = 3^b = 6^{-c} = k$$

$$2=k^{\frac{1}{a}}, 3=k^{\frac{1}{b}}, 6=k^{-\frac{1}{c}}$$

$$\text{Or, } 2 \cdot 3 = 6$$

$$\text{Or, } k^{\frac{1}{a}} * k^{\frac{1}{b}} = k^{-\frac{1}{c}}$$

$$\text{Or, } 1/a + 1/b + 1/c = 0$$

**Q7) Answer d**

$$\text{LCM of 6, 3, 4 and 2} = 12$$

$$\text{Or, } \sqrt[6]{12} = \sqrt[12]{12^2} = \sqrt[12]{144}$$

$$\sqrt[4]{5} = \sqrt[12]{125}$$

$$\sqrt[3]{4} = \sqrt[12]{256}$$

$$\sqrt{3} = \sqrt[12]{729}$$

$$\text{So the smallest surd} = \sqrt[4]{5}$$

**Q8) Answer c**

$$\text{Or, } a = 3 + 2\sqrt{2}$$

$$\text{So } x = 1/(3 + 2\sqrt{2}) = 3 - 2\sqrt{2}$$

$$\text{So, } a+x=6$$

$$\text{So, } a^2+ax+x^2=(a+x)^2-2ax+ax=36-2+1=35$$

**Q9) Answer b**

$$=2+6/\sqrt{3}+1/(2+\sqrt{3})+1/\sqrt{3}-2$$

$$=2+6/\sqrt{3}+1/(2+\sqrt{3})-1/(2-\sqrt{3})$$

$$=2+ \{(6*\sqrt{3})/(\sqrt{3}*\sqrt{3})\} + \frac{2-\sqrt{3}-2-\sqrt{3}}{(2+\sqrt{3}) \times (2-\sqrt{3})}$$

$$= 2+2\sqrt{3}+ (-2\sqrt{3}/1)$$

$$=2+2\sqrt{3}-2\sqrt{3}=2$$

**Q10) Answer a**

$$(\sqrt{72} \times \sqrt{363} \times \sqrt{175})/(\sqrt{32} \times \sqrt{147} \times \sqrt{252})$$

$$=(6\sqrt{2} \times 11\sqrt{3} \times 5\sqrt{7})/(4\sqrt{2} \times 7\sqrt{3} \times 6\sqrt{7})$$

$$=6 \times 11 \times 5/4 \times 7 \times 6$$

$$=55/28$$

**Q11) Answer e**

$$(\sqrt{24} + \sqrt{216})/\sqrt{96} = (2\sqrt{6} + 6\sqrt{6})/4\sqrt{6} = 2$$

**Q12) Answer d**

$$(\sqrt{32} + \sqrt{48})/(\sqrt{8} + \sqrt{12})$$

$$=(4\sqrt{2} + 4\sqrt{3})/(2\sqrt{2} + 2\sqrt{3}) = 2$$

**Q13) Answer c**

$$=3\sqrt{7}/(\sqrt{5}+\sqrt{2})=[(3\sqrt{7})*(\sqrt{5}-\sqrt{2})/\{(\sqrt{5}+\sqrt{2})*(\sqrt{5}-\sqrt{2})\}]=3\sqrt{7}(\sqrt{5}-\sqrt{2})/3=\sqrt{35}-\sqrt{14}$$

Similar others can be written is  $(\sqrt{35}-\sqrt{10}), (\sqrt{14}-\sqrt{10})$

$$=\sqrt{35}-\sqrt{14}-(\sqrt{35}-\sqrt{10})+(\sqrt{14}-\sqrt{10})$$

$$=\sqrt{35}-\sqrt{14}-\sqrt{35}+\sqrt{10}+\sqrt{14}-\sqrt{10}=0$$

**Q14) Answer b**

$$x=\frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}+\sqrt{2}}$$

$$x=(\sqrt{3}-\sqrt{2})^2/1$$

$$y=\frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}$$

$$=(\sqrt{3}+\sqrt{2})^2/1$$

$$x+y=3-2\sqrt{6}+2+3+2\sqrt{6}+2=10$$

**Q15) Answer a**

$$=\sqrt{8}-\sqrt{4}-\sqrt{2}=2\sqrt{2}-2-\sqrt{2}=\sqrt{2}-2$$

**Q16) Answer e**

$$1/(1+\sqrt{3})+\sqrt{2}+1/(1+\sqrt{3})-\sqrt{2}$$

$$=1+\sqrt{3}-\sqrt{2}+1+\sqrt{3}+\sqrt{2}/(1+\sqrt{3}+\sqrt{2})(1+\sqrt{3}-\sqrt{2})$$

$$=2+2\sqrt{3}/(1+\sqrt{3})^2-(\sqrt{2})^2$$

$$=2(1+\sqrt{3})/1+3+2\sqrt{3}-2$$

$$=2(1+\sqrt{3})/2(1+\sqrt{3})$$

$$=1$$

**Q17) Answer d**

$$=(\sqrt{2}*\sqrt{3})^{1/2}=6^{(1/2*1/2)}=6^{1/4}$$

**Q18) Answer c**

$$\frac{\sqrt{6}}{\sqrt{3}+\sqrt{2}}-\frac{4\sqrt{3}}{\sqrt{2}+\sqrt{6}}+\frac{3\sqrt{2}}{\sqrt{3}+\sqrt{6}}$$

$$=\frac{\sqrt{6}(\sqrt{3}-\sqrt{2})}{(\sqrt{3}+\sqrt{2})(\sqrt{3}-\sqrt{2})}-\frac{4\sqrt{3}(\sqrt{6}-\sqrt{2})}{(\sqrt{2}+\sqrt{6})(\sqrt{6}-\sqrt{2})}+\frac{3\sqrt{2}(\sqrt{6}-\sqrt{3})}{(\sqrt{3}+\sqrt{6})(\sqrt{6}-\sqrt{3})}$$

$$=\sqrt{6}(\sqrt{3}-\sqrt{2})-4\sqrt{3}(\sqrt{6}-\sqrt{2})/4+3\sqrt{2}(\sqrt{6}-\sqrt{3})/3$$

$$=\sqrt{18}-\sqrt{12}-\sqrt{18}+\sqrt{6}+\sqrt{12}-\sqrt{6}=0$$

**Q19) Answer b**

$$\text{So, } a+b=\sqrt{3}+\sqrt{2}+\sqrt{3}-\sqrt{2}=2\sqrt{3}$$

$$\text{So, } a \times b=(\sqrt{3}+\sqrt{2}) \times (\sqrt{3}-\sqrt{2})=1$$

So,  $(8 \times a^2 \times b) + (8 \times a \times b^2) = 8a \times b \times (a+b)$  [taking  $8ab$  common from both the term]

$$\text{So, } 8 \times 1 \times 2\sqrt{3}=16\sqrt{3}$$

**Q20) Answer a**

$$=[64^{2/3} * 2^{-2/8^0}]^{1/2}$$

$$=[(4^3 * 2/3)/4 / 1]^{1/2}$$

$$=4^{1/2}=2$$

**Q21) Answer e**

$$(2+\sqrt{3})/(2-\sqrt{3})$$

$$=(2+\sqrt{3})^2/1=4+3+2*2\sqrt{3}=7+4*1.732=13.928$$

**Q22) Answer d**

$$\text{So, } x = \sqrt{(\sqrt{5}+1)^2}$$

$$\text{Or, } x = \sqrt{5}+1$$

$$\text{So, } x^2 + x - 1 = 5 + 2\sqrt{5} + 1 + \sqrt{5} + 1 - 1 = 6 + 3\sqrt{5}$$

**Q23) Answer c**

$$\text{So, } x = 7 + 4\sqrt{3} = 4 + (\sqrt{3})^2 + 2 \cdot 2 \cdot \sqrt{3} = (2 + \sqrt{3})^2$$

$$\sqrt{x} = 2 + \sqrt{3} \text{ and } 1/\sqrt{x} = 2 - \sqrt{3}$$

$$\text{So } 2 + \sqrt{3} + 2 - \sqrt{3} = 4$$

**Q24) Answer b**

$$\text{So, } x = \sqrt{3} - \sqrt{2}$$

$$\text{Or, } 1/x = 1/\sqrt{3} - \sqrt{2}$$

$$\text{Or, } 1/x = \sqrt{3} + \sqrt{2}$$

$$\text{So, } x + 1/x = \sqrt{3} - \sqrt{2} + \sqrt{3} + \sqrt{2} = 2\sqrt{3}$$

**Q25) Answer a**

$$\sqrt{5},$$

$$3\sqrt{7} = \sqrt{9 \cdot 7} = \sqrt{63}$$

$$4\sqrt{13} = \sqrt{4 \cdot 4 \cdot 13} = \sqrt{208}$$

**So  $4\sqrt{3}$  largest.**

**Q26) Answer E**

$$\text{L.H.S } (\sqrt{5} + \sqrt{3})/(\sqrt{5} -$$

$$\sqrt{3}) = [(\sqrt{5} + \sqrt{3})^2]/2 = 5 + 3 + 2\sqrt{15} = 4 + \sqrt{15} = x + z\sqrt{15}$$

$$\text{So } x = 4 \text{ and } z = 1$$

**Q27) Answer d**

$$= 4 + \sqrt{7} = [8 + 2\sqrt{7}]/2$$

$$\text{Or, } [7 + 1 + 2 \cdot \sqrt{7 \cdot 1}]/2$$

$$= [(\sqrt{7} + 1)^2/(\sqrt{2})^2]$$

$$= \{(\sqrt{7} + 1)/\sqrt{2}\}^2$$

**Q28) Answer c**

$$\sqrt{3} + 1/\sqrt{3} - 1$$

$$= (\sqrt{3} + 1)^2/(\sqrt{3} - 1)(\sqrt{3} + 1)$$

$$= 3 + 1 + 2\sqrt{3}/3 - 1$$

$$= 4 + 2\sqrt{3}/2$$

$$= 2 + \sqrt{3}$$

$$\text{Or, } \sqrt{3} - 1/\sqrt{3} + 1 = 2 - \sqrt{3}$$

$$\sqrt{2} + 1/\sqrt{2} - 1$$

$$= (\sqrt{2} + 1)^2/(\sqrt{2} - 1)(\sqrt{2} + 1)$$

$$= 2 + 1 + 2\sqrt{2}/2 - 1$$

$$= 3 + 2\sqrt{2}$$

$$\text{Or, } \sqrt{2} - 1/\sqrt{2} + 1 = 3 - 2\sqrt{2}$$

$$\text{Or, } (2 + \sqrt{3}) + (3 - 2\sqrt{2}) + (2 - \sqrt{3}) + (3 - 2\sqrt{2})$$

$$= 10$$

**Q29) Answer b**

$$3^x + y = 81 = 3^4$$

$$\text{So, } x+y=4 \quad \text{-----eq1}$$

$$81^{x-y}=3$$

$$\text{Or, } 3^4 \cdot (x-y)=3$$

$$4x-4y=1 \quad \text{-----eq2}$$

By solving eq1 and eq2 we get

$$\text{So, } x=17/8$$

**Q30) Answer A**

$$\left[ \sqrt[3]{\sqrt[6]{5^9}} \right]^4 \times \left[ \sqrt[3]{\sqrt[6]{5^9}} \right]^4 = [5^9 \cdot 1/6 \cdot 1/3]^4$$

$$* [5^9 \cdot 1/6 \cdot 1/3]^4 = 5^2 \cdot 5^2 = 625$$

**Q31) Answer e**

$$2\sqrt{2} + \sqrt{2} + 1/(2+\sqrt{2}) + 1/(\sqrt{2}-2)$$

$$= 2\sqrt{2} - \sqrt{2} + (1/2 + \sqrt{2} - 1/2 - \sqrt{2})$$

$$= 2\sqrt{2} + \sqrt{2} + \frac{2 - \sqrt{2} - 2 - \sqrt{2}}{(2 + \sqrt{2})(2 - \sqrt{2})}$$

$$= 2\sqrt{2} + \sqrt{2} - [2\sqrt{2}/4 - 2]$$

$$= 2\sqrt{2} + \sqrt{2} - \sqrt{2}$$

$$= 2\sqrt{2}$$

$$= 2 \times 1.4142$$

$$= 2.8284$$

**Q32) Answer d**

$$10^{100/5^75}$$

$$= 2^{100} \cdot 5^{100/5^75}$$

$$= 2^{100} \cdot 5^{25}$$

$$= 2^{25} \cdot 5^{25} \cdot 2^{75}$$

$$= 10^{25} \cdot 2^{75}$$

**Q33) Answer c**

$$\text{So, } a = 5 + 2\sqrt{6} = 3 + 2 + 2 \cdot \sqrt{3} \cdot \sqrt{2} = (\sqrt{3} + \sqrt{2})^2$$

$$\sqrt{a} = \sqrt{3} + \sqrt{2}$$

$$\text{Or, } 1/\sqrt{a} = \sqrt{3} - \sqrt{2}$$

**Q34) Answer b**

$$3 + 1/\sqrt{3} + 1/(3 + \sqrt{3}) + 1/(\sqrt{3} - 3)$$

$$= 3 + 1/\sqrt{3} + 1/3 + \sqrt{3} - 1/3 - \sqrt{3}$$

$$= 3 + 1/\sqrt{3} + (3 - \sqrt{3} - 3 - \sqrt{3})/(3 + \sqrt{3})(3 - \sqrt{3})$$

$$= 3 + 1/\sqrt{3} + (-2\sqrt{3})/9 - 3$$

$$= 3 + 1/\sqrt{3} - \sqrt{3}/3$$

$$= 3 + 1/\sqrt{3} - 1/\sqrt{3}$$

$$= 3$$

**Q35) Answer a**

$$\text{L.H.S} = (7 + \sqrt{5}/7 - \sqrt{5}) - (7 - \sqrt{5}/7 + \sqrt{5})$$

$$= (7 + \sqrt{5})^2/(7 + \sqrt{5})(7 - \sqrt{5}) - (7 - \sqrt{5})^2/(7 + \sqrt{5})(7 - \sqrt{5})$$

$$= \{(7 + \sqrt{5})^2 - (7 - \sqrt{5})^2\}/49 - 5$$

$$= \{49 + 5 + 14\sqrt{5} - 49 - 5 + 14\sqrt{5}\}/44$$

$$=28\sqrt{5}/44$$

$$=7\sqrt{5}/11$$

$$\text{Now, } (7+\sqrt{5}/7-\sqrt{5})-(7-\sqrt{5}/7+\sqrt{5}) = x+7\sqrt{5}y$$

$$\Rightarrow 7\sqrt{5}/11 = x+7\sqrt{5}y$$

$$\Rightarrow 0+7\times\sqrt{5}\times 1/11 = x+7\sqrt{5}y$$

$$\text{So, } x=0 \text{ and } y= 1/11$$

**Q36) Answer e**

$$=[\sqrt{3}+1/\sqrt{3}]^2=\{3+1/\sqrt{3}\}^2=16/3$$

**Q37) Answer d**

$$\sqrt[3]{2} * \sqrt{2} * \sqrt[3]{3} * \sqrt{3} = 2^{1/3} * 2^{1/2}$$

$$* 3^{1/3} * 3^{1/2} = 2^{6/5} * 3^{5/6} = 6^{5/6}$$

**Q38) Answer c**

$$\sqrt{12}+\sqrt{18}$$

$$=\sqrt{3*2*2}+\sqrt{2*3*3}$$

$$=2\sqrt{3}+3\sqrt{2}$$

$$\text{So required difference is } =2\sqrt{3}+3\sqrt{2}-2\sqrt{3}-2\sqrt{2}=\sqrt{2}$$

**Q39) Answer b**

$$(\sqrt{5}+\sqrt{3})/\sqrt{80}+\sqrt{48}-\sqrt{45}-\sqrt{27}$$

$$=(\sqrt{5}+\sqrt{3})/\sqrt{(16+5)}+\sqrt{(16\times 3)}-\sqrt{(19\times 5)}-\sqrt{(9\times 3)}$$

$$=(\sqrt{5}+\sqrt{3})/4\sqrt{5}+4\sqrt{3}-3\sqrt{5}-3\sqrt{3}$$

$$=(\sqrt{5}+\sqrt{3})/(4-3)\sqrt{5}+(4-3)\sqrt{3}$$

$$=\sqrt{5}+\sqrt{3}/\sqrt{5}+\sqrt{3}$$

$$=1$$

**Q40) Answer a**

$$\sqrt{3}=5.745(\text{given})$$

$$\sqrt{(3/11)}$$

$$=\sqrt{(3\times 11/11\times 11)}$$

$$=\sqrt{33/11}$$

$$=5.745/11$$

$$\approx 0.5223$$

**Q41) Answer e**

$$\text{Let, } X=\sqrt{3}\sqrt{3}\sqrt{3}\dots\dots\dots$$

Squaring both sides,

$$X^2=3\sqrt{3}\sqrt{3}\dots\dots\dots$$

$$\Rightarrow x^2=3x$$

$$\Rightarrow X^2-3x=0$$

$$\Rightarrow X(X-3)=0$$

$$x=3, \text{ because } x\neq 0$$

**Q42) Answer d**

$$4x=\sqrt{5}+2$$

Multiplying both sides by 4

$$16x=4(\sqrt{5}+2)$$



$$\Rightarrow 1/16x = 1/4\sqrt{5} + 8$$

$$\Rightarrow 1/16x = 4\sqrt{5} - 8 / (4\sqrt{5} + 8)(4\sqrt{5} - 8)$$

$$\Rightarrow 1/16x = 4(\sqrt{5} - 2) / 80 - 64$$

$$\Rightarrow 1/16x = 4(\sqrt{5} - 2) / 16$$

$$\Rightarrow 1/16x = \sqrt{5} - 2 / 4$$

$$\text{Now, } x - 1/16x = (\sqrt{5} + 2) / 4 - (\sqrt{5} - 2) / 4$$

$$= \sqrt{5} + 2 - \sqrt{5} + 2 / 4$$

$$= 4 / 4$$

$$= 1$$

**Q43) Answer c**

$$\text{So, } x = 1/\sqrt{2} + 1$$

$$= 1(\sqrt{2} - 1) / (\sqrt{2} + 1)(\sqrt{2} - 1)$$

$$= \sqrt{2} - 1 / 2 - 1$$

$$= (\sqrt{2} - 1)$$

$$\text{So, } x + 1 = (\sqrt{2} - 1) + 1 = \sqrt{2}$$

**Q44) Answer b**

$$9\sqrt{x} = \sqrt{12} + \sqrt{147}$$

$$\Rightarrow 9\sqrt{x} = 2\sqrt{3} + 7\sqrt{3}$$

$$\Rightarrow 9\sqrt{x} = \sqrt{3}(2 + 7)$$

$$\Rightarrow 9\sqrt{x} = 9\sqrt{3}$$

$$\text{So, } x = 3$$

**Q45) Answer a**

$$(\sqrt{5} - 2 / \sqrt{5} + 2) / -(\sqrt{5} + 2 / \sqrt{5} - 2)$$

$$= \{(\sqrt{5} - 2)^2 / (\sqrt{5} + 2)(\sqrt{5} - 2)\} - \{(\sqrt{5} + 2)^2 / (\sqrt{5} - 2)(\sqrt{5} + 2)\}$$

$$= 5 + 4 - 4\sqrt{5} - 5 - 4 - 4\sqrt{5} / 5 - 4$$

$$= (-8\sqrt{5})$$

**Q46) Answer e**

$$\sqrt{(9 + 2\sqrt{16} + 3\sqrt{5}12)}$$

$$= \sqrt{(9 + 8 + 8)}$$

$$= \sqrt{25}$$

$$= 5$$

**Q47) Answer d**

$$\text{Let, } X = \sqrt{12} + \sqrt{12} + \sqrt{12} + \dots$$

Squaring both sides

$$X^2 = 12 + \sqrt{(12 + \sqrt{12} + \dots)}$$

$$\Rightarrow X^2 = 12 + X$$

$$\Rightarrow X^2 - X - 12 = 0$$

$$\Rightarrow (X - 4)(X + 3) = 0$$

The given expression is positive

$$\text{So, } X = 4$$

**Q48) Answer c**

$$a = \sqrt{3/2}$$

$$\text{or, } \sqrt{(1+a)} + \sqrt{(1-a)} = \sqrt{(1+\sqrt{3}/2)} + \sqrt{(1-\sqrt{3}/2)}$$

$$= \sqrt{(2+\sqrt{3})}/\sqrt{2} + \sqrt{(2-\sqrt{3})}/\sqrt{2}$$

$$= \sqrt{(4+2\sqrt{3})}/\sqrt{2} \times \sqrt{2} + \sqrt{(4-2\sqrt{3})}/\sqrt{2} \times \sqrt{2}$$

$$= \sqrt{3+1/2} + \sqrt{3-1/2}$$

$$= \sqrt{3+1} + \sqrt{3-1/2}$$

$$= 2\sqrt{3}/2$$

$$= \sqrt{3}$$

**Q49) Answer b**

$$\sqrt{(10+\sqrt{(25+\sqrt{(108+\sqrt{(154+15))}})^3\sqrt{2} \times 2 \times 2})}$$

$$= \sqrt{(10+\sqrt{(25+\sqrt{(108+\sqrt{169}))})})/2$$

$$= \sqrt{(10+\sqrt{(25+\sqrt{(108+13))})})/2$$

$$= \sqrt{(10+\sqrt{(25+\sqrt{121}))})/2$$

$$= \sqrt{(10+\sqrt{(25+11))})/2$$

$$= \sqrt{(10+\sqrt{36})}/2$$

$$= \sqrt{(10+6)}/2$$

$$= \sqrt{(16)}/2$$

$$= 4/2$$

$$= 2$$

**Q50) Answer A**

$$(256)^{0.16} \times (16)^{0.18}$$

$$= (4)^{4 \times 0.16} \times (4)^{2 \times 0.18}$$

$$= (4)^{0.64} \times (4)^{0.36}$$

$$= (4)^{0.64+0.36}$$

$$= (4)^1$$

$$= 4$$

## Approximation

1.  $181.13 * 4.94 + \sqrt{144} = ? + 545.12$

A.216

B.372

C.481

D.816

E.924

2.  $(121.13 \div 10.87) + (85.19 \div 5.34) = ?$

A.7

B.12

C.28

D.34

E.40

3.  $10.12\% \text{ of } 15.32\% \text{ of } 419.81 = 4.01/5.13 * ?$

A.2

B.18

C.8

D.24

E.31

4.  $1044.21 \div \sqrt{1295} + ?^3 = 782.12 - 264.14 \div \sqrt{120}$

A.9

**B.13**

**C.11**

**D.4**

**E.7**

**5.  $85.04\%$  of  $*$  299.98 - 767.01  $\div$   $\sqrt{170} = ?^2$**

**A.16**

**B.14**

**C.18**

**D.20**

**E.22**

**6.  $900.01 \div \sqrt{325} + 124.93\%$  of 40.06 = ?  $*$  9.91**

**A.20**

**B.15**

**C.10**

**D.40**

**E.30**

**7.  $1599.98 \div 3.98 - 999.912 \div 7.91 = ?$**

**A.295**

**B.305**

**C.235**

**D.255**

**E.275**

**8.  $12.512\%$  of 399.98 +  $85.714\%$  of 28.18 = ?**

**A.65**

**B.74**

**C.52**

**D.84**

**E.44**

**9.  $\sqrt{7395.89} - \sqrt{2303.91} + \sqrt{6890.01} = ?^2$**

**A.14**

**B.11**

**C.17**

**D.9**

**E.21**

**10.  $(29.09) * (33.23) - 117.18 = ? * 11.903$**

**A.30**

**B.40**

**C.50**

**D.60**

**E.70**

**11.  $(11.12)^2 * 3.41 \div 3.01 = ? + 85.02$**

**A.36**

**B.152**

**C.181**

**D.197**

**E.215**

**12.  $3 \frac{1}{4} * 599.92 - 85.13 * 11.13 = ?$**

**A.150**

**B.715**

**C.1015**

**D.1321**

**E.1420**

**13.  $(8.01 - 4.32)^2 = ? - (9.92 * 5.72)$**

**A.21**

**B.31**

**C.76**

**D.89**

**E.110**

**14.  $346.50 \times 94.85 - 19812 = ? + 2144 + 3248$**

**A.7002**

**B.7262**

**C.6227**

**D.8200**

**E.7713**

**15.  $5399.88 + 2650.088 - 6239.987 + 4640.008 = ?$**

**A.6250**

**B.6350**

**C.6400**

**D.6450**

**E.6500**

**16.  $78 + 99 - 134 + 161 - 60 = ?^2$**

**A.-12**

**B.13**

**C.-14**

**D.11**

**E. None of the above**

**17.  $44.96\% \text{ of } 3999.69 + 3469.81 + 24.901\% \text{ of } 4801.07 = ?$**

**A.6570**

**B.5430**

**C.6470**

**D.5630**

**E.6630**

**18.  $\sqrt{255} + \sqrt{1228} + \sqrt{675} = ?$**

**A.68**

**B.74**

**C.77**

**D.80**

**E.84**

**19.  $139.95 * 11.98 = ? + 99.98 * 4.08$**

**A.1260**

**B.1280**

**C.1300**

**D.1320**

**E.1340**

**20.  $33.33\% \text{ of } 45.08 + 42.85\% \text{ of } 27.93 = ?^3$**

**A.4**

**B.2**

**C.0**

**D.5**

**E.3**

**21.  $(349.98 \div 6.98) - \sqrt{24} * 11.98 = ? - 10.01$**

**A.10**

**B.12**

**C.4**

**D.0**

**E.8**

**22.  $(? \div 8.01) \text{ of } \sqrt{401} = (79.98 \div ?) \text{ of } (512.12)^{(1/3)}$**

A.16

B.24

C.12

D.8

E.32

23.  $2/5$  of  $729.79 * 8.12 = 25.13\%$  of ?

A.2412

B.4100

C.6800

D.9344

E.8100

24.  $\sqrt{529.01} - \sqrt{360.71} = ? - \sqrt{121.01}$

A.5

B.25

C.35

D.15

E.2

25.  $7.72\%$  of  $49.87 * 2.01 + 9.34 = ?$

A.7

B.17

C.25

D.32

E.41

26.  $(\sqrt{783.92} - \sqrt{676.12}) * (\sqrt{225.12} - \sqrt{143.87}) = ?$

A.1

B.6

C.18

D.25

E.32

27.  $42.02 - 241.12 \div 15.94 = 12.15 * ?$

A.2

B.12

C.24

D.36

E.45

28.  $(135.02 \div 12.98) * (117.23 \div 8.91) = ?$

A.120

B.125

C.140

D.150

E.135

29.  $19.98 * 21.21 \div \sqrt{145} = ?^3 + (1.98)^3$

A.1

B.3

C.5

D.4

E.7

30.  $(2/3) * \sqrt{2020} + 560.96 \div \sqrt{120} = ?^2$

A.7

B.11

C.13

D.9

E.3

31.  $6.09 * 14.97 \div 8.98 = ? - 5.08 * 7.12$

A.35

B.40

C.45

D.50

E.55

32.  $(7.89)^3 + (11.11)^2 + (4.903)^4 = ?$

A.1258

B.1278

C.1511

D.1486

E.1398

33.  $19.902\% \text{ of } 44.915 + ?\% \text{ of } 179.92 = 549.198$

A.100

B.150

C.200

D.250

E.300

34.  $174.89\% \text{ of } 119.91 + 28.02 * 3.99 = ? + (11.11)^2$

A.201

B.208

C.210

D.196

E.188

35.  $33.98^2 + 22.22^2 = ?^2 + \sqrt{1605}$

A.20

B.35

C.40

D.45

E.25

36.  $32.06 * ? + 22.12^2 = 19.18 * 27.87 + 47.93$

A.1

B.3

C.5

D.2

E.4

37.  $25.86^2 - \sqrt{360} - 133.98 * 3.98 = ?^2$

A.11

B.13

C.15

D.17

E.19

38.  $^3\sqrt{(6860)} + ^3\sqrt{(510)} + ^2\sqrt{(170)} = ?$

A.40

B.50

C.30

D.35

E.25

39.  $(? \div 22.12) * ^3\sqrt{(999)} = (109.98 \div ?) * \sqrt{1025}$

A.124

B.100

C.98

D.114

E.88

40.  $(45.05 \div 324.05) * (35.98 \div 359.901) * ? = 4.901$

A.320

B.340

C.360

D.380

E.350

41.  $\sqrt{49.08 * 27.98} = ? * \sqrt{2400}$

A.4

B.5

C.8

D.10

E.6

42.  $20.20\% \text{ of } 399.98 + 45.45\% \text{ of } 44.044 = ?^2$

A.12

B.14

C.8

D.10

E.6

43.  $18.18 * 29.98 = ? * 8.98$

A.40

C.12

D.18

E.24

47.  $5.94\% \text{ of } 2449.76 - 10.11^2 + 13.41^2 = ?$

A.200

B.216

C.231

D.272

B.50

C.60

D.30

E.90

44.  $(52.10 * 3.31) - 8.98 = 15.12 * ?$

A.10

B.20

C.30

D.40

E.50

45.  $(3.12)^3 + (4.98)^2 + ? = 9.99\% \text{ of } 7200.13$

A.380

B.410

C.520

D.668

E.720

46.  $8.79\% \text{ of } 87.93 - ?\% \text{ of } 66.14 = 4$

A.1

B.6

E.281

48.  $33.33\% \text{ of } 44.98 + 66.66\% \text{ of } 69.08 = ?$

A.61

B.73

C.57

D.79

E.91

49.  $72.08\%1200 + 35.09\%270 = ?\% \text{ of } 600$

A.140

B.125

C.120

D.135

E.160

$$50. (33.02)^2 - (20.98)^2 - (25.08)^2 = ?$$

A.23

B.26

C.35

D.33

E.19

## Approximation - Answer and Explanation

**1. Answer: B**

$$181.13 * 4.94 + \sqrt{144} = ? + 545.12$$

$$\Rightarrow 181 * 5 + 12 - 545$$

$$\Rightarrow 372$$

**2. Answer: C**

$$(121.13 \div 10.87) + (85.19 \div 5.34) = ?$$

$$\Rightarrow (121/11) + (85/5)$$

$$\Rightarrow 28$$

**3. Answer: C**

$$10.12\% \text{ of } 15.32\% \text{ of } 419.81 = 4.01/5.13 * ?$$

$$\Rightarrow 10\% \text{ of } 15\% \text{ of } 420 = 4/5 * ?$$

$$\Rightarrow 6 * 5/4 (\text{approximately})$$

$$\Rightarrow 8 (\text{approximately})$$

**4. Answer: A**

$$1044.21 \div \sqrt{1295} + ?^3 = 782.12 - 264.14 \div \sqrt{120}$$

$$29 + ?^3 = 782 - 24$$

$$?^3 = 729$$

$$? = 9$$

**5. Answer: B**

$$85.04\% \text{ of } * 299.98 - 767.01 \div \sqrt{170} = ?^2$$

$$255 - 59 = ?^2$$

$$196 = ?^2$$

$$? = 14$$

**6. Answer: C**

$$900.01 \div \sqrt{325} + 124.93\% \text{ of } 40.06 = ? * 9.91$$

$$50 + 50 = ? * 10$$

$$10 = ?$$

**7. Answer: E**

$$1599.98 \div 3.98 - 999.912 \div 7.91 = ?$$

$$400 - 125 = ?$$

$$? = 275$$

**8. Answer: B**

$$12.512\% \text{ of } 399.98 + 85.714\% \text{ of } 28.18 = ?$$

$$1/8 * 400 + 6/7 * 28 = ?$$

$$50 + 24 = ?$$

$$? = 74$$

**9. Answer: B**

$$\sqrt{7395.89} - \sqrt{2303.91} + \sqrt{6890.01} = ?^2$$



$$86 - 48 + 83 = ?^2$$

$$? = 11$$

**10. Answer: E**

$$(29.09) * (33.23) - 117.18 = ? * 11.903$$

$$957 - 117 = ? * 12$$

$$? = 70$$

**11. Answer: A**

$$(11.12)^2 * 3.41 \div 3.01 = ? + 85.02$$

$$\Rightarrow 11^2 * 3/3 - 85$$

$$\Rightarrow 36$$

**12. Answer: C**

$$3 \frac{1}{4} * 599.92 - 85.13 * 11.13 = ?$$

$$\Rightarrow 13/4 * 600 - 85 * 11$$

$$\Rightarrow 1015$$

**13. Answer: C**

$$(8.01 - 4.32)^2 = ? - (9.92 * 5.72)$$

$$\Rightarrow (8 - 4)^2 + (10 * 6)$$

$$\Rightarrow 76$$

**14. Answer: E**

$$346.50 \times 94.85 - 19812 = ? + 2144 + 3248$$

$$= 346.50 \times 95 - 19812 = ? + 2144 + 3248$$

$$= 32917 - 19812 = ? + 5392$$

$$= 13105 = ? + 5392$$

$$= 13105 - 5392 = ?$$

$$= 7713$$

**15. Answer: D**

$$5399.88 + 2650.088 - 6239.987 + 4640.008 = ?$$

$$5400 + 2650 - 6240 + 4640 = ?$$

$$12690 - 6240 = ?$$

$$6450 = ?$$

**16. Answer: A**

$$78 + 99 - 134 + 161 - 60 = ?^2$$

$$338 - 194 = ?^2$$

$$144 = ?^2$$

$$+12 \text{ or } -12 = ?$$

**17. Answer: C**

$$44.96\% \text{ of } 3999.69 + 3469.81 + 24.901\% \text{ of } 4801.07 = ?$$

$$45\% \text{ of } 4000 + 3470 + 25\% \text{ of } 4800 = ?$$

$$1800 + 3470 + 1200 = ?$$

$$6470 = ?$$

**18. Answer: C**

$$\sqrt{255} + \sqrt{1228} + \sqrt{675} = ?$$

$$16 + 35 + 26 = ?$$

$$? = 77$$

**19. Answer: B**

$$139.95 * 11.98 = ? + 99.98 * 4.08$$

$$1680 = ? + 400$$

$$? = 1280$$

**20. Answer: E**

$$33.33\% \text{ of } 45.08 + 42.85\% \text{ of } 27.93 = ?^3$$

$$3/9 * 45 + 3/7 * 28 = ?^3$$

$$?^3 = 27$$

$$? = 3$$

**21. Answer: D**

$$(349.98 \div 6.98) - \sqrt{24} * 11.98 = ? - 10.01$$

$$50 - 60 = ? - 10$$

$$? = 0$$

**22. Answer: A**

$$(? \div 8.01) \text{ of } \sqrt[4]{401} = (79.98 \div ?) \text{ of } (512.12)^{(1/3)}$$

$$?/8 * 20 = 80/? * 8$$

$$? = 16$$

**23. Answer: D**

$$2/5 \text{ of } 729.79 * 8.12 = 25.13\% \text{ of } ?$$

$$\Rightarrow 2/5 \text{ of } 730 * 8 = 25\% \text{ of } ?$$

$$\Rightarrow 2336 = 25/100 \text{ of } ?$$

$$\Rightarrow 9344$$

**24. Answer: D**

$$\sqrt{529.01} - \sqrt{360.71} = ? - \sqrt{121.01}$$

$$\Rightarrow \sqrt{529} - \sqrt{361} = ? - \sqrt{121}$$

$$\Rightarrow 23 - 19 + 11$$

$$\Rightarrow 15$$

**25. Answer: B**

$$7.72\% \text{ of } 49.87 * 2.01 + 9.34 = ?$$

$$\Rightarrow 8\% \text{ of } 50 * 2 + 9$$

$$\Rightarrow 4 * 2 + 9$$

$$\Rightarrow 17$$

**26. Answer: B**

$$(\sqrt{783.92} - \sqrt{676.12}) * (\sqrt{225.12} - \sqrt{143.87}) = ?$$

$$\Rightarrow (\sqrt{784} - \sqrt{676}) * (\sqrt{225} - \sqrt{144}) = ?$$

$$\Rightarrow (28 - 26) * (15 - 12)$$

$$\Rightarrow 6$$

**27. Answer: A**

$$42.02 - 241.12 \div 15.94 = 12.15 * ?$$

$$\Rightarrow 42 - 241 \div 16 = 12 * ?$$

$$\Rightarrow (42 - 15)/12$$

$$\Rightarrow 2$$

**28. Answer: E**

$$(135.02 \div 12.98) * (117.23 \div 8.91) = ?$$

$$135 = ?$$

**29. Answer: B**

$$19.98 * 21.21 \div \sqrt{145} = ?^3 + (1.98)^3$$

$$20 * 21/12 = ?^3 + 8$$

$$? = 3$$

**30. Answer: D**

$$(2/3) * \sqrt{2020} + 560.96 \div \sqrt{120} = ?^2$$

$$2/3 * 45 + 561/11 = ?^2$$

$$? = 9$$

**31. Answer: C**

$$6.09 * 14.97 \div 8.98 = ? - 5.08 * 7.12$$

$$6 * 15/9 = ? - 35$$

$$? = 45$$

**32. Answer: A**

$$(7.89)^3 + (11.11)^2 + (4.903)^4 = ?$$

$$512 + 121 + 625 = ?$$

$$? = 1258$$

**33. Answer: E**

$$19.902\% \text{ of } 44.915 + ?\% \text{ of } 179.92 = 549.198$$

$$20\% \text{ of } 45 + ?\% \text{ of } 180 = 549$$

$$9 + ? \% \text{ of } 180 = 549$$

$$? \% 180 = 540$$

$$? = 300$$

**34. Answer: A**

$$174.89\% \text{ of } 119.91 + 28.02 * 3.99 = ? + (11.11)^2$$

$$210 + 112 = ? + 121$$

$$? = 201$$

**35. Answer: C**

$$33.98^2 + 22.22^2 = ?^2 + \sqrt{1605}$$

$$1156 + 484 = ?^2 + 40$$

$$? = 40$$

**36. Answer: B**

$$32.06 * ? + 22.12^2 = 19.18 * 27.87 + 47.93$$

$$32 * ? + 484 = 532 + 48$$

$$? = 96/32$$

$$? = 3$$

**37. Answer: A**

$$25.86^2 - \sqrt{360} - 133.98 * 3.98 = ?^2$$

$$676 - 19 - 536 = ?^2$$

$$? = 11$$

**38. Answer: A**

$$\sqrt[3]{(6860)} + \sqrt[3]{(510)} + \sqrt[2]{(170)} = ?$$

$$19 + 8 + 13 = ?$$

$$? = 40$$

**39. Answer: E**

$$(? \div 22.12) * \sqrt[3]{(999)} = (109.98 \div ?) * \sqrt{1025}$$

$$?/22 * 10 = 110/? * 32$$

$$? = 88$$

**40. Answer: C**

$$(45.05 \div 324.05) * (35.98 \div 359.901) * ? = 4.901$$

$$? = 72 * 5$$

$$? = 360$$

**41. Answer: A**

$$\sqrt{49.08} * 27.98 = ? * \sqrt{2400}$$

$$7 * 28 = ? * 49$$

$$? = 4$$

**42. Answer: D**

$$20.20\% \text{ of } 399.98 + 45.45\% \text{ of } 44.044 = ?^2$$

$$80 + 20 = ?^2$$

$$? = 10$$

**43. Answer: C**

$$18.18 * 29.98 = ? * 8.98$$

$$18 * 30 = ? * 9$$

$$? = 60$$

**44. Answer: A**

$$(52.10 * 3.31) - 8.98 = 15.12 * ?$$

$$\Rightarrow (52 * 3) - 9 = 15 * ?$$

$$\Rightarrow 147/15$$

$$\Rightarrow 10$$

**45. Answer: D**

$$(3.12)^3 + (4.98)^2 + ? = 9.99\% \text{ of } 7200.13$$

$$\Rightarrow 3^3 + 5^2 + ? = 10\% \text{ of } 7200$$

$$\Rightarrow 27 + 25 + ? = 720$$

$$\Rightarrow 668$$

**46. Answer: B**

$$8.79\% \text{ of } 87.93 - ?\% \text{ of } 66.14 = 4$$

$$\Rightarrow 9\% \text{ of } 88 - ?\% \text{ of } 66 = 4$$

$$\Rightarrow 8 - 4 = ?\% \text{ of } 66$$

$$\Rightarrow 6\% \text{ of } 2450 - 100 + 169$$

$$\Rightarrow 147 - 100 + 169$$

$$\Rightarrow 216$$

**48. Answer: A**

$$33.33\% \text{ of } 44.98 + 66.66\% \text{ of } 69.08 = ?$$

$$3/9 * 45 + 6/9 * 69 = ?$$

$$15 + 46 = ?$$

$$? = 61$$

**49. Answer :E**

$$\Rightarrow ? = 4 * 100/66$$

$$\Rightarrow 6$$

**47. Answer: B**

$$5.94\% \text{ of } 2449.76 - 10.11^2 + 13.41^2 = ?$$

$$72 * 12 + (35 * 270/100) = ? * 6$$

$$864 + 95 = ? * 6$$

$$? = 959/6$$

$$? = 160$$

**50. Answer: A**

$$(33.02)^2 - (20.98)^2 - (25.08)^2 = ?$$

$$1089 - 441 - 625 = ?$$

$$? = 23$$

## Quadratic Equation

Following question contains two equations as I and II. You have to solve both equations and determine the relationship between.

1. I)  $x^2 - 22x + 105 = 0$

II)  $y^2 - 12y + 35 = 0$

A.  $x < y$

B.  $x \geq y$

C.  $x > y$

D.  $x \leq y$

E.  $x = y$  or the relation cannot be established

2. I)  $4x^2 - 25x + 36 = 0$

II)  $2y^2 - 25y + 72 = 0$

A.  $x < y$

B.  $x \geq y$

C.  $x > y$

D.  $x \leq y$

E.  $x = y$  or the relation cannot be established

3. I)  $x^2 - 13x - 198 = 0$

II)  $2y^2 + 42y + 220 = 0$

A.  $x < y$

B.  $x \geq y$

C.  $x > y$

D.  $x \leq y$

E.  $x = y$  or the relation cannot be established

4.

I.  $2x^2 + 24x + 72 = 0$

II.  $3y^2 + 30y + 75 = 0$

A.  $x < y$

B.  $x \geq y$

C.  $x > y$

D.  $x \leq y$

E.  $x = y$  or the relation cannot be established

5. I)  $3x^2 - 3x - 36 = 0$

II)  $4y^2 + 20y + 24 = 0$

A.  $x < y$

B.  $x \geq y$

C.  $x > y$

D.  $x \leq y$

E.  $x = y$  or the relation cannot be established

6. I)  $5x^2 - 3x - 36 = 0$

II)  $3y^2 + 30y + 72 = 0$

A.  $x < y$

B.  $x \geq y$

C.  $x > y$

D.  $x \leq y$

E.  $x = y$  or the relation cannot be established

7. I)  $6x^2 - 19x + 15 = 0$

II)  $5y^2 - 34y + 24 = 0$

A. If  $x > y$

B. If  $x < y$

C. If  $x \geq y$

D. If  $x \leq y$

E. If  $x = y$  or relationship between  $x$  and  $y$  cannot be determined.

8. I).  $x^2 - 31x + 228 = 0$

II).  $y^2 - 21y + 108 = 0$

A.  $x < y$

B.  $x \geq y$

C.  $x > y$

D.  $x \leq y$

E.  $x = y$  or the relation cannot be established

9. I)  $x^2 + 2x - 120 = 0$

II)  $y^2 - 12y + 20 = 0$

A.  $x > y$

B.  $x \geq y$

C.  $x = y$  or relationship can't be determined.

D.  $x < y$

E.  $x \leq y$

10. I)  $x^2 - 21x - 130 = 0$

II)  $y^2 + 26y + 169 = 0$

A.  $x > y$

B.  $x \geq y$

C.  $x = y$  or relationship can't be determined.

D.  $x < y$

E.  $x \leq y$

11. I).  $x^2 + 31x + 234 = 0$

II).  $y^2 + 21y + 104 = 0$

A.  $x < y$

B.  $x \geq y$

C.  $x > y$

D.  $x \leq y$

E.  $x = y$  or the relation cannot be established

12. I).  $8x^2 + 5x - 42 = 0$

II).  $7y^2 + 43y + 60 = 0$

A.  $x < y$

B.  $x \geq y$

C.  $x > y$

D.  $x \leq y$

E.  $x = y$  or the relation cannot be established

13. I)  $x^2 - 29x + 210 = 0$

II)  $8y^2 - 49y + 45 = 0$

A. If  $x < y$

B. If  $x > y$

C. If  $x \leq y$

D. If  $x \geq y$

E. If relationship between  $x$  and  $y$  cannot be determined

14. I)  $4x^2 + 14x + 12 = 0$

II)  $3y^2 + 18y + 27 = 0$

**A.** $x < y$

**B.** $x \geq y$

**C.** $x > y$

**D.** $x \leq y$

**E.** $x = y$  or the relation cannot be established

**15. I.** $3p^2 - 5p - 12 = 0$

**II.** $2q^2 - 3q - 14 = 0$

**A.)**If  $p > q$

**B.)**If  $p < q$

**C.)**If  $p \geq q$

**D.)**If  $p \leq q$

**E.)**If  $p = q$  or relation cannot be established

**16. I.** $2p^2 - 17p + 35 = 0$

**II.** $3q^2 - 13q + 14 = 0$

**A.)**If  $p > q$

**B.)**If  $p < q$

**C.)**If  $p \geq q$

**D.)**If  $p \leq q$

**E.)**If  $p = q$  or relation cannot be established

**17. I.** $3p^2 + p - 24 = 0$

**II.** $3q^2 - 20q + 32 = 0$

**A.)**If  $p > q$

**B.)**If  $p < q$

**C.)**If  $p \geq q$

**D.)**If  $p \leq q$

**E.)**If  $p = q$  or relation cannot be established

**18. I)**  $6x^2 - 19x + 15 = 0$

**II)**  $10y^2 - 29y - 21 = 0$

**A.** $x < y$

**B.** $x \geq y$

**C.** $x > y$

**D.** $x \leq y$

**E.** $x = y$  or the relation cannot be established

**19. I.**  $8x^2 - 22x + 15 = 0$

**II.**  $3y^2 - 13y + 14 = 0$

**A.** $x < y$

**B.** $x \geq y$

**C.** $x > y$

**D.** $x \leq y$

**E.** $x = y$  or the relation cannot be established

**20. I)**  $x^2 - 2x - 3 = 0$

**II)**  $y^2 + 18y + 72 = 0$

**A.** $x < y$

**B.** $x \geq y$

**C.** $x > y$

**D.** $x \leq y$

**E.** $x = y$  or the relation cannot be established

**21. I)**  $x^2 + 19x + 34 = 0$

II)  $y^2 - 14y - 32 = 0$

A.  $x < y$

B.  $x \geq y$

C.  $x > y$

D.  $x \leq y$

E.  $x = y$  or the relation cannot be established

22. I)  $2x^2 - 28x + 96 = 0$

II)  $y^2 - 34y + 288 = 0$

A.  $x < y$

B.  $x \geq y$

C.  $x > y$

D.  $x \leq y$

E.  $x = y$  or the relation cannot be established

23. I)  $x^2 - 19x + 18 = 0$

II)  $y^2 + y - 2 = 0$

A.  $x < y$

B.  $x \geq y$

C.  $x > y$

D.  $x \leq y$

E.  $x = y$  or the relation cannot be established

24. I)  $3x^2 + 21x + 36 = 0$

II)  $2y^2 + 18y + 36 = 0$

A.  $x < y$

B.  $x \geq y$

C.  $x > y$

D.  $x \leq y$

E.  $x = y$  or the relation cannot be established

25. I)  $3x^2 + 30x + 63 = 0$

II)  $2y^2 + 20y + 42 = 0$

A.  $x = y$  or relationship can't be determined.

B.  $x \geq y$

C.  $x < y$

D.  $x > y$

E.  $x \leq y$

26. I)  $5x^2 - 14x - 55 = 0$

II)  $4y^2 - 2y - 56 = 0$

A.  $x < y$

B.  $x \geq y$

C.  $x > y$

D.  $x \leq y$



E.  $x = y$  or the relation cannot be established

27. I)  $x^2 - 30x + 81 = 0$

II)  $3y^2 - 9y + 6 = 0$

A.  $x < y$

B.  $x \geq y$

C.  $x > y$

D.  $x \leq y$

E.  $x = y$  or the relation cannot be established

28. I)  $3x^2 - 25x + 52 = 0$

II)  $2y^2 - 23y + 65 = 0$

A.  $x < y$

B.  $x \geq y$

C.  $x > y$

D.  $x \leq y$

E.  $x = y$  or the relation cannot be established

29. I)  $x^2 + 12x + 20 = 0$

II)  $y^2 + 13y + 22 = 0$

A.  $x < y$

B.  $x \geq y$

C.  $x > y$

D.  $x \leq y$

E.  $x = y$  or the relation cannot be established

30. I)  $2x^2 - 14x + 24 = 0$

II)  $y^2 - 9y - 52 = 0$

A.  $x < y$

B.  $x \geq y$

C.  $x > y$

D.  $x \leq y$

E.  $x = y$  or the relation cannot be established

31. I)  $x^2 + 19x + 88 = 0$

II)  $y^2 + 13y + 40 = 0$

A.  $x < y$

B.  $x \geq y$

C.  $x > y$

D.  $x \leq y$

E.  $x = y$  or the relation cannot be established

32. I)  $x^2 - 26x + 153 = 0$

II)  $y^2 - 22y + 117 = 0$

A.  $x < y$

B.  $x \geq y$

C.  $x > y$

D.  $x \leq y$

E.  $x = y$  or the relation cannot be established

33. I)  $x^2 - 22x + 105 = 0$

II)  $y^2 - 12y + 35 = 0$

A.  $x < y$

B.  $x \geq y$

C.  $x > y$

D.  $x \leq y$

E.  $x = y$  or the relation cannot be established

34. I)  $x^2 + 23x + 120 = 0$

II)  $y^2 + 26y + 165 = 0$

A.  $x < y$

B.  $x \geq y$

C.  $x > y$

D.  $x \leq y$

E.  $x = y$  or the relation cannot be established

35. I.  $x^2 - 15x + 56 = 0$

II.  $y^2 - 26y + 165 = 0$

a)  $x < y$

b)  $x > y$

c)  $x \leq y$

d)  $x \geq y$

e)  $x = y$  or relationship cannot be established

36. I)  $x^2 + 11x + 24 = 0$

II)  $y^2 + 13y + 40 = 0$

A.  $x < y$

B.  $x \geq y$

C.  $x > y$

D.  $x \leq y$

E.  $x = y$  or the relation cannot be established

37. I)  $2x^2 - 18x + 36 = 0$

II)  $y^2 - 9y + 18 = 0$

A.  $x < y$

B.  $x \geq y$

C.  $x > y$

D.  $x \leq y$

E.  $x = y$  or the relation cannot be established

38. I)  $x + y = 45$

II)  $x - 2y = 15$

A.  $x < y$

**B.** $x \geq y$

**C.** $x > y$

**D.** $x \leq y$

**E.** $x = y$  or the relation cannot be established

**39. I)**  $x^2 + 18x + 80 = 0$

**II)**  $y^2 + 21y + 104 = 0$

**A.** $x < y$

**B.** $x \geq y$

**C.** $x > y$

**D.** $x \leq y$

**E.** $x = y$  or the relation cannot be established

**40. I.**  $x^2 = 11449$

**II.**  $y = \sqrt{11449}$

**A.** $x < y$

**B.** $x \geq y$

**C.** $x > y$

**D.** $x \leq y$

**E.** $x = y$  or the relation cannot be established

**41. I.**  $4x^2 - 13x + 10 = 0$

**II.**  $4y^2 + 7y - 2 = 0$

**A.** $x < y$

**B.** $x \geq y$

**C.** $x > y$

**D.** $x \leq y$

**E.** $x = y$  or the relation cannot be established

**42. I.**  $3p^2 + 25p + 50 = 0$

**II.**  $2q^2 + 9q + 10 = 0$

**A)** If  $p > q$

**B)** If  $p < q$

**C)** If  $p \geq q$

**D)** If  $p \leq q$

**E)** If  $p = q$  or relation cannot be established

**43. I.**  $3p^2 - 4p - 4 = 0$

**II.**  $3q^2 - 10q - 8 = 0$

**A)** If  $p > q$

**B)** If  $p < q$

**C)** If  $p \geq q$

**D)** If  $p \leq q$

**E)** If  $p = q$  or relation cannot be established

**44.**

**I.**  $2x^2 - 7x + 6 = 0$

**II.**  $y^2 + 13y + 42 = 0$

**A.** if  $x < y$

**B.** if  $x > y$

**C.** if  $x \leq y$

**D.** if  $x \geq y$

E.if relationship between x and y cannot be determined

45.

I.  $2x^2 - 9x + 9 = 0$

II.  $8y^2 + 34y + 21 = 0$

A.if  $x < y$

B.if  $x > y$

C.if  $x \leq y$

D. if  $x \geq y$

E.if relationship between x and y cannot be determined

46.

I.  $2x^2 - 13x + 15 = 0$

II.  $3y^2 + 28y + 65 = 0$

A.if  $x < y$

B.if  $x > y$

C.if  $x \leq y$

D.if  $x \geq y$

E.if relationship between x and y cannot be determined

47. I)  $x^2 + 26x - 87 = 0$

II)  $y^2 - 12y + 35 = 0$

A. $x < y$

B. $x \geq y$

C. $x > y$

D. $x \leq y$

E. $x = y$  or the relation cannot be established

48. I)  $x^2 + 14x - 51 = 0$

II)  $y^2 - 8y + 15 = 0$

A. $x < y$

B. $x \geq y$

C. $x > y$

D. $x \leq y$

E. $x = y$  or the relation cannot be established

49. I:  $2x^2 - 13x + 20 = 0$

II:  $2y^2 - 17y + 36 = 0$

A.If  $x < y$

B.If  $x > y$

C.If  $x \leq y$

D.If  $x \geq y$

E.If relationship between x and y cannot be determined

50. I)  $x^2 - 13x - 114 = 0$

II)  $y^2 + 21y + 104 = 0$

A. $x > y$

**B.**  $x \geq y$

**C.**  $x = y$  or relationship can't be determined.

**D.**  $x < y$

**E.**  $x \leq y$

## Quadratic Equation - Answer and Explanation

### 1. Answer: B

$$x^2 - 22x + 105 = 0$$

$$x^2 - 15x - 7x + 105 = 0$$

$$x(x - 15) - 7(x - 15) = 0$$

$$(x - 7)(x - 15) = 0$$

$$x = 7, 15$$

$$y^2 - 12y + 35 = 0$$

$$y^2 - 7y - 5y + 35 = 0$$

$$y(y - 7) - 5(y - 7) = 0$$

$$(y - 5)(y - 7) = 0$$

$$y = 5, 7$$

$$x \geq y$$

### 2. Answer: A

**I)**  $4x^2 - 25x + 36 = 0$

$$4x^2 - 16x - 9x + 36 = 0$$

$$4x(x - 4) - 9(x - 4) = 0$$

$$(4x - 9)(x - 4) = 0$$

$$x = 2.25, 4$$

**II)**  $2y^2 - 25y + 72 = 0$

$$2y^2 - 16y - 9y + 72 = 0$$

$$2y(y - 8) - 9(y - 8) = 0$$

$$(2y - 9)(y - 8) = 0$$

$$y = 4.5, 8$$

Hence,  $x < y$

### 3. Answer: C

**I)**  $x^2 - 13x - 198 = 0$

$$(x - 22)(x + 9) = 0$$

$$x = 22, -9$$

**II)**  $2y^2 + 42y + 220 = 0$

$$2y^2 + 20y + 22y + 220 = 0$$

$$2y(y + 10) + 22(y + 10) = 0$$

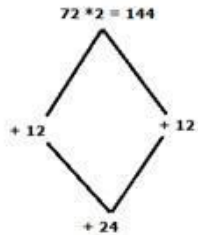
$$(2y + 22)(y + 10) = 0$$

$$y = -11, -10$$

Hence  $x > y$

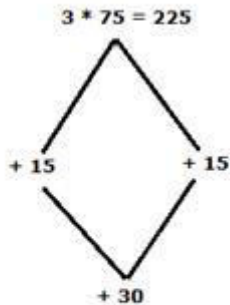
4. Answer: A

$$\text{I. } 2x^2 + 24x + 72 = 0$$



$$x = -12/2, -12/2 = -6 \text{ and } -6$$

$$\text{II. } 3y^2 + 30y + 75 = 0$$



$$y = -15/3, -15/3 = -5 \text{ and } -5$$

From I and II,  $x < y$

5. Answer: E

$$\text{I) } 3x^2 - 3x - 36 = 0$$

$$3x^2 - 12x + 9x - 36 = 0$$

$$3x(x - 4) + 9(x - 4) = 0$$

$$(3x + 9)(x - 4) = 0$$

$$x = -3, 4$$

$$\text{II) } 4y^2 + 20y + 24 = 0$$

$$4y^2 + 8y + 12y + 24 = 0$$

$$4y(y + 2) + 12(y + 2) = 0$$

$$(4y + 12)(y + 2) = 0$$

$$y = -3, -2$$

Hence the relationship cannot be determined.

6. Answer: C

$$\text{I) } 5x^2 - 3x - 36 = 0$$

$$5x^2 - 15x + 12x - 36 = 0$$

$$5x(x - 3) + 12(x - 3) = 0$$

$$(5x + 12)(x - 3) = 0$$

$$x = -12/5, 3 = -2.4, 3$$

$$\text{II) } 3y^2 + 30y + 72 = 0$$

$$3y^2 + 18y + 12y + 72 = 0$$

$$3y(y + 6) + 12(y + 6) = 0$$

$$(3y + 12)(y + 6) = 0$$

$$y = -4, -6$$

$$x > y$$

**7. Answer: E**

$$\text{I. } 6x^2 - 19x + 15 = 0$$

$$\Rightarrow 6x^2 - 9x - 10x + 15 = 0$$

$$\Rightarrow 3x(2x - 3) - 5(2x - 3) = 0$$

$$\Rightarrow (3x - 5)(2x - 3) = 0$$

$$\Rightarrow x = 5/3, 3/2$$

$$\text{II. } 5y^2 - 34y + 24 = 0$$

$$\Rightarrow 5y^2 - 30y - 4y + 24 = 0$$

$$\Rightarrow 5y(y - 6) - 4(y - 6) = 0$$

$$\Rightarrow (5y - 4)(y - 6) = 0$$

$$\Rightarrow y = 4/5, 6$$

**Hence, relationship between x and y cannot be determined.**

**8. Answer: B**

$$x^2 - 31x + 228 = 0$$

$$(x - 12)(x - 19) = 0$$

$$x = 12, 19$$

$$y^2 - 21y + 108 = 0$$

$$(y - 9)(y - 12) = 0$$

$$y = 12, 9$$

**Hence,  $x \geq y$**

**9. Answer: C**

$$x^2 + 2x - 120 = 0$$

$$x^2 + 12x - 10x - 120 = 0$$

$$x(x + 12) - 10(x + 12) = 0$$

$$(x - 10)(x + 12) = 0$$

$$X = 10, -12$$

$$y^2 - 12y + 20 = 0$$

$$y^2 - 10y - 2y + 20 = 0$$

$$y(y - 10) - 2(y - 10) = 0$$

$$(y - 2)(y - 10) = 0$$

$$Y = 2, 10$$

Relationship between x and y cannot be established.

**10. Answer: A**

$$x^2 - 21x - 130 = 0$$

$$x^2 - 26x + 5x - 130 = 0$$

$$x(x - 26) + 5(x - 26) = 0$$

$$(x + 5)(x - 26) = 0$$

$$X = -5, 26$$

$$y^2 + 26y + 169 = 0$$

$$y^2 + 13y + 13y + 169 = 0$$

$$y(y + 13) + 13(y + 13) = 0$$

$$(y + 13)(y + 13) = 0$$

$$Y = -13, -13$$

$$x > y$$

**11. Answer: D**

$$I)x^2 + 31x + 234 = 0$$

$$(x + 13)(x + 18) = 0$$

$$x = -13, -18$$

$$II)y^2 + 21y + 104 = 0$$

$$(y + 13)(y + 8) = 0$$

$$y = -13, -8$$

**Hence,  $x \leq y$**

**12. Answer: E**

$$I). 8x^2 + 5x - 42 = 0$$

$$8x^2 - 16x + 21x - 42 = 0$$

$$8x(x - 2) + 21(x - 2) = 0$$

$$(8x + 21)(x - 2) = 0$$

$$x = -21/8, 2 = -2.625, 2$$

$$II). 7y^2 + 43y + 60 = 0$$

$$7y^2 + 28y + 15y + 60 = 0$$

$$7y(y + 4) + 15(y + 4) = 0$$

$$(7y + 15)(y + 4) = 0$$

$$y = -15/7, -4 = -2.14, -4$$

**Can't be determined**

**13. Answer: B**

**From I  $\Rightarrow$**

$$x^2 - 29x + 210 = 0$$

$$\Rightarrow x(x - 14) - 15(x - 14) = 0$$

$$\Rightarrow (x - 15)(x - 14) = 0$$

$$\Rightarrow x = 14, 15$$

**From II  $\Rightarrow$**

$$8y^2 - 49y + 45 = 0$$

$$\Rightarrow 8y(y - 5) - 9(y - 5) = 0$$

$$\Rightarrow (8y - 9)(y - 5) = 0$$

$$\Rightarrow y = 5, 9/8$$

**Hence,  $x > y$**

**14. Answer: C**

$$I) 4x^2 + 14x + 12 = 0$$

$$4x^2 + 8x + 6x + 12 = 0$$

$$4x(x + 2) + 6(x + 2) = 0$$



$$(4x + 6)(x + 2) = 0$$

$$X = -6/4, -2 = -1.5, -2$$

$$\text{II) } 3y^2 + 18y + 27 = 0$$

$$3y^2 + 9y + 9y + 27 = 0$$

$$3y(y + 3) + 9(y + 3) = 0$$

$$(3y + 9)(y + 3) = 0$$

$$Y = -9/3, -3 = -3, -3$$

$$x > y$$

**15. Answer: E**

$$\text{I) } 3p^2 - 5p - 12 = 0$$

$$3p^2 - 9p + 4p - 12 = 0$$

$$(3p + 4)(p - 3) = 0$$

$$p = -4/3, 3$$

$$\text{II) } 2q^2 - 3q - 14 = 0$$

$$2q^2 + 4q - 7q - 14 = 0$$

$$(2q - 7)(q + 2) = 0$$

$$q = -2, 7/2$$

cannot be determined

**16. Answer: A**

$$\text{I) } 2p^2 - 17p + 35 = 0$$

$$2p^2 - 10p - 7p + 35 = 0$$

$$(2p - 7)(p - 5) = 0$$

$$p = 7/2, 5$$

$$\text{II) } 3q^2 - 13q + 14 = 0$$

$$3q^2 - 6q - 7q + 14 = 0$$

$$(3q - 7)(q - 2) = 0$$

$$q = 2, 7/3$$

$$p > q$$

**17. Answer: D**

$$\text{I) } 3p^2 + p - 24 = 0$$

$$3p^2 + 9p - 8p - 24 = 0$$

$$(3p - 8)(p + 3) = 0$$

$$p = -3, 8/3$$

$$\text{II) } 3q^2 - 20q + 32 = 0$$

$$3q^2 - 12q - 8q + 32 = 0$$

$$(3q - 8)(q - 4) = 0$$

$$q = 8/3, 4$$

$$p \leq q$$

**18. Answer: E**

$$\text{I) } 6x^2 - 19x + 15 = 0$$

$$6x^2 - 9x - 10x + 15 = 0$$

$$3x(2x - 3) - 5(2x - 3) = 0$$

$$(3x - 5)(2x - 3) = 0$$

$$X = 5/3, 3/2$$

$$\text{II) } 10y^2 - 29y - 21 = 0$$

$$10y^2 - 35y + 6y - 21 = 0$$

$$5y(2y-7) + 3(2y-7) = 0$$

$$(5y+3)(2y-7) = 0$$

$$Y = -3/5, 7/2$$

**Can't be determined**

**19. Answer: A**

$$I. 8x^2 - 22x + 15 = 0$$

$$8x^2 - 12x - 10x + 15 = 0$$

$$4x(2x-3) - 5(2x-3) = 0$$

$$(4x-5)(2x-3) = 0$$

$$X = 5/4, 3/2$$

$$II. 3y^2 - 13y + 14 = 0$$

$$3y^2 - 6y - 7y + 14 = 0$$

$$3y(y-2) - 7(y-2) = 0$$

$$(3y-7)(y-2) = 0$$

$$Y = 7/3, 2$$

$$x < y$$

**20. Answer: C**

$$I) x^2 - 2x - 3 = 0$$

$$x^2 - 3x + x - 3 = 0$$

$$x(x-3) + 1(x-3) = 0$$

$$(x+1)(x-3) = 0$$

$$x = -1, 3$$

$$II) y^2 + 18y + 72 = 0$$

$$y^2 + 12y + 6y + 72 = 0$$

$$y(y+12) + 6(y+12) = 0$$

$$(y+6)(y+12) = 0$$

$$y = -6, -12$$

**Hence,  $x > y$**

**21. Answer: D**

$$x^2 + 19x + 34 = 0$$

$$x^2 + 17x + 2x + 34 = 0$$

$$x(x+17) + 2(x+17) = 0$$

$$(x+2)(x+17) = 0$$

$$x = -2, -17$$

$$y^2 - 14y - 32 = 0$$

$$y^2 - 16y + 2y - 32 = 0$$

$$y(y-16) + 2(y-16) = 0$$

$$(y+2)(y-16) = 0$$

$$y = -2, 16$$

$$x \leq y$$

**22. Answer: A**

$$I) 2x^2 - 28x + 96 = 0$$

$$2x^2 - 16x - 12x + 96 = 0$$

$$2x(x - 8) - 12(x - 8) = 0$$

$$(2x - 12)(x - 8) = 0$$

$$x = 6, 8$$

$$II) y^2 - 34y + 288 = 0$$

$$y^2 - 18y - 16y + 288 = 0$$

$$y(y - 18) - 16(y - 18) = 0$$

$$(y - 16)(y - 18) = 0$$

$$y = 16, 18$$

$$x < y$$

**23. Answer: B**

$$x^2 - 19x + 18 = 0$$

$$x^2 - 18x - x + 18 = 0$$

$$x(x - 18) - 1(x - 18) = 0$$

$$(x - 1)(x - 18) = 0$$

$$x = 1, 18$$

$$y^2 + y - 2 = 0$$

$$y^2 + 2y - y - 2 = 0$$

$$y(y + 2) - 1(y + 2) = 0$$

$$(y - 1)(y + 2) = 0$$

$$y = 1, -2$$

$$x \geq y$$

**24. Answer: E**

$$I) 3x^2 + 21x + 36 = 0$$

$$3x^2 + 12x + 9x + 36 = 0$$

$$3x(x + 4) + 9(x + 4) = 0$$

$$(3x + 9)(x + 4) = 0$$

$$x = -4, -3$$

$$II) 2y^2 + 18y + 36 = 0$$

$$2y^2 + 12y + 6y + 36 = 0$$

$$2y(y + 6) + 6(y + 6) = 0$$

$$(2y + 6)(y + 6) = 0$$

$$y = -3, -6$$

**Relationship between x and y cannot be established.**

**25. Answer: A**

$$I) 3x^2 + 30x + 63 = 0$$

$$3x^2 + 21x + 9x + 63 = 0$$

$$3x(x + 7) + 9(x + 7) = 0$$

$$(3x + 9)(x + 7) = 0$$

$$x = -3, -7$$

$$\text{II) } 2y^2 + 20y + 42 = 0$$

$$2y^2 + 14y + 6y + 42 = 0$$

$$2y(y + 7) + 6(y + 7) = 0$$

$$(2y + 6)(y + 7) = 0$$

$$y = -3, -7$$

**Relationship between x and y cannot be established.**

**26. Answer: E**

$$\text{I) } 5x^2 - 14x - 55 = 0$$

$$5x^2 - 25x + 11x - 55 = 0$$

$$5x(x - 5) + 11(x - 5) = 0$$

$$(5x + 11)(x - 5) = 0$$

$$x = -2.2, 5$$

$$\text{II) } 4y^2 - 2y - 56 = 0$$

$$4y^2 - 16y + 14y - 56 = 0$$

$$4y(y - 4) + 14(y - 4) = 0$$

$$(4y + 14)(y - 4) = 0$$

$$y = -3.5, 4$$

**Can't be determined**

**27. Answer: C**

$$\text{I) } x^2 - 30x + 81 = 0$$

$$(x - 27)(x - 3) = 0$$

$$x = 27, 3$$

$$\text{II) } 3y^2 - 9y + 6 = 0$$

$$3y^2 - 6y - 3y + 6 = 0$$

$$3y(y - 2) - 3(y - 2) = 0$$

$$(3y - 3)(y - 2) = 0$$

$$y = 1, 2$$

$$x > y$$

**28. Answer: A**

$$\text{I) } 3x^2 - 25x + 52 = 0$$

$$3x^2 - 12x - 13x + 52 = 0$$

$$3x(x - 4) - 13(x - 4) = 0$$

$$(3x - 13)(x - 4) = 0$$

$$x = 13/3, 4 = 4.33, 4$$

$$\text{II) } 2y^2 - 23y + 65 = 0$$

$$2y^2 - 10y - 13y + 65 = 0$$

$$2y(y - 5) - 13(y - 5) = 0$$

$$(2y - 13)(y - 5) = 0$$

$$y = 6.5, 5$$

$$x < y$$

**29. Answer: E**

$$I)x^2 + 12x + 20 = 0$$

$$x^2 + 10x + 2x + 20 = 0$$

$$x(x + 10) + 2(x + 10) = 0$$

$$(x + 2)(x + 10) = 0$$

$$x = -2, -10$$

$$II)y^2 + 13y + 22 = 0$$

$$y^2 + 11y + 2y + 22 = 0$$

$$y(y + 11) + 2(y + 11) = 0$$

$$(y + 2)(y + 11) = 0$$

$$y = -2, -11$$

**Relationship between x and y cannot be established.**

**30. Answer: E**

$$I)2x^2 - 14x + 24 = 0$$

$$2x^2 - 8x - 6x + 24 = 0$$

$$2x(x - 4) - 6(x - 4) = 0$$

$$(2x - 6)(x - 4) = 0$$

$$x = 3, 4$$

$$II)y^2 - 9y - 52 = 0$$

$$y^2 - 13y + 4y - 52 = 0$$

$$y(y - 13) + 4(y - 13) = 0$$

$$(y + 4)(y - 13) = 0$$

$$y = -4, 13$$

**Relationship between x and y cannot be established.**

**31. Answer: D**

$$I)x^2 + 19x + 88 = 0$$

$$x^2 + 11x + 8x + 88 = 0$$

$$x(x + 11) + 8(x + 11) = 0$$

$$(x + 8)(x + 11) = 0$$

$$x = -8, -11$$

$$II)y^2 + 13y + 40 = 0$$

$$y^2 + 8y + 5y + 40 = 0$$

$$y(y + 8) + 5(y + 8) = 0$$

$$(y + 5)(y + 8) = 0$$

$$y = -5, -8$$

$$x \leq y$$

**32. Answer: E**

$$I)x^2 - 26x + 153 = 0$$

$$x^2 - 17x - 9x + 153 = 0$$

$$x(x - 17) - 9(x - 17) = 0$$

$$(x - 9)(x - 17) = 0$$

$$x = 9, 17$$

$$II)y^2 - 22y + 117 = 0$$

$$y^2 - 9y - 13y + 117 = 0$$

$$y(y - 9) - 13(y - 9) = 0$$

$$(y - 13)(y - 9) = 0$$

$$y = 13, 9$$

**Relationship between x and y cannot be established.**

**33. Answer: B**

$$x^2 - 22x + 105 = 0$$

$$x^2 - 15x - 7x + 105 = 0$$

$$x(x - 15) - 7(x - 15) = 0$$

$$(x - 7)(x - 15) = 0$$

$$x = 7, 15$$

$$y^2 - 12y + 35 = 0$$

$$y^2 - 7y - 5y + 35 = 0$$

$$y(y - 7) - 5(y - 7) = 0$$

$$(y - 5)(y - 7) = 0$$

$$y = 5, 7$$

$$x \geq y$$

**34. Answer: E**

$$I)x^2 - 23x + 22 = 0$$

$$x^2 - 22x - x + 22 = 0$$

$$x(x - 22) - 1(x - 22) = 0$$

$$(x - 1)(x - 22) = 0$$

$$X = 1, 22$$

$$II)y^2 + 19y - 66 = 0$$

$$y^2 + 22y - 3y - 66 = 0$$

$$y(y + 22) - 3(y + 22) = 0$$

$$(y - 3)(y + 22) = 0$$

$$Y = 3, -22$$

Relationship cannot be established between x and y.

**35. Answer: A**

$$I. x^2 - 15x + 56 = 0$$

$$x^2 - 7x - 8x + 56 = 0$$

$$x(x - 7) - 8(x - 7) = 0$$

$$(x - 8)(x - 7) = 0$$

$$x = 7, x = 8$$

$$\text{II. } y^2 - 26y + 165 = 0$$

$$y^2 - 11y - 15y + 165 = 0$$

$$y(y - 11) - 15(y - 11) = 0$$

$$y = 11, y = 15$$

so,  $x < y$

**36. Answer: E**

$$\text{I) } x^2 + 11x + 24 = 0$$

$$x^2 + 8x + 3x + 24 = 0$$

$$x(x + 8) + 3(x + 8) = 0$$

$$(x + 3)(x + 8) = 0$$

$$x = -3, -8$$

$$\text{II) } y^2 + 13y + 40 = 0$$

$$y^2 + 8y + 5y + 40 = 0$$

$$y(y + 8) + 5(y + 8) = 0$$

$$(y + 5)(y + 8) = 0$$

$$y = -5, -8$$

Relationship between  $x$  and  $y$  cannot be established.

**37. Answer: E**

$$\text{I) } 2x^2 - 18x + 36 = 0$$

$$2x^2 - 12x - 6x + 36 = 0$$

$$2x(x - 6) - 6(x - 6) = 0$$

$$(2x - 6)(x - 6) = 0$$

$$x = 3, 6$$

$$\text{II) } y^2 - 9y + 18 = 0$$

$$y^2 - 3y - 6y + 18 = 0$$

$$y(y - 3) - 6(y - 3) = 0$$

$$(y - 6)(y - 3) = 0$$

$$y = 6, 3$$

Relationship between  $x$  and  $y$  cannot be established.

**38. Answer: C**

$$x + y = 45 \text{ -----(1)}$$

$$x - 2y = 15 \text{ -----(2)}$$

$$(1) - (2)$$

$$3y = 30$$

$$y = 10$$

$$x = 45 - 10 = 35$$

**Hence,  $x > y$**

**39. Answer: E**

$$\text{I) } x^2 + 18x + 80 = 0$$

$$x^2 + 10x + 8x + 80 = 0$$

$$x(x + 10) + 8(x + 10) = 0$$

$$(x + 8)(x + 10) = 0$$

$$x = -8, -10$$

$$\text{II) } y^2 + 21y + 104 = 0$$

$$y^2 + 13y + 8y + 104 = 0$$

$$y(y + 13) + 8(y + 13) = 0$$

$$(y + 8)(y + 13) = 0$$

$$y = -8, -13$$

**Relationship cannot be established between x and y.**

**40. Answer: D**

$$\text{I. } x^2 = 11449$$

$$x = \sqrt{11449} = \pm 107$$

$$\text{II. } y = \sqrt{11449} = 107$$

$$\text{Hence } x \leq y$$

**41. Answer: C**

$$\text{I. } 4x^2 - 13x + 10 = 0$$

$$4x^2 - 8x - 5x + 10 = 0$$

$$4x(x - 2) - 5(x - 2) = 0$$

$$(x - 2)(4x - 5) = 0$$

$$x = 2, 5/4$$

$$\text{II. } 4y^2 + 7y - 2 = 0$$

$$4y^2 + 8y - y - 2 = 0$$

$$4y(y + 2) - 1(y + 2) = 0$$

$$(4y - 1)(y + 2) = 0$$

$$y = 1/4, -2$$

**Hence,  $x > y$**

**42. Answer: B**

$$\text{I) } 3p^2 + 25p + 50 = 0$$

$$3p^2 + 15p + 10p + 50 = 0$$

$$(3p + 10)(p + 5) = 0$$

$$p = -5, -10/3$$

$$\text{II) } 2q^2 + 9q + 10 = 0$$

$$2q^2 + 4q + 5q + 10 = 0$$

$$(2q + 5)(q + 2) = 0$$

$$q = -5/2, -2$$

$$p < q$$

**43. Answer: E**

$$3p^2 - 4p - 4 = 0$$

$$3p^2 - 6p + 2p - 4 = 0$$

$$(3p + 2)(p - 2) = 0$$

$$p = -2/3, 2$$

$$3q^2 - 10q - 8 = 0$$



$$3q^2 - 12q + 2q - 8 = 0$$

$$(3q+2)(q-4) = 0$$

$$q = -2/3, 4$$

cannot be determined

**44. Answer: B**

$$\text{I. } 2x^2 - 7x + 6 = 0$$

$$\Rightarrow 2x^2 - 4x - 3x + 6 = 0$$

$$\Rightarrow 2x(x - 2) - 3(x - 2) = 0$$

$$\Rightarrow (2x - 3)(x - 2) = 0$$

$$\Rightarrow x = 3/2, 2$$

$$\text{II. } y^2 + 13y + 42 = 0$$

$$\Rightarrow y^2 + 6y + 7y + 42 = 0$$

$$\Rightarrow y(y + 6) + 7(y + 6) = 0$$

$$\Rightarrow (y + 7)(y + 6) = 0$$

$$\Rightarrow y = -7, -6$$

**Hence,  $x > y$**

**45. Answer: B**

$$\text{I. } 2x^2 - 9x + 9 = 0$$

$$\Rightarrow 2x^2 - 6x - 3x + 9 = 0$$

$$\Rightarrow 2x(x - 3) - 3(x - 3) = 0$$

$$\Rightarrow (2x - 3)(x - 3) = 0$$

$$\Rightarrow x = 3/2, 3$$

$$\text{II. } 8y^2 + 34y + 21 = 0$$

$$\Rightarrow 8y^2 + 28y + 6y + 21 = 0$$

$$\Rightarrow 4y(2y + 7) + 3(2y + 7) = 0$$

$$\Rightarrow (4y + 3)(2y + 7) = 0$$

$$\Rightarrow y = -3/4, -7/2$$

**Hence,  $x > y$**

**46. Answer: B**

$$\text{I. } 2x^2 - 13x + 15 = 0$$

$$\Rightarrow 2x^2 - 10x - 3x + 15 = 0$$

$$\Rightarrow 2x(x - 5) - 3(x - 5) = 0$$

$$\Rightarrow (2x - 3)(x - 5) = 0$$

$$\Rightarrow x = 3/2, 5$$

$$\text{II. } 3y^2 + 28y + 65 = 0$$

$$\Rightarrow 3y^2 + 15y + 13y + 65 = 0$$

$$\Rightarrow 3y(y + 5) + 13(y + 5) = 0$$

$$\Rightarrow (3y + 13)(y + 5) = 0$$

$$\Rightarrow y = -13/3, -5$$

**Hence,  $x > y$**

**47. Answer: A**

$$\text{I) } x^2 + 26x - 87 = 0$$

$$x^2 + 29x - 3x - 87 = 0$$

$$x(x + 29) - 3(x + 29) = 0$$

$$(x + 29)(x - 3) = 0$$

$$x = -29, 3$$

$$\text{II) } y^2 - 12y + 35 = 0$$

$$y^2 - 7y - 5y + 35 = 0$$

$$y(y - 7) - 5(y - 7) = 0$$

$$(y - 7)(y - 5) = 0$$

$$y = 7, 5$$

Hence,  $x < y$

**48. Answer: D**

$$\text{I) } x^2 + 14x - 51 = 0$$

$$x^2 + 17x - 3x - 51 = 0$$

$$x(x + 17) - 3(x + 17) = 0$$

$$(x - 3)(x + 17) = 0$$

$$x = 3, -17$$

$$\text{II) } y^2 - 8y + 15 = 0$$

$$y^2 - 5y - 3y + 15 = 0$$

$$y(y - 5) - 3(y - 5) = 0$$

$$(y - 3)(y - 5) = 0$$

$$y = 3, 5$$

Hence,  $x \leq y$

**49. Answer: C**

From I  $\Rightarrow$

$$2x^2 - 13x + 20 = 0$$

$$\Rightarrow (2x - 5)(x - 4) = 0$$

$$\Rightarrow x = 5/2, 4$$

From II  $\Rightarrow$

$$2y^2 - 17y + 36 = 0$$

$$\Rightarrow (2y - 9)(y - 4) = 0$$

$$\Rightarrow y = 9/2, 4$$

Hence,  $x \leq y$

**50. Answer: A**

$$\text{I) } x^2 - 13x - 114 = 0$$

$$x^2 + 6x - 19x - 114 = 0$$

$$x(x + 6) - 19(x + 6) = 0$$

$$(x - 19)(x + 6) = 0$$

$$x = 19, -6$$

$$\text{II) } y^2 + 21y + 104 = 0$$

$$y^2 + 8y + 13y + 104 = 0$$

$$y(y + 8) + 13(y + 8) = 0$$

$$(y + 13)(y + 8) = 0$$

$$y = -13, -8$$

Hence,  $x > y$

## Wrong Number Series

1. **20, 21, 43, 140, 521, 2606**

A.20

B.21

C.43

D.140

E.521

2. **15, 14, 26, 76, 296, 1475**

A.15

B.14

C.26

D.76

E.296

3. **4 12 77 292 804 1804**

A.4

B.12

C.292

D.77

E.1804

4. **3 6 25 144 1152 11520**

A.3

B.6

C.25

D.144

E.1152

5. **64, 160, 400, 1000, 2500, 3600**

A.400

B.1000

C.3600

D.160

E.2500

6. **1, 730, 779, 904, 913, 920**

A.913

B.920

C.730

D.779

E.904

7. **64, 32, 48, 110, 420, 1890**

A.32

B.1890

C.420

D.110

E.48

8. 2, 218, 561, 1073, 1800, 2802

A.2802

B.1800

C.1073

D.561

E.218

9. 6, 15, 42, 120, 366, 1095

A.6

B.15

C.42

D.120

E.366

10. 20, 75, 192, 579, 1740, 5223

A.75

B.192

C.579

D.1740

E.5223

11. 4, 5, 18, 90, 672, 6057

A.4

B.5

C.18

D.90

E.672

12. 2592, 864, 576, 624, 768, 1280

A.624

B.1280

C.864

D.768

E.576

13. 15, 46, 139, 418, 1255, 3770

A.46

B.139

C.418

D.1255

E.3770

14. 18, 92, 360, 1112, 2226, 2228

A.18

B.92

C.360

D.1112

E.2226

15. 18, 20, 40, 123, 496, 2485

A.18

B.20

C.40

D.123

E.496

16. 7, 14, 42, 168, 720, 5040

A.14

B.720

C.42

D.5040

E.168

17. 12, 24, 50, 96, 192, 384

A.12

B.24

C.50

D.96

E.192

18. 15, 48, 99, 168, 245, 360

A.99

B.245

C.168

D.48

E.360

19. 23, 48, 98, 198, 398, 796

A.796

B.48

C.198

D.398

E.98

20. 32, 16, 24, 84, 546, 872

A.16

B.84

C.872

D.24

E.546

21. 113, 93, 75, 59, 42, 33

A.42

B.75

C.93

D.59

E.33

22. 143, 126, 107, 84, 55, 22

A.22

B.126

C.55

D.107

E.84

23. 12, 25, -7, 57, -68, 148

A.12

B.25

C.-7

D.57

E.-68

24. 8, 15, 28, 53, 102, 210

A.15

B.28

C.53

D.102

E.210

25. 15, 40, 76, 125, 190, 270

A.40

B.76

C.125

D.190

E.270

26. **79, 319, 439, 499, 529, 545**

A. 319

B. 545

C.499

D. 439

E.529

27. **80, 20, 10, 11, 12, 14.4**

A.20

B.10

C.11

D.12

E.14.4

28. **10, 11, 15, 20, 40, 65**

A.11

B.15

C.20

D.40

E.65

29. **45, 45, 48, 56, 72, 95**

A.56

B.72

C.45

D.95

E.48

30. **21, 43, 88, 175, 362, 729**

A.43

B.87

C.358

D.721

E.175

31. **1, 25, 36, 55, 61, 85**

A.25

B.85

C.55

D.61

E.36

32. **128, 238, 372, 526, 708, 918**

A.238

B.526

C.708

D.918

E.372

33. **15, 46, 139, 418, 1255, 3770**

A.46

B.139

C.418

D.1255

E.3770

34. **157,300,468,665,887,1142**

A.157

B.665

C.468

D.1142

E.300

**35. 12,18,36,90,250,945**

**A.945**

**B.90**

**C.250**

**D.12**

**E.18**

**36. 16,102,515,2064,6194,12392**

**A.16**

**B.515**

**C.102**

**D.6194**

**E.12392**

**37.3,5,13,43,177,892**

**A.3**

**B.13**

**C.5**

**D.177**

**E.892**

**38. 3780, 840, 240, 96, 64, 32**

**A.64**

**B.32**

**C.840**

**D.240**

**E.96**

**39. 2, 123, 204, 256, 278, 287**

**A.123**

**B.2**

**C.256**

**D.287**

**E.278**

**40. 37, 49, 70, 101, 142, 193**

**A.37**

**B.142**

**C.193**

**D.101**

**E.49**

**41. 120,135,180,255,360,505**

**A.505**

**B. 120**

**C.180**

**D.255**

**E.135**

**42. 4, 10, 16, 28, 40, 54**

**A.10**

**B.54**

**C.28**

**D.16**

**E.40**

**43. 179,184,211,227,352,388**

**A. 184**

**B.179**

**C.211**

**D.352**

**E.227**

44. **23, 46, 76, 110, 152, 192**

A.76

B.152

C.46

D.110

E.None of these

45. **32, 18, 36, 110, 440, 1944**

A.110

B.440

C.36

D.1944

E.None of these

46. **1216, 1250, 1428, 1704, 2048, 2426**

A.1704

B.2048

C.2426

D.1216

E.1428

47. **117, 198, 710, 760, 975, 1000**

A.710

B.1000

C.975

D.760

E.198

48. **6850, 5824, 4906, 4080, 3370, 2740**

A.4080

B.2740

C. 5824

D.4906

E.3370

49. **2, 4, 12, 48, 248, 1440**

A.48

B.12

C.248

D.1440

E.4

50. **77,78,157,472,1890,9446**

A.1890

B.78

C.77

D.472

E.9446

## Wrong Number Series - Answer and Explanation

**1.Answer: D**

$$20 * 1 + 1 = 21$$

$$21 * 2 + 1 = 43$$

$$43 * 3 + 1 = 130$$

$$130 * 4 + 1 = 521$$

$$521 * 5 + 1 = 2606$$



**2.Answer: D**

$$15 * 1 - 1 = 14$$

$$14 * 2 - 2 = 26$$

$$26 * 3 - 3 = 75$$

$$75 * 4 - 4 = 296$$

$$296 * 5 - 5 = 1475$$

**3.Answer: D**

$$4+2^3 = 12$$

$$12+4^3 = 76$$

$$76+6^3 = 292$$

$$292+8^3=804$$

$$804 + 10^3 = 1804$$

**4.Answer: C**

$$3*2= 6$$

$$6*4 = 24$$

$$24*6 = 144$$

$$144*8 = 1152$$

$$1152*10=11520$$

**5.Answer: C**

$$64 * 2.5 = 160$$

$$160 * 2.5 = 400$$

$$400 * 2.5 = 1000$$

$$1000 * 2.5 = 2500$$

$$2500 * 2.5 = 6250$$

**6.Answer: B**

$$1 + 9^3 = 730$$

$$730 + 7^2 = 779$$

$$779 + 5^3 = 904$$

$$904 + 3^2 = 913$$

$$913 + 1^3 = 914$$

**7.Answer: D**

$$64 * 0.5 = 32$$

$$32 * 1.5 = 48$$

$$48 * 2.5 = 120$$

$$120 * 3.5 = 420$$

$$420 * 4.5 = 1890$$

**8.Answer: B**

$$2 + 6^3 = 218$$

$$218 + 7^3 = 561$$

$$561 + 8^3 = 1073$$

$$1073 + 9^3 = 1802$$

$$1802 + 10^3 = 2802$$

**9.Answer: D**

$$6 * 3 - 3 = 15$$

$$15 * 3 - 3 = 42$$

$$42 * 3 - 3 = 123$$

$$123 * 3 - 3 = 366$$

$$366 * 3 - 3 = 1095$$

**10.Answer: A**

$$20 * 3 + 3 = 63$$

$$63 * 3 + 3 = 192$$

$$192 * 3 + 3 = 579$$

$$579 * 3 + 3 = 1740$$

$$1740 * 3 + 3 = 5223$$

**11. Answer: D**

$$4 * 1 + 1 = 5$$

$$5 * 3 + 3 = 18$$

$$18 * 5 + 5 = 95$$

$$95 * 7 + 7 = 672$$

$$672 * 9 + 9 = 6057$$

**12. Answer: A**

$$2592 * 1/3 = 864$$

$$864 * 2/3 = 576$$

$$576 * 3/3 = 576$$

$$576 * 4/3 = 768$$

$$768 * 5/3 = 1280$$

**13. Answer: E**

$$15 * 3 + 1 = 46$$

$$46 * 3 + 1 = 139$$

$$139 * 3 + 1 = 418$$

$$418 * 3 + 1 = 1255$$

$$1255 * 3 + 1 = 3766$$

**14. Answer: C**

$$18 * 5 + 2 = 92$$

$$92 * 4 + 2 = 370$$

$$370 * 3 + 2 = 1112$$

$$1112 * 2 + 2 = 2226$$

$$2226 * 1 + 2 = 2228$$

**15. Answer: B**

$$18 * 1 + 1 = 19$$

$$19 * 2 + 2 = 40$$

$$40 * 3 + 3 = 123$$

$$123 * 4 + 4 = 496$$

$$496 * 5 + 5 = 2485$$

**16. Answer: B**

$$7 * 2 = 14$$

$$14 * 3 = 42$$

$$42 * 4 = 168$$

$$168 * 5 = 840$$

$$840 * 6 = 5040$$

**17. Answer: C**

$$12 + 12 = 24$$

$$24 + 24 = 48$$

$$48 + 48 = 96$$

$$96 + 96 = 192$$

$$192 + 192 = 384$$

**18. Answer: B**

$$4^2 - 1 = 15$$

$$7^2 - 1 = 48$$

$$10^2 - 1 = 99$$

$$13^2 - 1 = 168$$

$$16^2 - 1 = 255$$

$$19^2 - 1 = 360$$

**19. Answer: A**

$$23 * 2 + 2 = 48$$

$$48 * 2 + 2 = 98$$

$$98 * 2 + 2 = 198$$

$$198 * 2 + 2 = 398$$

$$398 * 2 + 2 = 798$$

**20.Answer: C**

$$32 * 0.5 = 16$$

$$16 * 1.5 = 24$$

$$24 * 3.5 = 84$$

$$84 * 6.5 = 546$$

$$546 * 10.5 = 5733$$

**21.Answer: A**

$$11^2 - 8 = 113$$

$$10^2 - 7 = 93$$

$$9^2 - 6 = 75$$

$$8^2 - 5 = 59$$

$$7^2 - 4 = 45$$

$$6^2 - 3 = 33$$

**22.Answer: A**

$$143 - 17 = 126$$

$$126 - 19 = 107$$

$$107 - 23 = 84$$

$$84 - 29 = 55$$

$$55 - 37 = 18$$

**23.Answer: B**

$$12 + 2^3 = 20$$

$$20 - 3^3 = -7$$

$$-7 + 4^3 = 57$$

$$57 - 5^3 = -68$$

$$-68 + 6^3 = 148$$

**24.Answer: E**

$$8 * 2 - 1 = 15$$

$$15 * 2 - 2 = 28$$

$$28 * 2 - 3 = 53$$

$$53 * 2 - 4 = 102$$

$$102 * 2 - 5 = 199$$

**25.Answer: D**

$$15 + 5^2 = 40$$

$$40 + 6^2 = 76$$

$$76 + 7^2 = 125$$

$$125 + 8^2 = 189$$

$$189 + 9^2 = 270$$

**26.Answer: B**

$$79 + 240 = 319$$

$$319 + 120 = 439$$

$$439 + 60 = 499$$

$$499 + 30 = 529$$

$$529 + 15 = 544$$

**27.Answer: C**

$$80 \div 5 + 4 = 20$$

$$20 \div 5 + 6 = 10$$

$$10 \div 5 + 8 = 10$$

$$10 \div 5 + 10 = 12$$

$$12 \div 5 + 12 = 14.4$$

**28.Answer: C**

$$10 + 1^2 = 11$$

$$11 + 2^2 = 15$$

$$15 + 3^2 = 24$$

$$24 + 4^2 = 40$$

$$40 + 5^2 = 65$$

**29. Answer: B**

$$45 + 1^2 - 1 = 45$$

$$45 + 2^2 - 1 = 48$$

$$48 + 3^2 - 1 = 56$$

$$\mathbf{56 + 4^2 - 1 = 71}$$

$$71 + 5^2 - 1 = 95$$

**30. Answer: E**

$$21 * 2 + 1 = 43$$

$$43 * 2 + 2 = 88$$

$$\mathbf{88 * 2 + 3 = 179}$$

$$179 * 2 + 4 = 362$$

$$362 * 2 + 5 = 729$$

**31. Answer: E**

$$1 + 3^3 - 3 = 25$$

$$\mathbf{25 + 2^3 - 2 = 31}$$

$$31 + 3^3 - 3 = 55$$

$$55 + 2^3 - 2 = 61$$

$$61 + 3^3 - 3 = 85$$

**32. Answer: E**

$$128 + 11^2 - 11 = 238$$

$$\mathbf{238 + 12^2 - 12 = 370}$$

$$370 + 13^2 - 13 = 526$$

$$526 + 14^2 - 14 = 708$$

$$708 + 15^2 - 15 = 918$$

**33. Answer: E**

$$15 * 3 + 1 = 46$$

$$46 * 3 + 1 = 139$$

$$139 * 3 + 1 = 418$$

$$418 * 3 + 1 = 1255$$

$$\mathbf{1255 * 3 + 1 = 3766}$$

**34. Answer: B**

$$157 + 12^2 - 1 = 300$$

$$300 + 13^2 - 1 = 468$$

$$\mathbf{468 + 14^2 - 1 = 663}$$

$$663 + 15^2 - 1 = 887$$

$$887 + 16^2 - 1 = 1142$$

**35. Answer: C**

$$\mathbf{12 * 1.5 = 18}$$

$$\mathbf{18 * 2 = 36}$$

$$\mathbf{36 * 2.5 = 90}$$

$$\mathbf{90 * 3 = 270}$$

$$\mathbf{270 * 3.5 = 945}$$

**36. Answer: D**

$$16 * 6 + 6 = 102$$

$$102 * 5 + 5 = 515$$

$$515 * 4 + 4 = 2064$$

$$2064 * 3 + 3 = 6195$$

$$6195 * 2 + 2 = 12392$$

**37. Answer: E**

$$3 * 1 + 2 = 5$$

$$5 * 2 + 3 = 13$$

$$13 * 3 + 4 = 43$$

$$43 \times 4 + 5 = 177$$

$$177 \times 5 + 6 = 891$$

**38. Answer: B**

$$3780 \div 4.5 = 840$$

$$840 \div 3.5 = 240$$

$$240 \div 2.5 = 96$$

$$96 \div 1.5 = 64$$

$$64 \div 0.5 = 128$$

**39. Answer: C**

$$2 + 11^2 = 123$$

$$123 + 9^2 = 204$$

$$204 + 7^2 = 253$$

$$253 + 5^2 = 278$$

$$278 + 3^2 = 287$$

**40. Answer: A**

$$38 + 11 = 49$$

$$49 + 21 = 70$$

$$70 + 31 = 101$$

$$101 + 41 = 142$$

$$142 + 51 = 193$$

**41. Answer :A**

$$120 + 15 = 135$$

$$135 + 45 = 180$$

$$180 + 75 = 255$$

$$255 + 105 = 360$$

$$360 + 135 = 495$$

**42. Answer: D**

$$1^2 + (3 \times 1) = 4$$

$$2^2 + (3 \times 2) = 10$$

$$3^2 + (3 \times 3) = 18$$

$$4^2 + (3 \times 4) = 28$$

$$5^2 + (3 \times 5) = 40$$

$$6^2 + (3 \times 6) = 54$$

**43. Answer :B**

$$180 + 2^2 = 184$$

$$184 + 3^3 = 211$$

$$211 + 4^2 = 227$$

$$227 + 5^3 = 352$$

$$352 + 6^2 = 388$$

**44. Answer: D**

$$4 \times 6 - 1 = 23$$

$$6 \times 8 - 2 = 46$$

$$8 \times 10 - 4 = 76$$

$$10 \times 12 - 8 = 112$$

$$12 \times 14 - 16 = 152$$

$$14 \times 16 - 32 = 192$$

**45. Answer: B**

$$(32 + 4) \times 0.5 = 18$$

$$(18 + 6) \times 1.5 = 36$$

$$(36 + 8) \times 2.5 = 110$$

$$(110 + 10) \times 3.5 = 420$$

$$(420 + 12) \times 4.5 = 1944$$

**46. Answer: A**

The correct series is,

1216      1250      1428      **1706**      2048      2426

34      178      278      342      378

144      100      64      36

The difference of difference is,  $12^2$ ,  $10^2$ ,  $8^2$ ,  $6^2$ ,...

The wrong term is, 1704

**47.Answer: D**

$$117 + 9^2 = 198$$

$$198 + 8^3 = 710$$

$$710 + 7^2 = 759$$

$$759 + 6^3 = 975$$

$$975 + 5^2 = 1000$$

**48.Answer: A**

$$19^3 - 9 = 6850$$

$$18^3 - 8 = 5824$$

$$17^3 - 7 = 4906$$

$$16^3 - 6 = 4090$$

$$15^3 - 5 = 3370$$

$$14^3 - 4 = 2740$$

**49.Answer: C**

$$2 * 1 + 2 = 4$$

$$4 * 2 + 4 = 12$$

$$12 * 3 + 12 = 48$$

$$48 * 4 + 48 = 240$$

$$240 * 5 + 240 = 1440$$

**50.Answer :A**

$$77 * 1 + 1 = 78$$

$$78 * 2 + 1 = 157$$

$$157 * 3 + 1 = 472$$

$$472 * 4 + 1 = 1889$$

$$1889 * 5 + 1 = 9446$$

## Missing Number Series

1. 716, 750, 788, 834, 892, ?

A.984

B.1008

C.1020

D.966

E.942

2. 28, 29, 60, 183, 736, ?

A.2890

B.3685

C.3145

D.2960

E.3420

3. 15, ?, 43, 168, 511, 1240

A.16

B.20

C.31

D.40

E.41

4. 1723, 1324, 989, 716, 495, ?

A.324

B.285

C.211

D.345

E.386

5. 31, 32, 66, 201, 808, ?

A. 1616

B.3232

C.4045

D.2090

E.2894

6. 25, 50, 150, 300, 900, ?

A.1000

B.1200

C.1400

D.1600

E.1800

7. 1, 2, ?, 15, 31, 56

A.3

B.6

C.8

D.10

E.12

8. 14, 27, ?, 65, 90, 119

A.30

B.38

C.42

D.44

E.54

9. 22, 67, 204, ?, 1858, 5583

**A.310**

**B.420**

**C.617**

**D.815**

**E.1020**

**10. 7, ?, 42, 168, 840, 5040**

**A.18**

**B.14**

**C.30**

**D.11**

**E.16**

**11. 23, 50, 77, 104, 131, ?**

**A.158**

**B.167**

**C.178**

**D.182**

**E.196**

**12. 13, 27, ?, 111, 223, 447**

**A.30**

**B.33**

**C.44**

**D.55**

**E.77**

**13. 81, 111, 51, ?, 21, 171**

**A.71**

**B.81**

**C.121**

**D.131**

**E.141**

**14. 12, 23, 45, 89, ?, 353**

**A.150**

**B.168**

**C.132**

**D.177**

**E.142**

**15. 15120, 2160, ?, 72, 18, 6**

**A.420**

**B.432**



C.360

D.384

E.1080

16. 262144, 32768, 4096, 512, 64, ?

A.3

B.13

C.32

D.8

E.22

17. 406, 626, 896, 1216, 1586, ?

A.2006

B.2146

C.2046

D.1956

E.1996

18. 1, 6, 120, ?, 362880

A.360

B.980

C.2520

D.720

E.5040

19. 124, 137, 148, ?, 160, 163

A.157

B.155

C.153

D.150

E.159

20. 3, 515, 172, 388, ?, 327

A.263

B.276

C.312

D.298

E.288

21. 23, 192, 313, 394, 443, ?

A.368

B.498

C.348

D.468

E.328	25. 13, 8, 10, 23, 84, ?
22. 11, 12, 26, ?, 328, 1645	A.134
A.41	B.139
B.29	C.278
C.51	D.431
D.81	E.411
E.102	26. 21, 64, 195, ?, 1777, 5340
23. ?, 8, 20, 40, 70	A.590
A.2	B.356
B.3	C.259
C.4	D.689
D.1	E.890
E.5	27. 4, 32, 224, 1344,?, 26880
24. 2, 6, 12, 20, ?, 42	A.6720
A.40	B.6590
B.30	C.5920
C.20	D.5890
D.28	E.4790
E.25	28. 5, 9, 36, 52, 177, ?

**A.190**

**B.213**

**C.345**

**D.413**

**E.567**

**29. 12, 37, ?, 50, -14, 67**

**A.1**

**B.2**

**C.3**

**D.4**

**E.5**

**30. 7, ?, 31, 55, 87, 127**

**A.10**

**B.12**

**C.13**

**D.15**

**E.20**

**31. 28, 40, 54, 70, 88, ?**

**A.100**

**B.88**

**C.70**

**D.54**

**E.40**

**32. 2, 4, 9, 19, ?, 62**

**A.36**

**B.32**

**C.26**

**D.39**

**E.35**

**33. 71, 72, 82, ?, 1182, 11182**

**A.90**

**B.182**

**C.290**

**D.450**

**E.890**

**34. 4, 13, 16, 73, 36, ?**

**A.124**

**B.135**

C.158

D.178

E.229

35. 81, 89, 62, 126, ?, 217

A.1

B.2

C.3

D.4

E.5

36. 1474560, 46080, 2880, 360,?, 45

A.90

B.80

C.100

D.120

E.75

37. 120, 119, 146, ?, 364, -365

A.21

B.31

C.41

D.51

E.55

38. 123, 144, 175, 218, 275, ?

A.360

B.254

C.328

D.348

E.268

39. 2, ?, 64, 1024, 32768

A.8

B.6

C.4

D.10

E.2

40. 13, 94, 158, 207, 243, ?

A.258

B.268

C.270

D.250

E.281

41. 1216, 1079, ?, 829, 716, 611

A.1050

B.950

C.980

D.1180

E.920

42. 17, 29, 53, 93, 153, ?

A.189

B.201

C.225

D.231

E.237

43. 148, 269, 169, ?, 186, 235

A.230

B.250

C.270

D.280

E.300

44. 23, 43, 88, 168, ?, 473

A.263

B.273

C.293

D.283

E.253

45. 1331 1210 1066 897 ? 476 220

A.701

B.538

C.625

D.584

E.441

46. 921 913 886 822 697 ? 138

A.569

B.481

C.212

D.303

E.428

47. 16 64 160 528 ? 4640 13824

A.2018	49. 28 54 160 ? 2336 11810 71016
B.2020	A.558
C.2012	B.616
D.1520	C.324
E.1535	D.484
48. 1148 586 304 162 ? 53 33.5 22.75	E.826
A.95	50. 7, 17, ?, 67, 107, 157
B.92	A.27
C.90	B.37
D.84	C.47
E.87	D.57
	E.60

Missing Number Series - Answer and Explanation

1Answer: D

716,	750,	788,	834,	892,	966
34	38	46	58	74	
4	8	12	16		

The difference of difference is, 4, 8, 12, 16,...

2.Answer: B

28 \* 1 + 1 = 29

29 \* 2 + 2 = 60

60 \* 3 + 3 = 183

$$183 * 4 + 4 = 736$$

$$736 * 5 + 5 = \mathbf{3685}$$

**3.Answer: A**

$$15 + 1^3 = 16$$

$$16 + 3^3 = 43$$

$$43 + 5^3 = 168$$

$$168 + 7^3 = 511$$

$$511 + 9^3 = 1240$$

**4.Answer: A**

$$12^3 - 5 = 1723$$

$$11^3 - 7 = 1324$$

$$10^3 - 11 = 989$$

$$9^3 - 13 = 716$$

$$8^3 - 17 = 495$$

$$7^3 - 19 = 324$$

**5.Answer: C**

$$31 * 1 + 1 = 32$$

$$32 * 2 + 2 = 66$$

$$66 * 3 + 3 = 201$$

$$201 * 4 + 4 = 808$$

$$808 * 5 + 5 = 4045$$

**6.Answer: E**

$$25 * 2 = 50$$

$$50 * 3 = 150$$

$$150 * 2 = 300$$

$$300 * 3 = 900$$

$$900 * 2 = 1800$$

**7.Answer: B**

$$1 + 1^2 = 2$$

$$2 + 2^2 = 6$$

$$6 + 3^2 = 15$$

$$15 + 4^2 = 31$$

$$31 + 5^2 = 56$$

**8.Answer: D**

$$14 + 13 = 27$$

$$27 + 17 = 44$$

$$44 + 21 = 65$$

$$65 + 25 = 90$$

$$90 + 29 = 119$$

**9.Answer: C**

$$22 * 3 + 1 = 67$$

$$67 * 3 + 3 = 204$$

$$204 * 3 + 5 = 617$$

$$617 * 3 + 7 = 1858$$

$$1858 * 3 + 9 = 5583$$

**10.Answer: B**

$$7 * 2 = \mathbf{14}$$

$$14 * 3 = 42$$

$$42 * 4 = 168$$

$$168 * 5 = 840$$

$$840 * 6 = 5040$$

**11.Answer: A**

$$23 + 3^3 = 50$$

$$50 + 3^3 = 77$$

$$77 + 3^3 = 104$$

$$104 + 3^3 = 131$$

$$131 + 3^3 = 158$$

**12.Answer: D**

$$13 * 2 + 1 = 27$$

$$27 * 2 + 1 = 55$$

$$55 * 2 + 1 = 111$$

$$111 * 2 + 1 = 223$$

$$223 * 2 + 1 = 447$$

**13.Answer: E**

$$81 + 30 = 111$$

$$111 - 60 = 51$$

$$51 + 90 = 141$$

$$141 - 120 = 21$$

$$21 + 150 = 171$$

**14.Answer: D**

$$12 + 11 = 23$$

$$23 + 22 = 45$$

$$45 + 44 = 89$$

$$89 + 88 = \mathbf{177}$$



$$177 + 176 = 353$$

**Or**

$$12 * 2 - 1 = 23$$

$$23 * 2 - 1 = 45$$

$$45 * 2 - 1 = 89$$

$$89 * 2 - 1 = \mathbf{177}$$

$$177 * 2 - 1 = 353$$

**15.Answer: C**

$$15120/7 = 2160$$

$$2160/6 = 360$$

$$360/5 = 72$$

$$72/4 = 18$$

$$18/3 = 6$$

**16.Answer: D**

$$262144/8 = 32768$$

$$32768/8 = 4096$$

$$4096/8 = 512$$

$$512/8 = 64$$

$$64/8 = 8$$

**17.Answer: A**

406	626	896	1216	1586	2006
220	270	320	370	420	
	50	50	50	50	

**18.Answer: E**

$$1! = 1$$

$$3! = 6$$

$$5! = 120$$

$$7! = 5040$$

$$9! = 362880$$

**19.Answer: B**

$$124 + 13 = 137$$

$$137 + 11 = 148$$

$$148 + 7 = 155$$

$$155 + 5 = 160$$

$$160 + 3 = 163$$

**20.Answer: A**

$$3 + 8^3 = 515$$

$$515 - 7^3 = 172$$

$$172 + 6^3 = 388$$

$$388 - 5^3 = 263$$

$$263 + 4^3 = 327$$

**21. Answer: D**

$$23 + 13^2 = 192$$

$$192 + 11^2 = 313$$

$$313 + 9^2 = 394$$

$$394 + 7^2 = 443$$

$$443 + 5^2 = \mathbf{468}$$

**22. Answer: D**

$$11 * 1 + 1 = 12$$

$$12 * 2 + 2 = 26$$

$$26 * 3 + 3 = 81$$

$$81 * 4 + 4 = 328$$

$$328 * 5 + 5 = 1645$$

**23. Explanation**

**Answer: A**

$$2 + 2 * 3 = 8$$

$$8 + 3 * 4 = 20$$

$$20 + 4 * 5 = 40$$

$$40 + 5 * 6 = 70$$

(or)

2	8	20	40	70
	6	12	20	30
	6	8	10	

**24. Answer: B**

$$1 * 2 = 2$$

$$2 * 3 = 6$$

$$3 * 4 = 12$$

$$4 * 5 = 20$$

$$5 * 6 = \mathbf{30}$$

$$6 * 7 = 42$$

**25. Answer: E**

$$13 * 1 - 5 = 8$$

$$8 * 2 - 6 = 10$$

$$10 * 3 - 7 = 23$$

$$23 * 4 - 8 = 84$$

$$84 * 5 - 9 = 411$$

**26.Answer: A**

$$21 * 3 + 1 = 64$$

$$64 * 3 + 3 = 195$$

$$195 * 3 + 5 = 590$$

$$590 * 3 + 7 = 1777$$

$$1777 * 3 + 9 = 5340$$

**27.Answer: A**

$$4 * 8 = 32$$

$$32 * 7 = 224$$

$$224 * 6 = 1344$$

$$1344 * 5 = \mathbf{6720}$$

$$6720 * 4 = 26880$$

**28.Answer: B**

$$5 + 2^2 = 9$$

$$9 + 3^3 = 36$$

$$36 + 4^2 = 52$$

$$52 + 5^3 = 177$$

$$177 + 6^2 = 213$$

**29.Answer: A**

$$12 + 5^2 = 37$$

$$37 - 6^2 = 1$$

$$1 + 7^2 = 50$$

$$50 - 8^2 = -14$$

$$-14 + 9^2 = 67$$

**30.Answer: D**

$$7 + 8 = 15$$

$$15 + 16 = 31$$

$$31 + 24 = 55$$

$$55 + 32 = 87$$

$$87 + 40 = 127$$

**31.Answer: A**

$$5^2 + 3 = 28$$

$$6^2 + 4 = 40$$

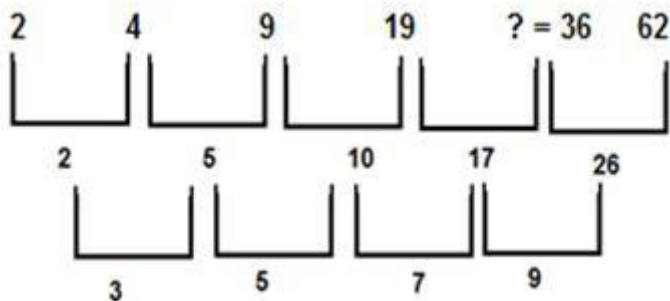
$$7^2 + 5 = 54$$

$$8^2 + 6 = 70$$

$$9^2 + 7 = 88$$

$$10^2 + 8 = 108$$

32. Answer: A



33. Answer: B

$$71 + 10^0 = 72$$

$$72 + 10^1 = 82$$

$$82 + 10^2 = 182$$

$$182 + 10^3 = 1182$$

$$1182 + 10^4 = 11182$$

34. Answer: E

$$1^2 + 3 = 4$$

$$2^3 + 5 = 13$$

$$3^2 + 7 = 16$$

$$4^3 + 9 = 73$$

$$5^2 + 11 = 36$$

$$6^3 + 13 = 229$$

35. Answer: A

$$81 + 2^3 = 89$$

$$89 - 3^3 = 62$$

$$62 + 4^3 = 126$$

$$126 - 5^3 = 1$$

$$1 + 6^3 = 217$$

36. Answer: A

$$1474560 \div 32 = 46080$$

$$46080 \div 16 = 2880$$

$$2880 \div 8 = 360$$

$$360 \div 4 = 90$$

$$90 \div 2 = 45$$

37. Answer: A

$$120 - 1^3 = 119$$

$$119 + 3^3 = 146$$

$$146 - 5^3 = 21$$

$$21 + 7^3 = 364$$

$$364 - 9^3 = -365$$

38. Answer: D

$$123 \quad 144 \quad 175 \quad 218 \quad 275 \quad ?$$

$$21 \quad 31 \quad 43 \quad 57$$

$$10 \quad 12 \quad 14$$

Difference of difference is 2 . so  $16+57=73$  ,  
 $73+275= 348$ .

**39.Answer: A**

$$2 * 4 = 8$$

$$8 * 8 = 64$$

$$64 * 16 = 1024$$

$$1024 * 32 = 32768$$

**40.Answer: B**

$$13 + 9^2 = 94$$

$$94 + 8^2 = 158$$

$$158 + 7^2 = 207$$

$$207 + 6^2 = 243$$

$$243 + 5^2 = 268$$

**41.Answer: B**

$$35^2 - 9 = 1216$$

$$33^2 - 10 = 1079$$

$$31^2 - 11 = 950$$

$$29^2 - 12 = 829$$

$$27^2 - 13 = 716$$

$$25^2 - 14 = 611$$

**42.Answer: E**

$$17 + (2 * 6) = 29$$

$$29 + (3 * 8) = 53$$

$$53 + (4 * 10) = 93$$

$$93 + (5 * 12) = 153$$

$$153 + (6 * 14) = 237$$

**43.Answer: B**

$$148 + 11^2 = 269$$

$$269 - 10^2 = 169$$

$$169 + 9^2 = 250$$

$$250 - 8^2 = 186$$

$$186 + 7^2 = 235$$

**44.Answer: C**

$$23 + (10 * 2) = 43$$

$$43 + (15 * 3) = 88$$

$$88 + (20 * 4) = 168$$

$$168 + (25 * 5) = 293$$

$$293 + (30 * 6) = 473$$

**45. Answer: A**

$$1331 - 11^2 = 1210$$

$$1210 - 12^2 = 1066$$

$$1066 - 13^2 = 897$$

$$897 - 14^2 = \mathbf{701}$$

$$701 - 15^2 = 476$$

$$476 - 16^2 = 220$$

**46. Answer: B**

$$921 - 2^3 = 913$$

$$913 - 3^3 = 886$$

$$886 - 4^3 = 822$$

$$822 - 5^3 = 697$$

$$697 - 6^3 = \mathbf{481}$$

$$481 - 7^3 = 138$$

**47. Answer: D**

$$16 \times 3 + 16 = 64$$

$$64 \times 3 - 32 = 160$$

$$160 \times 3 + 48 = 528$$

$$528 \times 3 - 64 = \mathbf{1520}$$

$$1520 \times 3 + 80 = 4640$$

$$4640 \times 3 - 96 = 13824$$

**48. Answer: C**

$$1148 \div 2 + 12 = 586$$

$$586 \div 2 + 11 = 304$$

$$304 \div 2 + 10 = 162$$

$$162 \div 2 + 9 = \mathbf{90}$$

$$90 \div 2 + 8 = 53$$

$$53 \div 2 + 7 = 33.5$$

$$33.5 \div 2 + 6 = 22.75$$

**49. Answer: A**

$$28 \times 1 + 26 \times 1 = 54$$

$$54 \times 2 + 26 \times 2 = 160$$

$$160 \times 3 + 26 \times 3 = \mathbf{558}$$

$$558 \times 4 + 26 \times 4 = 2336$$

$$2336 \times 5 + 26 \times 5 = 11810$$

$$11810 \times 6 + 26 \times 6 = 71016$$

**50. Answer: B**

$7 + 10 * 1 = 17$   
 $17 + 10 * 2 = 37$   
 $37 + 10 * 3 = 67$

$67 + 10 * 4 = 107$   
 $107 + 10 * 5 = 157$

Table DI

Directions (1-5): The table given below shows production of shoe company by 6 units A, B, C, D, E, and F in one hour. Refer the table and answer the questions given below.

Production Unit	Total Shoes	Black:White
A	5225	10:9
B	3150	9:5
C	5625	7:8
D	3825	4:13
E	4875	4:9
F	4950	11:7

Note: These units produce shoes in only two colors i.e. Black and White.

1. For which unit the difference between number of Black shoes and White shoes is maximum.

- a) A
- b) D
- c) B
- d) C
- e) E

2. What is the average number of Black shoes produced in unit B, C and D.

- a) 1500
- b) 1700

- c) 1850
- d) 1650
- e) 1250

3. The number of White shoes produced in unit F is how much percent less than the number of Black shoes produced in Unit A.

- a) 30%
- b) 40%
- c) 50%
- d) 65%
- e) 45%

4. The number of Black shoes produced by units D and E together is what percent of total number of shoes produced by units D and E together.

- a) 800/11%
- b) 600/11%
- c) 700/19%
- d) 800/29%
- e) None of these

5. What is the ratio of number of Black shoes produced by units B and F together to the number of White shoes produced by units A and B together?

- a) 101:73
- b) 101:72
- c) 111:72
- d) 72:111
- e) 72:101

**Directions (6-10):** Study the table and answer the questions given below.

The table shows total number of voters in 5 different towns, % of voters who did not vote and % of female out of total persons who have voted.

Town	Total voters	% of voters who do not vote	% of female out of total voters voted
P	30000	15	30
Q	13500	20	45
R	28000	18	40
S	16000	12	60
T	32500	6	40

6. What is the total number of people who have voted from Town P, Q and R together

- a) 59060
- b) 59460
- c) 59260
- d) 59360
- e) 59420

7. What is ratio of male to female who voted from town Q.

- a) 9:13
- b) 9:11
- c) 13:9
- d) 90:11
- e) 11:9



**8. What is the difference between number of male from town T who have voted and female from town Q who voted?**

- a) 13470
- b) 13670
- c) 12470
- d) 12660
- e) None of these

**9. What is the average number of voters who do not voted from town P, R and T together.**

- a) 3830
- b) 3630

c) 3930

d) 3030

e) None of these

**10. If the ratio of male to female who do not vote is 5:4 from town Q then what is the ratio of total male voters and total female voters from town Q.**

a) 124:111

b) 100:101

c) 101:124

d) 124:101

e) None of these

**Directions (11-15): Table given below shows the number of web series released by 5 online streaming platforms-Netflix, Amazon prime, Hotstar, MX player and voot during 2016 to 2020.**

	2016	2017	2018	2019	2020
Netflix	20	18	-----	12	22
Amazon prime	15	20	10	23	18
Hotstar	25	10	-----	15	20
MX player	12	12	20	18	25
Voot	18	20	-----	10	15
Total	90	80	75	78	100

**Study the table and answer the questions given below.**

**Note-Some values are missing in table candidate is expected to calculate the missing values if required.**

**11.If number of web series by Netflix and MX player released in 2017 increased by 100/9% and 25/3% respectively.Then what will be percentage change in total number of web series released in 2017.**

- a) 2.5%
- b) 3.75%
- c) 4.75%
- d) 3.25%
- e) 5.5%

**12. Total number of web series released in 2018 is how much percent more than number of web series released by Amazon prime and MX player together in 2018.**

- a) 75%
- b) 50%
- c) 150%
- d) 100%
- e) 200%

**13. Web series released by Netflix and Amazon prime together in 2016 is how much percent less or more than web series released by Netflix and Amazon prime together in 2020.**

- a) 15% less
- b) 17.5% less
- c) 12.5% less
- d) 17.5% more
- e) 12.5% more

**14. What will be the average of web series released by Netflix, Amazon prime and Hotstar in 2018, If the ratio of number of web series released by Netflix, Hotstar and Voot in 2018 is 2:3:4 respectively.**

- a) 11.66
- b) 15
- c) 15.5
- d) 12.66
- e) 12.5

**15. Among 5 online streaming platforms, which one is the 2nd highest released web series in duration of 5 years ?**

- a) Voot
- b) Netflix
- c) Hotstar
- d) MX player
- e) Amazon prime

**Directions (16-20): Table given below shows the total three types of trees i.e. Mango, Banana and Coconut in 5 farms P, Q, R, S and T. Study the table and answer the questions below.**

Farms	Total trees	Mango:Banana	Coconut
-------	-------------	--------------	---------

<b>P</b>	<b>1150</b>	<b>7:9</b>	<b>398</b>
<b>Q</b>	<b>1300</b>	<b>3:4</b>	<b>635</b>
<b>R</b>	<b>750</b>	<b>4;5</b>	<b>408</b>
<b>S</b>	<b>2100</b>	<b>6;7</b>	<b>1281</b>
<b>T</b>	<b>1850</b>	<b>2:3</b>	<b>800</b>

**16. What is the total number of Banana trees in all the five farms?**

- a) 2160
- b) 2260
- c) 2064
- d) 2200
- e) 2300

**17. What is the ratio of number of Mango trees in farm T to number of Coconut trees in same farm.**

- a) 40/21
- b) 21/40
- c) 21/20
- d) 41/20
- e) 20/21

**18. What is the difference between total number of Coconut trees in all farms and total number of Mango trees in all farms?**

- a) 1958
- b) 2168

c) 2238

d) 1950

e) None of these

**19. The total number of Banana trees in farm S is what percent of total number of trees in farm S.**

a) 28%

b) 35%

c) 14%

d) 21%

e) None

**20.If 40 Banana trees from farm R are cut down then remaining Banana trees are what percent more than or less than of total number of trees in Farm R.**

a) 50% less

b) 80% less

c) 60% less

d) 80% more

e) 60% more

**Directions (21-25): Study the table and answer the questions given below.**

The table shows the monthly salary, expenditure and savings of 5 friends.

Friends	Salary	Expenditure				Savings
		Home rent	Food	Travel	Others	
Akash	58000	12000	9000	6000	22000	9000
Sagar	56000	10000	12000	8000	16000	10000
Rohit	60000	15000	14000	9000	19000	3000
Varun	72000	12000	8500	9500	21000	21000
Akshay	66000	9000	11500	7500	15500	22500

21. What is the difference between average salary and average expenditure of all the five friends.

- a) 11011
- b) 13100
- c) 10011
- d) 11000
- e) 10101

22. What is the ratio of total salary of Akash, Rohit and Varun together to the total savings of Akash, Sagar and Rohit together.

- a) 11/95
- b) 11/85
- c) 85/11
- d) 95/11
- e) None

23. Total annual income of Varun is what percent more than total annual income of Rohit.

- a) 25%

- b) 30%
- c) 40 %
- d) 20%
- e) 55%

24. Total expenditure by Akshay constitutes what percent (Approx.) of total salary of Varun?

- a) 60%
- b) 75.5%
- c) 62.5%
- d) 60.4%
- e) 70.5%

25.If the salary of Rohit increased by 15% in next month and his total expenditure reduced by 15%, then what is the savings of Rohit in next month?

- a) 20550
- b) 22500
- c) 20500
- d) 21500

e) None

**Directions (26-30):** Study the table and answer the questions given below.

The following table shows number of students appeared and percentage of students passed in the given exam (A and B) in different years.

Years	A		B	
	No. of students appeared	% of students passed	No. of students appeared	% of students passed
2006	380	60%	440	70%
2007	260	45%	320	75%
2008	420	30%	560	40%
2009	600	35%	700	80%
2010	720	25%	240	55%

**26. What is the average number of students appeared in exam A and average number of students appeared in exam B**

- a) 452 and 476 respectively
- b) 476 and 452 respectively
- c) 456 and 476 respectively
- d) 476 and 456 respectively
- e) 476 and 450 respectively

**27. Find the difference between the number of students passed in exam A in 2007 and 2008 together to number of students passed in exam B in 2009 and 2010 together.**

- a) 449

- b) 499
- c) 599
- d) 549
- e) None

**28. What is the ratio of number of students passed in exam A in 2006 to number of students passed in exam B in 2007.**

- a) 57/30
- b) 67/40
- c) 40/57
- d) 57/60
- e) 40/67

29. The number of students passed in exam A in 2009 is what percent more than or less than number of students passed in exam B in 2009.

- a) 60.5% less
- b) 62.5% more
- c) 65% more
- d) 65% less
- e) 62.5 %less

30. What is the total number of students passed in exam A and exam B in all the five years?

- a) 2325
- b) 2225
- c) 2521
- d) 2523
- e) 2525

Directions (31-35): Study the table and answer the questions given below.

Given table shows the quantity of Tea and Sugar (in metric tons) exported from different countries in 2019 and quantity of Tea and Sugar imported (in percentage) with respect to previous year import of six countries in 2019.

Countries	Tea		Sugar	
	Export (in metric tons)	Import (in %)	Export (in metric tons)	Import (in %)
India	2500	150%	180	20%
U.S.	6000	90%	400	60%
China	4500	50%	320	75%
Germany	5200	60%	360	110%
France	2600	120%	150	80%
Israel	3800	110%	200	100%

31. Total export by Israel in 2019 is what percent more or less than the total export by U.S. in 2019

- a) 37.5% less
- b) 42.5% less
- c) 42.5% more
- d) 37.5% more
- e) None

**32.If in 2018 Tea imported by India is 200 metric ton and India's imported Tea and imported Sugar are in ratio 3:2 in 2019, then find the sum of total export of India in 2019 and total import of India in 2018.**

- a) 3680
- b) 4010
- c) 3880
- d) 3040
- e) None

**33. If total import of China is 25% of what it exported in 2019 and Sugar imported by China in 2019 is 665, then what is the total import of china in 2018.**

- a) 1720.67
- b) 1580.67
- c) 1620.67
- d) 1966.67

e) 1810.67

**34. What is the average of Tea exported by all countries in 2019?**

- a) 3200
- b) 4100
- c) 3500
- d) 5200
- e) 3600

**35. What is the difference between total Tea exported by Germany, France and Israel together to total Sugar exported by India, U.S. and China together.**

- a) 10700
- b) 12700
- c) 12500
- d) 10500
- e) None

**Directions (36-40): Study the table and answer the questions given below.**

**Table represents the Cost of production and % profit of Electronics company that produces Laptops over the years 2011 to 2015.**

Years	HP		Dell	
	Cost of Production (Rs. in Lakh)	% profit	Cost of Production (Rs. in Lakh)	% profit
2011	300	35%	-----	15%
2012	510	60%	-----	60%

<b>2013</b>	<b>320</b>	<b>75%</b>	<b>420</b>	<b>-----</b>
<b>2014</b>	<b>-----</b>	<b>40%</b>	<b>300</b>	<b>25%</b>
<b>2015</b>	<b>450</b>	<b>80%</b>	<b>720</b>	<b>30%</b>

**Note-Some values are missing in table candidate is expected to calculate the missing values if required.**

**36. Total sale of HP and Dell together in 2012 is 1856, then find cost of production of Dell**

- a) 850
- b) 800
- c) 750
- d) 600
- e) 650

**37. What is the ratio of sales of HP in 2013 to that of Dell in 2014?**

- a) 110/77
- b) 112/75
- c) 75/112
- d) 77/112
- e) 112/77

**38. If the total sales of HP and Dell together in 2014 is 1495 lakh, then find the cost of production of HP in 2014**

- a) 800
- b) 600
- c) 500

d) 700

e) 900

**39. If the cost of production of Dell in 2011 is 360 and % profit in 2013 for is 20%, then what is the difference between total selling price of HP and Dell in all the 5 years.**

- a) 432
- b) 440
- c) 438
- d) 442
- e) 532

**40. The average sale of HP in 2013 and 2014 together is what percent of average sale of Dell in 2011 and 2015 together.**

- a) 125%
- b) 124.44%
- c) 120%
- d) 144.44%
- e) 135%

**Directions (41-45): Study the table and answer the questions given below.**



The table shows the total number of students in 5 classes from which some participate in two games i.e. Cricket and Football. It also shows the students who do not participate in games and ratio of students who participate in Cricket and Football.

Class	Total students	Ratio of students Cricket :Football	Students who do not play
A	240	4:5	105
B	320	6:5	155
C	280	2:3	85
D	150	4:7	29
E	475	3:4	104

41. What is the total number of students who participate in Cricket from B,C and D together.

- a) 113
- b) 112
- c) 212
- d) 221
- e) 121

42. What is the average number of students who participate in Football from class A, B and C.

- a) 69
- b) 65
- c) 79
- d) 89
- e) 85

43. What is the ratio of students who participate in Football from class C and D together to students

who participate in Cricket from class A and B together?

- a) 75/91
- b) 75/97
- c) 91/75
- d) 97/75
- e) 77/75

44. Students who participate in both games from class C is what percent more or less than the students who participate in Cricket from class A and B together.

- a) 45% more
- b) 30% less
- c) 15% more
- d) 30% more
- e) 15% less

**45.If students who participate in Cricket from class B increased by 50% and the students who do not participates in games remains same, then the number of students who participate in Football from class B will reduce to**

- a) 15
- b) 90
- c) 50
- d) 45
- e) 30

**Directions (46-50): Study the table and answer the questions given below.**

**Table given below shows number of workers employed in 6 factories during lockdown 2020.**

Month	A	B	C	D	E
April	145	90	60	45	320
May	136	120	45	180	400
June	180	145	150	125	240
July	150	96	320	30	180
August	120	81	60	69	120

**46. Find the difference between total workers employed by all factories in April and total workers employed by all factories in August.**

- a) 150
- b) 240
- c) 270
- d) 210
- e) 180

**47. Total number of workers employed by factory E in all the months is approximately what percent of total number of workers employed in all the units in month June.**

- a) 250%
- b) 150%
- c) 200%
- d) 175%
- e) 50%

**48. In June average no. of workers employed by all factories together**

- a) 168
- b) 138
- c) 148
- d) 178
- e) 188

49. Find the ratio of workers employed in B and C together in April to workers employed in A and E together in July.

- a) 25/36
- b) 33/15
- c) 5/11
- d) 33/25
- e) 25/33

50. Total number of workers employed in factory E is approximately what percent more or less than total number of workers employed in factory C in all the months.

- a) 98.42% more
- b) 90.42% more
- c) 98.42% less
- d) 88.42% more
- e) 88.42% less

### Table DI - Answer and Explanation

Solutions (1-5):

Unit	No. of Black : No. of White	Difference
A	2750:2475	275
B	2025:1125	900
C	2625:3000	375
D	900:2925	2025
E	1500:3375	1875
F	3025:1925	1100

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1. Answer: B

Let’s find no. of Black and White shoes by all 6 units

Unit A – Black: White = 10:9

No. of Black shoes = 5225\*(10/19) = 2750

No. of White shoes = 5225\*(9/19) = 2475

Difference between no. of Black shoes and White shoes =2750-2475 = 275

Similarly we can find for other units

Unit D (900-2925=2025)

2. Answer: C

Average number of Black shoes produced in unit B, C and D = (2025+2625+900)/3 = 1850

3. Answer: A

The number of White shoes produced in unit F = 1925  
The number of Black shoes produced in Unit A = 2750  
Required percentage = (2750-1925)/2750\*100 = 30%

**4. Answer: D**

The number of Black shoes produced by units D and E together = 2400

Total number of shoes produced by units D and E together = 3825+4875 = 8700

Required percentage =  $2400/8700 \times 100 = 800/29\%$

**5. Answer: B**

Number of Black shoes produced by units B and F together = 2025+3025 = 5050

White shoes produced by units A and B together = 2475+1125 = 3600

Required ratio =  $5050/3600 = 101:72$

**Solutions (6-10):**

Town	Total voters	Voters who do not vote	Voters who voted	Female out of total voters voted
P	30000	4500	25500	7650
Q	13500	2700	10800	4860
R	28000	5040	22960	9184
S	16000	1920	14080	8448
T	32500	1950	30550	12220

**6. Answer: C**

From the data given we can calculate Total number of people who have voted from Town P, Q and R together = 25500+10800+22960 = 59260

**7. Answer: E**

Ratio of male to female who voted from town Q =  $(10800-4860)/4860 = 11:9$

**8. Answer: A**

Number of male from town T who voted = 30550-12220 = 18330

Number of female from town Q who voted = 4860

Required difference = 18330-4860 = 13470

**9. Answer: A**

Average number of voters who do not voted from town P, R and T =  $(4500+5040+1950)/3 = 3830$

**10. Answer: D**

Ratio of male to female who do not vote is 5:4 from town Q

Number of male voters who do not vote from town Q =  $2700 \times 5/9 = 1500$

Number of female voters who do not vote from town Q =  $2700 \times 4/9 = 1200$

Male out of total voters voted from town Q = 10800-4860 = 5940

Total male voters from town Q = 5940+1500 = 7440

### Solutions (11-15):

	2016	2017	2018	2019	2020
Netflix	20	18	<b>10</b>	12	22
Amazon prime	15	20	10	23	18
Hotstar	25	10	<b>15</b>	15	20
MX player	12	12	20	18	25
voot	18	20	<b>20</b>	10	15
Total	90	80	75	78	100

### 11. Answer: B

Number of web series by Netflix released in 2017 increased by  $100/9\% = 18 \times 1/9 = 2$

Number of web series by MX player released in 2017 increased by  $25/3\% = 12 \times 1/12 = 1$

Total increase =  $2+1 = 3$

Required percentage =  $3/80 \times 100 = 3.75\%$

### 12. Answer: C

Total number of web series released in 2018 = 75

Number of web series released by Amazon prime and MX player together in 2018 = 30

Required percentage =  $(75-30)/30 \times 100 = 150\%$

### 13. Answer: C

Web series released by Netflix and Amazon prime together in 2016 =  $20+15 = 35$

Total female voters from town Q =  $4860+1200 = 6060$

Required ratio =  $7440/6060 = 124:101$

Web series released by Netflix and Amazon prime together in 2020 =  $22+18 = 40$

Required % =  $(35-40)/40 \times 100 = -12.5\%$  i.e. 12.5% less

### 14. Answer: A

No. of web series released by Netflix, Hotstar and Voot together in 2018 =  $75-(10+20) = 45$

The ratio of number of web series released by Netflix, Hotstar and Voot in 2018 is 2:3:4 respectively.

$$2x+3x+4x = 45$$

$$9x = 45$$

$$x = 5$$

Number of web series released by Netflix, Hotstar and Voot in 2018 is 10, 15 and 20 respectively.

Average of web series released by Netflix, Amazon prime and Hotstar in 2018 =  $(10+10+15)/3 = 35/3 = 11.66$

**15. Answer: E**

Total no. of series released by Netflix =  $20+18+10+12+22 = 82$

Total no. of series released by Amazon prime =  $15+20+10+23+18 = 86$

**Solutions (16-20):**

Farms	Total trees	No. of Mango trees: No. of Banana trees	No. of Coconut trees
P	1150	329:423	398
Q	1300	285:380	635
R	750	152:190	408
S	2100	378:441	1281
T	1850	420:630	800

**16. Answer: C**

Total number of Banana trees in all the five farms =  $423+380+190+441+630 = 2064$

**17. Answer: B**

Ratio of number of Mango trees in farm T to number of Coconut trees in same farm =  $420/800 = 21/40$

**18. Answer: A**

Total number of Coconut trees in all farms =  $398+635+408+1281+800 = 3522$

Total no. of series released by Hotstar =  $25+10+15+15+20 = 85$

Total no. of series released by MX player =  $12+12+20+18+25 = 87$

Total no. of series released by Voot =  $18+20+20+10+15 = 83$

2<sup>nd</sup> highest = Amazon prime

Total number of Mango trees in all farms =  $329+285+152+378+420 = 1564$

Required difference =  $3522-1564 = 1958$

**19. Answer: D**

Total number of Banana trees in farm S = 441

Total number of trees in farm S = 2100

Required percentage =  $441/2100 \times 100 = 21\%$

**20. Answer: B**

No. of Banana trees in farm R after 40 cut down =  $190-40 = 150$

Total number of trees in Farm R = 750

Required % = (150-750)/750\*100 = -80% i.e. 80% less

Solutions (21-25):

Friends	Salary	Expenditure					Savings
		Home rent	Food	Travel	Others	Total	
Akash	58000	12000	9000	6000	22000	49000	9000
Sagar	56000	10000	12000	8000	16000	46000	10000
Rohit	60000	15000	14000	9000	19000	57000	3000
Varun	72000	12000	8500	9500	21000	51000	21000
Akshay	66000	9000	11500	7500	15500	43500	22500

21. Answer: B

Average salary of all the five friends =  
(58000+56000+60000+66000+72000)/5 = 62400  
Average average expenditure of all the five friends =  
(49000+46000+57000+51000+43500)/5 = 49300  
Required difference = 62400-49300= 13100

22. Answer: D

Ratio of total salary of Akash, Rohit and Varun together to the total savings of Akash, Sagar and Rohit together  
= (58+60+72)/(9+10+3) = 95/11

23. Answer: D

Total annual income of Varun = 72000\*12 = 864000  
Total annual income of Rohit = 60000\*12 = 720000

Required % = (864000-720000)/720000\*100 = 20% more

24. Answer: D

Total expenditure by Akshay = 43500  
Total salary of Varun = 72000  
Required percentage = 43500/72000\*100 = 60.4%

25. Answer: A

Salary of Rohit in next month = 115% of 60000 = 69000  
Expenditure of Rohit in next month = 85% of 57000 = 48450  
Savings of Rohit in next month = 69000-48450 = 20550

Solutions (26-30):

Years	A		B	
	No. of students appeared	No. of students passed	No. of students appeared	No. of students passed
2006	380	228	440	308
2007	260	117	320	240
2008	420	126	560	224
2009	600	210	700	560
2010	720	180	240	132

**26. Answer: B**

Average number of students appeared in exam A =  $(380+260+420+600+720)/5 = 476$

Average number of students appeared in exam B =  $(440+320+560+700+240)/5 = 452$

**27. Answer: A**

Number of students passed in exam A in 2007 and 2008 together =  $117+126 = 243$

Number of students passed in exam B in 2009 and 2010 together =  $560+132 = 692$

Required difference =  $692-243 = 449$

**28. Answer: D**

Ratio of number of students passed in exam A in 2006 to number of students passed in exam B in 2007

**Solutions (31-35):**

**31. Answer: A**

Total export by Israel in 2019 =  $3800+200 = 4000$

Total export by U.S. in 2019 =  $6000+400 = 6400$

$$= 228/240 = 57/60$$

**29. Answer: E**

Number of students passed in exam A in 2009 = 210

Number of students passed in exam B in 2009 = 560

Required difference =  $(210-560)/560*100 = -62.5\%$   
i.e. 62.5% less

**30. Answer: A**

Total number of students passed in exam A and exam B in all the five years

= total no. of students passed in exam A + total no of students passed in exam B

$$= 861+464 = 2325$$

Required percentage =  $(4000-6400)/6400*100 = -37.5\%$  i.e. 37.5% less

**32. Answer: C**



Tea imported by India is in 2018 is 200

Tea imported by India is in 2019 =150% of 200 = 300

India's imported Tea and imported Sugar are in ratio 3:2 in 2019

i.e. Imported Tea by India in 2019 = 300

Imported Sugar by India in 2019 = 200

Now, imported Sugar in India in 2018 =  $200 \times 100 / 20 = 1000$

Total export of India in 2019 =  $2500 + 180 = 2680$

Total import of India in 2018 =  $200 + 1000 = 1200$

Required sum =  $2680 + 1200 = 3880$

**33. Answer: D**

Total import of China is 25% of what it exported in 2019 i.e.  $4500 + 320 = 4820$

Total import of china in 2018 = 25% of 4820 = 1205

Sugar imported by China in 2019 is 665

So, Tea imported by China in 2019 =  $1205 - 665 = 540$

Now,

Sugar imported by China in 2018 =  $665 \times 100 / 75 = 886.67$

Tea imported by China in 2018 =  $540 \times 100 / 50 = 1080$

Total import =  $1080 + 886.67 = 1966.6$

**34. Answer: B**

Average of Tea exported by all countries in 2019 =  $(2500 + 6000 + 4500 + 5200 + 2600 + 3800) / 6 = 4100$

**35. Answer: A**

Difference between total Tea exported by Germany, France and Israel together to total Sugar exported by India, U.S. and China together =  $(5200 + 2600 + 3800) - (180 + 400 + 320) = 10700$

**Solutions (36-40):**

Years	HP		Dell	
	Cost of Production (Rs. in Lakh)	Selling price	Cost of Production (Rs. in Lakh)	Selling price
2011	300	405	360	414
2012	510	816	650	1040
2013	320	560	420	504
2014	800	1120	300	375
2015	450	810	720	936

**36. Answer: E**

In 2012 Cost of production of HP = 510 and profit is 60%

Therefor Selling price = 160% of 510 = 816

Total sale of HP and Dell together in 2012 is 1856

Total sale of Dell = 1856-816 =1040

Cost of production =1040\*100/160 = 650

**37. Answer: B**

Ratio of sales of HP in 2013 to that of Dell in 2014 =  
(175% of 320)/(125% of 300) = 560/375 = 112/75

**38. Answer: A**

Total sales of HP and Dell together in 2014 is 1495 lakh

Total sale of Dell in 2014 = 375

Total sale of HP = 1495-375 = 1120

Cost of production of HP in 2014 = 1120\*100/140 = 800

**39. Answer: D**

Selling price of Dell in 2011 = 115% of 360 = 414

Selling price of Dell in 2013 = 120% of 420 = 504

Required Difference = (405+816+560+1120+810) –  
(414+1040+504+375+936) = 3711-3269 = 442

**40. Answer: B**

Average sale of HP in 2013 and 2014 together =  
(560+1120)/2 = 840

Average sale of Dell in 2011 and 2015 together =  
(936+414)/2 = 675

Required % = (840/675)\*100 = 124.44 %

**Solutions (41-45):**

Class	Total students	No. of students Cricket :Football	Students who do not play
A	240	60:75	105
B	320	90:75	155
C	280	78:117	85
D	150	44:77	29
E	475	159:212	104

**41. Answer: C**

Number of students who participate in Cricket from B,  
C and D together = 90+78+44 = 212

**42. Answer: D**

Average number of students who participate in  
Football from class A, B and C = (75+75+117)/3 = 89

**43. Answer: D**

Ratio of students who participate in Football from class C and D together to students who participate in Cricket from class A and B together =  $(117+77)/(60+90) = 97/75$

**44. Answer: D**

Students who participate in both games from class C =  $117+78 = 195$

Students who participate in Cricket from class A and B together =  $60+90 = 150$

**Solutions (46-50):**

**46. Answer: D**

Difference between total workers employed by all factories in April and total workers employed by all factories in August =  $(145+90+60+45+320)-(120+81+60+69+120) = 210$

**47. Answer: B**

Total number of workers employed by factory E in all the months =  $320+400+240+180+120 = 1260$

Total number of workers employed in all the units in month June =  $180+145+150+125+240 = 840$

Required percentage =  $1260/840*100 = 150\%$

**48. Answer: A**

Required percentage =  $(195-150)/150*100 = 30\%$  more

**45. Answer: E**

If students who participate in Cricket from class B increased by 50% i.e. =  $150\%$  of  $90 = 135$

Students who do not participate in games remains same i.e. =  $155$

Number of students who participate in Football from class B =  $320-(135+155) = 30$

In June average no. of workers employed by all factories together =  $(180+145+150+125+240)/5 = 168$

**49. Answer: C**

Ratio of workers employed in B and C together in April to workers employed in A and E together in July =  $(90+60)/(150+180) = 150/330 = 5/11$

**50. Answer: A**

Total number of workers employed in factory E in all the months =  $320+400+240+180+120 = 1260$

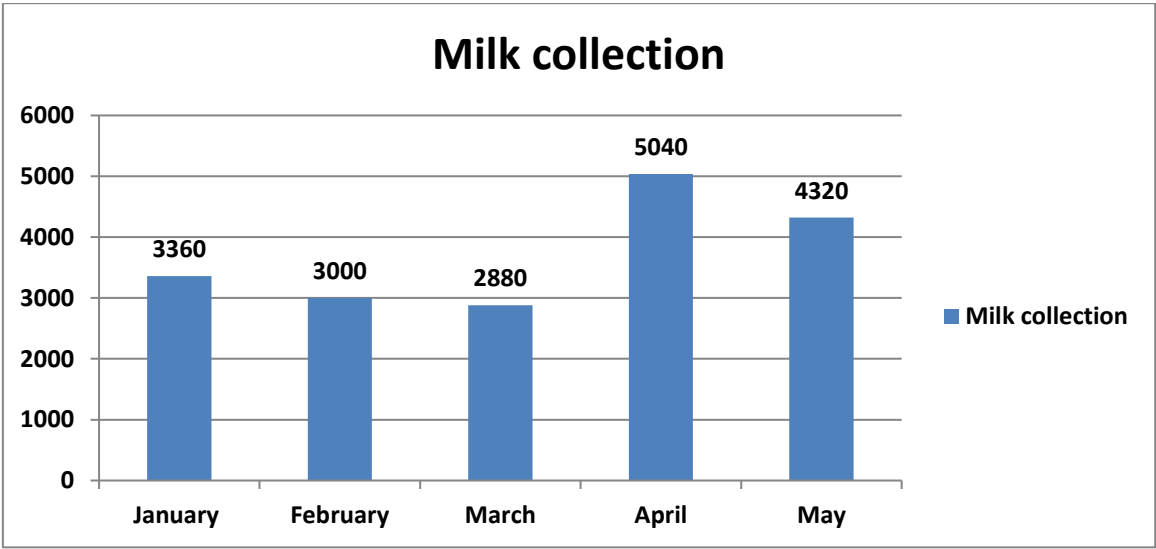
Total number of workers employed in factory C in all the months =  $60+45+150+320+60 = 635$

Required % =  $(1260-635)/635*100 = 98.42\%$  more

## Bar Graph DI

**Directions (1-5): Study the bar graph and answer the questions given below.**

The bar graph shows the milk collection by dairy (in liters) for five months January, February, March, April and May.



1. The milk collection by dairy in April was approximately what percentage of the average milk collection over the period under review.

- a) 145.5%
- b) 135.5%
- c) 125.5%
- d) 130%
- e) None of these

2. For which month the percentage decrease in collection of milk by dairy over previous month, is maximum?

- a) March
- b) February
- c) April

- d) May
- e) January

3. What is ratio of number of months in which milk collection is above the average milk collection to number of months in which milk collection is below the average milk collection?

- a) 2:3
- b) 3:2
- c) 1:4
- d) 4:1
- e) None of these

4. What is the difference between average milk collection by dairy in January, April and May

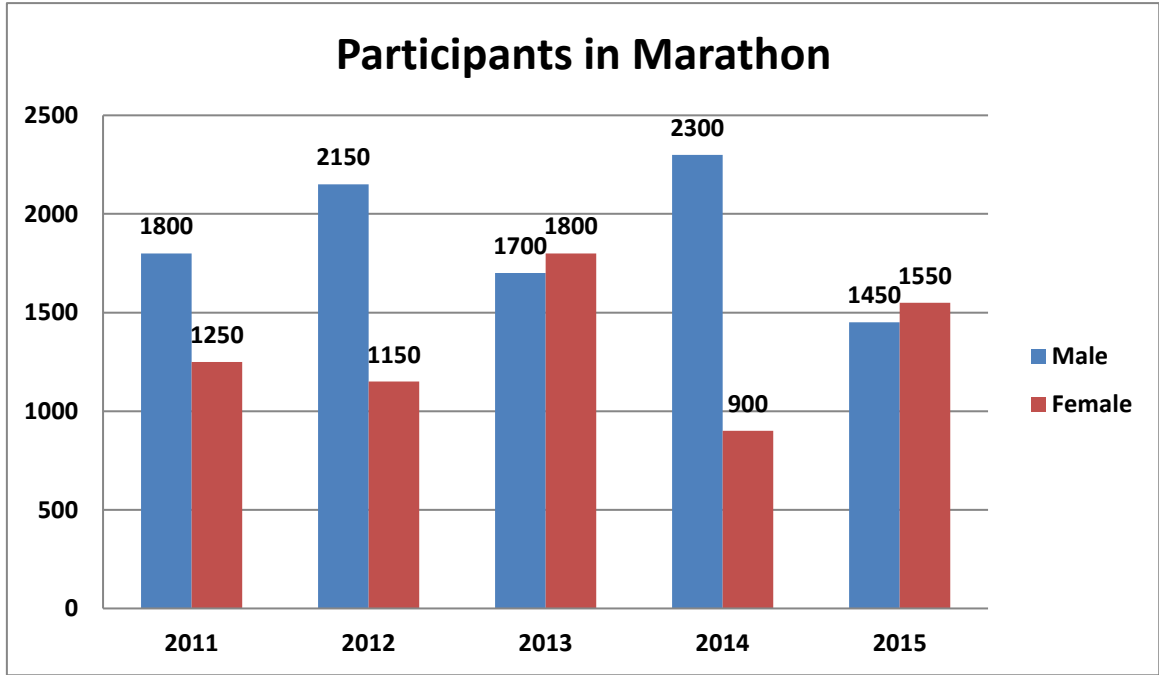
together and average milk collection by dairy in February, March and May together?

- a) 540 liters
- b) 480 liters
- c) 720 liters
- d) 420 liters
- e) 840 liters

5. If the dairy procures the milk at the rate 50rs per liter. How much less/more amount spent by dairy to procure the milk in March as compared to February?

- a) 6000 Rs less
- b) 5000 Rs less
- c) 6000 Rs more
- d) 5000 Rs more
- e) 7000 Rs less

Directions (6-10): The bar graph given below shows the number of male and female participants in City Marathon in five years 2011, 2012, 2013, 2014 and 2015.



6) Find the ratio of average number of males participated in marathon in 2012, 2013, 2014 to

average number of female participated in 2011, 2012 and 2013.

- a) 48:51

- b) 28:41
- c) 41:28
- d) 51:48
- e) None of these

**7) In which year maximum people participated in marathon?**

- a) 2015
- b) 2012
- c) 2011
- d) 2014
- e) 2013

**8) Find the total no of participants in marathon in 2016 if the total participants increased by 25% in 2016 over the average of participants in 2014 and 2015?**

- a) 3800
- b) 3700
- c) 3775
- d) 3875

- e) None of these

**9) What is the difference between average male participants in marathon and average female participants in marathon?**

- a) 450
- b) 660
- c) 550
- d) 350
- e) None of these

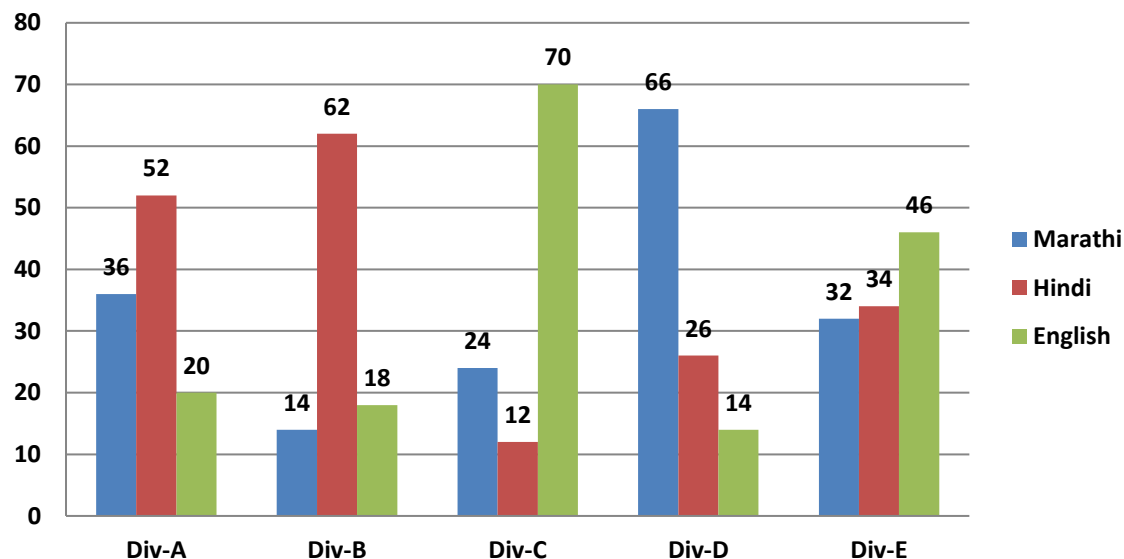
**10) What is the difference between the percentage of female participants in marathon in 2011 and percentage of male participants in marathon in 2013?**

- a) 4.5%
- b) 7.6%
- c) 6.7%
- d) 5.4%
- e) None of these

**Directions (11-15): Study the bar graph and answer the questions given below.**

**The bar graph shows number of students enrolled in different language classes in five divisions A, B, C, D and E.**

# Students enrolled in different languages



11.What is the ratio of number of students enrolled for Marathi and Hindi in Div-C to number of students enrolled for Hindi and English in Div-A?

- a) 1:2
- b) 3:2
- c) 2:3
- d) 2:1
- e) None of these

12. Students who enrolled for Marathi from Div-C are approximatetly what percentage of total students enrolled from Div-A?

- a) 11.11%
- b) 22.22%
- c) 33.33%
- d) 44.44%

e) 55.55%

13. If the ratio of girls to boys who enrolled for Hindi language from Div-E is 9:8 then how many girls enrolled for Hindi language from Div-E?

- a) 24
- b) 12
- c) 15
- d) 21
- e) 18

14. Students who enrolled for English from Div-A and B together are approximatetly what percentage more or less than students enrolled for Hindi from Div.-C and E together?

- a) 17.39% less
- b) 21.05% more

- c) 7.5% more

d) 7.5% less

e) None of these
15. What is the diff between no. of students who enrolled for Hindi from Div.-A, B and E together and no. of students who enrolled for English from Div.-B, C and D together?

a) 28

b) 42

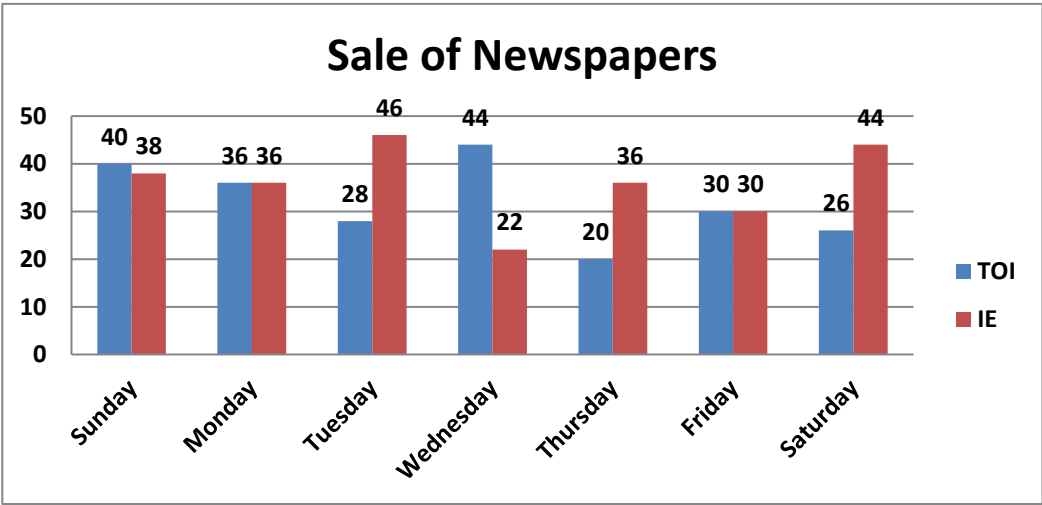
c) 26

d) 46

e)
- 36

Directions (16-20) : Study the graph and answer the questions given below.

The bar graph below shows the sale of two newspapers TOI i.e. Times Of India and IE i.e. Indian Express (in thousand) for seven days of the week.



16. What is the difference between average sale of TOI and average sale of IE in this week?

a) 5

b) 6

c) 4

d) 3
17. What is the ratio of sale of TOI on Tuesday and Thursday together to sale of IE on Monday and Thursday together?

a) 4:3



- b) 3:4
- c) 1:3
- d) 2:3
- e) 3:2

**18. The average sale of IE in the week is what percentage of average sale of TOI?**

- a) 120%
- b) 110%
- c)  $122\frac{1}{2}\%$
- d)  $132\frac{1}{2}\%$
- e)  $112\frac{1}{2}\%$

**19. If the average sale of TOI increased by 60% in next week and that of IE increased by 20% in next**

**week, then what is the difference between sale of TOI and IE in next week?**

- a) 9
- b) 8
- c) 12
- d) 4
- e) 6

**20. Total sale of TOI on Sunday and Monday together is what percentage more or less than total sale of IE on Monday and Saturday together?**

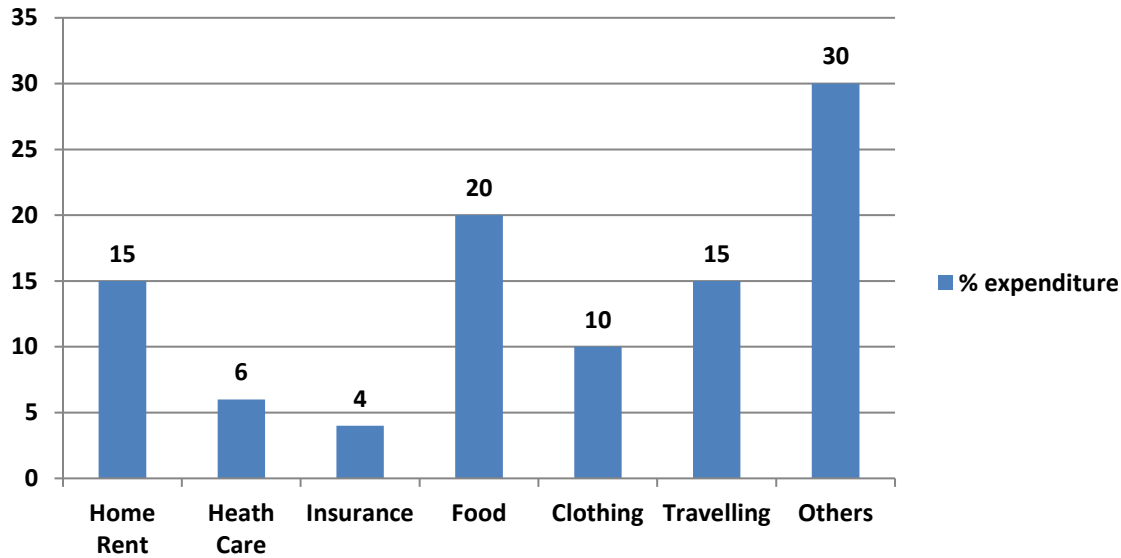
- a) 10% more
- b) 5%less
- c) 10 % less
- d) 5% more
- e) None of these

**Directions (21-25): Study the graph and answer the questions given below.**

**The bar graph given below shows the percentage expenditure by Sagar in year 2018 on various things.**

**Total expenditure in 2018 is 20 Lakh.**

**% expenditure by Sagar**



**21. What will the average expenditure of all the things except Home Rent and Traveling?**

- a) 5.8 lakh
- b) 3.8 lakh
- c) 2.8 lakh
- d) 8.2 lakh
- e) 3.2 lakh

**22. If the total expenditure by Sagar in 2018 is 75% of his earnings then expenditure on clothing is what percentage of his total earnings?**

- a) 12.5%
- b) 7.5%
- c) 8.5 %
- d) 9.5 %
- e) 15.5%

**23. What is the ratio of total expenditure on 'other things' and clothing together to the total expenditure on HealthCare, Insurance and HomeRent together?**

- a) 18:15
- b) 3:5
- c) 4:5
- d) 8:5
- e) 5:8

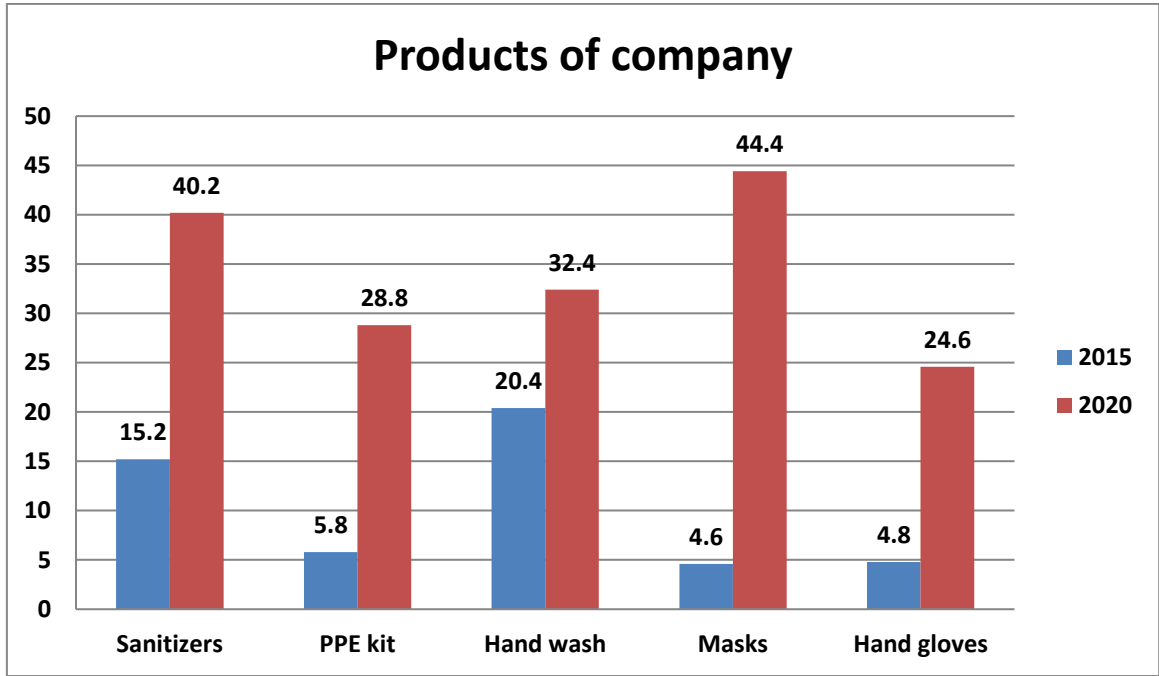
**24. If the Home Rent is increased by 20% then expenditure on traveling should be reduced by what percent so that overall expenditure remains constant.**

- a) 20%
- b) 25%
- c) 35%
- d) 15%

- e) 12.5%
25. Total expenditure of Sagar increased to 25 lakh in 2019 while the Food expenditure remains same that is 20% of expenditure. Then what is the difference between total expenditure on Food by Sagar in year 2018 and 2019?
- a) 5 Lakh
- b) 3 Lakh
- c) 2.5 Lakh
- d) 1 Lakh
- e) 1.5 Lakh

Directions (26-30): Study the graph and answer the questions given below.

A company produces five different products. The sales of these five products (in lakh no. of packs) during 2015 and 2020 are shown in graph.



26. Find average sales (in lakh no. of packs) of 5 different products of company during 2015 and 2020 respectively.
- a) 14.08 and 20.16
- b) 10.16 and 34.08
- c) 16.10 and 34.08

d) 34.08 and 10.16

e) 10.16 and 24.08

**27. What is the difference between average sale of Sanitizers and Handwash together in 2015 and average sale of Sanitizers and Handwash together in 2020?**

a) 19.5

b) 16.5

c) 17.5

d) 18.5

e) None of these

**28. Find the product which records the minimum increase in sales from 2015 to 2020.**

a) PPE kit

b) Sanitizers

c) Hand wash

d) Masks

e) Hand gloves

**29. The sale of Masks (in lakh of packs) in 2015 is approximately what percentage of total sale of all the 5 products in 2015.**

a) 10%

b) 9%

c) 12%

d) 6%

e) 15%

**30. Find the ratio of sales of Hand wash and Mask together for 2015 to sales of Hand Gloves and Mask together for 2020.**

a) 20:69

b) 50:69

c) 69:50

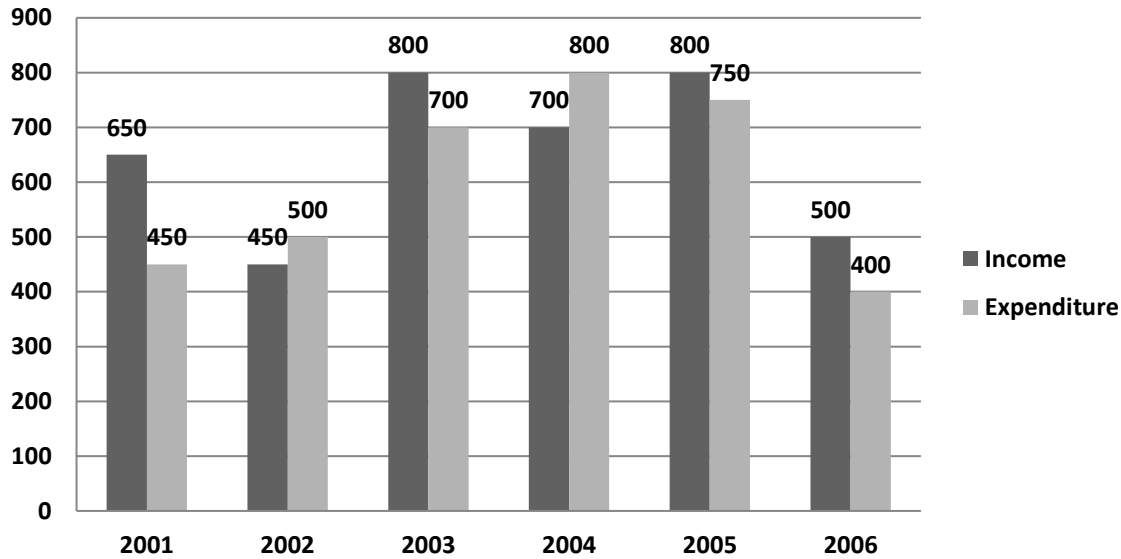
d) 75:69

e) 25:69

**Directions (31-35) : Study the graph and answer the questions given below.**

**The bar graph shows the income and expenditure of a company from 2001 to 2006.**

## Income & Expenditure of company



**31. What is the overall profit or loss (in crore rs) is earned by the company from 2003 to 2005**

- a) 150
- b) 200
- c) 100
- d) 50
- e) None of these

**32. What is the average profit earned by the company in odd years among the given years?**

- a) 126.66
- b) 150
- c) 116.66
- d) 100
- e) None of these

**33. The profit earned by the company in 2006 is what percentage more than profit earned by the company in 2005.**

- a) 200%
- b) 50%
- c) 150%
- d) 100%
- e) 250%

**34. If the profit of the company increased by 25% and income increased by 20% in 2007 then 2006. What is the expenditure of the company in 2007?**

- a) 425
- b) 475
- c) 550

d) 450

e) 525

**35. By what percent total income from 2001 to 2003 is less than total expenditure from 2003 to 2005**

a) 15 5/9%

b) 15 4/9%

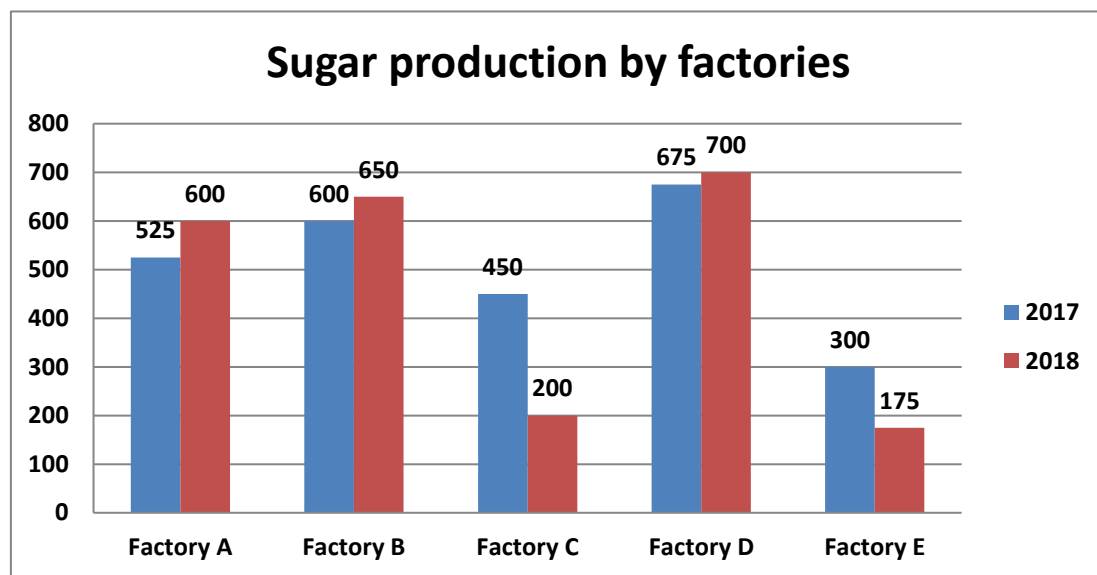
c) 25 5/9%

d) 25 4/9%

e) 5 4/9%

**Directions (36-40) : Study the graph and answer the questions given below.**

**The bar graph given below shows the production of Sugar (in tons) by 5 different factories in two consecutive years 2017 and 2018.**



**36. The percentage increase in Sugar production for year 2018 over previous year is maximum for which Factory?**

a) Factory B

b) Factory D

c) Factory C

d) Factory A

e) Factory E

**37. Total Sugar produced by all the factories in 2017 is what percentage more or less than total Sugar production in all the factories in 2018.**

a) 200/31%

b) 300/31% more

c) 300/21%

d) 300/31% less

e) None of these

38. What is the difference between average Sugar produced by Factory A and D in 2017 to average of Sugar produced by Factory B and C in same year?

- a) 50
- b) 25
- c) 125
- d) 75
- e) 175

39. Find the ratio of Sugar produced by Factory B and C in both years to Sugar produced by D in 2017 and by E in 2018.

- a) 38:17
- b) 17:8

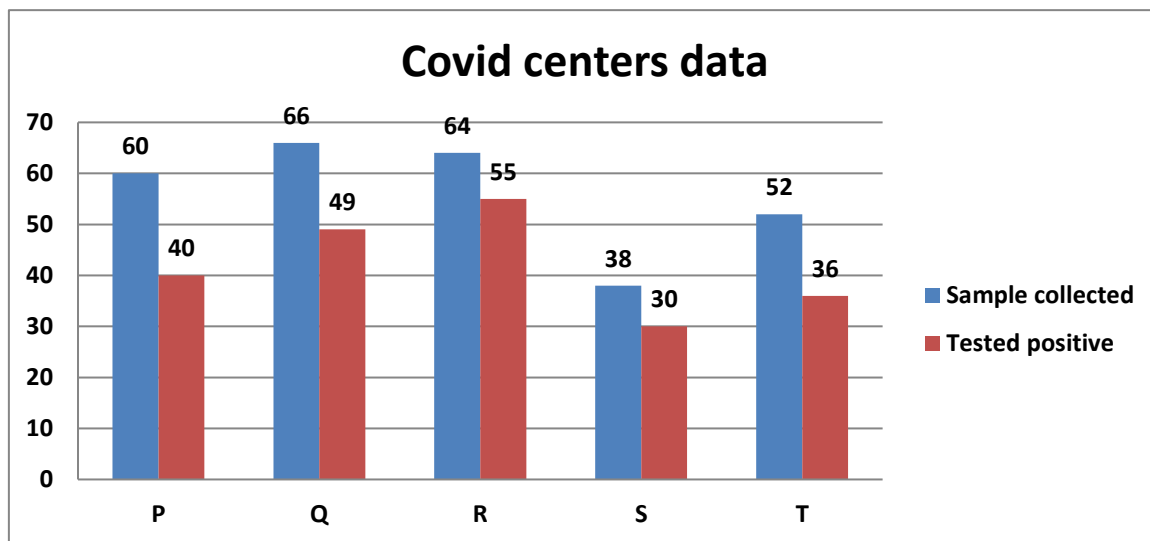
- c) 21:8
- d) 8:19
- e) 9:8

40. If the production of Sugar by Factory A in 2019 is increased by 20% and that of Factory D by 10% over previous year. What is the sum of Sugar production (in tons) by both Factory A and D in 2019?

- a) 1260
- b) 1360
- c) 1490
- d) 1450
- e) 1290

Directions (41-45) : Study the graph and answer the questions given below.

The bar graph shows the data of 5 different covid centers in which number of samples collected for Covid test and number of samples tested positive in a day are shown.



**41. The total number of samples tested positive in all the 5 Covid centers is what percentage of total number of samples collected by all Covid centers.**

- a) 25%
- b) 505
- c) 75%
- d) 80%
- e) 60%

**42. What is the ratio of samples collected in Covid center S and T together to samples tested positive in Covid center P and S together?**

- a) 7:6
- b) 9:7
- c) 9:8
- d) 7:9
- e) 8:7

**43. What is the difference between percentage of samples tested positive in Covid center P to percentage of samples tested positive in Covid Center T?**

- a) 39/50%
- b) 150/39%

- c) 39/75%
- d) 200/39%
- e) 100/39%

**44. In Covid center P, 25% of samples collected are of female patients, then what is the number of samples of female patients tested positive in Center P?**

- a) 25
- b) 15
- c) 10
- d) Can't be determined
- e) None of these

**45. Out of the total number of samples tested positive for Covid in center S, 20% of patients are admitted in ICU then number of patients who tested positive are not in ICU in center S are?**

- a) 18
- b) 24
- c) Cant be determined
- d) 27
- e)

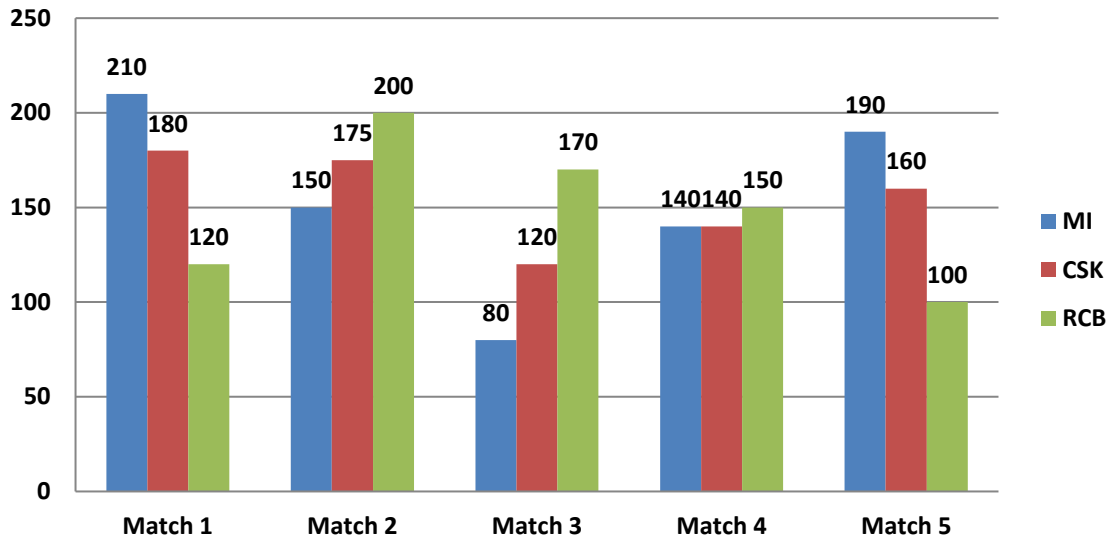
21

**Directions (46-50) : Study the graph and answer the questions given below.**

**The bar graph shows the runs scored by 3 different IPL in 5 matches.**



### Runs scored by IPL teams



46. Find the ratio of runs scored by MI in Match 1 to CSK in Match 3 to RCB in Match 4.

- a) 3:7:5
- b) 5:9:7
- c) 7:4:5
- d) 4:5:7
- e) 5:7:4

47. What average runs scored by all the 3 teams in Match 5?

- a) 120
- b) 75
- c) 125
- d) 150
- e) 175

48. In which Match CSK has scored 50% runs more than RCB?

- a) Match 2
- b) Match 3
- c) Match 5
- d) Match 1
- e) Match 4

49. Total runs scored by MI and RCB together in Match 3 and Match 5.

- a) 680
- b) 540
- c) 320
- d) 620
- e) 480

**50. What is the average of average runs scored by MI, average runs scored by CSK and average runs scored by RCB in all the five matches.**

a) 152.33

b) 142.66

c) 152.66

d) 172.50

e) 144.66

## Bar Graph DI - Answer and Explanation

### Solutions

(1-5):

#### 1. Answer: B

The milk collection by dairy in April = 5040 liters

Average milk collection by dairy =  $(3360+3000+2880+5040+4320)/5$

=3720 liters

Required percentage =  $(5040/3720*100)$

=135.48 % = 135.5% approx.

#### 2. Answer: D

There is decrease in collection of milk in the months February, March and May over previous months.

Percentage decrease in February =  $(3360-3000)/3360*100 = 10.71\%$

Percentage decrease in March =  $(3000-2880)/3000*100 = 4\%$

Percentage decrease in May =  $(5040-4320)/5040*100 = 14.28\%$

Required month = May

#### 3. Answer: A

Average milk collection by dairy in 5 months = 3720 liters

Milk collection by dairy is more than 3720 liters in 2 months April and May.

Milk collection by dairy is less than 3720 liters in 3 months January, February and March.

So, required ratio = 2:3

#### 4. Answer: E

The average milk collection by dairy in January, April and May together =

=  $(3360+5040+4320)/3$   
=4240 liters

The average milk collection by dairy in February, March and May together =

=  $(3000+2880+4320)/3$   
=3400 liters

Required difference = 4240-3400 = 840 liters

#### 5. Answer: A

Total amount spent by dairy to procure milk in February  
=  $50 \times 3000 = 150000$

Total amount spent by dairy to procure milk in March =  
 $50 \times 2880 = 144000$

**6. Answer: C**

Average no. Of male participated in 2012, 2013 and  
2014 =  $(2150 + 1700 + 2300) / 3 = 2050$

Average no. Of female participated in 2011, 2011 and  
2013 =  $(1250 + 1150 + 1800) / 3 = 1400$

Required ratio =  $2050 : 1400 = 41 : 28$

**7. Answer: E**

Total participants in marathon

In 2011 =  $(1800 + 1250) = 3050$

In 2012 =  $(2150 + 1150) = 3300$

In 2013 =  $(1700 + 1800) = 3500$

In 2014 =  $(2300 + 900) = 3200$

In 2015 =  $(1450 + 1550) = 3000$

In 2013 City Marathon had maximum participants.

**8. Answer: D**

Average number of participants in 2014 and 2015 =  
 $(2300 + 900 + 1450 + 1550) / 2$

=  $(3200 + 3000) / 2$

= 3100

Participants increased by 25% over the average of  
participants in 2014 and 2015.

So,

No of participants in 2016 = 125% of 3100

The dairy spent 6000 Rs. (150000-144000) less in March  
as compared to February.

**Solutions**

**(6-10):**

=  $125 / 100 \times 3100$

= 3875

**9. Answer: C**

Average male participants =  
 $(1800 + 2150 + 1700 + 2300 + 1450) / 5$

=  $9400 / 5$

= 1880

Average female participants =  
 $(1250 + 1150 + 1800 + 900 + 1550) / 5$

=  $6650 / 5$

= 1330

Required difference =  $1880 - 1330 = 550$

**10. Answer: B**

Percentage of female participants in marathon in 2011 =  
 $(1250 / 3050) \times 100$

= 40.98 %

Percentage of male participants in marathon in 2013 =  
 $(1700 / 3500) \times 100$

= 48.57

Required difference =  $(48.57 - 40.98) = 7.59 \% = 7.6 \%$   
(approx)

**Solutions**

**(11-15):**

**11. Answer: A**

Number of number of students enrolled for Marathi and Hindi in Div-C =  $24+12=36$

Number of number of students enrolled for Hindi and English in Div-C =  $52+20=72$

Required ratio = 1:2

**12. Answer: B**

Students who enrolled for Marathi from Div.-C = 24

Total no. of students enrolled from Div-A =  $(36+52+20)=108$

Required percentage =  $24/108*100=22.22\%$

**13. Answer: E**

Ratio of girls to boys who enrolled for Hindi language from Div.-E is 9:8

Total no. of students who enrolled for Hindi in Div.-E = 34

**16. Answer: C**

Average sell of TOI =  $(40+36+28+44+20+30+26)/7=224/7=32$

Average sell of IE =  $(38+36+46+22+36+30+44)/7=252/7=36$

Required difference =  $36-32=4$  thousand

**17. Answer: D**

Sell of TOI on Tuesday and Thursday together =  $(28+20)=48$

Then no. of girls enrolled for Hindi language from Div.-E =  $9/(9+8)*34$

= 18

**14. Answer: A**

Students who enrolled for English from Div-A and B together =  $20+18=38$

Students who enrolled for Hindi from Div.-C and E together =  $12+34=46$

Required =  $(46-38)/46*100$

=  $(8/46)*100=17.39\%$  less

**15. Answer: D**

No. of students who enrolled for Hindi from Div.-A, B and E together =  $52+62+34=148$

No. of students who enrolled for English from Div.-B, C and D together =  $18+70+14=102$

Required difference =  $148-102=46$

**Solutions****(16-20):**

Sell of IE on Monday and Thursday together =  $(36+36)=72$

Required ratio =  $48:72=2:3$

**18. Answer: E**

The average sale of IE in this week =  $(38+36+46+22+36+30+44)/7=36$

Average sale of TOI in this week =  $(40+36+28+44+20+30+26)/7=32$

Required percentage =  $36/32*100=112.5\%=112\frac{1}{2}\%$

**19. Answer: B**

Average sale of TOI increased by 60% in next week =  
 $160\% \text{ of } 32 = 51.2$

Average sale of IE increased by 20% in next week =  
 $120\% \text{ of } 36 = 43.2$

Required difference =  $51.2 - 43.2 = 820$ . **Answer: B**

Total sale of TOI on Sunday and Monday together =  
 $40 + 36 = 76$

**21. Answer: C**

Average expenditure of all the things except Home Rent  
and Traveling =  $70\% \text{ of } 20 \text{ lakh} / 5 = (70/100 * 20) / 5$   
 $= 14/5 = 2.8 \text{ Lakh}$

**22. Answer: B**

The total expenditure by Sagar in 2018 is 75% of his  
earnings

That means  $20 \text{ Lakh} = 75\% \text{ of earnings}$

Therefore earnings =  $20 * 100 / 75 = 26.66 \text{ Lakh}$

Expenditure on clothing =  $10\% \text{ of } 20 \text{ Lakh} = 2 \text{ Lakh}$

Required percentage =  $(2/26.66) / 100 = 200/26.66 = 7.50\%$

So, expenditure on clothing is 7.50% of earnings.

**23. Answer: D**

Total expenditure on 'other things' and clothing together  
 $= 30\% + 10\% = 40\%$

**26. Answer: B**

Average sales (in Lakh no. of packs) of 5 different  
products of company during 2015  
 $= (15.20 + 5.8 + 20.40 + 4.60 + 4.80) / 5 = 10.16$

Total sale of IE on Monday and Saturday together =  
 $36 + 44 = 80$

Required percentage =  $(76 - 80) / 80 * 100 = -5\%$

So, total sale of TOI on Sunday and Monday together is  
5% less than Total sale of IE on Monday and Saturday  
together.

**Solutions**

**(21-25):**

Total expenditure on HealthCare, Insurance and Home  
Rent together =  $6\% + 4\% + 15\% = 25\%$

Required ratio =  $40 : 25 = 8 : 5$

**24. Answer: A**

Increase in Home Rent =  $20\% \text{ of } 15\% \text{ of } 20$

$= 20/100 * 15/100 * 20$

$= 0.6 \text{ Lakh}$

Percentage decrease in expenditure on travelling =  
 $(0.6/15\% \text{ of } 20) * 100 = 20\%$

**25. Answer: D**

Food expenditure of Sagar in 2018 =  $20\% \text{ of } 20 \text{ Lakh} = 4$   
Lakh

Food expenditure of Sagar in 2019 =  $20\% \text{ of } 25 \text{ Lakh} = 5$   
Lakh

Required difference =  $5 - 4 = 1 \text{ Lakh}$

**Solutions**

**(26-30):**

Average sales (in Lakh no. of packs) of 5 different  
products of company during 2020  
 $= (40.20 + 28.80 + 32.40 + 44.40 + 24.60) = 34.08$

**27. Answer: D**

Average sale of Sanitizers and Hand wash together in 2015 =  $(15.20+20.40)/2 = 17.8$

Average sale of Sanitizers and Hand wash together in 2020 =  $(40.20+32.40)/2 = 36.3$

Required difference =  $36.3-17.8 = 18.5$

**28. Answer: C**

It is clearly visible from the graph – Hand wash

**29. Answer: B**

Sale of Masks (in Lakh of packs) in 2015 = 4.60

**31. Answer: D**

Overall profit or loss (in crore Rs) is earned by the company from 2003 to 2005

=  $(800+700+800)-(700+800+750) = 2300-2250 = 50$

50 Crore Rs. profit

**32. Answer: C**

Profit earned by company in 2001 =  $650-450 = 200$

Profit earned by company in 2003 =  $800-700 = 100$

Profit earned by company in 2005 =  $800-750 = 50$

Average profit earned by the company in odd years among the given years =  $(200+100+50)/3 = 350/3 = 116.66$

**33. Answer: D**

Profit earned by the company in 2006 = 100

Profit earned by the company in 2005 = 50

**36. Answer: D**

Total sale of all the 5 products (in Lakh of packs) in 2015 =  $(15.20+5.8+20.40+4.60+4.80) = 50.8$

Required percentage =  $4.60/50.8*100 = 9.05\%$

**30. Answer: E**

Sales of Hand wash and Mask together for 2015 =  $20.40+4.60 = 25$

Sales of Hand gloves and Mask together for 2020 =  $44.40+24.60 = 69$

Required ratio = 25:69

**Solutions**

**(31-35):**

Required percentage =  $(100-50)/50*100 = 100\%$

**34. Answer: B**

Profit of the company in 2007 = 125% of profit in 2006 =  $125\% \text{ of } 100 = 125 \text{ Crore}$

Income of the company in 2007 = 120% of income in 2006 =  $120\% \text{ of } 500 = 600 \text{ Crore}$

Expenditure in 2007 =  $600-125 = 475 \text{ crore}$

**35. Answer: A** Total income from 2001 to 2003 =  $(650+450+800) = 1900$

Total expenditure from 2003 to 2005 =  $(700+800+750) = 2250$

Required percentage =  $(2250-1900)/2250*100 = 15 \frac{5}{9}\%$

**Solutions**

**(36-40):**

There is increase in Sugar production only in 3 factories A, B and D.

The percentage increase in Sugar production in Factory A =  $75/525 \times 100 = 14.28\%$

The percentage increase in Sugar production in Factory B =  $50/600 \times 100 = 0.83\%$

The percentage increase in Sugar production in Factory D =  $25/675 \times 100 = 3.7\%$

**37. Answer: B**

Total Sugar produced by all the factories in 2017 =  $(525+600+450+675+300) = 2550$

Total Sugar production in all the factories in 2018 =  $(600+650+200+700+175) = 2325$

Required percentage =  $(2550-2325)/2325 \times 100 = 300/31\%$  more

**38. Answer: D**

Average Sugar produced by Factory A and D in 2017 =  $(525+675)/2 = 600$

**41. Answer: C**

Total number of samples tested positive in all the 5 Covid centers =  $(40+49+55+30+36) = 210$

Total number of samples collected by all Covid centers =  $(60+66+64+38+52) = 280$

Required percentage =  $210/280 \times 100 = 75\%$

**42. Answer: B**

Samples collected in Covid center S and T together =  $38+52 = 90$

Average of Sugar produced by Factory B and C in 2017 =  $(600+450)/2 = 525$

Required difference =  $600-525 = 75$

**39. Answer: A**

Sugar produced by Factory B and C in both years =  $(600+650+450+200) = 1900$

Sugar produced by D in 2017 and by E in 2018 =  $(675+175) = 850$

Required ratio =  $1900:850 = 38:17$

**40. Answer: C**

Production of Sugar by Factory A in 2019 = 120% of 600 = 720

Production of Sugar by Factory D in 2019 = 110% of 700 = 770

Sum of Sugar production (in tons) by both Factory A and D in 2019 =  $720+772 = 1490$

**Solutions (41-45):**

Tested positive in Covid center P and S together =  $40+30 = 70$

Required ratio =  $90/70 = 9:7$

**43. Answer: E**

Percentage of samples tested positive in Covid center P =  $40/60 \times 100 = 200/3\%$

Percentage of samples tested positive in Covid Center T =  $36/52 \times 100 = 900/13\%$

Required difference =  $900/13 - 200/3 = 100/39\%$

**44. Answer: D**

25% of samples collected by Covid center P are of female patients.

From this information we cannot calculate number of samples of female patients tested positive in Center P.

Hence cannot be determined.

**45. Answer: B**

**46. Answer: C**

Runs scored by MI in Match 1 = 210

Runs scored by CSK in Match 3 = 120

Runs scored by RCB in Match 4 = 150

Required ratio = 210:120:150 = 7:4:5

**47. Answer: D**

Average runs scored by all the 3 teams in Match 5 =  $(190+160+100)/3 = 450/3 = 150$

**48. Answer: D**

In all the 5 matches CSK scored less runs than RCB except match 1 and match 5.

Match 1 – CSK score 180 runs and RCB score 120 runs

CSK scored 60 more runs than RCB which is 50% more.

$(180-120)/120 \times 100 = 50\%$

Total number of samples tested positive for Covid in center S = 30

Out of them 20% of patients are admitted in ICU = 20% of 30 = 6

Number of patients who tested positive are not in ICU =  $30-6 = 24$

**Solutions (46-50):**

Match 5 – CSK score 160 runs and RCB score 100 runs

CSK scored 60 more runs than RCB which is 60% more.  
 $(160-100)/100 \times 100 = 60\%$

**49. Answer: B**

Total runs scored by MI and RCB together in Match 3 and Match 5 =  $(80+170+190+100) = 540$

**50. Answer: A**

Average runs scored by MI in all the 5 matches =  $(210+150+80+140+190)/5 = 770/5 = 154$

Average runs scored by CSK in all the 5 matches =  $(180+175+120+140+160)/5 = 775/5 = 155$

Average runs scored by RCB in all the 5 matches =  $(120+200+170+150+100)/5 = 740/5 = 148$

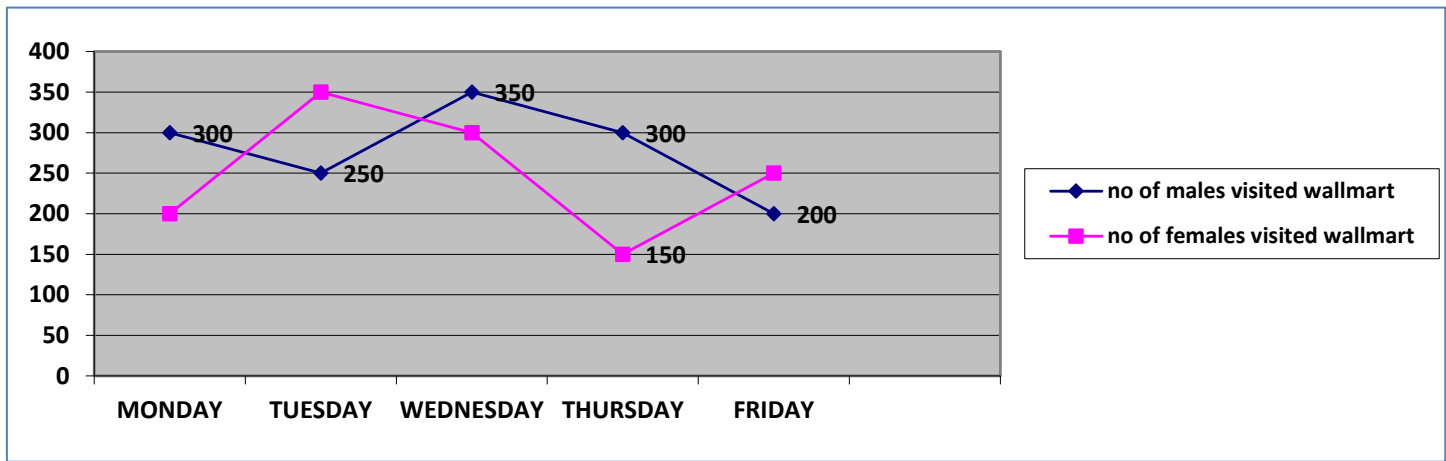
Required average =  $(154+155+148)/3 = 457/3 = 152.33$

## Line DI

**Directions (1 – 5): Study the following information and answer the following questions:**

**In the following line graph number of males and number females visited Wall mart on different days shown.**





1) What is the average number of males visited wall mart on Tuesday, Thursday and Friday?

- a) 220
- b) 240
- c) 260
- d) 280
- e) 250

2) What is the difference between the males who visited wall mart on Monday, Tuesday and Friday together and number of females who visited wall mart on Wednesday, Tuesday and Friday together?

- a) 5
- b) 150
- c) 175
- d) 200
- e) 225

3) What is the percentage increase in total number of males and females who visited wall mart on

Wednesday over the total number of males and females who visited on Monday?

- a) 25%
- b) 28%
- c) 35%
- d) 30%
- e) 40%

4) If number of males visited on Saturday is increased by 25% than Friday and number of females who visited on Saturday is decreased by 10% than Friday, then what will be the total number of males and females visited wall mart on Saturday?

- a) 400
- b) 425
- c) 450
- d) 475
- e) 500

5) Find the ratio of average number of female visited wall mart to average number of males visited wall mart?

a) 28:25

b) 25:28

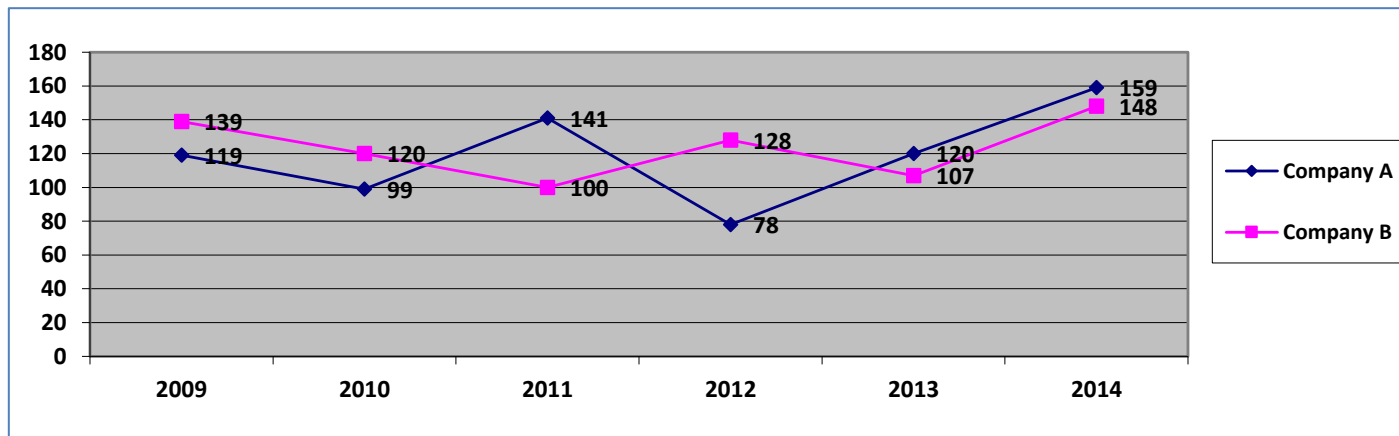
c) 27:23

d) 23:27

e) 24:28

**Directions (6 – 10): Study the following information and answer the following questions:**

**Given below is the line graph which shows the number of articles (in thousands )sold by two companies A and B over the year**



6) If 20% and 15% of article sold by company A in 2012 and 2014 respectively are defective then defective article sold by A in 2012 and 2014 together are what percent of total article sold by A in 2012 and 2014 together?

a)  $14\frac{53}{79}\%$

b)  $12\frac{51}{79}\%$

c)  $16\frac{51}{79}\%$

d)  $19\frac{47}{79}\%$

e) 22%

7) What is the ratio of articles sold by company A in 2011, 2012 and 2013 together to the articles sold by B in 2009, 2010 and 2011 together?

a) 339:359

b) 249:250

c) 331:336

d) 125:139

e) 127:336

8) Number of articles sold by A in 2009 and 2011 together is what percent more or less than articles sold by B in 2012 and 2013 together approx.

a)  $12\frac{30}{47}\%$

b)  $10\frac{30}{47}\%$

c)  $14\frac{46}{47}\%$

d)  $7\frac{53}{79}\%$

e) 5%

9) If number of articles sold by A in 2008 is 120% more than the difference between the articles sold by A and B in 2009, then articles sold by A in 2008 is what percent more or less than the article sold by B in 2009.

a)  $64(65/139)\%$

b)  $68(48/139)\%$

c)  $63(63/139)\%$

d) 70%

e) 65%

10) What is the difference between the average article sold by A over all the years except year 2009 and average article sold by B over all the years except year 2014 (in thousands)?

a) 1

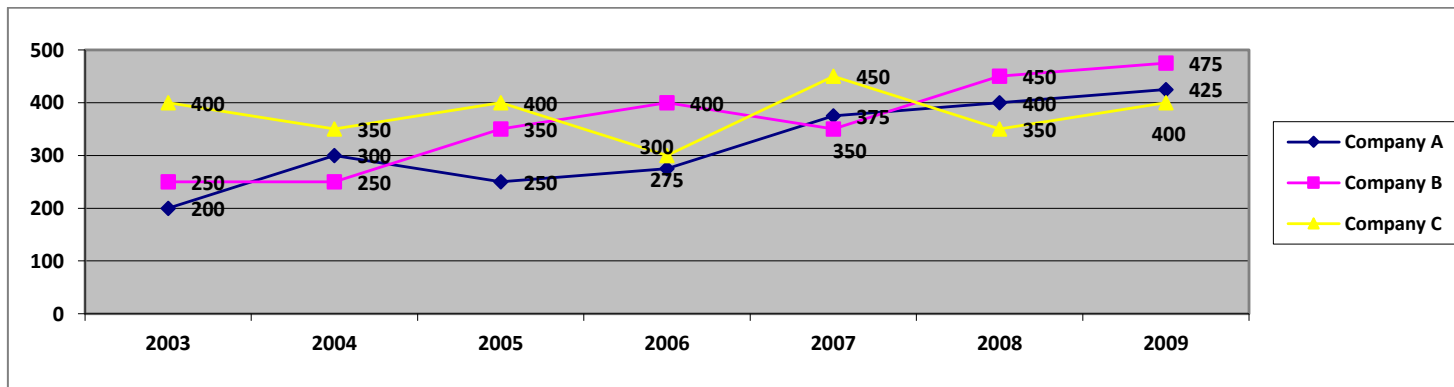
b) 0.6

c) 0.8

d) 0.4

e) 0.5

Directions (11 – 15): Study the following information and answer the following questions:



11) What is the ratio of total profit earned by all companies in year 2007 to the total profit earned by all companies in 2009?

a) 23:22

b) 47:52

c) 44:45

d) 33:34

e) 24:25

**12) In which of the following year was the difference between the profits earned by company B and company A is maximum?**

- a) 2003
- b) 2004
- c) 2006
- d) 2008
- e) 2009

**13) If profit earned by company A in 2010 is increased by 200/17% over previous year and profit earned by company B in 2010 is increased by 300/19% over previous year then what is the sum of profit (in crore ) earned by company A and B in 2010?**

- a) 650
- b) 780
- c) 1025
- d) 825
- e) 725

**14) Highest total profit earned by all 3 companies together for any year is what percent of lowest total profit of all 3 companies together for any year?**

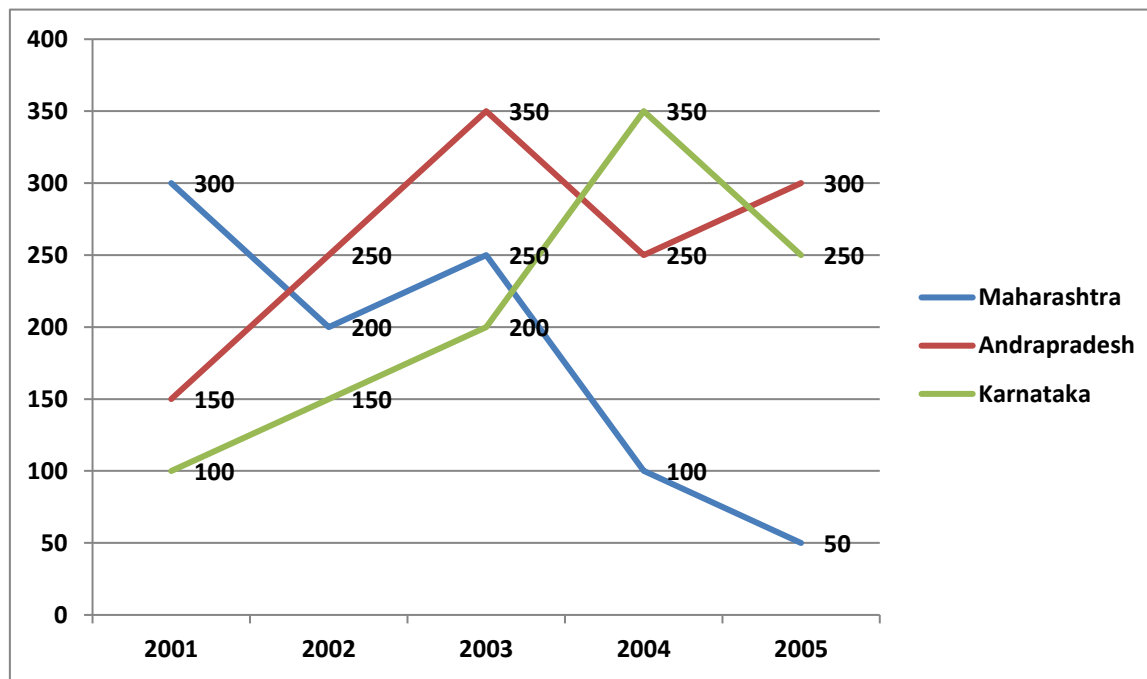
- a)  $152\frac{16}{17}\%$
- b)  $107\frac{2}{7}\%$
- c)  $105\frac{3}{8}\%$
- d)  $95\frac{3}{17}\%$
- e) None of these

**15) If in year 2002 ratio of profit earned by company A, B and C are 3:2:5 and profit of C in 2002 is 25% less than profit of C in 2003 then profit of B in 2009 increased by approximately what percent over profit of B in 2002?**

- a) 225%
- b) 235%
- c) 262%
- d) 222%
- e) 296%

**Directions (16 – 20): Study the following information and answer the following questions:**

**The graph shows the funds (in crore) allotted to three states by the government in different year.**



16) What is the ratio of average fund allotted to Karnataka in years 2002, 2004 and 2005 to the average funds allotted to Andhra Pradesh in 2001, 2003 and 2005?

- a) 15:17
- b) 12:17
- c) 15:16
- d) 13:14
- e) 17:15

17) Total funds allotted to these three states in 2002 is what percent less than the total funds allotted to the three states in 2005?

- a) 5%
- b) 0%
- c) 4%

d) 6%

e) 2.5%

18) If in 2006 the funds allotted in Maharashtra, Andhra Pradesh and Karnataka increased by 10% , 20% and 40% respectively as compared to 2005, then find the average fund allotted to three states in 2006?

- a) 200 crores
- b) 240 crores
- c) 255 crores
- d) 260 crores
- e) 235 crores

19) Funds allotted in Maharashtra in 2001, 2002 and 2003 is what percent more or less than funds allotted to Karnataka in 2003, 2004 and 2005?

- a) 3.25%

b) 7.25%

c) 4.25%

d) 6.25%

e) 6%
- a) 200

b) 300

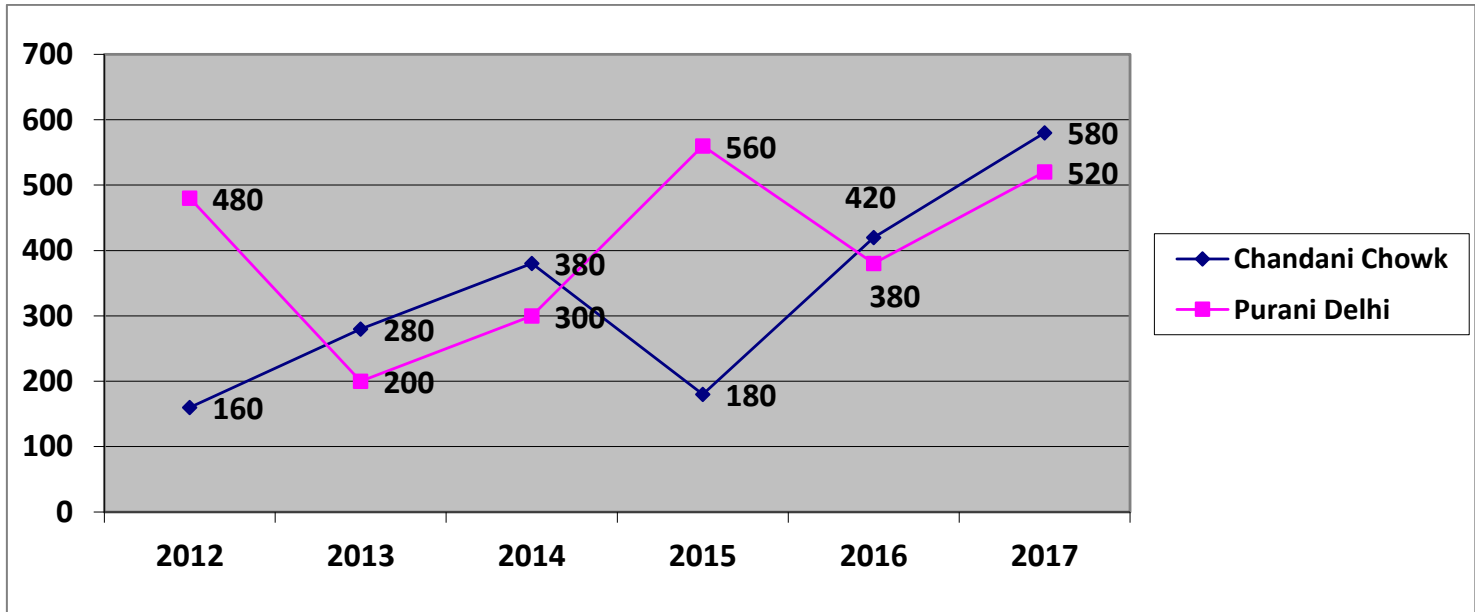
c) 400

d) 250

e) 210

20) What are the average funds (in crore) allotted to the average of given three states in 2002 and 2005?

Directions (21 – 25): Study the following information and answer the following questions:  
Data related to the number of votes polled in two constituencies of Chandani Chowk and Purani Delhi during six year.



- 21) If in 2012, 100/9% of total registered voters did not pole vote from purani Delhi and 20% of registered voters did not poll from chandani chowk then what is the sum of total registered voters in purani delhi & chandani chowk in 2012?

a) 740

b) 820

c) 640

d) 520

e) 550

22) In 2015 if 20% of total votes polled from constituency were invalid and valid votes from chandani chowk and purani Delhi are in the ratio 3:5 in 2015 then what is the number of invalid votes from purani Delhi in 2015?

- a) 150
- b) 165
- c) 180
- d) 170
- e) 190

23) Number of votes polled in purani Delhi in 2012 is what percent number of votes polled of purani Delhi in 2017?

- a)  $80\frac{2}{13}\%$
- b)  $87\frac{3}{13}\%$
- c)  $92\frac{4}{13}\%$
- d)  $72\frac{9}{13}\%$
- e)  $89\frac{3}{13}\%$

24) What is the ratio of votes polled from chandani chowk in 2012, 2013 and 2015 together to the votes polled from purani Delhi in 2014, 2015 and 2017 together?

- a) 30:67
- b) 31:69
- c) 28:67
- d) 29:69
- e) 31:68

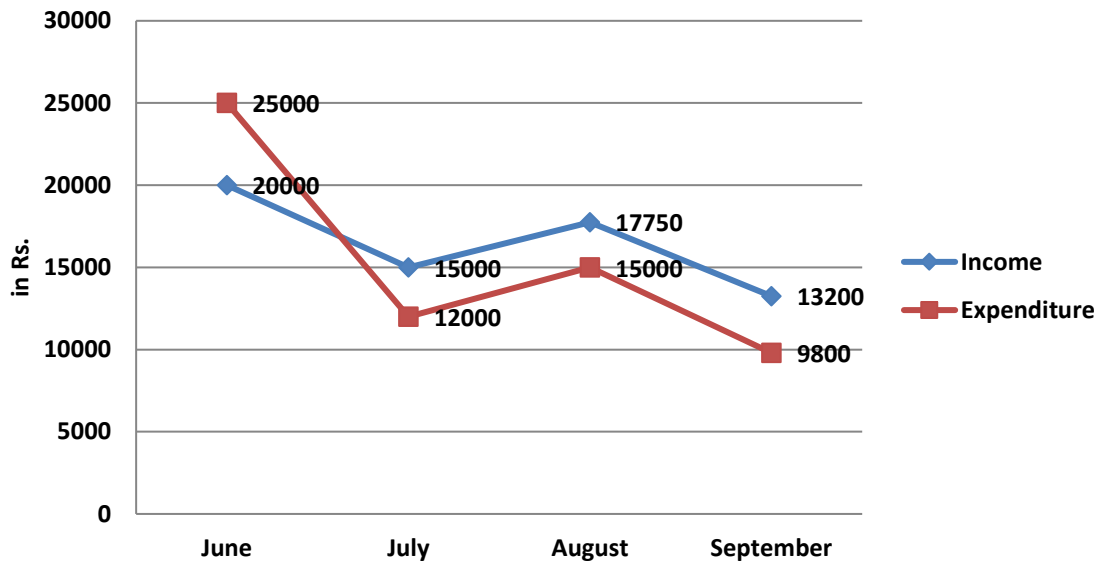
25) Number of votes polled in 2017 from purani Delhi decreased by what percent over year 2015?

- a)  $\frac{100}{3}$
- b)  $\frac{100}{6}$
- c)  $\frac{100}{7}$
- d)  $\frac{50}{7}$
- e)  $\frac{50}{17}$

**Directions (26 -30) Study the line graph and answer the question that follows.**

**Below given Line graph shows us the Income and expenditure of Mr. Akshay in the 4 months i.e. June, July, August and September of 2012.**

## Income and Expenditure of Mr. Akshay



26) If the income is increased by 10% and 25% in the next year for the month of July and September respectively and Expenditure remained same for the next year then what will be the percentage change in savings?

- a) 75%
- b) 80%
- c) 135.5%
- d) 140.5%
- e) None of these

27) Average savings in June and July are what percent less than the average savings in August and September 2012? (If there are no savings then take it as zero.)

- a) 51.12%

b) 62.2%

c) 98.1%

d) 51.21%

e) None of these

28) The income in July is what percentage more than the expenditure in September 2012?

a) 51%

b) 52%

c) 53%

d) 54%

e) None of these

29) What is the ratio of savings in the month of August to the average income in the month of June and July for the year 2012?

- a) 70: 11



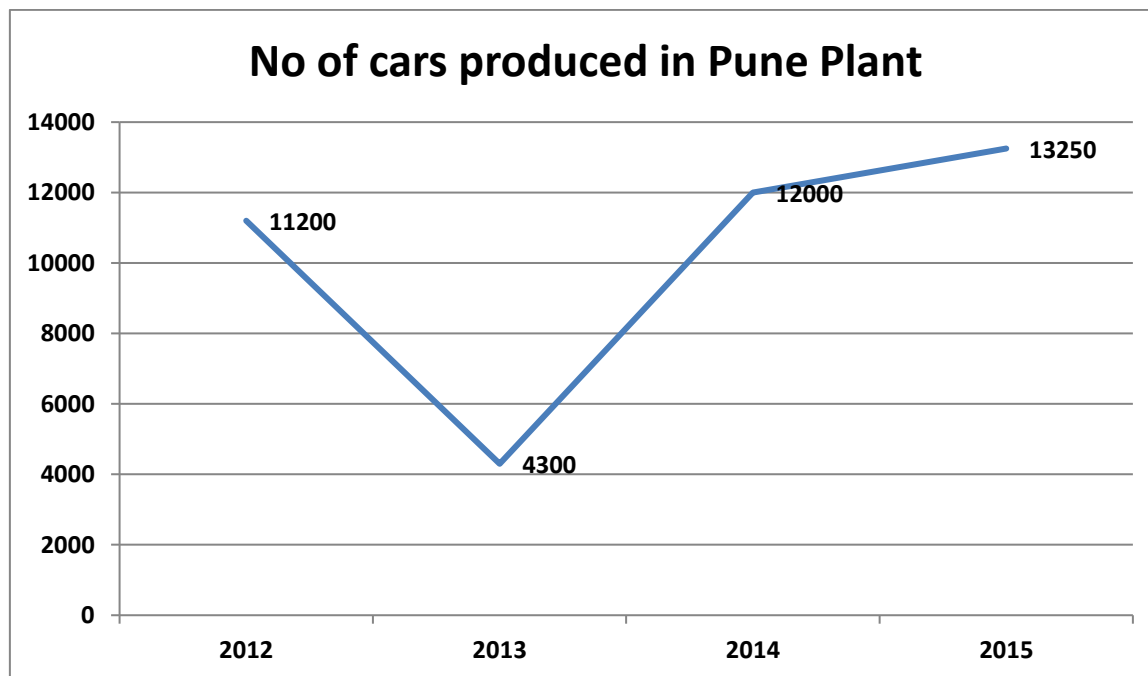
- b) 11: 70
- c) 21 : 22
- d) 22 : 21
- e) None of these

30) If the expenditure is increased by 10% in every month in 2013 then what is the change in the total expenditure from 2012 to 2013?

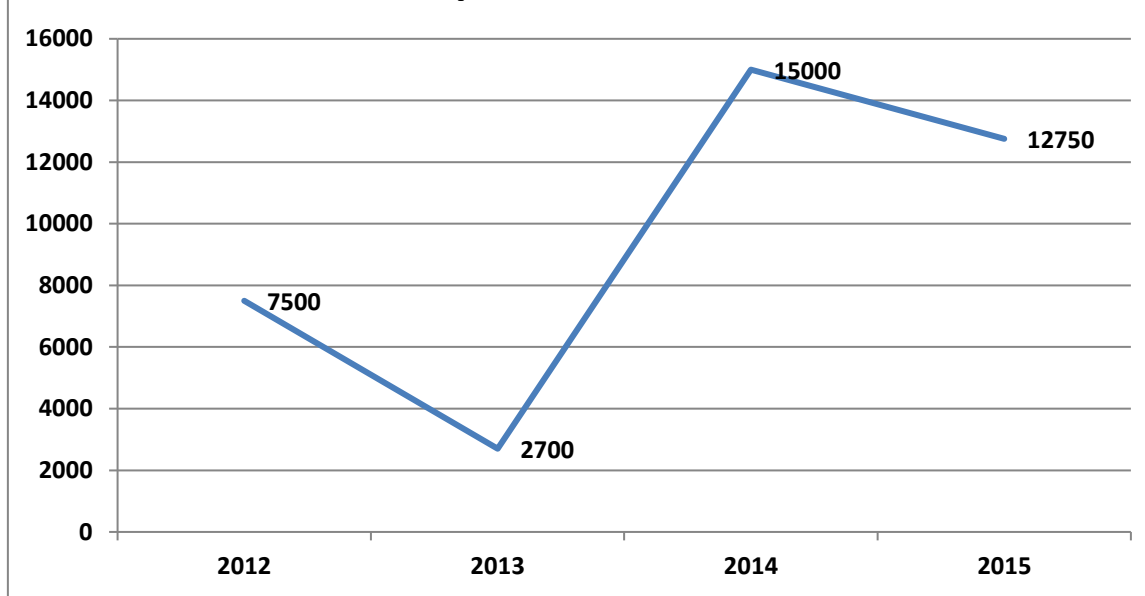
- a) 6180
- b) 7120
- c) 8860
- d) 9900
- e) None of these

Directions (Q 31-35). Study the graph and answer the question.

Below given Line graph shows the number of cars produced in TATA Motors Plant in Pune and Delhi for the year 2012 to 2015. Study the both graphs and answer the questions.



**No of cars produced in Delhi Plant**



**31) What is average number of cars produced in the year 2012?**

- a) 5600
- b) 1570
- c) 7150
- d) 5140
- e) 9350

**32) What is the respective ratio between the number of cars produced in Pune in the year 2014 to the number of cars produced in Delhi for the year 2015?**

- a) 14 : 13
- b) 13 : 14
- c) 17 : 16
- d) 16 : 17
- e) None of these

**33) What is the difference between total numbers of cars produced 2013 to the total number of cars produced in 2014?**

- a) 12000
- b) 15000
- c) 20000
- d) 24000
- e) None of the above

**34) The number of cars produced in Delhi in 2012 are what percent more than number of cars produced in Pune in 2013?**

- a) 45.5%
- b) 74.41%
- c) 65.5%
- d) 45.45%

e) None of the above

**35) The number of cars produced in Delhi in 2015 are what percent less than number of cars produced in Pune in the same year?**

a) 3.77%

b) 6.5%

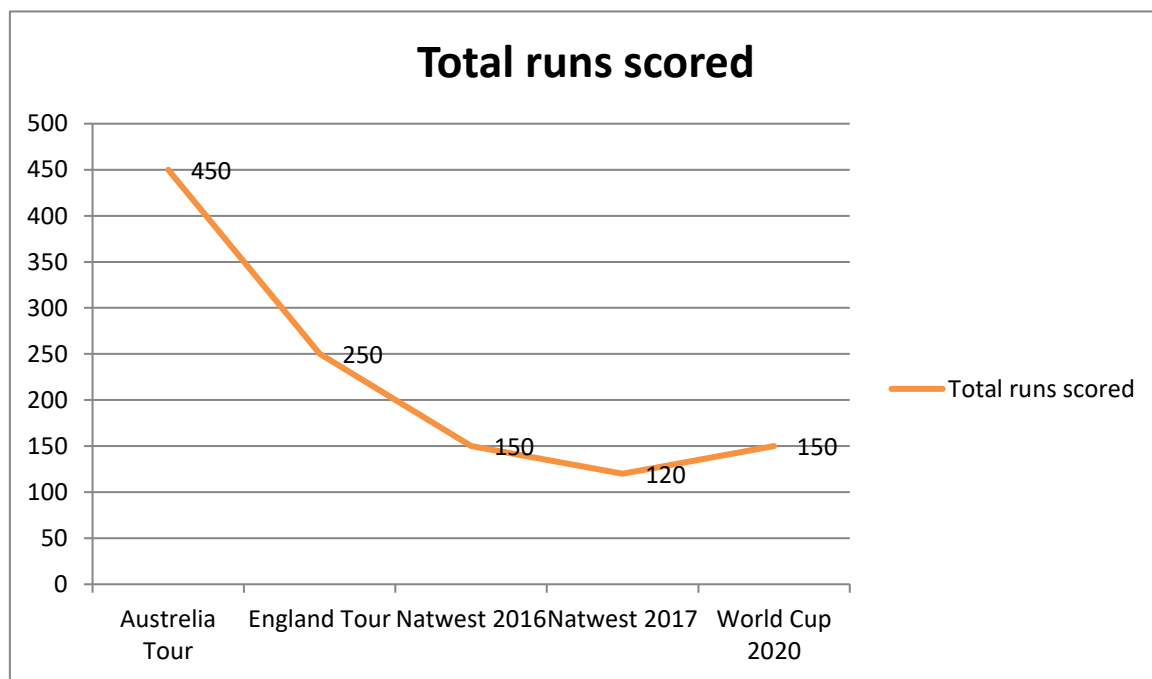
c) 6%

d) 5.5%

e) None of these

**Directions (Q. 36-40) Study the graph and answer the question.**

**Given below line graph shows the runs scored by Mitali in different tournaments. Read the data and answer the questions that follow.**



**36) What is the average runs scored by Mitali in the Natwest Series 2016 if the number of matches played were 5?**

a) 50

b) 55

c) 32

d) 36

e) 30

**37) If the average runs for Australia tour and England tour are 25 and 50 respectively then calculate the percentage difference between numbers of matches played?**

- a) 100%
- b) 81.10%
- c) 17.20%
- d) 56.52%
- e) None of these

**38) What are the average runs scored in the Natwest series by Mitali (Calculate for the both year tournaments if both tournaments had 5 matches each.)**

- a) 25
- b) 18
- c) 27
- d) 31
- e) None of these

**39) If Shreya scored 25% more runs than Mitali in Australia tour and played one match less then her.**

**Calculate the average runs scored by Shreya? Take matches played by Mitali = 7**

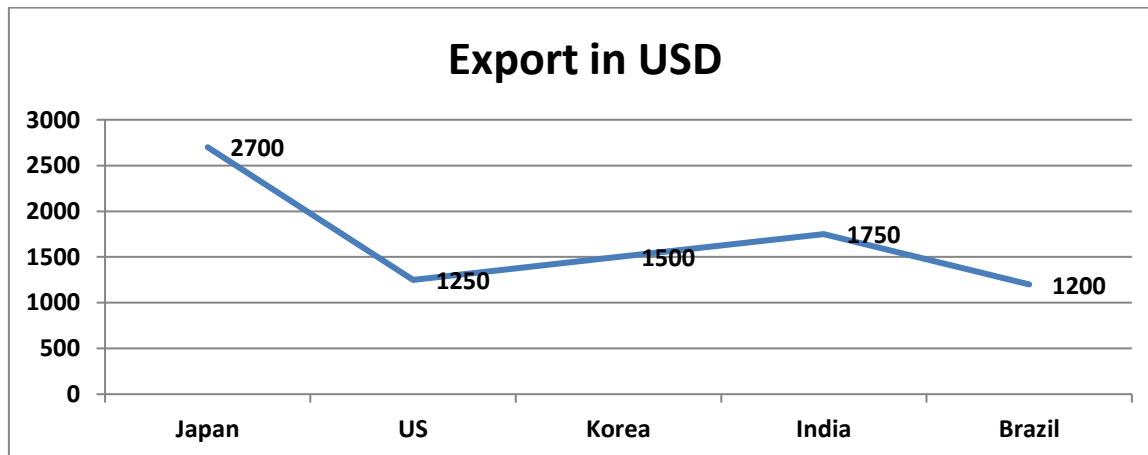
- a) 93.75
- b) 42.21
- c) 22.21
- d) 23.66
- e) None of the above

**40) What is the ratio of number of runs scored by Mitali in England tour to the number of runs scored by her in world cup?**

- a) 5 : 3
- b) 3 : 5
- c) 4 : 5
- d) 5 : 5
- e) None of these

**Directions (Q.41-45) Study the graph and answer the question.**

**Below given line graph shows the export of China in US Dollars to different countries in 2012. Study the following graph and answer the questions that follow.**



**41) What is the average export made to the Japan and Korea together?**

- a) 2100
- b) 2630
- c) 1450
- d) 2350
- e) None of these

**42) The export made in India increased by 12% in next two years then what is the export in 2014 to the India made by China?**

- a) 1256.9 USS
- b) 1295.4 USS
- c) 1259.8 USS
- d) 2195.2 USS
- e) None of these

**43) What is the ratio of export to the Brazil in 2012 to the export made to US in 2012?**

- a) 7 : 25
- b) 9 : 17

c) 24: 25

d) 6 : 13

e) None of these

**44) What are the average exports to all the countries together?**

a) 1640

b) 1680

c) 8900

d) 9800

e) None of these

**45) The export made to the Korea is what percent more than the export made to Brazil?**

a) 25%

b) 34%

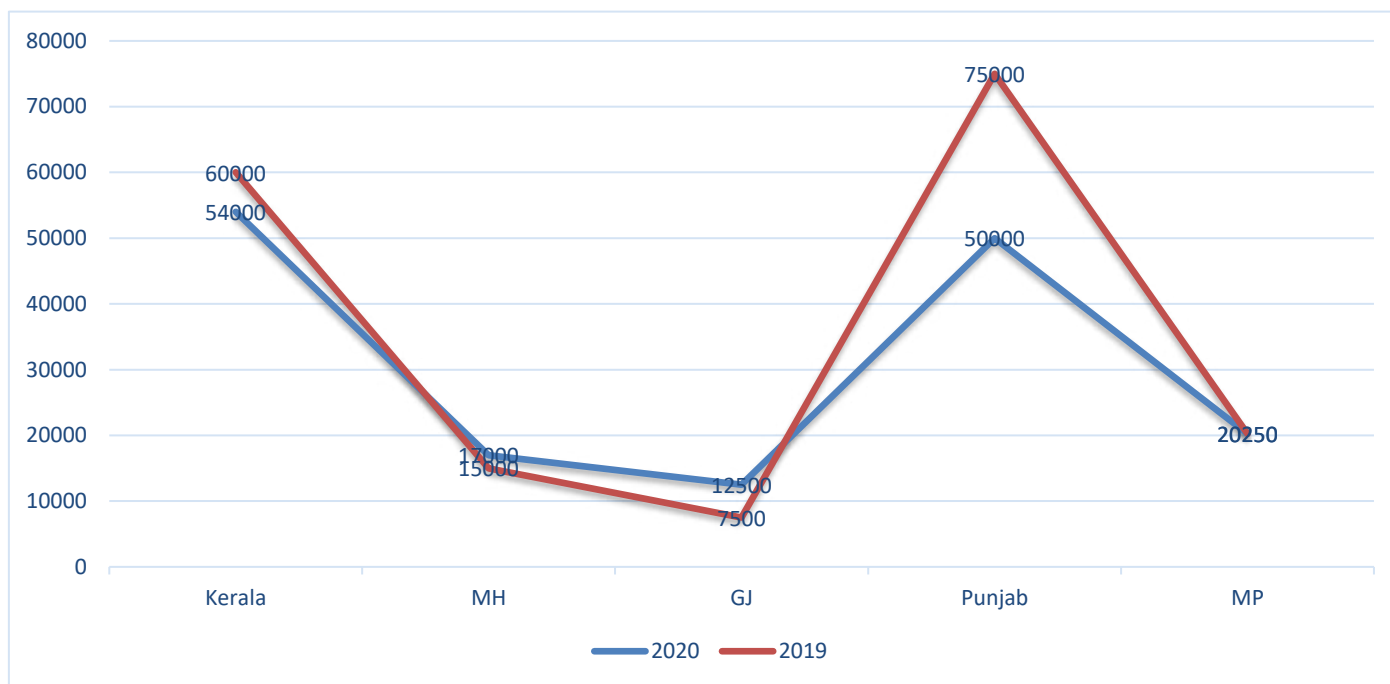
c) 31%

d) 30%

e) None of the above

**Directions (Q.46-50) Study the graph and answer the question.**

**Given below Line graph shows the number of trees planted under MNREGA mission in different states in different years 2020 and 2019.**



**46) What is the ratio of number of trees planted by MH in 2020 to the number of trees planted by GJ in the year 2019?**

- a) 34 : 15
- b) 23 : 25
- c) 14 : 15
- d) 15 : 17
- e) None of these

**47) If the target for 2021 is 25% more plantation of trees than previous year total number of trees then what is the target?**

- a) 32569
- b) 187192
- c) 121870
- d) 192187

e) None of these

**48) The total number of trees planted by Kerala are what percent more / less than total number of trees planted by MP?**

- a) 13.0%
- b) 19.25%
- c) 81.48%
- d) 60%
- e) None of these

e) None of these

**49) What is the ratio of number of trees planted by Kerala in 2020 to the number of trees planted by Punjab in the year 2019?**

- a) 25 : 18
- b) 18 : 25
- c) 7 : 25

d) 25 : 7

e) None of these

**50) What is average number of trees planted in 2020 by all the states together ?**

a) 30750

b) 30330

c) 31000

d) 30350

e) None of the above

## Line Graph DI - Answer and Explanation

### 1-5. Common Explanation:

**1) Answer: E**

$$\begin{aligned}\text{Desired average} &= (250+300+200)/3 \\ &= 750/3 \\ &= 250\end{aligned}$$

**2) Answer: B**

Number of males who visited wall mart on Monday, Tuesday and Friday =  $300+250+200=750$

Number of females who visited wall mart on Wednesday, Tuesday and Friday =  $300+350+250=900$

$$\begin{aligned}\text{Difference} &= 900-750 \\ &= 150\end{aligned}$$

**3) Answer: D**

On Wednesday = 650

On Monday = 500

$$\begin{aligned}\% \text{ increase} &= 650-500/500 \\ &= 30\%\end{aligned}$$

**4) Answer: D**

Number of males on Saturday =  $200 * 125/100$

$$= 250$$

$$\begin{aligned}\text{Number of females on Saturday} &= 250 * 90/100 \\ &= 225\end{aligned}$$

$$\text{Total} = 250 + 225 = 475$$

**5) Answer: B**

$$\begin{aligned}\text{Average number of females} &= \\ (200+350+300+150+250) / 5 &= 250\end{aligned}$$

$$\begin{aligned}\text{Average number of males} &= \\ (300+250+350+300+200) / 5 &= 280\end{aligned}$$

$$\begin{aligned}\text{Desired ratio} &= 250/280 \\ &= 25/28\end{aligned}$$

### 6-10. Common Explanation:

**6) Answer: C**

$$\begin{aligned}\text{Defective articles sold by A in 2012 and 2014} &= \\ (20/100 * 78 + 15/100 * 159) * 1000 &= \\ = 15600+23850 &= 39450\end{aligned}$$

$$\begin{aligned}\text{Required \%} &= \{39450 / (78+159 * 1000)\} * 100 \\ &= 16(51/79) \%\end{aligned}$$

**7) Answer: A**

$$\begin{aligned}\text{Required ratio} &= (141+78+120) / (139+120+100) \\ &= 339/359\end{aligned}$$

**8) B**

$$\begin{aligned}\text{Required percentage} &= \{(119+141) - (128+107)\} / \\ &(128+107) * 100 \\ &= 10(30/47) \%\end{aligned}$$

**9) Answer: B**

$$\begin{aligned}\text{Articles sold by A in 2008} &= 220/100 * (139-119) \\ &= 220/100 * 20 = 44 \\ \text{Required \%} &= (139-44)/139 * 100 = 95/139 * 100 \\ &= 68(48/139)\%\end{aligned}$$

**10) Answer: B**

$$\begin{aligned}\text{Required difference} &= 1/5(597-594) = 3/5 \\ &= 0.6 \text{ thousands}\end{aligned}$$

### 11-15. Common Explanation:

**11) Answer: B**

$$\begin{aligned}\text{Required ratio} &= (350+375+450) / (400+425+475) \\ &= 1175/1300 = 47:52\end{aligned}$$

**12) Answer: C**

$$\text{Difference in 2003} = 50$$

$$\text{Difference in 2004} = 50$$

$$\text{Difference in 2005} = 100$$

$$\text{Difference in 2006} = 125 \text{ maximum}$$

$$\text{Difference in 2007} = 25$$

$$\text{Difference in 2008} = 50$$

$$\text{Difference in 2009} = 50$$

**13) Answer: C**

$$\text{Profit of A in 2010} = (100 + 200/17) \% * 425 = 475$$

$$\text{Profit in B in 2010} = (100 + 300/19)\% * 475 = 550$$

$$\begin{aligned}\text{Required sum} &= 475 + 550 \\ &= 1025\end{aligned}$$

**14) Answer: A**

$$\text{Total profit in 2003} = 850$$

$$\text{Total profit in 2004} = 900$$

$$\text{Total profit in 2005} = 1000$$

$$\text{Total profit in 2006} = 975$$

$$\text{Total profit in 2007} = 1175$$

$$\text{Total profit in 2008} = 1200$$

$$\text{Total profit in 2009} = 1300$$

$$\text{Required \%} = 1300/850 * 100 = 152\frac{16}{17}\%$$

**15) Answer: E**

$$\text{Profit of C in 2002} = 75/100 * 400 = 300$$

$$\text{Profit of B in 2002} = 300/5 * 2 = 120$$

$$\text{Required percentage} = 475-120/120 * 100 \approx 296$$

### 16-20. Common Explanation:

**16) Answer: C**

$$\begin{aligned}\text{Required ratio} &= \{(150+350+250)/3\} / \\ &\{(150+350+300)/3\} \\ &= 750/850 = 15/16\end{aligned}$$

**17) Answer: B**

$$\text{Total funds in 2002} = 250+200+150 = 600 \text{ crore}$$



Total funds in 2005 =  $300+250+50 = 600$  crore

Both are equal, hence 0%

**18) Answer: C**

Funds allocated to Maharashtra in 2006 =  $50 * 1.1 = 55$  crore

Funds allocated to Andhra Pradesh in 2006 =  $300 * 1.2 = 360$  crore

Funds allocated to Karnataka in 2006 =  $250 * 1.4 = 350$  crore

Required average =  $55+360+350/3 = 765/3$   
= 255 crore

**19) Answer: D**

Funds allocated to Maharashtra in 2001, 2002 and 2003  
=  $300+200+250 = 750$

Funds allocated to Karnataka in 2003, 2004 and 2005 =  
 $200+350+250 = 800$

Required % =  $(800-750)/800 * 100$   
=  $50/8 = 6.25\%$

**20) Answer: A**

Required average =  $\{(600/3) + (600/3)\} / 2 = 200$  crore

**21-25. Common Explanation:**

**21) Answer: A**

Total registered voters from chandani chowk =  $160 * 100 / 80 = 200$

Total registered voters from purani Delhi =  $(480 * 100) / (800/9) = 540$

Required sum  $200+540 = 740$

**22) Answer: E**

Total polled votes from both constituencies in 2015 =  
 $560+180 = 740$

Valid votes from purani Delhi =  $740 * 80/100 * 5/8 = 370$

Invalid votes from purani Delhi =  $560-370 = 190$

**23) Answer: C**

Required % =  $480/520 * 100 = 92\frac{4}{13}\%$

**24) Answer: B**

Required ratio =  $(160+280+180) / (300+560+520)$   
= 31:69

**25) D**

Required percentage =  $560-520 / 560 * 100 = 40/560 * 100$   
=  $\frac{50}{7}\%$

**Solution (26-30).**

**26) Answer A**

Savings in 2012 =

Savings for July 2012 =  $15000 - 12000$   
= 3000

Savings in the month of Sept. =  $13200 - 9800$   
= 3400

Total savings =  $3000 + 3400$   
= 6400

Now, we calculating the Savings in 2013 =

Income of month July in 2013 = 10% more than July 2012

$$= 110\% \times 15000$$

$$= 16500$$

Savings in July 2013 = 16500 – 12000

$$= 4500$$

Now,

Income in Sept 2013 = 25% more than Sept 2012

$$= 125\% \times 13200$$

$$= 16500$$

New savings for Sept = 16500 – 9800

$$= 6700$$

Total savings = 6700 + 4500

$$= 11200$$

Percentage Change =  $(11200 - 6400) / 6400 \times 100$

$$= 75\%$$

### 27) Answer D

Saving in June 2012 = There is no savings made by Mr. Akshay

Saving in July 2012 = 15000 – 12000

$$= 3000$$

Average =  $3000 / 2 = 1500$

Savings in August 2012 = 17750 – 15000 = 2750

Savings in Sept 2012 = 13200 – 9800 = 3400

Average =  $(2750 + 3400) / 2 = 3075$

Percentage less =  $(3075 - 1500) / 3075 \times 100$

$$= 51.21\%$$

### 28) Answer C

Income in July 2012 = 15000

Expenditure in Sept 2012 = 9800

Percentage more =  $(15000 - 9800) / 9800 \times 100$

$$= 53.06\% \approx 53\%$$

### 29) Answer B

Savings in the month of August = 17750 – 15000

$$= 2750$$

Average income in June and July =  $20000 + 15000 / 2$

$$= 17500$$

Required ratio = 2750: 17500

$$= 11 : 70$$

### 30) Answer A

Lets calculate the total expenditure in the year 2012 =  $25000 + 12000 + 15000 + 9800$

$$= 61800$$

Each month it is increased by 10% so total is increased by 10%

$$= 61800 \times 110 / 100 = 67980$$

Required difference = 6180

### Solution (31-35)

### 31) Answer E

Average number of cars produced in 2012

$$= 11200 + 7500 / 2$$

$$= 9350$$

### 32) Answer D

Number of cars produced in Pune in the year 2014 = 12000

Number of cars produced in Delhi for the year 2015 = 12750

Required ratio = 12000 : 12750  
= 16 : 17

**33) Answer C**

Total number of cars produced 2013 = 4300+2700  
= 7000

Total number of cars produced in 2014 = 12000+15000  
= 27000

Required difference = 27000-7000  
= 20000

**34) Answer B**

number of cars produced in Delhi in 2012 = 7500

Number of cars produced in Pune in 2013 = 4300

Required percentage more =  $(7500-4300) / 4300 \times 100$   
= 74.41%

**35) Answer A**

The number of cars produced in Delhi in 2015= 12750

Number of cars produced in Pune in the same year =- 13250

Percentage less =  $(13250-12750) / 13250 \times 100$   
= 3.77%

**Solution (36-40)**

**36) Answer E**

Total scored by Mitali in the Natwest Series 2016 = 150

No of matches played = 5

Average =  $150 / 5$   
= 30

**37) Answer D**

Average runs for Australia tour are 25

Total runs for Australia tour = 450

No of matches =  $450 / 25$   
= 18

Average runs for England tour 50.

Total runs scored in England tour = 250

No of matches =  $250 / 50 = 5$

Percentage difference =  $(18 - 5) / 23 \times 100$   
= 56.52%

**38) Answer C**

Both year tournaments if both tournaments had 5 matches each

Total number of matches =  $5 + 5 = 10$

Average runs scored in the Natwest series = Total / no of matches

Total number of runs in Natwest =  $150+120 = 270$   
=  $270 / 10$   
= 27

**39) Answer A**

Shreya scored 25% more runs than Mitali in Australia tour = 125% of 450  
= 562.5

And played one match less then her  $(7) = 7-1 = 6$

Average =  $562.5 / 6$

= 93.75

**40) Answer A**

Number of runs scored by Mitali in England tour = 250

Number of runs scored by her in world cup = 150

Required ratio =  $5 : 3$

**Solution (41-45)**

**41) Answer A**

Average export made to the Japan and Korea =

$2700+1500 / 2$

= 2100

**42) Answer D**

The export made in India increased by 12% in next two years =

=  $1.12 \times 1.12 \times 1750$  USS

= 2195.2 USS

**43) Answer C**

Export made to Brazil = 1200

Export made to US = 1250

Required ratio =  $24 : 25$

**44) Answer B**

Average exports to all countries =

$(2700+1250+1500+1750+1200) / 5$

= 1680 USS

**45) Answer A**

Export made to the Korea = 1500

The export made to Brazil = 1200

Required percent =  $(1500-1200) / 1200 \times 100$

= 25%

**Solution (46-50)**

**46) Answer A**

Number of trees planted by MH in 2020 = 17000

Number of trees planted by GJ in the year 2019 = 7500

Required ratio =  $34 : 15$

**47) Answer D**

Total number of trees planted by all states in 2020

=  $54000+17000+12500+50000+20250$

= 153750

Target for 2021 = 25% of 153750

=  $192187.5 \approx 192187$

**48) Answer C**

Number of trees planted by Kerala = 114000

Total number of trees planted by MP = 40500

Required percentage =  $(114000- 40500) / 40500 \times 100$

= 181.48%

**49) Answer B**

Number of trees planted by Kerala in 2020 = 54000

Number of trees planted by Punjab in the year 2019 = 75000

Required ratio =  $18 : 25$

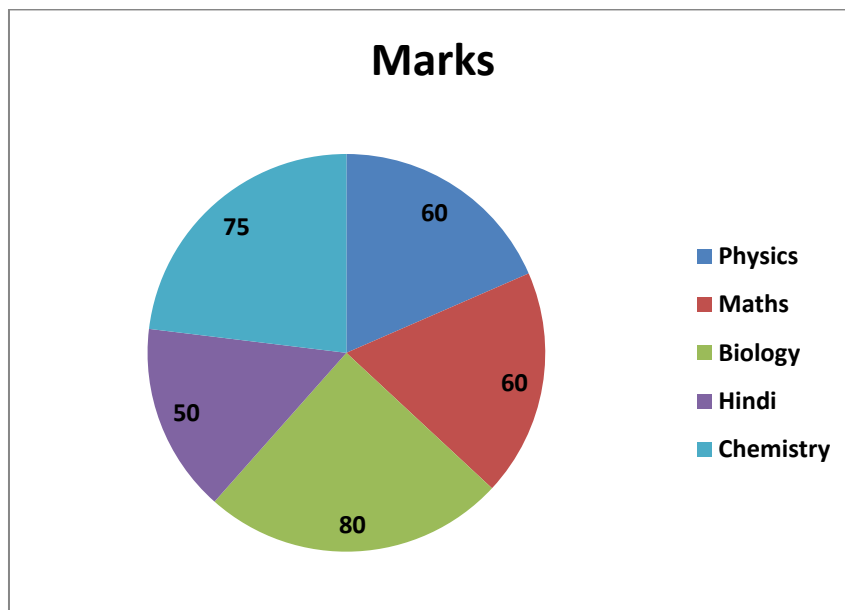
**50) Answer A**

Average number of trees planted in 2020 by all the states together = 
$$= (54000+17000+12500+50000+20250) / 5$$
$$= 30750$$

## Pie Chart DI

1-5). Study the following pie chart and answer the questions that follow.

Below given pie chart shows the marks obtained by Rajiv in his test out of 100 marks each. There were 5 subjects for the test i.e. Physics, Maths, Chemistry, Biology and Hindi.



1. What is the overall percentage obtained by Rajiv in all the five subjects together?

- A. 55%
- B. 65%
- C. 75%
- D. 85%
- E. None of these

2. In which subject he got maximum percentage individually?

- A. Maths

- B. Physics
- C. Biology
- D. Chemistry
- E. None of the above

3. If there was another subject included in which he got 75 marks out of 150 then by what percent the total marks obtained by him increased?

- A. 23%
- B. 24%
- C. 25%

- D. 26%
- E. None of these

4. What is the average mark obtained by Rajiv in all the five subjects together?

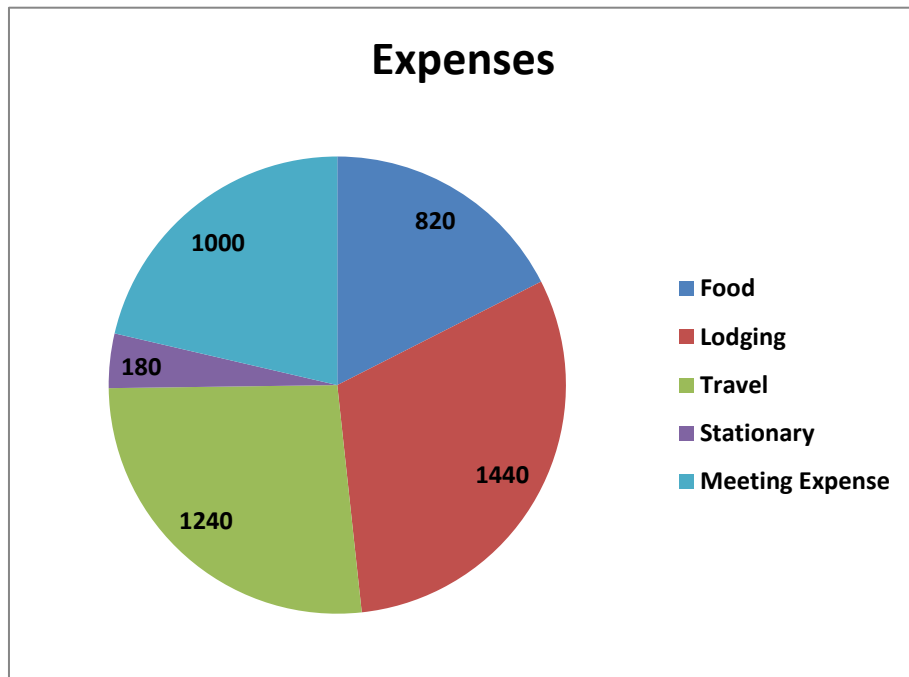
- A. 55
- B. 65
- C. 75
- D. 85
- E. None of these

5. What should be the total of marks if he wants to increase his percentage by 10% than the previous one obtained by him?

- A. 325.5
- B. 365.5
- C. 357.5
- D. 350
- E. None of these

6-10). Study the following pie chart and answer the questions that follow.

Below given pie chart shows the expenditure on different items made by Shivani when she was on a business tour for 3 days on company expenses.



6. What percentage of total expenditure was spent on food items by Shivani?

- A. 16.52%
- B. 17.52%

C. 17.57%

D. 16.57%

E. None of these

**7. The expenditure on lodging is how much percent more/less than the average expenditure by Shivani in all sectors together?**

A. 49%

B. 48.23%

C. 48%

D. 49.57%

E. None of these

**8. What is total amount spent on travel and meeting expenses together?**

A. 2240

B. 3240

C. 2260

D. 3250

E. None of these

**9. If she will get 75% of the total expenditure made by her during the stay then what amount she will have to pay from her pocket?**

A. 1170

B. 1270

C. 1180

D. 1280

E. None of these

**10. What is her average daily expenditure on the whole tour?**

A. 1550

B. 1330

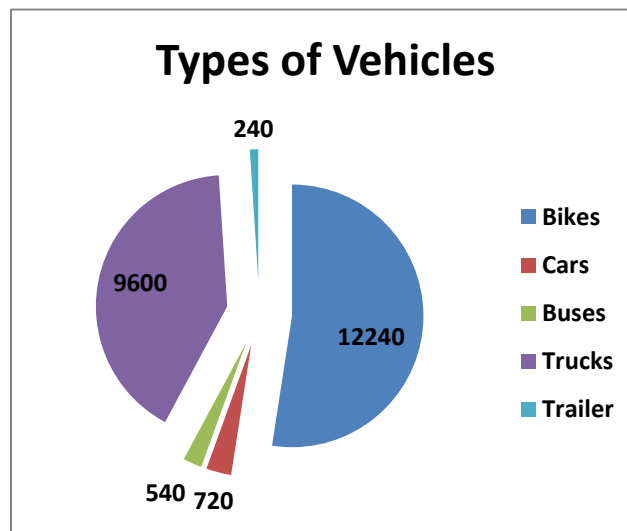
C. 1240

D. 1560

E. None of these

**11-15). Study the following pie chart and answer the questions that follow.**

**Below given Pie Chart shows the traffic in terms of number of vehicles of type of vehicle passed from a toll plaza on Ahmedabad Mumbai Highway.**



**11. If the Toll amount for car is 40 Rs and Free for bikes then what will be the total revenue obtained by toll collecting company from Car and Bikes?**

- A. 26600
- B. 28800
- C. 26800
- D. 28600
- E. None of these

**12. The number of Trucks is what percent more than the number of trailers?**

- A. 3300%
- B. 3700%
- C. 3900%
- D. Cannot be determined.
- E. None of these

**13. How many types of vehicles were more than the average number of vehicles through the toll plaza?**

- A. 2
- B. 3
- C. 4
- D. 5
- E. None of these

**14. If the Trailer were charged 200 Rs and Car were charged 12 Rs then the difference between the revenue obtained is?**

- A. 25980
- B. 34560
- C. 36390
- D. 39360
- E. None of these

**15. By what number trucks should be increased on the toll plaza for the revenue to be increased from Trucks to two lakh Rs.? (Truck charged at 20 Rs Per truck)**

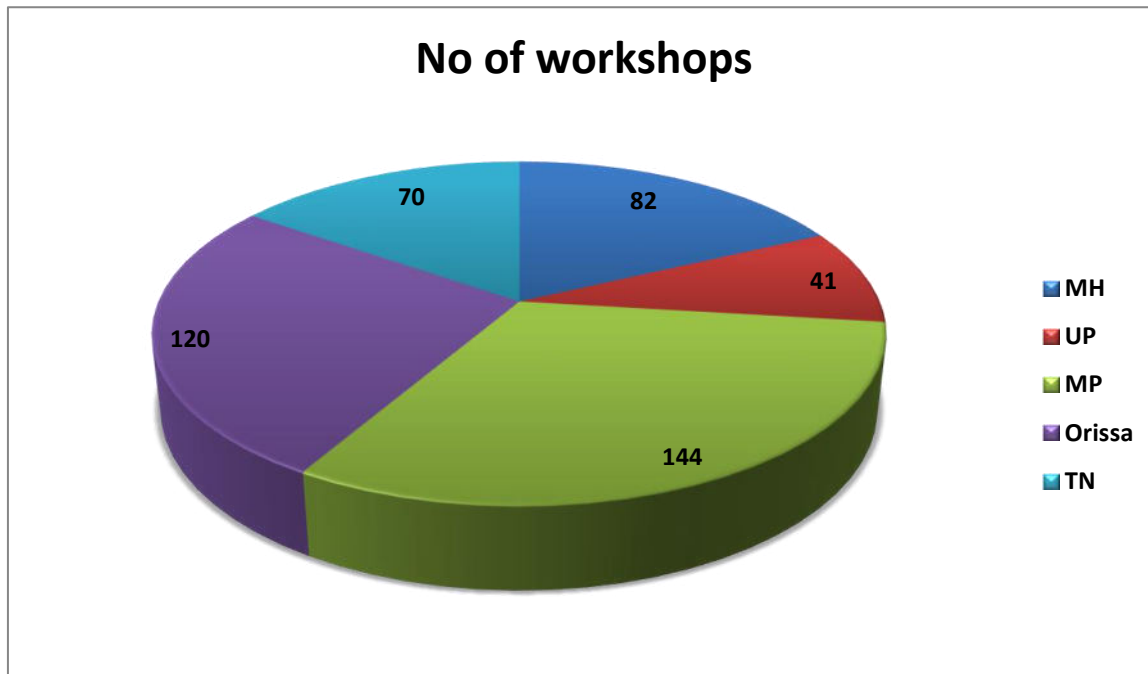


- A. 400
- B. 500
- C. 600

- D. 700
- E. None of these

16-20). Study the following pie chart and answer the questions that follow.

The following pie chart shows the distribution of number of workshops ABC Servicing pvt. ltd. having in different states of India. Each Workshop employs different number of workers depending on the Tier of the center i.e. Tier I, II or III.



16. What is the number of workshops together in UP and MP?

- A. 181
- B. 175
- C. 185
- D. 197
- E. None of these

17. Average number of workshops is by what number more or less than the number of workshops in Orissa?

- A. 29
- B. 30
- C. 31
- D. 33
- E. None of these

18. If Orissa has 20% Tier I and Tier II each. And Tier I, II and III type has 10. 20, 30 workers respectively then the total number of workers in Orissa are?

- A. 2680
- B. 2880
- C. 2741
- D. 2312
- E. None of these

19. By what percent the number of workshops in MH is more or less than the number of workshops in TN?

- A. 23.23%

- B. 12.23%
- C. 14.17%
- D. 17.14%
- E. None of these

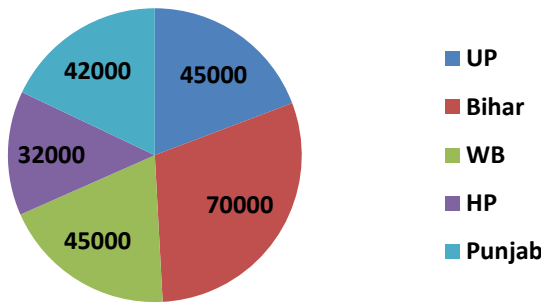
20. What is the difference between average number of workshops in TN and Orissa together to the average number of workshops in UP and MP together?

- A. 25
- B. 1.5
- C. 2.5
- D. 15
- E. None of these

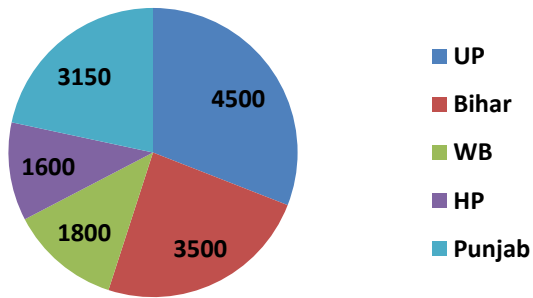
21-25). Study the following pie chart and answer the questions that follow.

Below given pie chart shows the number of students appeared for the IBPS Clerk exam in 2020 and second pie chart shows the number of students who got selected from the exam. Different number of students appeared from different states.

No of Students appeared



No of students selected



**21. Which of the following states has the highest selection percentage out of number of students appeared?**

- A. UP
- B. Bihar
- C. WB
- D. HP
- E. None of these

**22. Which of the following states has same number of selected students from the given exam?**

- A. UP and WB
- B. Bihar and WB
- C. Punjab and HP
- D. UP and HP
- E. None of these

**23. What is the percentage of selection from Bihar state and Punjab state together?**

- A. 5%
- B. 6%

C. 7%

D. 8%

E. None of these

**24. The average number of applications is what percent of the total number of selected students from all the states together?**

A. 224.67%

B. 325.23%

C. 123.65%

D. 321.64%

E. None of these

**25. Which of the following state have highest selection percentage among all the states considered?**

A. UP

B. Bihar

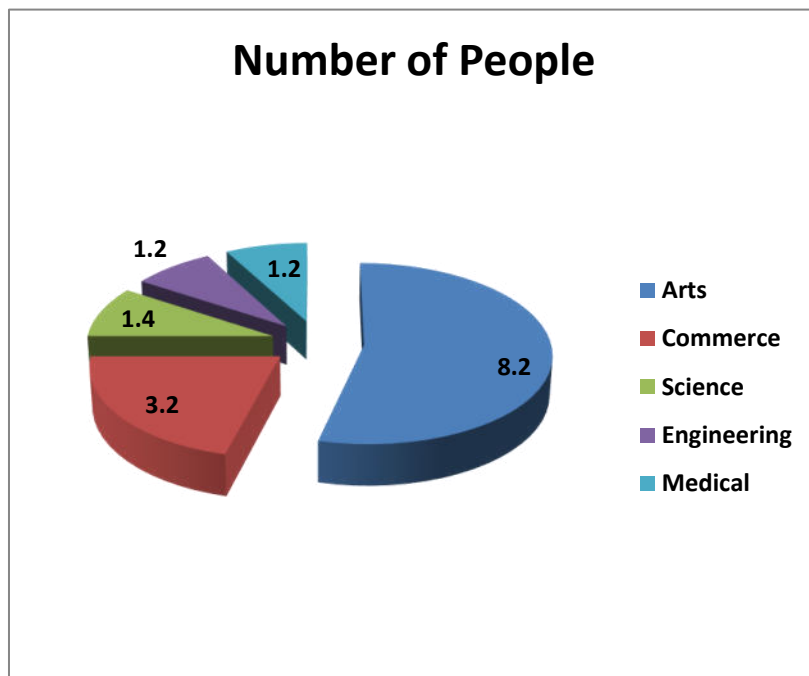
C. WB

D. Punjab

E. None of these

**26-30). Study the following pie chart and answer the questions that follow.**

**Below given pie chart shows the number of people in '000 who attended the conference on Success in Banking Exams. Different number of people in '000s from different streams attended the conference.**



**26. The number of people who attended the conference from Arts background are how much more/ less than the number of people from Engineering background?**

- A. 5000
- B. 6000
- C. 7000
- D. 8000
- E. None of these

**27. What is the average number of people who have attended the conference from Science and Medical background together?**

- A. 1300
- B. 1400
- C. 1500

D. 1600

E. None of these

**28. By what percent the number people from Commerce field should have been more to make half of the total audience for the conference?**

- A. 125.7%
- B. 225.5%
- C. 137.5%
- D. 135%
- E. None of these

**29. The number of people from Medical field is what percent of the number of people from engineering field who attended the conference?**

- A. 100%
- B. 200%

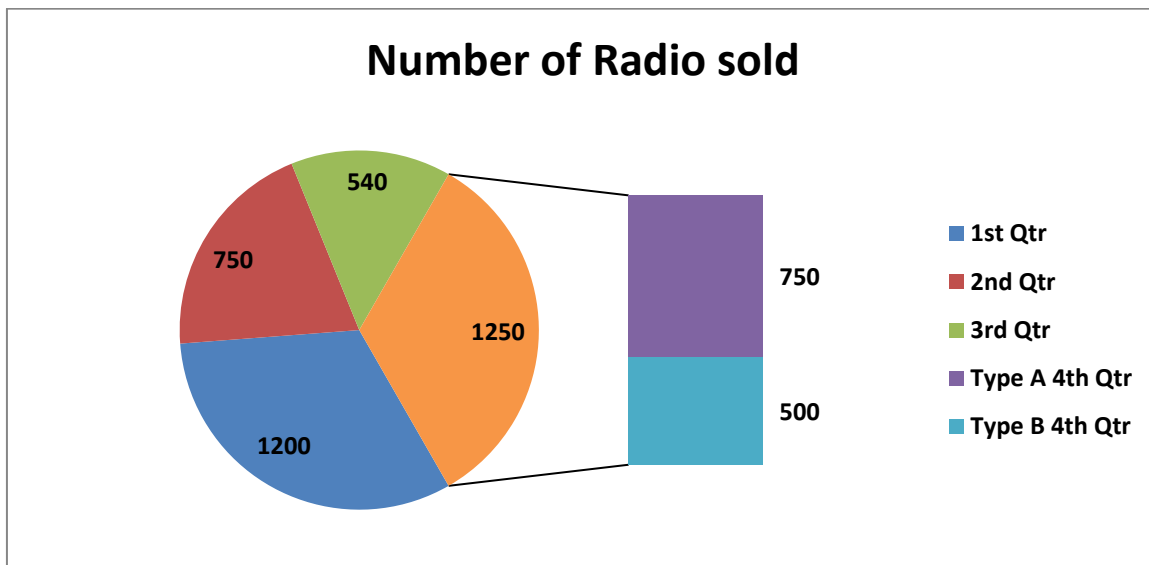
- C. 150%
- D. 120%
- E. None of these

30. What is the ratio of number of people from Arts stream to the number of people from Science stream?

- A. 7 : 41
- B. 41 : 7
- C. 8 : 15
- D. 15 : 8
- E. None of these

31-35). Study the following pie chart and answer the questions that follow.

Company A sells two types of Radio i.e. Type A and Type B. The number of Radio sold in 4 quarters of the year 2012 are shown in below mentioned pie chart and Type A and B distribution figures for quarter 4 are also given.



31. By what percent the sales of Qtr II was more than the number of Radio A sold in Qtr 4?

- A. 100%
- B. 150%
- C. Cannot be determined.
- D. The sales figure was same.
- E. None of these

32. What is the number of Radio A sold in the Qtr I?

- A. 750
- B. 500
- C. 250
- D. Cannot be determined.
- E. None of these

**33. If the number of Radio sold of type A in the Qtr IV are 20% less then the total number of Radio sold in Qtr IV are?**

- A. 1100
- B. 1200
- C. 1300
- D. 1400
- E. None of these

**34. What is the average number of Radio sold in all the four Qtrs together?**

- A. 814
- B. 900

C. 934

D. 935

E. None of these

**35. What is the Ratio of the number of Radio sold in first half of the year to the number of Radio sold in second half of the year?**

A. 179 : 195

B. 195 : 179

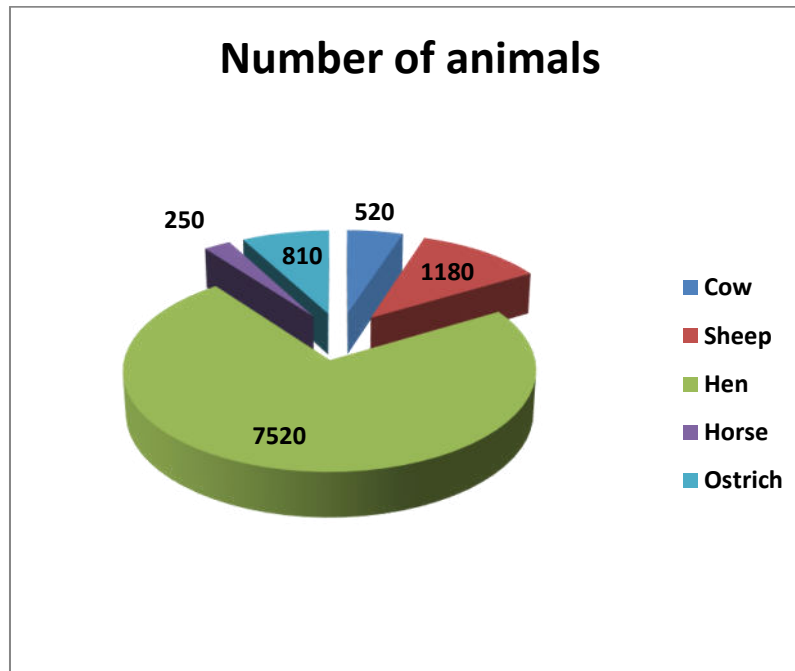
C. 155 : 157

D. 157 : 155

E. None of these

**36-40). Study the following pie chart and answer the questions that follow.**

**The following pie chart shows the number of animals according to their type a farmer has with him.**



**36. If the selling cost of one hen is 200 Rs and selling cost of one Horse is 20,000 then what is the difference between revenue obtained?**

- A. 3694000
- B. 3946000
- C. 3496000
- D. 3369000
- E. None of these

**37. The number of legs of Ostrich are what percent more or less than number of legs of Sheep with the farmer?**

- A. 65.67%
- B. 67.65%
- C. 64.33%
- D. 61.67%
- E. None of these

**38. What is the ratio of the number of Cow to the number of Sheep with the farmer?**

- A. 59 : 26
- B. 23 : 25
- C. 23 : 41
- D. 26 : 59
- E. None of these

**39. For which type of the animal the number is more than the average number of animals with the farmer?**

- A. Hen
- B. Sheep
- C. Horse
- D. Cow
- E. None of these

**40. Find the total number of birds with the farmer?**

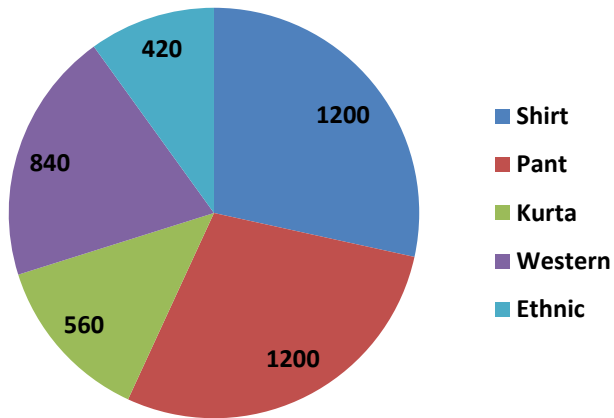
- A. 8500
- B. 8100
- C. 8320
- D. 8330
- E. None of these

**41-45). Study the following pie chart and answer the questions that follow.**

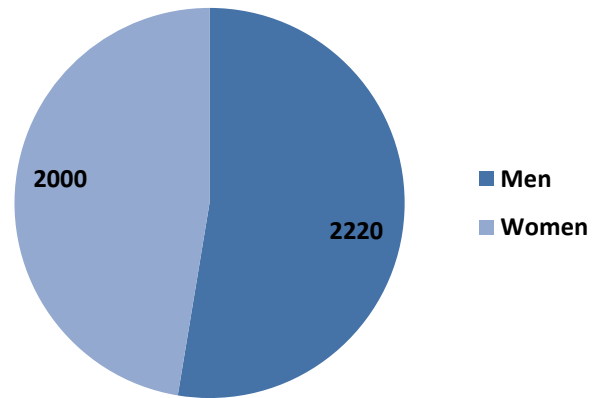
**Numbers of clothes of different types which are sold during this season are shown in pie chart no 1. And second pie chart shows the number of male and female customers who have purchased the given number of clothes this season.**

**Total number of clothes sold = 4220**

### Sales



### Sales



**41. The shopping made by female is what percent less than the total shopping made by the male shoppers?**

- A. 9.90%
- B. 9.95%
- C. 8.5%
- D. Cannot be determined.
- E. None of these

**42. What is the difference between the numbers of western clothes sold to the number of ethnic clothes sold in the season?**

- A. 500
- B. 420
- C. 320
- D. 240
- E. None of these

**43. What is the ratio of number of clothes sold female customers to the number of Kurtas sold in the season?**

- A. 15 : 7
- B. 7 : 15
- C. 25 : 7
- D. 7 : 25
- E. None of these

**44. If the percentage increase in number of customers is 20% for the next season then the total number of customers in the next season is?**

- A. 1265
- B. 6054
- C. 5064
- D. 5040



E. None of these

45. The ratio of number of Shirt sold to the number of pants sold is?

A. 1 : 1

B. 1 : 2

C. 2 : 1

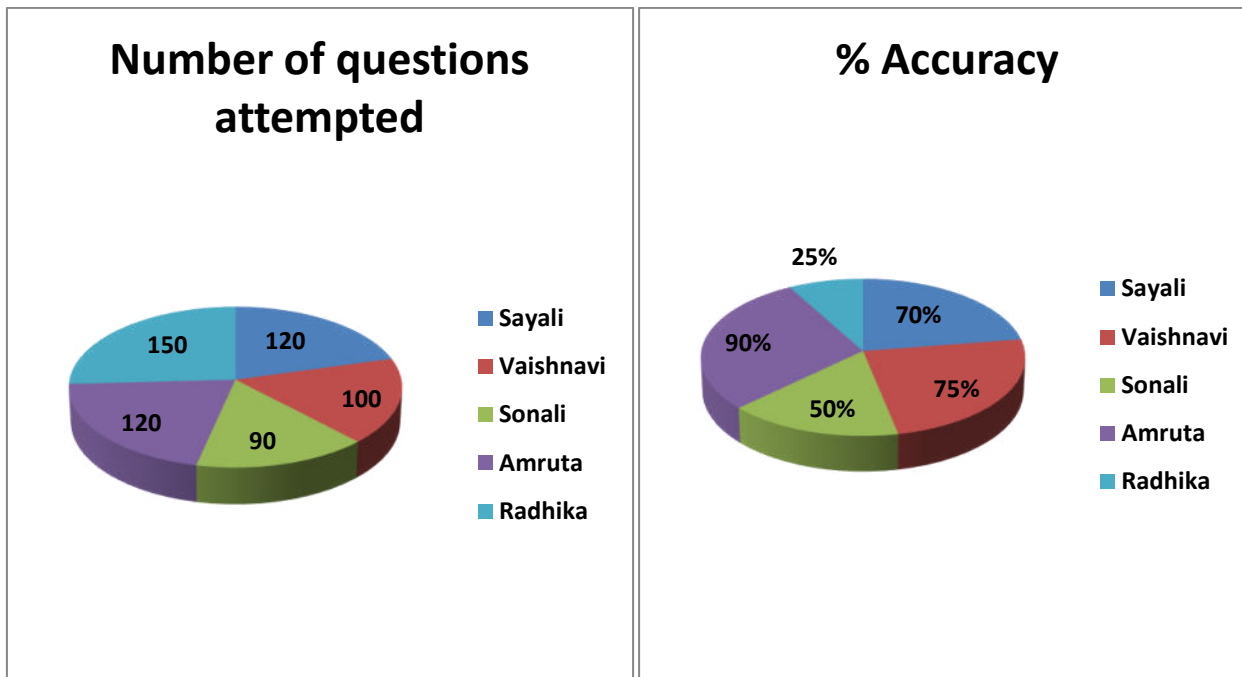
D. 1 : 3

E. None of these

46-50). Study the following pie chart and answer the questions that follow.

Different numbers of questions solved by different students in an examination are given in below mentioned pie chart and another pie chart shows the percentage accuracy of the students.

Total number of questions - 200



46. If each question carries 2 marks and there is no negative marks then who among the following got maximum marks?

A. Radhika

B. Sonali

C. Sayali

D. Amruta

E. None of these

47. Who among the following has highest accuracy in the exam?

A. Sayali

B. Amruta

C. Radhika

D. Sonali

E. None of these

**48. What is the ratio of total number of questions solved by Sayali and Vaishnavi together to the total number of questions solved by Amruta and Radhika?**

A. 11 : 13

B. 27 : 22

C. 22 : 27

D. 13 : 11

E. None of these

**49. By what percent the number of question solved by Sonali are more/less than the number of questions solved by Vaishnavi?**

A. 10% more

B. 10% less

C. 15% more

D. 15% less

E. None of these

**50. Whats the average number of accurate questions solved by all of them together?**

A. 64.67

B. 65

C. 69.9

D. 67

E. None of these

## Pie Chart DI - Answer and Explanation

**1. Answer: B**

Overall percentage obtained =  $\frac{\text{total obtained marks}}{\text{total marks}}$

$$= (325 / 500 \times 100)$$

$$= 65\%$$

**2. Answer: C**

Percentage of marks in each subject will be directly related to marks obtained in that test.

Total marks for each test are same.

So he got maximum marks as well as maximum percentage in Biology.

**3. Answer: A**

If there would have been a new subject having marks 75 out of 150.

Pervious total of marks = 325

$$\text{New total} = 325 + 75 = 400$$

$$\text{Perenatge increase} = (400-325) / 325 \times 100$$
$$= 23\%$$

**4. Answer: B**

Average marks obtained by him = Total / 5

$$= 325 / 5 = 65$$

**5. Answer: C**

If Rajiv wants to increase percentage obtained by 10%

$$\text{New total} = 325 \times 110 / 100$$

$$= 357.5$$

**6. Answer: B**

Percentage of total expenditure on food = (Expenditure on food / Total Exp.)  $\times$  100

$$= 820 / 4680 \times 100$$

$$= 17.52\%$$

**7. Answer: D**

Average expenditure on all sectors together = ( Total / No of sector)

$$= (4680 / 5) = 936$$

$$\text{Expenditure on Lodging} = 1440$$

$$\text{Percentage more} = (1440 - 936) / 936 \times 1000$$

$$= 49.57\%$$

**8. Answer: A**

$$\begin{aligned} \text{Total amount spent on travel and meeting expenses} &= \\ 1240 + 1000 &= 2240 \end{aligned}$$

**9. Answer: A**

If she gets 75% of expenditure made then she will not receive 25% of the expenditure made.

$$= 4680 \times 25 / 100 = 1170$$

She will have to pay 1170 Rs.

**10. Answer: D**

Average daily expenditure = Total / 3 (Since She stayed for 3 days)

$$= 4680 / 3 = 1560$$

**11. Answer: B**

Revenue obtained will be from cars only.

$$= 720 \times 40$$

$$= 28800$$

**12. Answer: C**

$$\text{No of Trucks} = 9600$$

$$\text{No of Trailers} = 240$$

$$\text{Percentage more} = (9600 - 240) / 240 \times 100$$

$$= 3900\%$$

**13. Answer: A**

$$\begin{aligned} \text{Average number of vehicles through Plaza} &= \\ (12240 + 720 + 540 + 9600 + 240) / 5 \end{aligned}$$

$$= 4668$$

Only Bike and Truck number are more than 4668.

So 2 Types.

**14. Answer: D**

$$\text{Trailer charge} = 200$$

$$\text{Total amount} = 200 \times 240 = 48000$$

$$\text{Car charged} = 12$$

$$\text{Total amount} = 12 \times 720 = 8640$$

$$\text{Difference} = 48000 - 8640$$

$$= 39360$$

**15. Answer: A**

$$\text{Current revenue through trucks} = 20 \times 9600 = 192000$$

For Revenue to be 2 Lakhs

It should be increased by 8000 Rs.

$$\text{So the number of trucks} = 8000 / 20 = 400$$

**16. Answer: C**

Number of workshops in UP and MP together =  $41 + 144$   
 $= 185$

**17. Answer: A**

Average number of workshops =  $(82 + 41 + 144 + 120 + 700) / 5$   
 $= 91.4$  Lets take 91 approx.

Number of workshops in Orissa = 120

Required Diff. =  $120 - 91$   
 $= 29$

**18. Answer: B**

Total number of workshops in Orissa = 120

20% are Tier I =  $120 \times 20\% = 24$

No of workers =  $24 \times 10 = 240$

20% are Tier II =  $120 \times 20\% = 24$

No of workers =  $24 \times 20 = 480$

Remaining are Tier III =  $120 - (24 + 24)$   
 $= 72$

No of workers =  $72 \times 30 = 2160$

Total no of workers =  $240 + 480 + 2160$   
 $= 2880$

**19. Answer: D**

Number of workshops in MH = 82

Number of workshops in TN = 70

Required Percent =  $(82 - 70) / 70 \times 100$

**25. Answer: A**

$= 17.14\%$

**20. Answer: C**

Average number of workshops in TN and Orissa together  
 $= (120 + 70) / 2 = 95$

Average number of workshops in UP and MP together =  $(41 + 144) / 2 = 92.5$

Diff. = 2.5

**21. Answer: A**

It is clearly visible from the pie chart that UP has highest selection ratio = 10%

**22. Answer: E**

None of the above mentioned states has same number of selected students.

**23. Answer: B**

Selection Percentage from Bihar and Punjab together  
 $= \text{Selected students} / \text{Total number of students appeared} \times 100$   
 $= (3500 + 3150) / (70000 + 42000) \times 100 = 5.93\% \approx 6\%$   
 approx

**24. Answer: D**

Average number of applications =  $\text{Total} / 5$   
 $= 234000 / 5 = 46800$

Total number of selected students = 14550

Required Percent =  $46800 / 14550 \times 100$   
 $= 321.64\%$

UP has highest selection percentage among all the states which is 10%.

**26. Answer: C**

Number of people who attended the conference from

Arts background = 8200

Number of people who attended from engineering

background = 1200

Difference =  $8200 - 1200 = 7000$

**27. Answer: A**

Average number of people who have attended the conference

from Science and Medical background together =

$(1400 + 1200) / 2 = 1300$

**28. Answer: C**

Half of the total audience for the conference =  $15200 / 2$

= 7600

New attendance from commerce field = 7600

Old Attendance = 3200

Percentage more =  $(7600 - 3200) / 3200 \times 100$

= 137.5%

**29. Answer: A**

Number of people from Medical field = 1200

Number of people from engineering field = 1200

Required Percentage =  $1200 / 1200 \times 100$

= 100%

**30. Answer: B**

Number of people from Arts stream = 8200

Number of people from Science stream = 1400

Required Ratio = 41 : 7

**31. Answer: D**

Sales of Qtr II = 750

Number of Radio A sold in Qtr 4 = 750

The sales figure is same here.

**32. Answer: D**

Number of Radio A sold in the Qtr I = cannot be determined.

**33. Answer: A**

Number of Radio sold of type A in the Qtr IV are 20%

less =  $750 \times 80\% = 600$

Total number of Radio sold in Qtr IV =  $600 + 500$

= 1100

**34. Answer: D**

Average number of Radio sold in all the four Qtrs

together =  $1200 + 750 + 540 + 1250 = 3740 / 4$

= 935

**35. Answer: B**

Number of Radio sold in first half of the year =

$1200 + 750$

= 1950

Number of Radio sold in second half of the year =  $540 +$

1250

= 1790

Ratio =  $1950 : 1790 = 195 : 179$

**36. Answer: C**

Selling cost of one hen is 200 Rs

So  $200 \times 7520 = 1504000$

Selling cost of one Horse is 20,000

So  $20000 \times 250 = 5000000$

The difference between revenue = 3496000

**37. Answer: A**

Number of legs of Ostrich =  $810 \times 2 = 1620$

Number of legs of Sheep =  $1180 \times 4 = 4720$

Percentage =  $(4720-1620)/4720 \times 100$

= 65.67%

**38. Answer: D**

Number of Cow = 520

Number of Sheep = 1180

Ratio = 520 : 1180

= 26 : 59

**39. Answer: A**

Average number of animals with the farmer =

$(520+1180+7520+250+810) / 5$

=  $10280 / 5$

= 2056

Only one animal has 7520 Hens more than the average.

**40. Answer: D**

Total number of birds =  $7520 + 810$

= 8330

**41. Answer: A**

Shopping made by female = 2000

Total shopping made by the male = 2220

Required Percentage =  $(2220-2000) / 2220 \times 100$

= 9.90%

**42. Answer: B**

Numbers of western clothes = 840

Numbers of ethnic clothes = 420

Difference = 420

**43. Answer: C**

Number of clothes sold female customers = 2000

Number of Kurtas sold = 560

Ratio = 2000 : 560

= 25 : 7

**44. Answer: C**

Percentage increase in number of customers is 20% for the next season =  $4220 \times 120\%$

= 5064

Total number of customers in the next season = 5064

**45. Answer: A**

Number of shirt sold = 1200

Number of pants sold = 1200

Ratio = 1 : 1

**46. Answer: D**

Since there is no negative marking then who has highest vacancies will get highest marks among attempted questions.

It is clearly visible that Amruta attempted 120 questions with 90% accuracy.

So She has highest marks.

**47. Answer: B**

It is clearly visible that 90% accuracy is with Amruta.

**48. Answer: C**

Ratio of total number of questions solved by Sayali and Vaishnavi together =  $120+100$   
= 220

Total number of questions solved by Amruta and Radhika =  $120+ 150$   
= 270

Ratio = 22 : 27

**49. Answer: B**

Number of questions solved by Sonali = 90

Number of questions solved by Vaishnavi = 100

Required percentage =  $(100-90)/100 \times 100$   
= 10% less

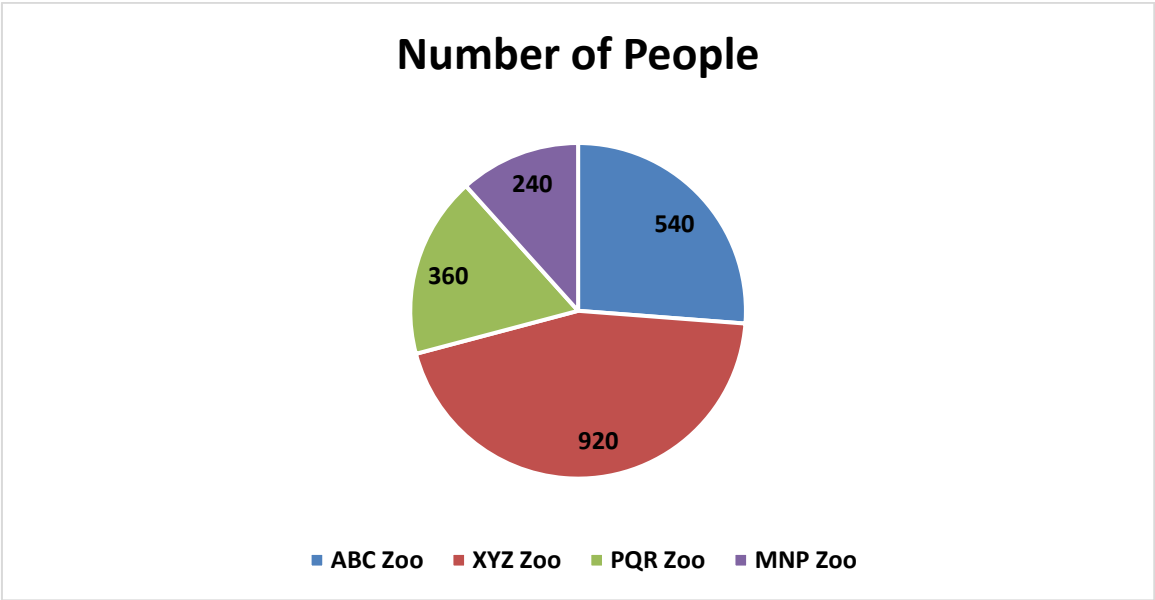
**50. Answer: C**

Average number of accurate questions solved by all of them together  
=  $(120 \times 70\%+ 100 \times 75\% +90 \times 50\% + 120 \times 90\% + 150 \times 25\%) / 5$   
= 379.5 / 5  
= 69.9

## Mixed DI-1

**Directions (1-5). Read the following mixed graph and answer the questions that follow.**

**Given below Pie chart shows the number of people different zoos in the city and the table shows people from different age groups coming to zoo.**



<b>Zoo</b>	<b>&lt;20 years</b>	<b>20-50 years</b>	<b>50-70 years</b>	<b>70&lt; years</b>
<b>ABC</b>	100	120	120	200
<b>XYZ</b>	360	150	110	300
<b>PQR</b>	80	80	150	50
<b>MNP</b>	100	70	70	0

**1. How many people visiting Zoo Xyz are above 50 years old and people visiting Zoo MNP below 50 years old in total?**

- a) 580
- b) 560
- c) 550
- d) 520
- e) None of these

**2. Total number of people visiting the Zoo above the age of 50 are what percent of total number of people visiting the zoo below 20 years?**

- a) 120.24%
- b) 125.25%
- c) 145.25%
- d) 156.25%
- e) None of these

**3. What percent of total number of people are above 70 years old from all Zoo together?**

- a) 28.54%

b) 31.34%

c) 26.69%

d) 37%

e) None of these

**4. What is the ratio of number of People having age between 20-50 visiting Zoo ABC to the number of people having age between 50-70 visiting Zoo MNP?**

a) 9 : 13

b) 7 : 12

c) 12 : 7

d) 13 : 9

e) None of these

**5. Total number of people between age 20-70 visiting Zoo ABC and PQR together are?**

a) 450

b) 470

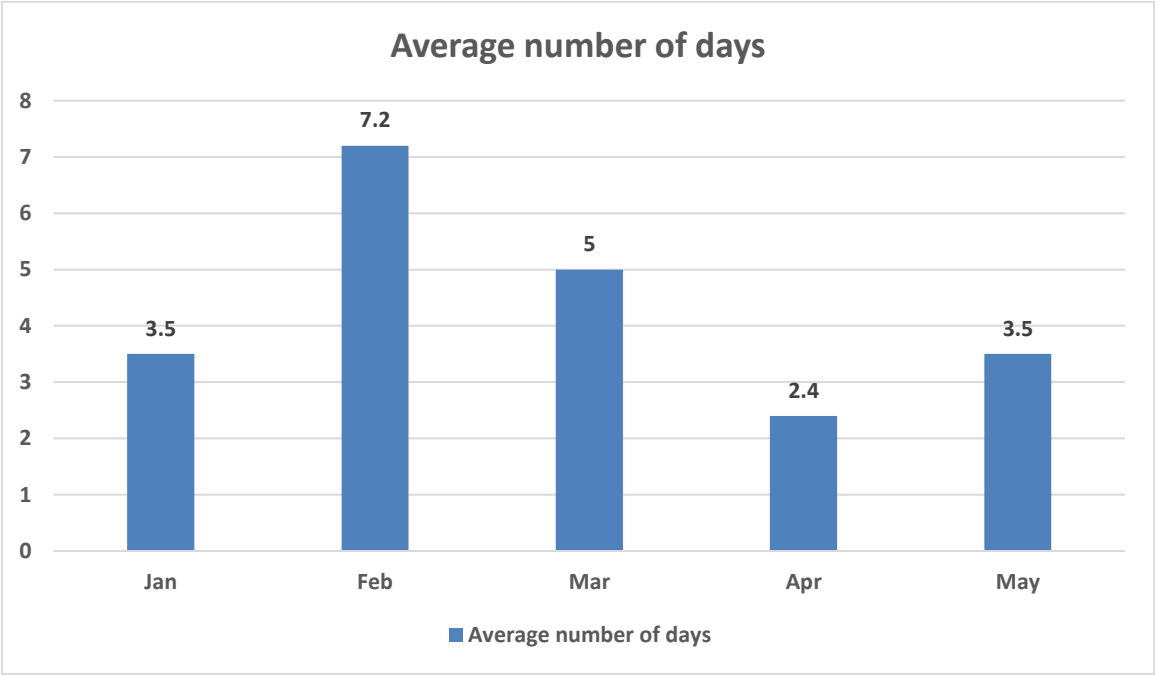
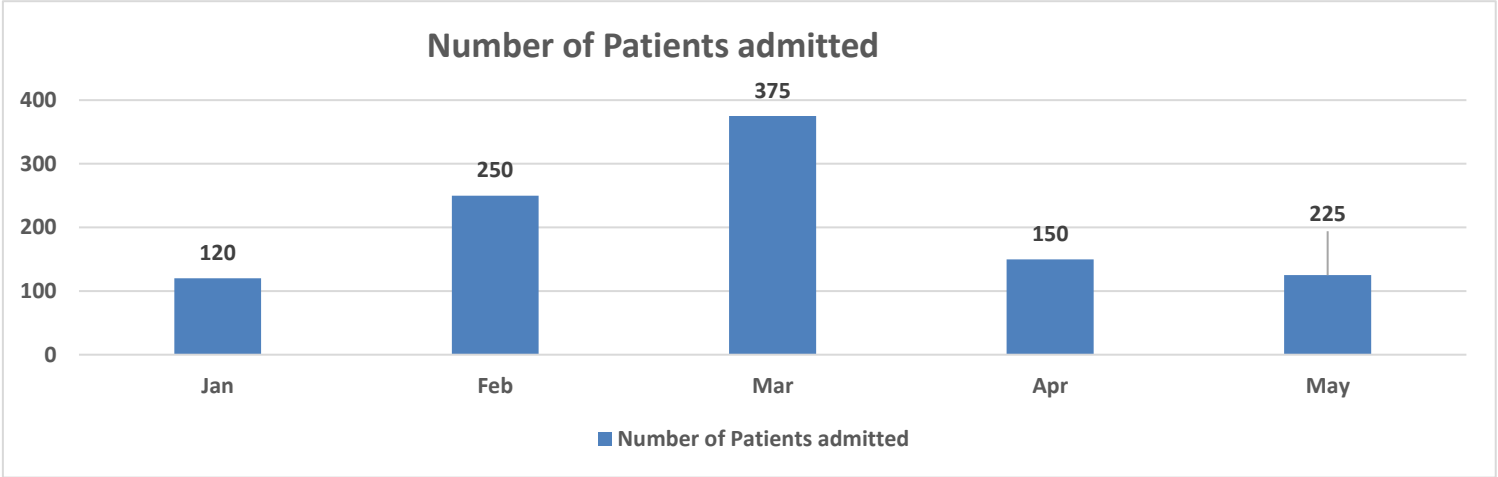
c) 540

d) 520

e) None of these



**Directions (6-10).** Read the following mixed graph and answer the questions that follow. Below given bar graph shows the number of people admitted to the hospital in different months. The second bar graph shows the average number of days the patient was admitted in a month.



**6. The total number of days for which patients were admitted in May is what percent of total number of days for which patients were admitted in April?**

a) 119.31%

b) 120%

c) 121.35%

d) 135%

e) None of these

**7. The average number of patients that were admitted from all the given months together is?**

a) 220

b) 420

c) 330

d) 350

e) None of these

**8. The total number of patients in the month having days 30 are what percent more/less than the total number of patients in the month having days 31? (approx.)**

a) 75%

b) 80%

c) 85%

d) 90%

e) None of these

**9. In which of the following month the total number of days the patients were admitted is maximum?**

a) March

b) April

c) May

d) June

e) None of these

**10. What is the ratio of average number of days patients were admitted in month Jan to the average number of days patients were admitted in month May?**

a) 2 : 1

b) 1 : 2

c) 1 : 1

d) 1 : 3

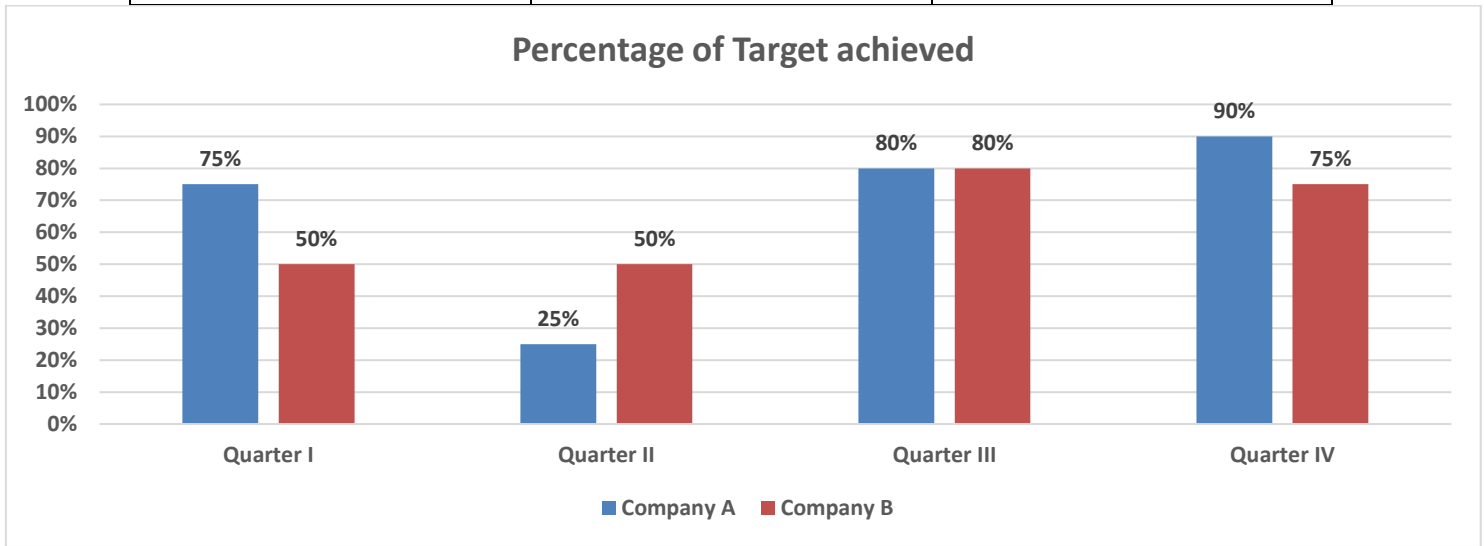
e) None of these

**Directions (11-15). Read the following mixed graph and answer the questions that follow.**

**Below given Table shows the Expected Sale in number of units of a FMCG company for 4 quarters of the company A and Company B. Another Bar graph shows the percentage of targets achieved in those quarters for both the companies.**

	Expected Sales figures	
	Company A	Company B
Quarter I	2400	4400
Quarter II	1700	2900
Quarter III	5200	5000

Quarter IV	3200	2800
------------	------	------



**11. In which of the following quarter Company A achieved its highest sales in all the four quarters together?**

- a) Quarter I
- b) Quarter II
- c) Quarter III
- d) Quarter IV
- e) None of these

**12. The Expected sales in the quarter II is what percent more/less than the achieved sales target for the same quarter for company B?**

- a) 120%
- b) 50%
- c) 200%
- d) 100%
- e) None of these

**13. The average sales target for company A is what percent of the average sales target for the company B in all 4 quarters?**

- a) 78%
- b) 85.13%
- c) 78.82%
- d) 82.78%
- e) None of these

**14. The expected target in which of the following quarters was lowest for both Company A and company B together?**

- a) II
- b) III
- c) IV
- d) I
- e) None of these

15. What are the total sales achieved in the quarter IV by company A and company B together?
- a) 4890

b) 4980

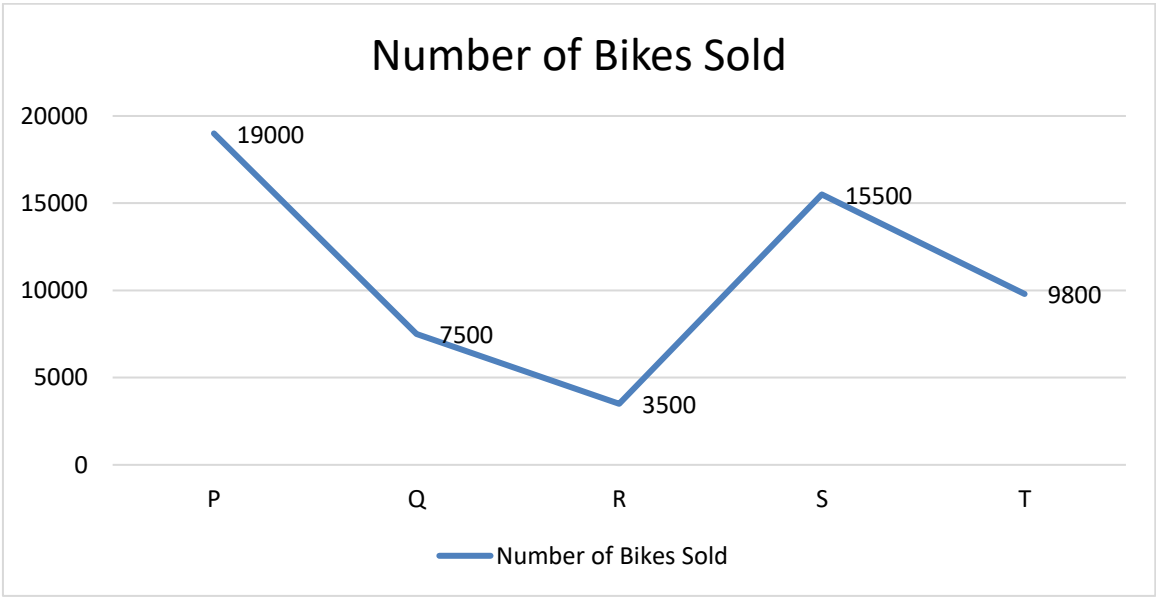
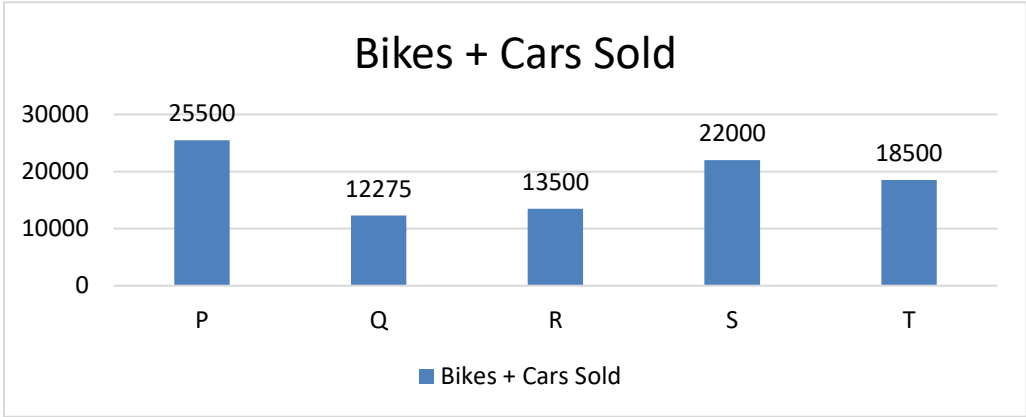
c) 4560

d) 4650

e) None of these

**Directions (16-20). Read the following mixed graph and answer the questions that follow.**

**The Bar chart shows the number of cars + bikes sold in different showrooms. Another line graph shows the number of bikes sold in those showrooms.**



**16. What is the average of number of Cars sold from all the given showrooms?**

- a) 5765
- b) 7580
- c) 7295
- d) 6725
- e) None of these

**17. The total number of Cars + Bikes sold from showroom T are approximately what percent of total number of Cars + Bikes sold from showroom R?**

- a) 135%
- b) 128%
- c) 140%
- d) 137%
- e) None of these

**18. If the total sales of Bikes + Cars increased by 25% in the next year but sales of Cars remained same then calculate the growth rate for Bikes?**

- a) 45%
- b) 48.41%

- c) 41.48%
- d) 43.25%
- e) None of these

**19. The number of Bikes sold from showroom P and Q together are what percent more/less than the number of Bikes sold from showroom S and T together?**

- a) 4%
- b) 4.5%
- c) 5%
- d) 5.15%
- e) None of these

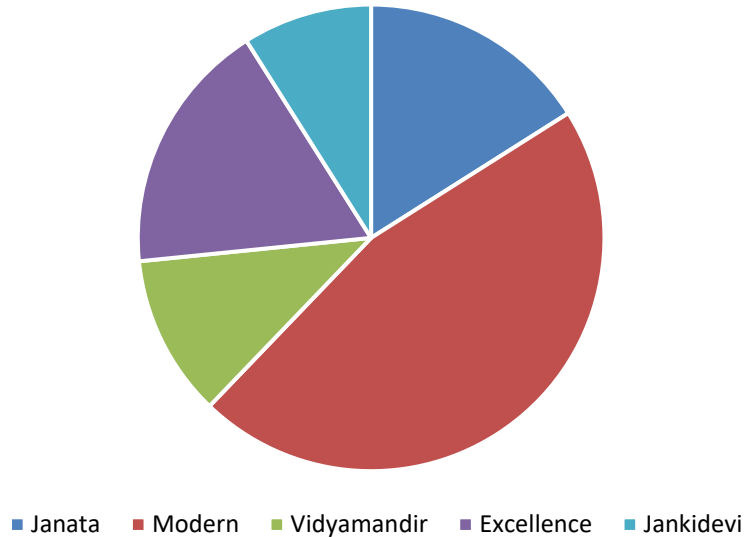
**20. In which of the following showroom the number of Bikes sold were more than 50% of the total sales of the Bikes + Cars?**

- a) None
- b) 1
- c) 2
- d) 3
- e) None of these

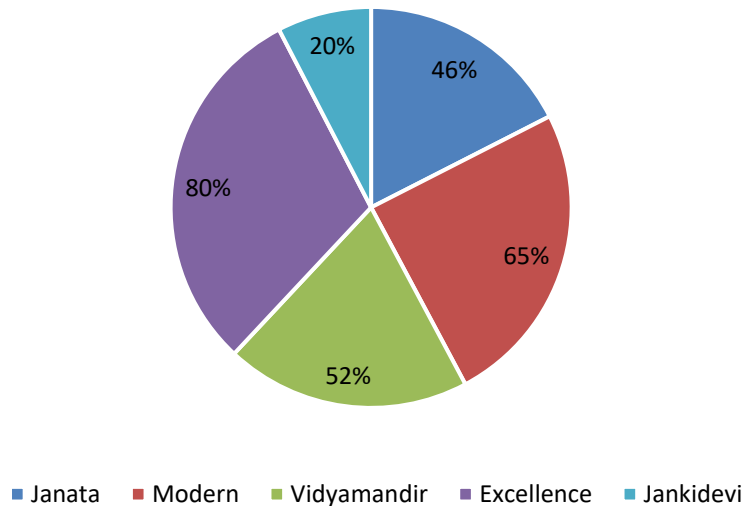
**Directions (21-25). Read the following mixed graph and answer the questions that follow.**

**Below mentioned Pie chart shows the number of students passed from five different schools. Also another Pie chart shows the percentage of boys in the total passed students.**

### Number of students passed



### Percentage of Boys in Total Passed



21. What is the average number of girls who passed from Janta and Excellence together?

- a) 93
- b) 95

- c) 97
- d) 98
- e) None of these

**22. The number of Boys students passed was increased from 45 % to 55% in the total number of passed students in School Janta then what is percentage change in number of girls passed from the same school?**

- a) 18.25%
- b) 19.46%
- c) 17.75%
- d) 19.23%
- e) None of these

**23. Which of the following schools have highest number of girls passed?**

- a) Excellence
- b) Janata
- c) JanakiDevi

- d) Modern
- e) None of these

**24. What is the ratio of number of boys passed from Vidyamandir to the number of girls passed from Modern School?**

- a) 225 : 117
- b) 117 : 225
- c) 252 : 115
- d) 115 : 252
- e) None of these

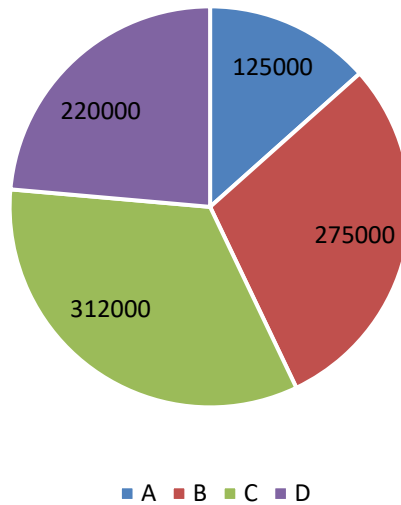
**25. What is the overall passing percentage of boys from all the above-mentioned schools together?**

- a) 60%
- b) 70%
- c) 80%
- d) 90%
- e) None of these

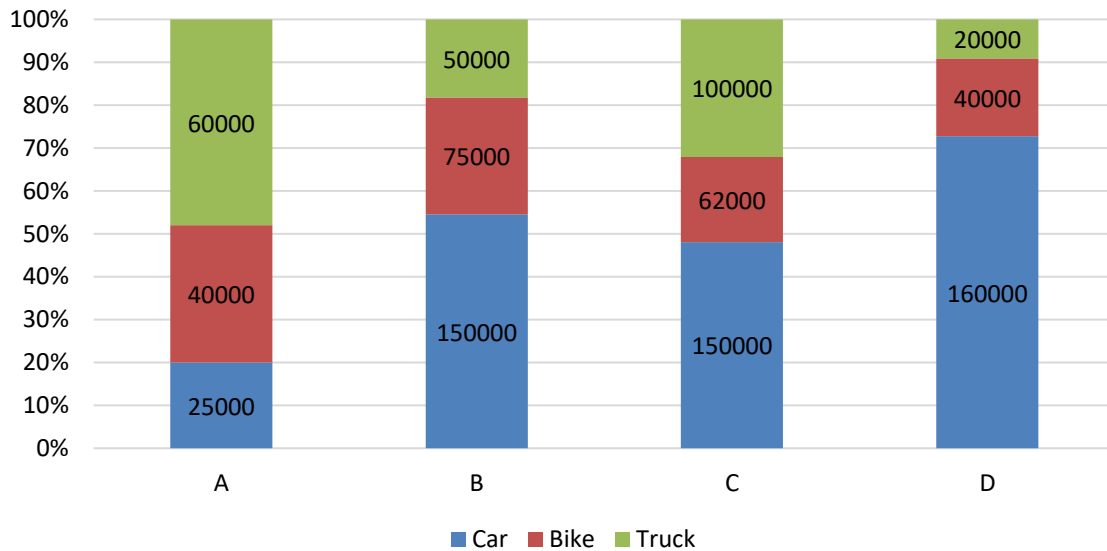
**Directions (26-30). Read the following mixed graph and answer the questions that follow.**

**The Pie chart mentions the total number of vehicles sold in 4 different showrooms namely A, B, C and D. Another Stacked Bar graph shows the composition of vehicles i.e. Bike, Car and Trucks.**

Total Vehicle sold in 4 showrooms



Composition of Vehicles in Sales





**26. The number of cars sold from showroom B is what percent more than the number of Trucks sold from showroom D?**

- a) 540%
- b) 637%
- c) 650%
- d) 590%
- e) None of these

**27. How many showrooms have sales of bikes more than the average sales for the bikes from all the four showrooms together?**

- a) 4
- b) 3
- c) 1
- d) 2
- e) None of these

**28. If the sales of cars, bikes and truck all increased by 10, 15 and 25% respectively for the showroom C then the percentage growth in total number of vehicles is?**

- a) 14%

- b) 15%
- c) 16%
- d) 17%
- e) None of these

**29. The average number of Cars sold by all showrooms together are what percent of the average number of trucks sold by all the showrooms together?**

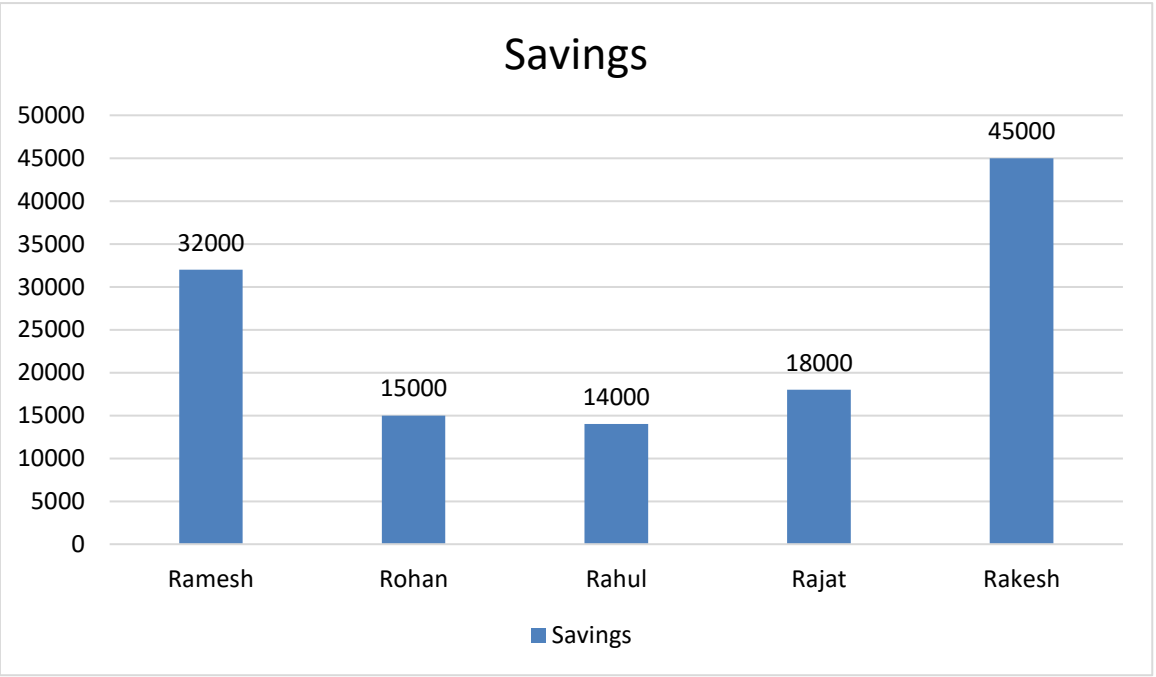
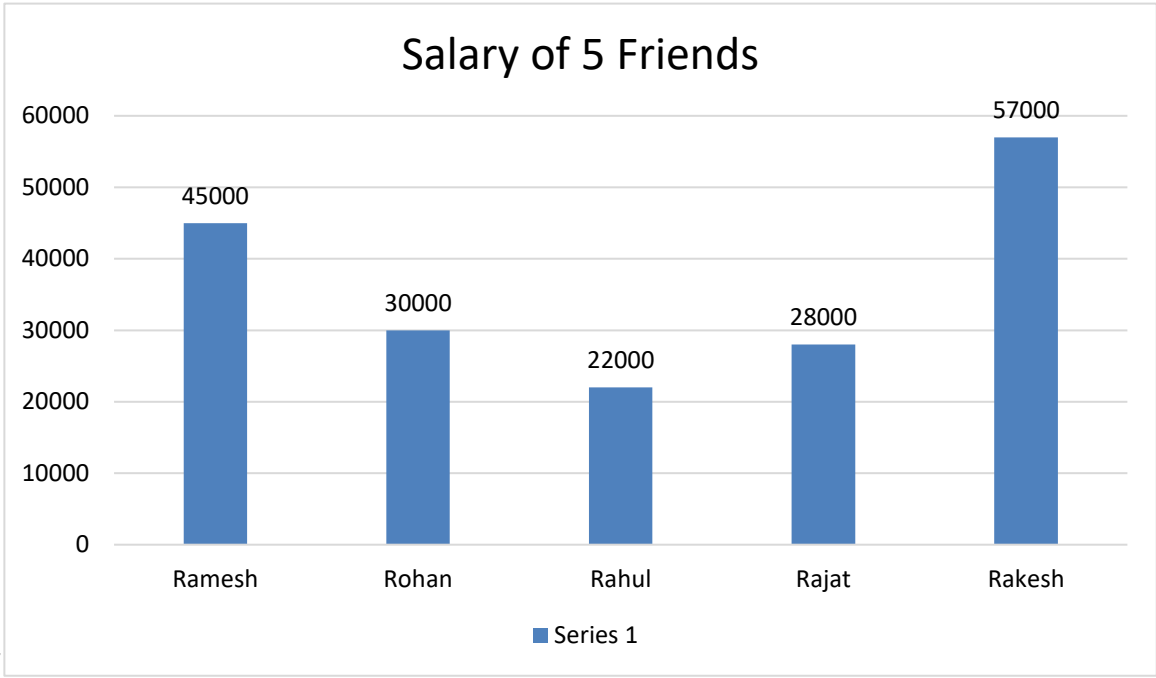
- a) 110.85%
- b) 210.86%
- c) 117%
- d) 210%
- e) None of these

**30. The average number of vehicles sold from showroom D are what if it showed 12.5% growth in sales of total number of vehicles in the next year?**

- a) 34600
- b) 87500
- c) 82500
- d) 12500
- e) None of these

**Directions (31-35). Read the following mixed graph and answer the questions that follow.**

**Below mentioned two bar graph shows the salaries of different person and their savings respectively. Study them answer the questions properly.**



**31. What is the ratio of the expenditure of Ramesh and Rakesh together to the expenditure of Rohan and Rajat together?**

- a) 1 : 2
- b) 1 : 1
- c) 2 : 1
- d) 1 : 3
- e) None of these

**32. How many of the following Person has salaries more than the average salaries of the all the persons mentioned in the Bar graph?**

- a) 3
- b) 1
- c) 2
- d) 4
- e) None of these

**33. Rahul decided to increase his expenditure by 20% without changing his saving then what should be the percentage effect on the salary of Rahul?**

- a) 7.27%

- b) 6.25%
- c) 12.5%
- d) 1.5%
- e) None of these

**34. The ratio of Rajat's and Kamal's Savings is 5 : 6 . If salary of Kamal is 70% more than the salary of Ramesh. Then what is the expenditure of Kamal?**

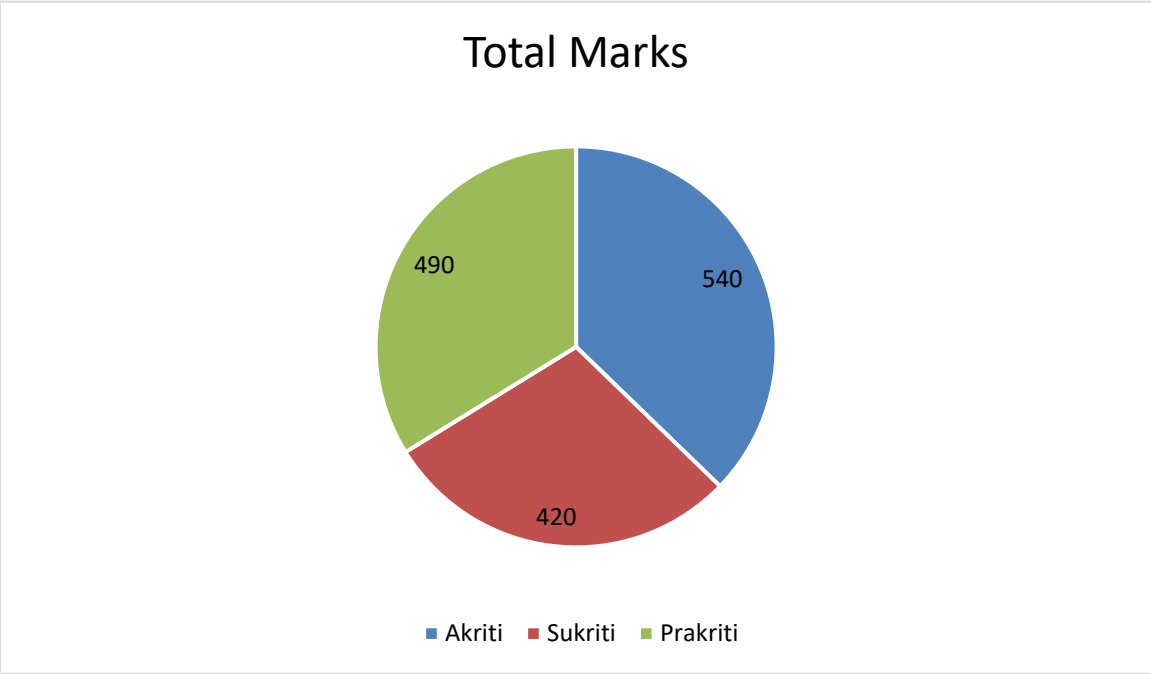
- a) 54900
- b) 55500
- c) 65000
- d) 54000
- e) None of these

**35. The expenditure of Ramesh and Rohan is what percent of the expenditure of the Rahul and Rakesh together?**

- a) 140%
- b) 20%
- c) 25%
- d) 30%
- e) None of these

**Directions (36-40). Read the following mixed graph and answer the questions that follow.**

**The pie chart shows the Total marks obtained by Akriti, Sukriti and Prakriti. Then their individual subject marks are also mentioned in the below mentioned tabular graph. Akriti and Sukriti did not take the exam of Math and Prakriti did not take the exam of Biology.**



	Physics	Chemistry	Biology	Maths
Akriti	210	130	200	-
Prakriti	175	145	-	100
Sukriti	190	50	250	-

- 36. If every subject had maximum marks 300 then what is the percentage of marks obtained by Akriti?**

  - a) 30%
  - b) 40%
  - c) 50%
  - d) 60%
  - e) None of these

**37. The total marks obtained by all of them together in Biology are what percent more than the total marks obtained by all of them in Maths?**
- a) 120

b) 320

c) 350

d) 420

e) None of these

**38. Total marks obtained by Sujata were 720 then the total marks obtained by Prakriti are what percent less than the marks obtained by Suajata?**

  - a) 42%
  - b) 31.9%

- c) 43%
- d) 41.55%
- e) None of these

39. The ratio of marks obtained in Hindi of Akriti, Prakriti and Sukriti is 2 : 3 : 5 and total marks obtained in Hindi are 20% less than the total marks obtained in Physics. What are marks obtained in Hindi by Akriti?

- a) 92
- b) 93
- c) 94

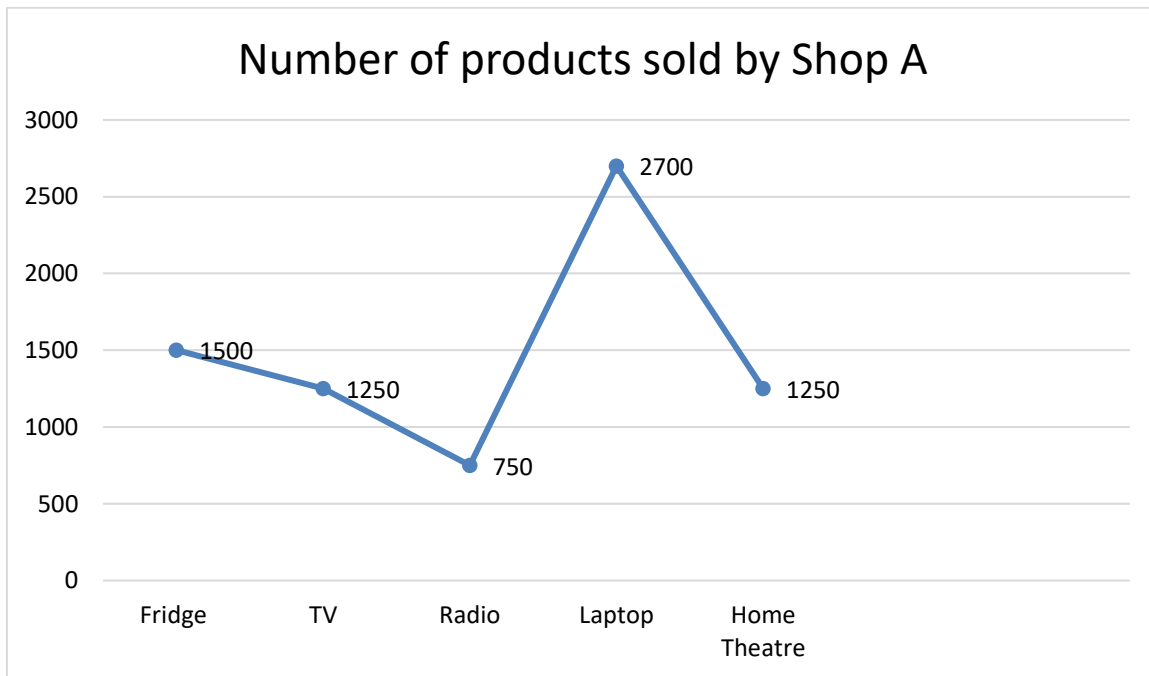
- d) 95
- e) None of these

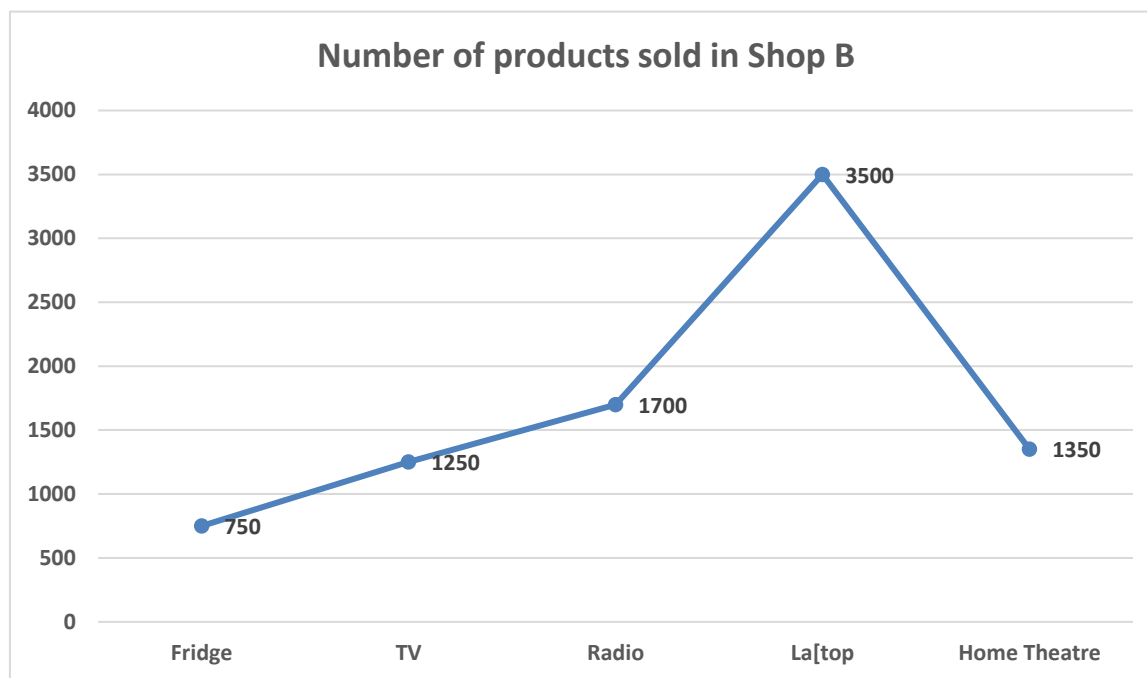
40. Average marks obtained by Prakriti were how much more/less than the average marks obtained in biology?

- a) 84
- b) 102.5
- c) 86
- d) 87
- e) None of these

Directions (41-45). Read the following mixed graph and answer the questions that follow.

Below given two-line graphs shows the sales of different electronic in two Shops A and B. Study the following graphs and answer the questions that follow.





**41. The number of Fridge sold in Shop C were 80% of the total number of fridge sold in Shop A and shop B. The number of fridge sold in shop C is?**

- a) 1500
- b) 1800
- c) 1700
- d) 1900
- e) None of these

**42. Average number of appliances sold in Shop A are what percent of Average number of appliances sold in Shop B?**

- a) 82.45%
- b) 55.65%
- c) 85%
- d) 87.13%

e) None of these

**43. The difference between numbers of Laptops sold in shop A and B is 75% of the total home theatres sold in B in next year. Then the percentage difference in sales of home theatre is?**

- a) 18%
- b) 19%
- c) 20%
- d) 21%
- e) None of these

**44. What is the ratio of number of radio sold in Shop A to the number of TV sold in shop B?**

- a) 2 : 5
- b) 5 : 3
- c) 3 : 5

- d) 5 : 2

e) None of these
45. The total number of TV sold in both shops together is what percent more/less than the total number of Fridge sold in both shops together?

a) 10%

b) 12%

c) 15%

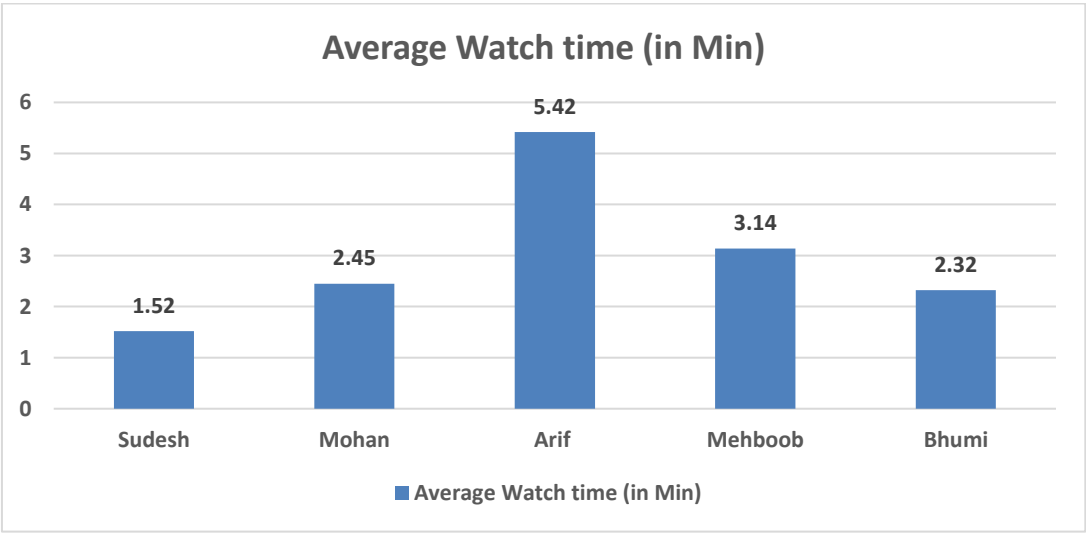
d) 25%

e) None of these

**Directions (46-50). Read the following mixed graph and answer the questions that follow.**

**Below mentioned table shows the view obtained by different singers for their respective videos in millions on social media platform on 3 different days after release. Another Bar graph shows the average watch time In minutes.**

	Day 1	Day 2	Day 3
Sudesh	45	55	45
Mohan	32	21	2
Arif	22	15	5.1
Mehboob	9.2	8.4	7.2
Bhumi	87	78	54



**46. The percentage growth rate of views from Day 3 to Day 1 for the song released by Arif is what percent?**

- a) 55%
- b) 110%
- c) 220%
- d) 330%
- e) None of these

**47. The average views on three days for the Bhumi is what percent of the average views on Day 3 for all the singers together?**

- a) 322%
- b) 222%
- c) 343.33%
- d) 24%
- e) None of these

**48. If Sudesh want to cross 200 million views on Day 4 then the percentage growth he will require to take on views of Day 3?**

- a) 21%
- b) 22.22%
- c) 23.65%
- d) 24%
- e) None of these

**49. Total watch time of which of the following person is highest?**

- a) Arif
- b) Sudesh
- c) Bhumi
- d) Mohan
- e) None of these

**50. Which of the following days showed maximum number of views together for all the singers together?**

- a) Day 1
- b) Day 2
- c) Day 3
- d) Cannot be determined
- e) None of these

## **Mixed DI-1 - Answer and Explanation**

### **1. Answer A**

People visiting Zoo Xyz are above 50 years old =  
 $110 + 300$   
 $= 410$

People visiting Zoo MNP below 50 years old =  
 $100 + 70$   
 $= 170$

Total =  $410 + 170$   
 $= 580$

### **2. Answer D**

Total number of people visiting the Zoo above the age of 50  
 $= 120 + 110 + 150 + 70 + 200 + 300 + 50$   
 $= 1000$



Total number of people visiting the zoo below 20 years

$$= 100+360+80+100$$

$$= 640$$

$$\text{Required Percentage} = (1000/640) \times 100$$

$$= 156.25\%$$

**3. Answer C**

$$\text{Above 70 years old from all Zoo together} = 200+300+50$$

$$= 550$$

$$\text{Total number of people} = 540+920+360+240$$

$$= 2060$$

$$\text{Required Percent} = (550/2060) \times 100$$

$$= 26.69\%$$

**4. Answer C**

Number of People having age between 20-50 visiting Zoo ABC = 120

Number of people having age between 50-70 visiting Zoo MNP = 70

$$\text{Required ratio} = 12 : 7$$

**5. Answer B**

Total number of people between age 20-70 visiting Zoo ABC = 120+120

$$= 240$$

Total number of people between age 20-70 visiting Zoo PQR = 80+150

$$= 230$$

$$\text{Total} = 240+230$$

$$= 470$$

**6. Answer A**

Total number of days for which patients were admitted in May = 225 x 3.5

$$= 787.5$$

Total number of days for which patients were admitted in April = 660

$$\text{Required Percent} = (787.5 / 660) \times 100$$

$$= 119.31\%$$

**7. Answer E**

Average number of patients that were admitted from all the given months together is =  $(120+250+375+150+225) / 5$

$$= 224$$

**8. Answer B**

Total number of patients in the month having days 30 (April)

$$= 150$$

Total number of patients in the month having days 31 (Jan, March, May) = 120+375+225

$$= 720$$

$$\text{Percent more/less} = (720 - 150) / 720 \times 100$$

$$= 79.16 = 80\%$$

**9. Answer A**

Number of days the patients were admitted in Jan

$$= 120 \times 3.5$$

$$= 420$$

Number of days the patients were admitted in Feb

$$= 250 \times 7.2$$

$$= 1800$$

Number of days the patients were admitted in

$$\text{March} = 375 \times 5$$

$$= 1875$$

Number of days the patients were admitted in

$$\text{April} = 150 \times 2.4$$

$$= 360$$

Number of days the patients were admitted in

$$\text{May} = 225 \times 3.5$$

$$= 787.5$$

Obviously, Number of days the patients were admitted in March were maximum.

#### 10. Answer C

Average number of days patients were admitted in month Jan = 3.5

Average number of days patients were admitted in month May = 3.5

$$\text{Required ratio} = 3.5 : 3.5$$

$$= 1 : 1$$

#### 11. Answer C

Sales in quarter I for company A :

$$= 2400 \times 75/100 = 1800$$

Sales in quarter II for company A :

$$= 1700 \times 25/100$$

$$= 425$$

Sales in quarter III for company A :

$$= 5200 \times 0.80$$

$$= 4160$$

Sales in quarter IV for company A :

$$= 3200 \times 90/100$$

$$= 2880$$

The maximum sale was in quarter III.

#### 12. Answer D

Expected sales in the quarter II for B = 2900

The achieved sales target for the same quarter =  
 $2900 \times 0.50$

$$= 1450$$

$$\text{Percent more} = (2900 - 1450) / 1450 \times 100$$

$$= 100\%$$

#### 13. Answer D

Average sales target for company A =

$$(2400 + 1700 + 5200 + 3200) / 4$$

$$= 3125$$

Average sales target for the company B =

$$= (4400 + 2900 + 5000 + 2800) / 4$$

$$= 15100 / 4$$

$$= 3775$$

$$\text{Required percent} = (3125 / 3775) \times 100$$

$$= 82.78\%$$

#### 14. Answer A

Expected target for quarter I Company A and B =  
 $2400 + 4400$

= 6800

Expected target for quarter II Company A and B  
 $= 1700 + 2900$

= 4600

Expected target for quarter III Company A and B  
 $= 5200 + 500$

= 10200

Expected target for quarter IV Company A and B  
 $= 3200 + 2800$

= 6000

Lowest is for quarter II.

**15. Answer B**

The total sales achieved in the quarter IV =

$= 3200 \times 90/100 + 2800 \times 75/100$

= 4980

**16. Answer C**

Average of number of Cars sold from the entire  
given showroom =

$(6500 + 4775 + 10000 + 6500 + 8700) / 5$

= 7295

**17. Answer D**

Total number of Cars + Bikes sold from  
showroom T = 18500

Total number of Cars + Bikes sold from  
showroom R = 13500

Required percent =  $(18500 / 13500) \times 100$   
 $= 137\%$

**18. Answer C**

Total sales of Bikes + Cars increased by 25% in  
the next year

= Total sale in this year  $\times 125/100$

$= 91775 \times 1.25$

= 114718

Total Sales of Cars remained same =  
 $6500 + 4775 + 10000 + 6500 + 8700$

= 36475

Sale of Bikes next year =  $114718 - 36475$

= 78243

Growth rate for Bikes =  $(78243 - 55300) / 55300$   
 $\times 100$

= 41.48%

**19. Answer E**

Number of Bikes sold from showroom P and Q  
together =  $19000 + 7500$

= 26500

Bikes sold from showroom S and T together =  
 $15500 + 9800$

= 25300

Percent more /less =  $(26500 - 25300) / 25300 \times$   
 $100$

= 4.74%

**20. Answer A**

Total sales of the Bikes + Cars =  
 $25500 + 12275 + 13500 + 22000 + 18500$   
 $= 91775$   
 50% of this number = 45887.5  
 Showrooms having more than this sale = None

**21. Answer B**

Girls passed from Janta =  $250 \times 54 / 100$   
 $= 135$   
 Girls passed from Excellence =  $275 \times 20 / 100$   
 $= 55$   
 Average number of girls who passed from Janta  
 and Excellence together  
 $= 135 + 55 / 2$   
 $= 95$

**22. Answer B**

Number of Boys students passed was increased  
 from 46 % to 55% in the total number of passed  
 students in School Janta = 55 % of 250  
 $= 137$  approx.  
 Previously passed girls = 135  
 New number of girls passed =  $250 - 137$   
 $= 113$   
 Percentage change in number of girls passed =  
 $(135 - 113) / 113 \times 100$   
 $= 19.45\%$

**23. Answer D**

Highest number of girls passed = Modern

Girls passed from Janata =  $250 \times 054 / 100 = 135$   
 Similarly, Girls passed from Modern = 252  
 Girls passed from Vidyamandir = 84  
 Girls passed from Excellence = 55  
 Girls passed from Jankidevi = 112

**24. Answer D**

Number of boys passed from Vidyamandir = 250  
 $\times 46\%$   
 $= 115$   
 Number of girls passed from Modern School =  
 $720 \times 0.35$   
 $= 252$   
 Required ratio = 115 : 252

**25. Answer A**

Overall passing percentage of boys from all the  
 above mentioned schools together  
 $= (\text{Total number of boys passed} / \text{Total number of student s}) \times 100$   
 $= (115 + 468 + 91 + 220 + 28) / (250 + 720 + 175 + 275 + 140) \times 100$   
 $= 59.10\% = 60\%$  approx

**26. Answer C**

Number of cars sold from showroom B = 150000  
 Number of Trucks sold from showroom D =  
 20000  
 Percent more =  $(150000 - 20000) / 20000 \times 100$   
 $= 650\%$

**27. Answer D**

The average sales for the bikes from all the four showrooms together

$$= (40000 + 75000 + 62000 + 40000) / 4$$

$$= 217000 / 4$$

$$= 54250$$

Number of showrooms having sales more than this = B & C = 2

**28. Answer E**

Sales of cars, bikes and truck all increased by 10, 15 and 25% respectively for the showroom C

$$\text{Sales of car} = 150000 \times 110 / 100$$

$$= 165000$$

$$\text{Sales of bike} = 62000 \times 115 / 100$$

$$= 71300$$

$$\text{Sales of truck} = 100000 \times 125 / 100$$

$$= 125000$$

$$\text{Total sale} = 361300$$

Percentage growth in total number of vehicles =

$$(361300 - 312000) / 312000 \times 100$$

$$= 15.80\%$$

**29. Answer B**

Average number of Cars sold by all showrooms together =

$$= (25000 + 150000 + 150000 + 160000) / 4$$

$$= 121250$$

Average number of trucks sold by all the showrooms together =

$$= (60000 + 50000 + 100000 + 20000) / 4$$

$$= 57500$$

$$\text{Required percent} = (121250 / 57500) \times 100$$

$$= 210.86\%$$

**30. Answer C**

Average number of vehicles sold from showroom D

$$= 12.5\% \text{ growth in total sales} / 3$$

$$= 220000 \times 112.5 / 100$$

$$= 247500 / 3$$

$$= 82500$$

**31. Answer B**

Expenditure of Ramesh and Rakesh together

$$= 13000 + 12000$$

$$= 25000$$

Expenditure of Rohan and Rajat together =

$$15000 + 10000$$

$$= 25000$$

$$\text{Required ratio} = 1 : 1$$

**32. Answer C**

Average salaries of the all the persons mentioned in the Bar graph =

$$= (45000 + 30000 + 22000 + 28000 + 57000) / 5$$

$$= 36400$$

Salaries more than this number = Ramesh,  
Rakesh  
2 person.

**33. Answer A**

Increase his expenditure by 20% =  $120 / 100 \times 8000$

= 9600

Saving = 14000

New salary = 9600 + 14000

= 23600

Previous salary = 22000

Percentage effect =  $(23600 - 22000) / 22000 \times 100$

= 7.27%

**34. Answer A**

Ratio of Rajat's and Kamal's Savings is 5 : 6

Kamal's savings =  $18000 / 5 \times 6$

= 21600

Salary of Kamal is 70% more than the salary of  
Ramesh

=  $45000 \times 170 / 100$

= 76500

Expenditure of Kamal = 76500 – 21600

= 54900

**35. Answer A**

Expenditure of Ramesh and Rohan = 13000 +  
15000

= 28000

Savings of the Rahul and Rakesh = 8000 + 12000

= 20000

Required percent =  $(28000) / 20000 \times 100$

= 140%

**36. Answer D**

Every subject had maximum marks 300 = total  
marks = 900

Percentage of marks obtained by Akriti =  
 $(210+130+200) / 900 \times 100$

= 60%

**37. Answer C**

Total marks obtained by all of them together in  
Biology = 450

Marks obtained by all of them in Maths = 100

Percent more =  $(450 - 100) / 100 \times 100$   
= 350

**38. Answer B**

Total marks obtained by Sujata were 720

Total marks obtained by Prakriti are what percent  
less than the marks obtained by Suajata =  $(720 - 490) / 720 \times 100$

= 31.9%

**39. Answer A**

Ratio of marks obtained in Hindi of Akriti,  
Prakriti and Sukriti is 2 : 3 : 5

So, the marks are 2x, 3x, 5x

Total marks obtained in Hindi are 20% less than the total marks obtained in Physics =  $575 \times 80 / 100$

$$= 460$$

Marks obtained in Hindi by Akriti =  $2 / 10 \times 460$   
 $= 92$

**40. Answer B**

Average marks obtained by Prakriti = 122.5

Average marks obtained in biology = 225

Difference =  $225 - 122.5$

$$= 102.5$$

**41. Answer B**

Number of Fridge sold in Shop C were 80% of the total number of fridge sold in Shop A and shop B

$$= 80 / 100 \times (1500 + 750)$$

$$= 1800$$

**42. Answer D**

Average number of appliances sold in Shop A =  $7450 / 5$

$$= 1490$$

Average number of appliances sold in Shop B =  $8550 / 5$

$$= 1710$$

Required percent =  $(1490 / 1710) \times 100$

$$= 87.13\%$$

**43. Answer D**

Difference between numbers of Laptops sold in shop A and B =

$$= 3500 - 2700 = 800$$

Sale of home theatre next year =  $800 \times 100 / 75$

$$= 1067 \text{ approx}$$

Percentage Reduction in sales =  $(1350 - 1067) / 1350 \times 100$

$$= 20.98$$

$$= 21\% \text{ approx}$$

**44. Answer C**

Number of radio sold in Shop A = 750

Number of TV sold in shop B = 1250

Required ratio = 3 : 5

**45. Answer A**

Total number of TV sold in both shops together = 2500

Total number of Fridge sold in both shops together = 2250

Percentage more/less =  $(2500 - 2250) / 2500 \times 100$

$$= 10\% \text{ less}$$

**46. Answer E**

Percentage growth for Arif =  $(22 - 5.1) / 5.1 \times 100$

$$= 331\% \text{ approx.}$$

**47. Answer A**

The average views on three days for the Bhumi = 73

Average views on Day 3 for all the singers together = 22.66

Required percent =  $(73/22.66) \times 100$   
= 322% approx

**48. Answer B**

Sudesh want to cross 200 million views

Then views on Day 4 =  $200 - (45+55+45)$   
= 55

Percentage growth =  $(55-45)/45 \times 100$   
= 22.22%

**49. Answer C**

Total watch time of Sudesh =  $(45+55+45) \times 1.52$   
= 220.4

Similarly,

Total watch time of Mohan =  $55 \times 2.45$   
= 134.75 mins

Total watch time of Arif =  $42.1 \times 5.42$   
= 228.182 mins

Total watch time of Mehboob =  $24.8 \times 3.14$   
= 77.87

Total watch time of Bhumi =  $219 \times 2.32$   
= 508

Highest is for = Bhumi

**50. Answer A**

Obviously visible from graph that Day 1.

Views together for all the singers together on day 1 = 195.2 million

Views together for all the singers together on day 2 = 177.4 million

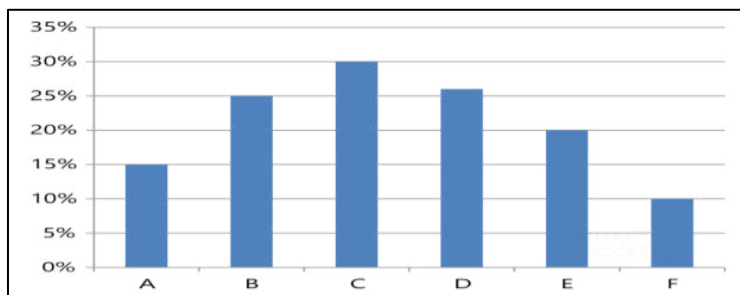
Views together for all the singers together on day 3 = 113.3 million

## Mixed DI-2

**Direction ( 1-5):** Study the following table carefully and answer the questions based on it.

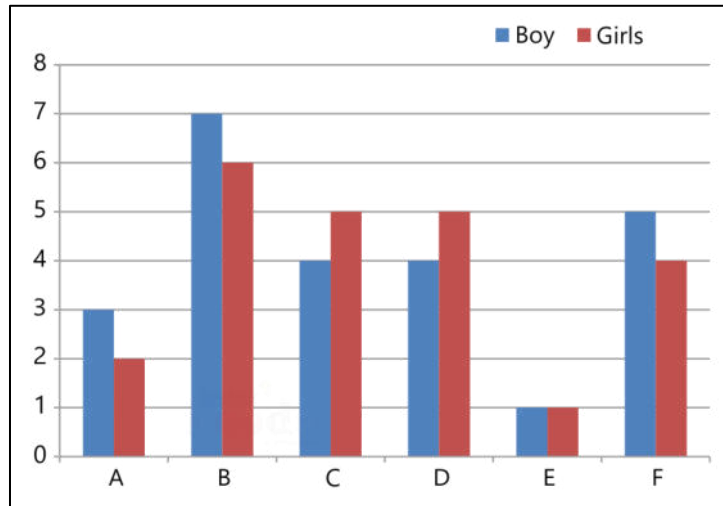
Following chart shows the percentage of failed students of six different schools and below it the given two charts show proportions of boys & girls for failed and passed students respectively.

**Percent of failed student**

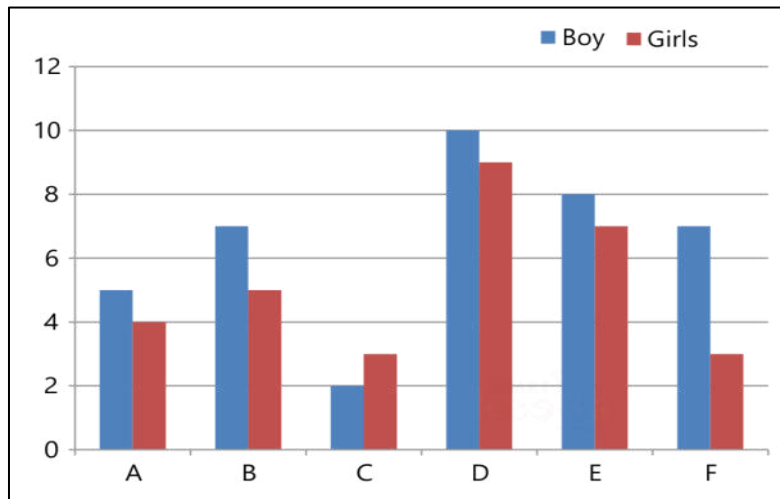




**Proportion of boys and girls for failed students**



**Proportion of boys and girls for passed students**



**1. Total Students in school A is 1350 then what is the approximate no. of passed Girl students in school A?**

- A. 510
- B. 81
- C. 500
- D. Can't determined

**E. None of these**

**2. If the total No. of students in school E & F is 2000, then what is the total no. of boys who failed in the above school?**

- A. 284
- B. 302

- C. 600
- D. Data inadequate
- E. None of these

3. If the failed boys students in school 'C' is 750 and that in school 'D' is 520, then what is the ratio of the total students of school 'C' & 'D'?

- A. 75 : 52
- B. 5 : 4
- C. 4 : 5
- D. Data inadequate
- E. None of these

4. If the failed boys students in school B is 175 what is the total no. of students in school B?

- A. Data inadequate
- B. 13.50
- C. 1300
- D. 1400
- E. None of these

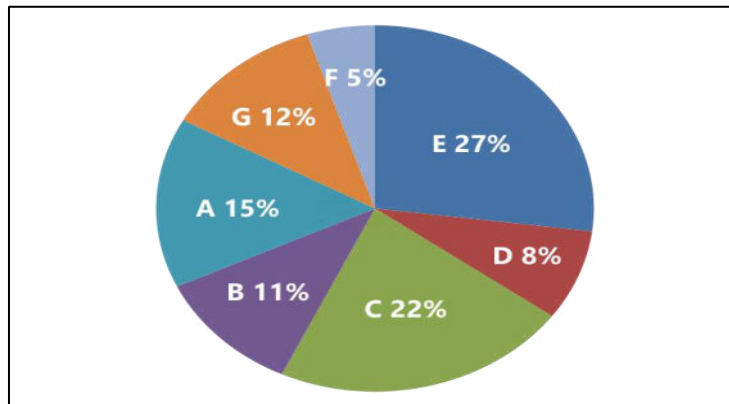
5. If in school 'F' passed boys student is 567 then what is the no. of failed girls students in that school?

- A. 90
- B. 80
- C. 70
- D. Data inadequate
- E. None of these

**Directions (6-10):** Study the following charts carefully and answer the given questions. Seven Companies A, B, C, D, E, F and G are engaged in production of two products I and II. The comparative data about production of these products by the seven companies is given in the following graph and the table. Study them carefully and answer the questions given below.

Cost to the total production (both products together) by seven companies = 25 crore

Percentage of the total production produced by the seven companies



Ratio of production between products I and II and the per cent profit earned for the two products

Company	Ratio of Production		Percent profit earned	
	Product I	Product II	Product I	Product II
A	2	3	25	20
B	3	2	32	35
C	4	1	20	22
D	3	5	15	25
E	5	3	28	30
F	1	4	35	25
G	4	2	30	24

6. What is the total cost of the production of product I by companies A and C together in Rs crore?

- A. 9.25
- B. 5.9
- C. 4.1625
- D. 4.9
- E. None of these

7. What is the amount of profit earned by company ‘D’ on product II ?

- A. Rs. 31.25 crore
- B. Rs. 3, 125 crore
- C. Rs. 31, 25 crore
- D. None of these
- E. Rs.0.3125 crore

8. Cost of production of product 1 by company F is what per cent of the cost of the cost of production of product II by company D ?

- A. 16%
- B. 33.33%
- C. 66.67%
- D. 12.5%
- E. None of these

9. What is total profit earned by company ‘G’ for product I and II together ?

- A. Rs. 78 lakh
- B. Rs. 1.62 crore
- C. Rs. 7.8 crore
- D. Rs. 16.2 lakh

E. None of these

10. What is the ratio of cost of production of product I by company A to the cost of production of product I by company 'D'?

A. 3 : 5

B. 1 : 2

C. 2 : 1

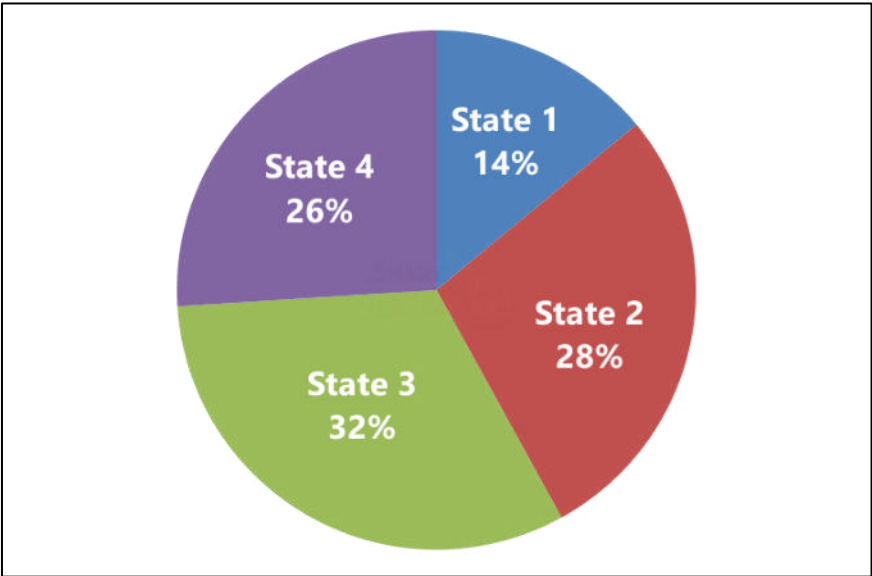
D. 2 : 3

E. None of these

Directions (11-15): Study the following pie chart and table carefully to answer the questions that follow.

Pie Chart Showing Percentage wise Distribution of Cars in Four Different States

Distribution of Cars



Total Cars = 700

Table showing Ratio between Diesel and Petrol Engine Cars which are Distributed among Four Different States

States	Diesel Engine Cars	Petrol Engine Cars
State 1	3	4

State 2	5	9
State 3	5	3
State 4	1	1

**11. What is the difference between the number of diesel engine cars in state 2 and the number of petrol engine cars in state 4?**

- A. 159
- B. 25
- C. 28
- D. 34
- E. 161

**12. Number of petrol engine cars in state 3 is what per cent of the number of diesel engine cars in state 1?**

- A. 100%
- B. 200%
- C. 300%
- D. 125%
- E. 225%

**13. If 25% of diesel engine cars in state 3 are AC and remaining cars are non-AC, what is the number of diesel engine cars in state 3 which are non-AC?**

- A. 75

B. 45

C. 95

D. 105

E. 35

**14. What is the difference between the total number of cars in state 3 and the number of petrol engine cars in state 2?**

A. 96

B. 106

C. 112

D. 102

E. 98

**15. What is the average number of petrol engine cars in all the states together?**

A. 86.75

B. 89.25

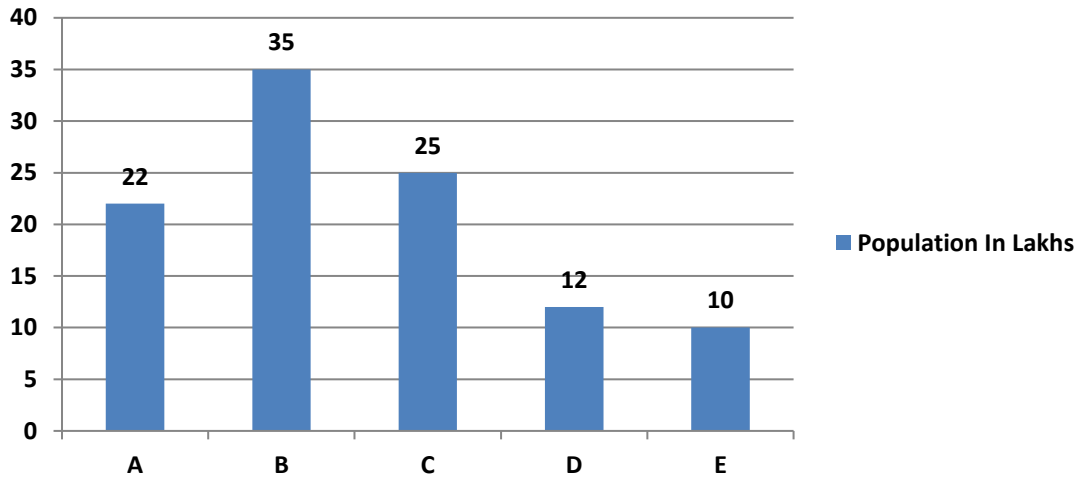
C. 89.75

D. 86.25

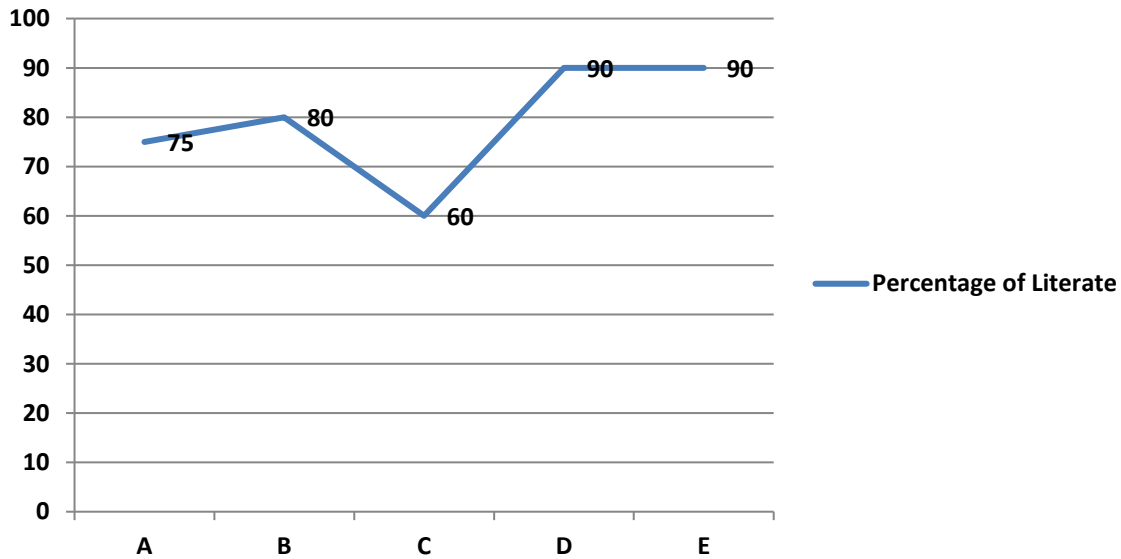
E. 88.75

**Directions (16-20):** The following bar graph shows the population (in lakh) of five cities in the years 2008 and the line graph shows the percentage of literate among them.

### Population In Lakhs



### Percentage of Literate



16. What is the number of literate people from village A in Lakhs in 2008?

A. 18

B. 16.5

C. 15

D. 17.5

E. 20

17. What is the total literate population of all cities together in the year 2008?

- A. 13.94 Lakh
- B. 79.3 Lakh
- C. 81 Lakh
- D. 48.3 Lakh
- E. None of these

18. In which of the following cities is the population in the year 2008 is maximum illiterate among all the cities?

- A. B
- B. A
- C. D
- D. C

E. E

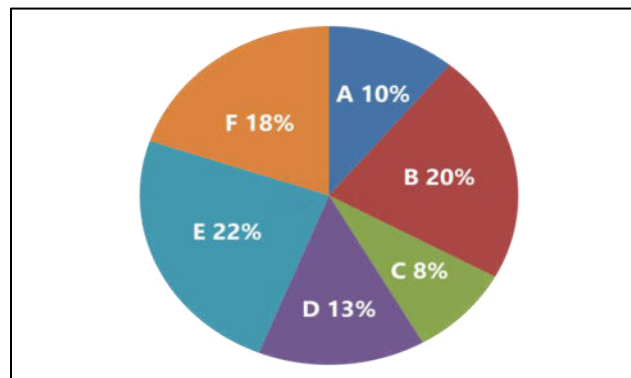
19. What is the average number of literate population among all the cities together?

- A. 12.5 Lakh
- B. 23 Lakh
- C. 9.8 Lakh
- D. 15.86 Lakh
- E. 14.45 Lakh

20. What is the total illiterate population of all cities together in the year 2008?

- A. 24.7 Lakh
- B. 18 Lakh
- C. 15 Lakh
- D. 25.9 Lakh
- E. None of these

Directions(21-25): The total population of seven cities together is 90 lakh. Given pie-chart shows the percentage distribution of this population and the table shows the percentage population below poverty line in these cities.



Total population = 90 lakh

City	population below poverty line
A	48%
B	45%
C	35%
D	40%
E	55%
F	45%
G	50%

**21. What is the population of City C which is above poverty line?**

- A. 4.12 lakh
- B. 4.48 lakh
- C. 4.68 lakh
- D. 4.84 lakh

**22. What is the difference between the population of City E which is below poverty line and that which is above poverty line?**

- A. 1.72 lakh
- B. 1.98 lakh
- C. 2.24 lakh
- D. 2.48 lakh
- E. None of these

**23. What is the ratio of the population of City A which above poverty line to the population of City D which below poverty line?**

- A. 1 : 1
- B. 2 : 3
- C. 3 : 4
- D. 5 : 4
- E. 5 : 3

**24. The population of City G which above poverty line approximately what per cent of the population of City A which is below poverty line?**

- A. 87%
- B. 90%
- C. 94%
- D. 96%
- E. 97%

**25. The population of City B which is below poverty line is approximately what percent more/less than the population of City D which is below poverty line?**

- A. 51%

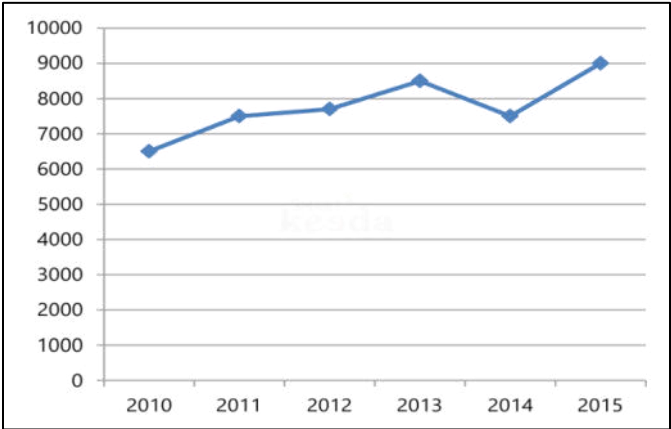


- B. 57%
- C. 64%

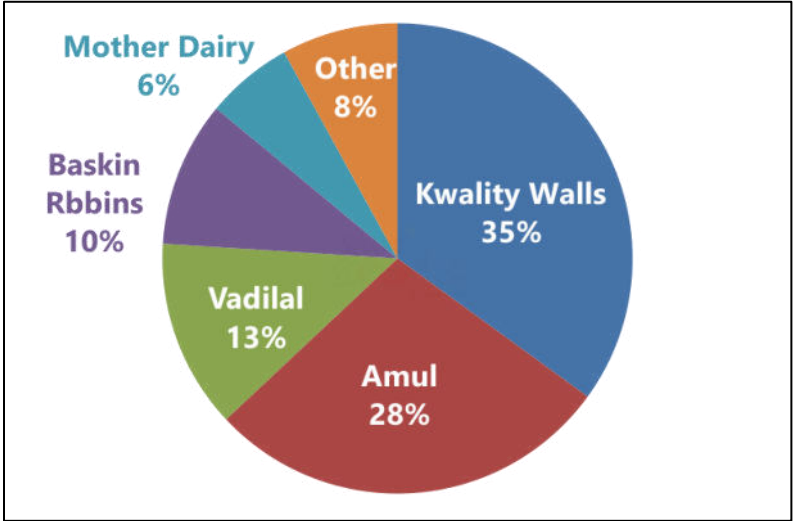
- D. 73%
- E. 78%

Directions(26-30): Refer to the line graph and pie-chart below and answer the question that follows. The line graph shows Ice-cream market size (in crores) in India from the year 2010 to 2015 and the pie chart depicts percentage market shares of different Ice-cream brands in 2013.

Ice-cream market in India



Market Share of various companies in 2013



**26. If the market share of Vadilal increases by 38% from 2013 to 2015, what would be the approximate market share of Vadilal in 2015?**

- A. 12%
- B. 17%
- C. 14%
- D. 21%
- E. 19%

**27. What is the difference between the market share of Amul and that of Mother Dairy in 2013?**

- A. 1650 crore
- B. 1950 crore
- C. 1870 crore
- D. 1750 crore
- E. Other than the given options

**28. If the market share of all the companies remain the same in 2014, what was the increase/decrease in the turnover of Amul from 2013 to 2014?**

- A. decreased by 280 crore
- B. increased by 520 crore
- C. decreased by 420 crore
- D. increased by 620 crore

E. Other than the given options

**29. What is the market share of Mother Dairy in 2016, if the market share of each company remains the same as in 2013 and the ice-cream market increased by 20% from 2013 to 2016?**

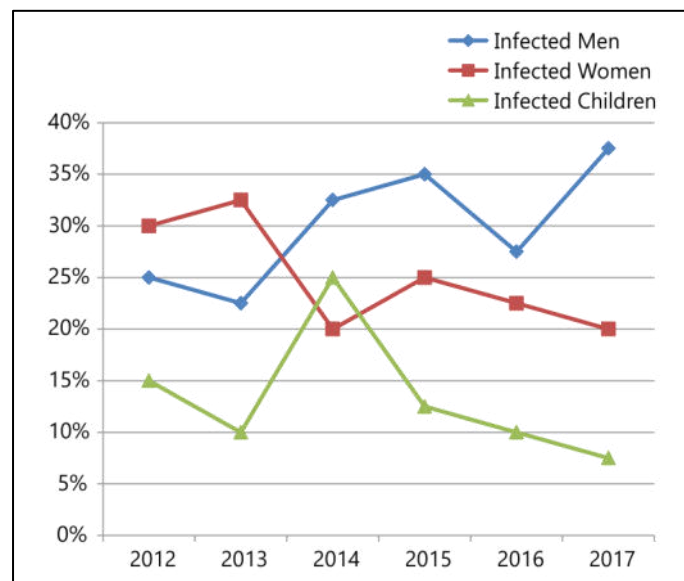
- A. ₹ 640
- B. ₹ 720
- C. ₹ 612
- D. ₹ 900
- E. ₹ 570

**30. If the market share of the companies in 2015 is the same as in 2013 and in 2016 the ice-cream market increases by 10% from the previous year but the share of Kwality Walls falls by 20%. What is the percentage change in the market share of Kwality Walls from 2015 to 2016?**

- A. 18.24%
- B. 13.14%
- C. 12.54%
- D. 9.54%
- E. 19.14%

**Directions (31-35): Study the following graph carefully and answer the questions given beside.**

**Following chart shows the percentage of infected people by epidemic 'SARS'**



**Total Number of Men, Women and Children  
in district over the years**

Years	Men	Women	Children
2012	44000	39000	12000
2013	75000	64000	21000
2014	63000	60000	12000
2015	70000	54000	16000
2016	70000	68000	20000
2017	78000	75000	45000

**31. What was the approximate average of infected men, infected women and infected children in 2014?**

- A. 12683
- B. 12795
- C. 11825
- D. 12843
- E. 12787

**32. The number of infected men in the year 2013 was what percent to the men not suffering from SARS in the same year?**

- A. 45%
- B. 29%
- C. 30.5%
- D. 25.5%
- E. None of these

**33. What was the ratio of the infected women in the 2014 to the infected men in the year 2016?**

- A. 6 : 7
- B. 21 : 65

C. 15 : 73

D. 48 : 77

E. None of these

**34. What is the difference between the number of infected women and infected children together in the year 2017 and the number of infected men in the same year ?**

A. 10875

B. 15745

C. 14530

D. 31650

E. None of these

**35. What is the percent of non infected women in 2012 to non infected men in 2015?**

A. 60%

B. 55%

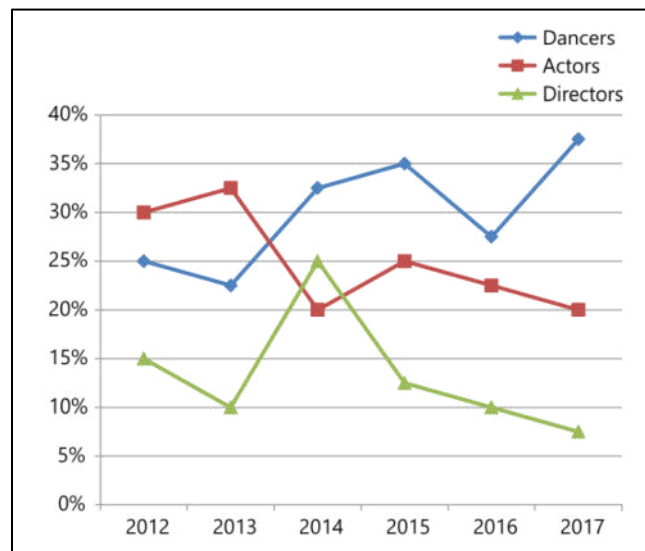
C. 70%

D. 85%

E. None of these

**Directions (36-40). Study the following graph carefully and answer the questions given beside:**

**The line graph shows the percentage of Dancers, Actors, and Directors who like cars and are from Tiripura and the table shows the total number of Dancers, Actors, and Directors living in Tiripura.**



**Total number of Dancers, Actors, and Directors over the years in Tiripura**

Year	Dancers	Actors	Directors
2011	4500	3000	1500
2012	5700	4600	2100
2013	6300	6000	1200
2014	6600	5400	1600
2015	4000	6800	2000
2016	7800	7500	4500

**36. Find the total number of directors who do not like cars in the year 2011 and 2014 together?**

**A. 3165**

**B. 2825**

**C. 2675**

**D. 4532**

E. None of these

**37. What is the difference between the number of Actors who like cars in 2016 and the number of Dancers who do not like cars in 2014?**

A. 2120

B. 2790

C. 3150

D. 3440

E. None of these

**38. Find the ratio of Dancers who like cars in 2011 to that of Actors who like cars in 2013?**

A. 16 : 9

B. 11 : 15

C. 15 : 16

D. 8 : 7

E. None of these

**39. What is the overall percentage change from the number of Directors who like cars in 2011 to the number of Dancers who like cars in 2016?**

A. 1050%

B. 1100%

C. 1150%

D. 1200%

E. None of these

**40. What was the approximate mean of Dancers, Actors and Directors who like cars in 2015?**

A. 943

B. 1060

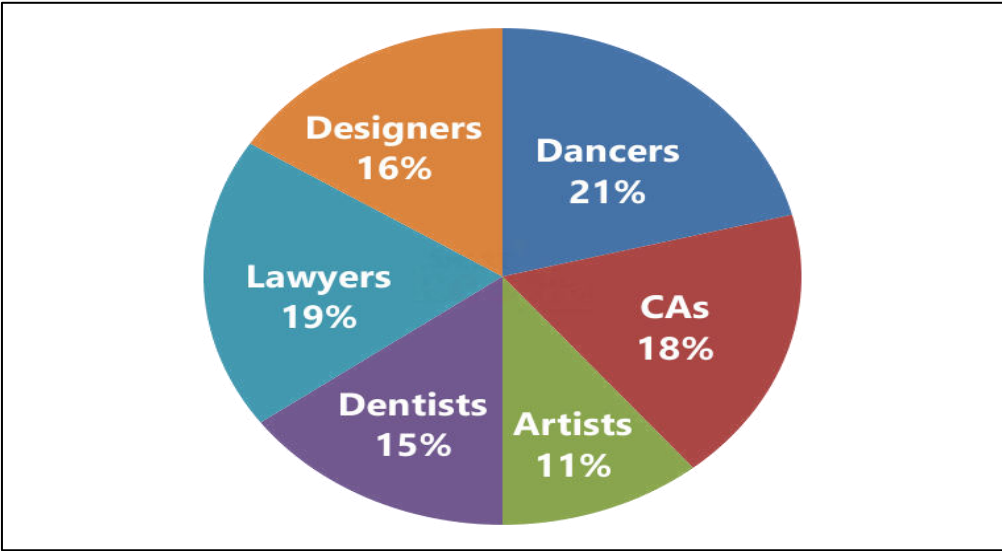
C. 963

D. 963

E. None of these

**(41 to 45). Directions: Study the following information carefully and answer the questions given beside:**

**A survey conducted on 10500 people to find out various professionals in the town as shown in the pie chart and percentage of Female professionals among them as shown in the table chart below:**



**Percentage of Female Professionals**

Dancers	–	20%
CAs	–	60%
Artists	–	40%
Dentists	–	80%
Lawyers	–	40%
Designers	–	35%

41. What is the respective ratio of the male CAs and Designers to the same female professionals in the town?
- A. 41 : 44
  - B. 55 : 53
  - C. 31 : 35

- D. 44 : 35
  - E. None of these
42. The total number of Lawyers in the town is approximately, what per cent of the total number of Dancers in the town?
- A. 95%

- B. 98%
- C. 90%
- D. 85%
- E. 81%

**43. What is the difference between the total number of male and female professionals in the town?**

- A. 1284
- B. 1134
- C. 1054
- D. 1164
- E. None of these

**44. Female Dancers are what per cent of the female Dentists in the town?**

- A. 42%

- B. 28%
- C. 15%
- D. 35%
- E. None of these

**45. If the percentage of female dancers is further increased by 50% and the percentage of dentists is decreased by 10%, what is the current ratio between the female dancers to the male dentists?**

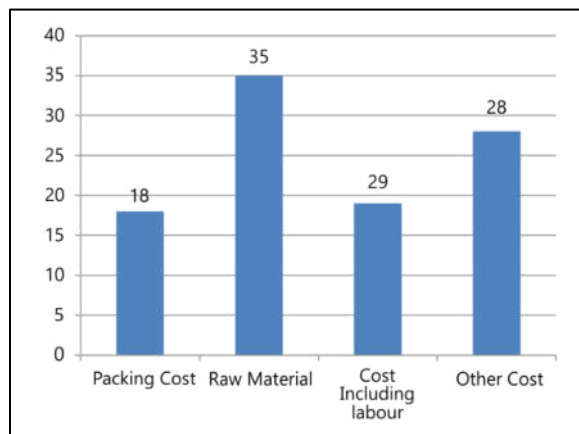
- A. 11 : 5
- B. 3 : 2
- C. 6 : 1
- D. 2 : 3
- E. None of these

**Directions( 46-50). Directions: Study the following charts carefully and answer the questions given beside:**

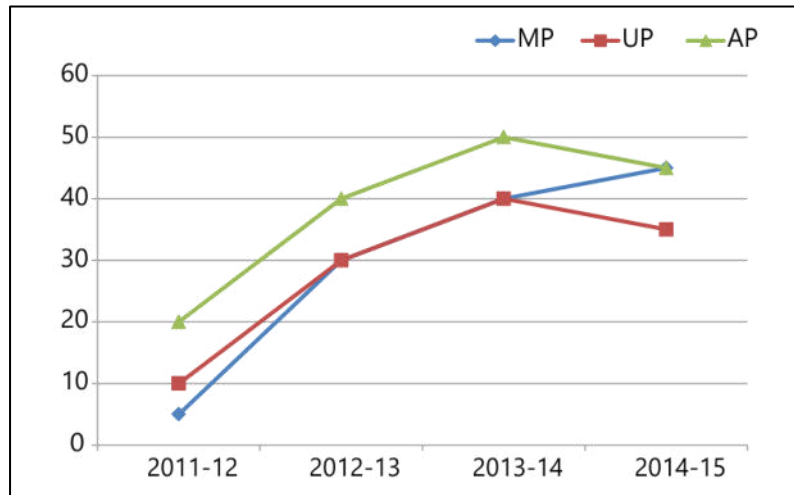
**The bar chart shows the percentage cost of various components required to manufacture machines in three different states. The percentage cost remains the same during the given period. In the line graph the volume of sales over four financial years in AP,UP and MP is given in thousand units.**

**Breakup of cost of machines (in%)**





(Sales in thousand units)



46. If the Raw Material Cost of one unit is Rs. 300, then what is the total packing Cost (approximately in Rs.) for the volume of sales in MP in 2014-15?

- A. 300 thousand
- B. 210 thousand
- C. 130 thousand
- D. 700 thousand
- E. 749 thousand

47. What is the ratio of the units sold in MP to those sold in UP over the given period?

- A. 21 : 10
- B. 10 : 21
- C. 24 : 23
- D. 21 : 30
- E. None of these

**48. Raw material cost alone is what percent of the total remaining cost? (In approximate)**

- A. 54%
- B. 40%
- C. 45%
- D. 64%
- E. None of these

**49. If the selling price of a machine is Rs. 40000 and the profit is Rs. 2000 per machine then what is the approximate total cost towards Raw Material for the volume of sales in AP for the year 2014-15?**

- A. 60 million

- B. 70 million
- C. 55 million
- D. 65 million
- E. None of these

**50. The sales of all the states together in 2014-15 was how much more than that of during 2012-13?**

- A. 10%
- B. 20%
- C. 15%
- D. 25%
- E. None of these

## Mixed DI-2 - Answer and Explanation

**1. Answer: A**

Percent of passed students in school A  $\Rightarrow 100 - 15 = 85\%$

No. of passed Girls students in school A

$$= 1350 \times \frac{85}{100} \times \frac{4}{9} = 510$$

Hence, option A is correct.

**2. Answer: D**

Data Inadequate

we don't know the no. of students of school E & School F separately.

Hence, option D is correct

**3. Answer: B**

Suppose the total boys student in school

'C' = x

$$x \times \frac{30}{100} \times \frac{4}{9} = 750$$

$$x = 5625$$

suppose the total boys student in school 'D' = y

$$y \times \frac{26}{100} \times \frac{4}{9} = 520$$

$$y = 4500$$

$$\text{Ratio} = 5625 : 4500 = 5 : 4$$

Hence, option B is correct.

**4. Answer: C**

Suppose the total No. of student in school 'B' = x

$$x \times \frac{25}{100} \times \frac{7}{13} = 175$$

$$x = 1300$$

Hence, option C is correct.

### 5. Answer: E

Suppose the total No. of student in school 'F' = x

$$x \times \frac{90}{100} \times \frac{7}{10} = 567$$

$$x = 900$$

$$\text{Failed girls} = 900 \times \frac{10}{100} \times \frac{4}{9} = 40$$

Hence, option E is correct.

### 6. Answer: B

Production of A company

$$= \frac{15}{100} \times 25 = 3.75 \text{ crore}$$

Production of C company

$$= \frac{22}{100} \times 25 = 5.5 \text{ crore}$$

The total cost of the production of product 1 by companies A and C together-

$$= \frac{2}{5} \times 3.75 + \frac{4}{5} \times 5.5$$

$$\Rightarrow 1.5 + 4.4 = 5.9 \text{ crores}$$

Hence, option B is correct.

### 7. Answer: E

$$\text{The production of D} = \frac{8}{100} \times 25 = 2 \text{ crores}$$

The profit earned by company 'D' on product II

$$\Rightarrow 2 \times \frac{5}{8} \times \frac{25}{100}$$

$$\Rightarrow .3125 \text{ crore}$$

Hence, option E is correct.

### 8. Answer: E

Cost of production of product I by company F

$$= \frac{5}{100} \times 25 \times \frac{1}{5} = .25 \text{ crore}$$

Cost of production of product II by company D

$$= \frac{8}{100} \times 25 \times \frac{5}{8} = 1.25$$

According to question,

$$\frac{.25}{1.25} \times 100 = 20\%$$

Hence, option E is correct.

### 9. Answer: E

Profit earned by company G for product I & II together

$$\frac{12}{100} \times 25 \times \frac{4}{6} \times \frac{30}{100} + \frac{12}{100} \times 25 \times \frac{2}{6} \times \frac{24}{100}$$

$$= 0.6 + 0.24 = 0.84 \text{ crore} = 84 \text{ lakh}$$

### 10. Answer: C

The cost of production of product I by company

$$A \frac{15}{100} \times 25 \times \frac{2}{5} = 1.5$$

The cost of production of product I by company

$$D \frac{8}{100} \times 25 \times \frac{3}{8} = 75$$

$$1.5:75 = 2:1$$

**11. Answer: B**

Total number of cars in state 2 = 28% of 700

Total number of diesel engine cars in state 2

$$= 28\% \text{ of } 700 \times \frac{5}{(5+9)}$$

$$= \frac{28}{100} \times 700 \times \frac{5}{14} = 70$$

Total number of cars in state 4 = 26% of 700

Total number of petrol engine cars in state 4

$$= 26\% \text{ of } 700 \times \frac{1}{(1+1)}$$

$$= \frac{26}{100} \times 700 \times \frac{1}{2} = 91.$$

$$\text{Difference} = 91 - 70 = 21.$$

**12. Answer: B**

Total number of cars in state 3 = 32% of 700

∴ Total number of petrol cars in state 3

$$= \frac{3}{(5+3)} \times 32\% \text{ of } 700$$

$$= 3 \times 32 \times 700 = 84.$$

$$8 \quad 100$$

And total number of cars in state 1 = 14% of 700

Number of diesel engine cars in state 1

$$= \frac{3}{(3+4)} \times 14\% \text{ of } 700$$

$$= \frac{3}{7} \times \frac{14}{100} \times 700 = 42.$$

∴ Required percentage

$$= \frac{84}{42} \times 100 = 200\%$$

**13. Answer: D**

Total number of cars in state 3 = 32% of 700

∴ Number of diesel engine cars in state 3

$$= \frac{5}{(5+3)} \times 32\% \text{ of } 700$$

$$= \frac{5}{8} \times \frac{32}{100} \times 700 = 140.$$

Number of non-AC diesel engine cars

$$= 100 - 25 = 75\% = \frac{3}{4} \text{th part}$$

Total number of diesel engine cars

$$= 140 \times \frac{3}{4} = 105.$$

Hence, option D is correct.

**14. Answer: E**

Total number of cars in state 3 = 32% of 700

$$= \frac{32}{100} \times 700 = 224$$

Total number of cars in state 2 = 28% of 700

Total number of petrol engine cars in state 2

$$= 28\% \text{ of } 700 \times \frac{9}{(5 + 9)}$$

$$= \frac{28}{100} \times 700 \times \frac{9}{14}$$

$$= 126$$

$$\therefore \text{Required difference} = 224 - 126 = 98.$$

**15. Answer: B**

Total number of cars in state 1 = 14% of 700 = 98

Total number of cars in state 2 = 28% of 700 = 196

Total number of cars in state 3 = 32% of 700 = 224

Total number of cars in state 4 = 26% of 700 = 182

Now, number of petrol engine cars in state 1

$$= 98 \times \frac{4}{(4 + 3)} = 98 \times \frac{4}{7} = 56$$

Number of petrol engine cars in state 2

$$= 196 \times \frac{9}{(5 + 9)} = 196 \times \frac{9}{14} = 126$$

Number of petrol engine cars in state 3

$$= 224 \times \frac{3}{(5 + 3)} = 224 \times \frac{3}{8} = 84$$

Number of petrol engine cars in state 4

$$= 182 \times \frac{1}{(1 + 1)} = 182 \times \frac{1}{2} = 91$$

$\therefore$  Average total number of petrol engine cars in all states

$$= \frac{56 + 126 + 84 + 91}{4} = \frac{357}{4} = 89.25$$

**16. Answer: B**

Population of Village A = 22 Lakh

Percentage of Literate = 75%

Number of Literate population =  $22 \times 75 / 100 = 16.5$   
Lakhs

**17. Answer: B**

Total literate Population from all the cities together =

Total population x percentage of literate

City A =  $22 \times 0.75\% = 16.5$  Lakh

City B =  $35 \times 0.80\% = 28$  Lakh

City C =  $25 \times 0.60\% = 15$  Lakh

City D =  $12 \times 0.90\% = 10.8$  Lakh

City E =  $10 \times 0.90\% = 9$  Lakh

Total Literate population =  $16.5 + 28 + 15 + 10.8 + 9$   
 $= 79.3$  Lakh

**18. Answer: D**

It is clearly visible from the graph that city C has lowest literate percentage 60%

This means highest Illiterate percentage 40% among all cities.

**19. Answer: D**

Average number of literate population = Total number of population / no of cities

$$= 79.3 / 5$$

$$= 15.86 \text{ Lakh}$$

**20. Answer: A**

$$\text{Total Literate population in 2008} = 22 \times 0.75 + 35 \times 0.80 + 25 \times 0.60 + 12 \times 0.90 + 10 \times 0.90$$

$$= 79.3 \text{ Lakh}$$

Total Illiterate population = Total population – Total Literate population

$$= 104 - 79.3 = 24.7 \text{ Lakh}$$

**21. Answer: C**

$$\text{Population of City C which is above poverty line} = 90 \times \frac{8}{100} \times \frac{65}{100} = 4.68 \text{ lakh}$$

**22. Answer: B**

$$\text{Reqd difference} = 90 \times \frac{22}{100} \times \frac{(55 - 45)}{100}$$

$$= 90 \times \frac{22}{100} \times \frac{10}{100} = 1.98 \text{ lakh}$$

**23. Answer: A**

$$\text{Population of City A which is above poverty line} = 90 \times \frac{10}{100} \times \frac{52}{100} = 4.68 \text{ lakh}$$

$$\text{Population of City D which is below poverty line} = 90 \times \frac{13}{100} \times \frac{40}{100} = 4.68 \text{ lakh}$$

$$\text{Ratio} = 4.68 : 4.68 = 1 : 1$$

**24. Answer: C**

$$\text{Population of City G which is above poverty line} = 90 \times \frac{9}{100} \times \frac{50}{100} = 4.05 \text{ lakh}$$

$$\text{Population of City A which is below poverty line} = 90 \times \frac{10}{100} \times \frac{48}{100} = 4.32 \text{ lakh}$$

$$\therefore \text{Reqd\%} = \frac{4.05 \times 100}{4.32} = 93.75\% \approx 94\%$$

**25. Answer: D**

$$\text{Population of City B which is below poverty line} = 90 \times \frac{20}{100} \times \frac{45}{100} = 8.1 \text{ lakh}$$

$$\text{Population of City D which is below poverty line} = 90 \times \frac{13}{100} \times \frac{40}{100} = 4.68 \text{ lakh}$$

$$\therefore \text{Reqd\%} = \frac{8.1 - 4.68}{4.68} \times 100 = \frac{342}{4.68} = 73.076 \approx 73\%$$

**26. Answer: B**

Market share of Vadilal in 2013

$$= \frac{13 \times 8500}{100} = ₹ 1105 \text{ crore}$$

Market share of Vadilal in value in 2015

$$= \frac{(100+38) \times 1105}{100} = ₹ 1524.9 \text{ crore}$$

Therefore, Market share of Vadilal in 2015 in percentage

$$= \frac{\text{Market Share of Vadilal in value}}{\text{Total Market Share}} \times 100\%$$

$$= \frac{1524.9}{9000} \times 100\% = 16.94\% \approx 17\%$$

**27. Answer: C**

Difference between the market share of Amul and that of Mother Dairy in 2013 =  $28 - 6 = 22\%$

∴ 22% of Market size of Ice-cream in 2013

= 22% of 8500 cr

$$= \frac{22 \times 8500}{100} = ₹ 1870 \text{ crore}$$

**28. Answer: A**

It's evident from the Line-graph that the Market size of ice-cream from 2013 (8500 cr) to 2014 (7500 cr) has decreased.

∴ Decrease in market size from 2013 to 2014 =  $(8500 - 7500) = 1000 \text{ crore}$

∴ The decrease in market share of of Amul's turnover

= 28% of 1000 cr

$$= \frac{28 \times 1000}{100} = ₹ 280 \text{ crore}$$

**29. Answer: C**

Increased Ice-cream market size in 2016

= 120% of 8500

$$= \frac{120 \times 8500}{100} = ₹ 10200$$

∴ Market share of Mother Dairy in 2016

6% of 10200 cr

$$= \frac{6 \times 10200}{100} = ₹ 612 \text{ crore}$$

**30. Answer: D**

Increased Ice-cream market in 2016

110% of 9000 cr

$$= \frac{9000 \times 110}{100} = 90 \times 110 = ₹ 9900 \text{ crore}$$

Value of share of Kwality Walls in 2015 which is same as in 2013

= 35% of 9000

$$= \frac{9000 \times 35}{100} = ₹ 3150 \text{ crore}$$

Therefore, value of share of Kwalitywalls in 2016 after decrement of 20%

80% of 3150 cr

$$= \frac{3150 \times 80}{100} = ₹ 2520 \text{ crore}$$

Now, % share of Kquality Walls in 2016

$$= \frac{2520}{9900} \times 100 = 25.45\%$$

Total percentage change in Market share of Kqualitywalls in 2016 =  $35 - 25.45 = 9.54\%$

**31. Answer: C**

Reqd. average

$$= \frac{63000 \times 32.5\% + 60000 \times 20\% + 12000 \times 25\%}{3}$$

$$= \frac{20475 + 12000 + 3000}{3}$$

$$= \frac{35475}{3} = 11825$$

**32 . Answer: B**

$$\text{Reqd. \%} = \frac{75000 \times 22.5\%}{75000 \times 77.5\%} \times 100 = 29.03\% \approx 29\%$$

**33. Answer: D**

$$\text{Reqd. ratio} = \frac{60000 \times 20\%}{70000 \times 27.5\%} = \frac{48}{77}$$

**34. Answer: A**

$$\begin{aligned} \text{Reqd. difference} &= (75000 \times 20\% + 45000 \times 7.5\%) - \\ &\quad (78000 \times 37.5\%) \\ &= (15000 + 3375) - (29250) \\ &= 18375 - 29250 = 10875 \end{aligned}$$

**35. Answer: A**

$$\% \text{ of non infected women} = 100 - 30 = 70\%$$

$$\% \text{ of non infected men} = 100 - 35 = 65\%$$

$$\begin{aligned} \text{Reqd. \%} &= 70\% \text{ of } 39000 / 65\% \text{ of } 70000 \times 100 \\ &= 60\% \end{aligned}$$

**36. Answer: C**

Total number of directors who do not like cars in the year 2011 and 2014 together =  $(100 - 15)\%$  of  $1500 + (100 - 12.5)\%$  of  $1600$

$$= 85\% \text{ of } 1500 + 87.5\% \text{ of } 1600$$

$$= 1275 + 1400 = 2675$$

**37. Answer: B**

$$\begin{aligned} \text{Number of Actors who like cars in 2016} &= 20\% \text{ of } 7500 = 1500 \end{aligned}$$

$$\begin{aligned} \text{Number of Dancers who do not like cars in 2014} &= \\ &\quad (100 - 35)\% \text{ of } 6600 = 4290 \end{aligned}$$

$$\text{Reqd. difference} = 4290 - 1500 = 2790$$

**38. Answer: C**

$$\text{Reqd. ratio} = 25\% \text{ of } 4500 = 15 : 16$$



20% of 6000

**39. Answer: D**

The number of Directors who like cars in 2011 =  
15% of 1500 = 225 The number of Dancers who  
like cars in 2016 = 37.5% of 7800 = 2925

$$\therefore \text{Reqd. \%} = \frac{2925 - 225}{225} \times 100 = 1200\%$$

**40. Answer: A**

$$\begin{aligned} \text{Reqd.} & \quad 27.5\% \text{ of } 4000 + 22.5\% \text{ of} \\ \text{avg} = & \quad \frac{6800 + 10\% \text{ of } 2000}{3} \end{aligned}$$

$$= \frac{1100 + 1530 + 200}{3}$$

$$= \frac{2830}{3} = 943.33 \approx 943$$

**41. Answer: E**

As per the given data, we get

In the CAs category, there are 60% females  
therefore, 40% must be males of the total  
percentage of CAs which is 18%.

Similarly, In the Designers category, there are 35%  
females therefore, 65% must be males of the total  
percentage of designers which is 16%.

$$\therefore \text{Reqd} \quad \frac{40\% \text{ of } 18\% \text{ of total} + 65\% \text{ of } 16\% \text{ of total}}{\quad}$$

ratio =  $60\% \text{ of } 18\% \text{ of total} + 35\%$   
of 16% of total

$$= \frac{40 \times 18 + 65 \times 16}{60 \times 18 + 35 \times 16} = \frac{720 + 1040}{1080 + 560}$$

$$= \frac{1760}{1640} = 44 : 41$$

**42. Answer: C**

The total number of lawyers in the town = 19%  
And, the total number of Dancers in the town =  
21%

$$\therefore \text{Reqd \%} = \frac{19}{21} \times 100 = 90.47 \approx 90\%$$

**43. Answer: B**

As per the given data, we get

In the Dancers category, there are 20% females  
therefore, 80% must be males and hence the difference  
between them would be =  $(80 - 20)\%$  of total dancers  
= 60% of 21% of total

Similarly,

In the CAs category, there are 60% females therefore,  
40% must be males and hence the difference between  
them would be

$$= (40 - 60)\% \text{ of total CAs} = -20\% \text{ of } 18\% \text{ of total}$$

In the Artists category, there are 40% females therefore,

60% must be males and hence the difference between them would be =  $(60 - 40)\%$  of total artists

= 20% of 11% of total

In the Dentists category, there are 80% females

therefore, 20% must be males and hence the difference between them would be =  $(20 - 80)\%$  of total dentists  
= - 60% of 15% of total

In the Lawyers category, there are 40% females

therefore, 60% must be males and hence the difference between them would be =  $(60 - 40)\%$  of total lawyers  
= 20% of 19% of total

In the Designers category, there are 35% females

therefore, 65% must be males and hence the difference between them would be =  $(65 - 35)\%$  of total dancers = 30% of 16% of total

The reqd. difference =  $(60\% \text{ of } 21\% - 20\% \text{ of } 18\% + 20\% + 11\% - 60\% \text{ of } 15\% + 20\% \text{ of } 19\% + 30\% \text{ of } 16\%) \text{ of total}$

$$= \frac{10500(1260 - 360 + 220 - 900 + 380 + 480)}{10000}$$

$$= \frac{105}{100} \times 1080 = 1134$$

Total number of female dancers = 20% of 21% of total

Total number of female dentists = 80% of 15% of total

Reqd % =  $\frac{20\% \text{ of } 21\% \text{ of total} \times 100}{\text{Total number of female dentists}}$

80% of 15% of total

$$= \frac{7}{20} \times 100 = 35\%$$

**44. Answer: B**

As per the question,

Total percentage of female dancers is increased by

$$50\% = 150\% \text{ of } 20 = 30\%$$

Total percentage of female dentists is decreased by 10%

$$= 90\% \text{ of } 80 = 72\%$$

Now,

The total number of female dancers = 30% of 21% of total

And the total number of male dentists =  $(100 - 72)\%$  of 15% of total

**45. Answer: D**

$$\text{Reqd ratio} = \frac{30\% \text{ of } 21\% \text{ of total}}{28\% \text{ of } 15\% \text{ of total}} = 3 : 2$$

**46. Answer: D**

Raw material cost = Rs. 300

And as given in the bar chart that the cost of Raw material of one item is 35% of whole.

Therefore,  $35\% \equiv ₹ 300$

$18\% \equiv x$

$$x = \frac{300 \times 18}{35} = ₹ 154.28$$

And the total volume sales in MP 2014-15 = 45 thousand  
 Therefore, Total packing cost in MP in year 2014-15 =  
 $154.28 \times 45000 = 6942600 \approx 700$  thousand.

**47. Answer: C**

Total sale in MP over the years =  $5 + 30 + 40 + 45 = 120$   
 and, the total sale in UP over the years =  $10 + 30 + 40 + 35 = 115$

$$\text{Reqd ratio} = \frac{120}{115} = 24 : 23$$

**48. Answer: A**

Raw material cost = 35

Remaining cost = Packing cost + Cost including labour +

Other cost =  $18 + 19 + 28 = 65$

$$\text{Reqd \%} = \frac{35}{65} \times 100 = 53.8 \approx 54\%$$

**49. Answer: E**

CP of machine =  $40000 - 2000 = 38000 \therefore$  CP of raw material = 35% of 38000

$$= \frac{35}{100} \times 38000 = ₹ 13300$$

$\therefore$  Total cost towards raw materials in AP for the volume of sales of machines in 2014-15 =  $13300 \times 45000 = 598500000 \approx 600$  million (approx)

**50. Answer: D**

Total sales of all the states together in year 2014-15 =  $45 + 45 + 35 = 125$   
 Total sales of all the states together in year 2012-13 =  $40 + 30 + 30 = 100$

$$\therefore \text{Reqd \%} = \frac{125 - 100}{100} \times 100 = 25\%$$

## Caselet DI

**Direction (1-5):** Read the following information carefully and answer the questions given below it.

Natasha wants to pursue her B. Tech from Massachusetts Institute of Technology, United States, but to be able to afford it, she has to take an education loan. The loan agreement guaranteed to pay 80% of all her expenses. This way she only had to bear the remaining costs. As soon as she landed in the United States, she had to pay the rent for her new apartment. The apartment rent was \$550 per month.

She then paid her tuition fee for the current semester worth \$25000. On an average she spent \$340 on utilities and groceries per month. Given that, Natasha's course lasted a total of two years (comprising of 2 semesters per year) and the bank gave 80% of the total expenses of two years at the beginning of her course.

**1. How much did the bank have to pay in total for two years on behalf of Natasha?**

- A) \$90308
- B) \$85428
- C) \$97088
- D) \$90288

E) Cannot be determined

**2. If the bank charges simple interest at the rate of 9% per annum, then find the total interest amount that Natasha paid after 2 years. (Assume she pays off the entire loan after 2 years of completion of course)**

- A) \$17075. 84
- B) \$17005. 48
- C) \$17975. 84
- D) \$16845. 48
- E) \$17475. 84

**3. Find, the annual amount spent on utilities is what percentage less than the annual amount spent on rent? (Approximate)**

- A) 50%
- B) 38%
- C) 30%
- D) 24%
- E) 10%

**4. Natasha gets an internship for a period of 3 months. The company where she'll be doing internship pays \$12000 per month. The utilities and rent for these 3 months is what percentage of the total amount she earns from the internship?**

- A) 7.41%
- B) 5.41%
- C) 17.41%
- D) 15.41%

E) None of these

**5. Natasha decides to live with her relatives for 6 months so she will not have to pay for rent and utilities. How much does she save on rent and utilities?**

- A) \$8340
- B) \$3640
- C) \$5340
- D) \$8940
- E) Cannot be determined

**Directions(6-10) : Study the following information carefully and answer the questions given beside. Three companies Xiaomi, Vivo and Realme sold mobiles in 3 different months January, February and March. In January, Xiaomi sold 20% more mobiles than February. Ratio of mobiles sold by Vivo in February to Realme in March was 8:5. Total number of mobiles sold by Xiaomi in three months together was 2270. Vivo sold 350 more mobiles than Realme in February. In February, Xiaomi sold 75% of mobiles sold by Vivo in same month. There was decrease in 20% of mobiles sold from February to March by Vivo. Total number of mobiles sold in March by three**

companies together was 2090. Total number of mobiles sold by Realme in three months together was 1250 and Vivo sold 540 mobiles in January.

**6. What is the difference between total number of mobiles sold by Xiaomi and Vivo in three months together?**

- A) 290
- B) 220
- C) 320
- D) 370
- E) 250

**7. Find ratio of mobiles sold by Xiaomi in February and March together to mobiles sold by Realme in January and February together.**

- A) 28 : 13
- B) 31 : 15
- C) 12 : 7
- D) 23 : 17
- E) 36 : 23

**8. Mobiles sold by Xiaomi and Vivo in February together is what percentage (approx) of mobiles sold by all three in January?**

- A) 73%
- B) 96%
- C) 82%
- D) 90%

E) 62%

**9. Average rate per mobile sold by Xiaomi in January was Rs. 8000 and same for Realme in March was Rs. 8800. What was the difference of revenue earned by Xiaomi in January and Realme in March?**

- A) Rs. 12,40,000
- B) Rs. 13,60,000
- C) Rs. 14,20,000
- D) Rs. 11,80,000
- E) Rs. 16,30,000

**10. Find the total number of mobiles sold by all three companies in three months together.**

- A) 5200
- B) 5500
- C) 5000
- D) 4800
- E) 5800

**Directions (11-15) : Study the following information carefully and answer the questions given beside.**

A train started running from source station P to its destination station Q. There were three intermediate stations i.e. A, B and C between station P and station Q in the given order and the fare between any two consecutive stations was Rs. 5. The total number of passengers boarded at station P was 2280. The ratio of the number of passengers boarded and left the train at station A was 9 : 7, respectively and the total

tickets sold for station Q at station B was 140 and the total number of Rs. 5 tickets sold at station B was 210. The ratio of the total number of passengers who left the train at station A and at station B was 7 : 6, respectively. The total amount earned by selling Rs. 5 tickets at station P was Rs. 2800 and the total number of passengers left the train at the station Q was 1740. The total amount earned by selling tickets at the station C was Rs. 1250.

**11. How many passengers had left the train at station C?**

- A) 780
- B) 820
- C) 850
- D) 940
- E) 760

**12. The ratio of the number of Rs. 5, Rs. 10, Rs. 15 and Rs. 20 tickets sold at the station P was 14: 6: 8: 29, respectively. Find the number of Rs. 5 tickets sold at the station A.**

- A) 228
- B) 270
- C) 240
- D) 300
- E) 264

**13. How many passengers were on the train between station B and station C?**

- A) 2190
- B) 2580
- C) 2640
- D) 2310
- E) 2420

**14. The per person average weight of the passengers travelling in the train from station A to station B was 35 kg and the resultant weight of the train (including the passengers) was 200 ton then find the weight of the train only. (1 ton = 1000 kg)**

- A) 114.6 ton
- B) 118.4 ton
- C) 115.2 ton
- D) 116.8 ton
- E) 124.2 ton

**15. Find the total amount collected at the station B on selling all the tickets.**

- A) Rs. 2250
- B) Rs. 2450
- C) Rs. 2600
- D) Rs. 3000
- E) Rs. 2500

**Directions(16-20) : Study the following information carefully and answer the questions given beside. The information given below is the investment of**

three Venture capitalists in a partnership for the period of 1991 – 1995.

The investments made by an individual are for the same period. The investment of Bikram in 1991 is Rs. 40000 and is equal to the investment of Chandan in 1993. The total investment in 1994 is Rs. 24000 and the ratio of investments of Arjun, Bikram and Chandan is 8 : 9 : 7 respectively. The investments of Arjun in 1991, 1992 and 1993 are Rs. 32000, Rs. 48000 and Rs. 44000 respectively. The investment of Chandan in 1991 and 1992 are same i.e. Rs. 22000. The investment of Bikram in 1993 is Rs. 6000 more than the investment by him in 1992 i.e. Rs. 30000.

16. Find the share of profit earned by Bikram in the year 1993, if the total profit in 1993 is Rs. 15000?

- A) Rs. 4250
- B) Rs. 4050
- C) Rs. 4500
- D) Rs. 4400
- E) Rs. 3600

17. Suppose all the VCs invested for one more year i.e. 1995 and the total investment of Arjun and Bikram is Rs. 56000 and invested their amounts for 24 and 16 months respectively, find for how many months Chandan invested his amount of Rs. 64,000?

[Given profits of Arjun, Bikram and Chandan are Rs. 12600, Rs. 11200 and Rs. 16800 respectively]

- A) 16 months
- B) 21 months
- C) 15 months
- D) 6 months
- E) 12 months

18. If the share of profit of Chandan in 1991 and 1992 is Rs. 7700 and Rs. 8800 respectively, find the ratio of profit of Arjun in 1991 to that in 1992?

- A) 1 : 2
- B) 1 : 4
- C) 12 : 7
- D) 7 : 12
- E) 3 : 4

19. If the amount of profit shared by Arjun and Bikram in 1994 is Rs. 4000 and Rs. 4500 respectively and Chandan makes  $\frac{3}{4}$ <sup>th</sup> of the profit in 1995 as compared to his profit in 1994. Find the amount of Profit shared by Chandan in 1995?

- A) Rs. 2625
- B) Rs. 3000
- C) Rs. 2265
- D) Rs. 3500
- E) Rs. 6225

20. The profit earned by Bikram in 1996 is 8% of the investment made by Bikram in 1992 and the profit of

**Chandan in 1996 is 10% of the investment made by Chandan in 1992. Find the ratio of profit of Chandan in 1996 to that of Bikram in 1996.**

- A) 12 : 11
- B) 11 : 12
- C) 1 : 12
- D) 15 : 11
- E) None of these

**Directions (21-25): Study the following information carefully and answer the questions given beside.**

**Information about number of patients who were tested positive to COVID-19 tests in five different cities of India is as follows.**

**Delhi has 60% more patients than Jaipur, which has 400 more than Chennai. Number of patients in Calcutta was half the number of patients in Chennai. Number of patients in Mumbai was 100 less than Chennai. Total patients were 9100 as on 31 March 2019 in all the five cities together.**

**It was found that out of every 200 patients, 180 recovered within 14 days, 18 took 30 days to recover and 2 died.**

**21. Find average number of patients in Chennai, Calcutta and Mumbai.**

- A) 1100
- B) 1200
- C) 1300

D) 1400

E) None of these

**22. Number of patients in Jaipur was what percent more than Calcutta?**

- A) 100%
- B) 150%
- C) 200%
- D) 250%

E) None of these

**23. For each 1000 tests the numbers of people who were found positive were 130. Find out how many tests were conducted that produced 9100 total positive cases?**

- A) 35000
- B) 40000
- C) 91000
- D) 130000
- E) 70000

**24. How many patients recovered till 30 April 2020, if all the patients in Delhi, Jaipur and Calcutta are considered?**

- A) 5400
- B) 5540
- C) 4590
- D) 5940
- E) 5990



**25. How many people died in Jaipur, Mumbai and Chennai together?**

- A) 41
- B) 51
- C) 55
- D) 112
- E) 102

**Direction (26-30): Study the following information carefully and answer the questions given beside. The census officers provided the data regarding changes in population of three major towns for three years. Population of town A was 180600 in the third year and it increased 5% and 7.5% in second and third year respectively. Population of town B increased by 25% in second year and in the second year it was equal to 150% of the population of town A in first year. After taking population control measures, town B succeeds in controlling population as growth rate in third year was half of that of previous year. The area of town C is 1250 km and population density for second year was 250. Growth rate for town C was 11.11% and 10% for second and third year respectively.**

**Note: Population density is calculated as  $\text{Total population} \div \text{Total area}$ .**

**26. Population of town B in third year exceed by how much compare to population of town A in second year?**

- A) 110000
- B) 107500
- C) 102000
- D) 105250
- E) None of these

**27. The average population of town B for three years forms what percentage of average population of town C for three years?**

- A) 73.15%
- B) 74.88%
- C) 78.44%
- D) 76.28%
- E) None of these

**28. For town B, male to female ratio for the last two years was 7 : 5 and literate male and illiterate male are in the ratio of 4 : 1 for same years. Find the ratio between illiterate male in second year and literate male in third year.**

- A) 8 : 9
- B) 4 : 9
- C) 9 : 2
- D) 2 : 9
- E) 7 : 2

**29. Refer the data provided in previous question, by what percentage the number of illiterate male in third year for town B less than female in third year for town B?**

- A) 72%
- B) 75%
- C) 69%
- D) 70.50%
- E) 74.25%

**30. For the third year, if  $\frac{3}{8}$ th part of population of A town are above 20 years old, 33% of population of B town are above 20 years old and 70% of population of C town are above 20 years old, how much population of three towns are above 20 years for third year?**

- A) 530440
- B) 545400
- C) 543300
- D) 534400
- E) Can't be determined

**Directions(31-35) : Study the following information carefully and answer the questions given beside.**

**In ecommerce industry, the growth of the industry is driven by the increase in the number of people buying online and the increase in the number of people selling online.**

**In 2016, it was expected that total 100 million people would buy products online in India that would be**

**20% of the total population of India and 2% of the total population of India would sell products online. If in 2017, the population of India was increased by 10% over the previous year together with the total number of people who bought products online was increased by 20% over the previous year and the number of sellers remained constant then in the year 2017 the Industry revenue was \$ 50 billion.**

**31. In 2016, what was the total number of people from India who sold the products online?**

- A) 1 million
- B) 5 million
- C) 50 million
- D) 10 million
- E) None of these

**32. If the revenue per seller was same in 2016 as compared to 2017 then what was the revenue per seller (in \$) in 2016? (one billion is equal to 1000 millions)**

- A) 50 million
- B) 500 million
- C) 5 million
- D) 5 billion
- E) None of these

**33. If in 2018, the number of people who will buy products online will increased by 30% over the**

previous year then in 2018, total how many people in million will buy product online?

- A) 144
- B) 156
- C) 132
- D) 150
- E) None of these

34. In 2018, the population of India was 900 million then what was the percentage growth of India over the period 2016 to 2018?

- A) 60%
- B) 40%
- C) 80%
- D) 20%
- E) None of these

35. It is assumed that in 2018, because of JIO, 40% of the total population of India will buy products online. If in 2018, the population of India was increased by 5% over previous year then in 2018, total how many people will buy product in India?

- A) 231 million
- B) 243 million
- C) 239 million
- D) 233 million
- E) None of these

**Directions(36-40):** Study the following information carefully and answer the questions given beside.

Three friends, Chand, Chandni, and Chanchal went to a shopping centre. Each of them had Rs. 2500. In the shopping centre, the session sale discount was 10% on the marked price. Chandni and Chanchal were regular customers so they got 20% each an additional discount on the discounted price but Chand being a new customer didn't get any additional discount. Only Chanchal had a membership card of the shopping centre which gave an additional discount of 25% on the discounted price. They all like Juicers of xyz brand and they purchased one piece each of that brand. The marked price of each piece was same. In last, when they calculated then they found that Chandni had paid Rs. 360 more than that of Chanchal.

36. If all of them combine the money paid for Juicer then, the total money paid by them for three pieces of the juicers was what percentage of the total marked price of the three juicers.

- A) 62%
- B) 72%
- C) 78%
- D) 68%
- E) None of these

37. The amount paid by Chand for the juicer was how much more than that by Chanchal?

- A) 45%

- B) 50%
- C) 55.33%
- D) 66.67%
- E) None of these

**38. What is the ratio of the amount paid by Chand to that by Chanchal?**

- A) 9 : 7
- B) 3 : 2
- C) 6 : 5
- D) 5 : 3
- E) None of these

**39. How much money was left with Chand after purchasing the juicer?**

- A) Rs. 900
- B) Rs. 500
- C) Rs. 700
- D) Rs. 750
- E) None of these

**40. What was the marked price of the juicer?**

- A) Rs. 1800
- B) Rs. 2400
- C) Rs. 2000
- D) Rs. 2150
- E) None of these

**Directions (41-45): Study the following information carefully and answer the questions given beside.**  
**Krishna invested some money under 20% per annum**

**simple interest in Axis bank. At the end of one – year, he withdrew all amount from the Axis bank and invested in Bandhan bank at the rate of R % per annum under compound interest compounded annually for two years and received Rs. 57600 as total interest from the Bandhan bank. The first year's interest at Bandhan bank was Rs. 24000.**

**41. In starting, how much money had Krishna invested in Axis bank?**

- A) Rs. 60000
- B) Rs. 75000
- C) Rs. 10000
- D) Rs. 50000
- E) None of these

**42. Total how much interest did Krishna get from the Axis bank and the Bandhan bank together?**

- A) Rs. 68600
- B) Rs. 67600
- C) Rs. 64600
- D) Rs. 71200
- E) None of these

**43. If the rate of interest was interchanged i.e. Axis bank had offered R% per annum simple interest and Bandhan bank had offered 20% per annum compound interest then how much less money Krishan would have received at the end of 3 years?**

- A) Rs. 16800
- B) Rs. 15800
- C) Rs. 14800
- D) Rs. 16400
- E) None of these

**44. If Krishan had invested the sum of money only in Axis bank for 3 years under 20% per annum simple interest then at the end of 3 years, total how much simple interest he would have received from the Axis bank?**

- A) Rs. 25000
- B) Rs. 30000
- C) Rs. 40000
- D) Rs. 20000
- E) None of these

**45. If the first year's interest at Bandhan bank was same as the simple interest received from the Axis bank at the end of 1 year and the rate of interest for the Bandhan bank remained constant then what should be the rate of interest for Axis bank?**

- A) 40%
- B) 50%
- C)  $66\frac{2}{3}\%$
- D)  $66\frac{2}{5}\%$
- E)  $43\frac{2}{5}\%$

**Direction (46-50): Answer the following question based on the information given below.**

Every year, a survey of 1000 people is conducted by the World Health Organization (WHO). WHO found that in the year 2005, 2006, 2007, 2008 and 2009 the percentage of people affected by malaria were 30%, 40%, 30%, 20% and 45% respectively. WHO also found that every year out of the affected people 60% were students, 10% were house-wives and 30% were drivers. The number of house-wives, students and drivers were in the ratio 20 : 11 : 9, every year.

**46. In the year 2007, find the number of house-wives affected by malaria?**

- A) 60
- B) 30
- C) 50
- D) 110
- E) 150

**47. In the year 2009, find the number of drivers who were not affected by malaria?**

- A) 110
- B) 125
- C) 415
- D) 190
- E) 90

**48. What is the difference in the number of students affected and not affected by malaria in the year 2006?**

- A) 205
- B) 35
- C) 200
- D) 240
- E) 420

**49. Find the ratio of the number of house-wives affected by malaria in the year 2005 to that affected by malaria in the year 2008.**

- A) 5 : 3

- B) 9 : 4

- C) 3 : 2

- D) 2 : 1

- E) 4 : 3

**50. Which year had the maximum number of students not affected by malaria?**

- A) 2005

- B) 2006

- C) 2007

- D) 2008

- E) 2009

## Caselet DI – Answer and Explanation

**1 Correct Option: C**

Total expenditure on rent = 24 months  $\times$  \$550 = \$13200

Total expenditure on utilities = 24 months  $\times$  \$340 = \$8160

Total expenditure on tuition fees = 4 semesters  $\times$  \$25000 = \$100000

Thus total expenditure = \$(13200 + 8160 + 100000) = \$121360

The bank paid 80% of this amount.

$\therefore$  Amount paid by the bank =  $(80/100) \times 121360 =$  \$97088

Hence, option C is correct.

**2 Correct Option: E**

Total expenditure on rent = 24 months  $\times$  \$550 = \$13200

Total expenditure on utilities = 24 months  $\times$  \$340 = \$8160

Total expenditure on tuition fees = 4 semesters  $\times$  \$25000 = \$100000

Thus total expenditure = 13200 + 8160 + 100000 = \$121360

The bank paid 80% of this amount.

$\therefore$  Amount paid by the bank =  $80/100 \times 121360 =$  \$97088

Simple Interest =  $(97088 \times 2 \times 9)/100 =$  \$17475.84

Hence, option E is correct.

**3 Correct Option: B**

Total annual expenditure on rent = 12 months  $\times$  \$550 = \$6600

Total annual expenditure on utilities = 12 months  $\times$  \$340 = \$4080

Clearly the amount spent on utilities is less than the amount spent on rent

$$\therefore \text{Required percentage} = [(6600 - 4080)/6600] \times 100 \\ = (2520 \times 100)/6600 = 38.18 = 38\% \text{ (approximate)}$$

Hence, option B is correct.

#### 4 Correct Option: A

The salary earned during internship = 3  $\times$  12000 = \$36000

Total expenditure on rent in 3 months = 3  $\times$  \$550 = \$1650

Total expenditure on utilities in 3 months = 3  $\times$  \$340 = \$1020

Total expense = \$(1650 + 1020) = \$2670

$$\therefore \text{Required percentage} = (2670/36000) \times 100 = 267/360 \\ = 7.41$$

Hence, option A is correct.

#### 5 Correct Option: C

Per month rent = \$550

Utilities cost per month = \$340

$$\therefore \text{The amount she would save in 6 months} = 6 \times (550 + 340) = 6 \times 890 = \$5340$$

Hence, option C is correct.

#### 6 Correct Option: A

Let mobiles sold by Vivo in February be  $8x$

Mobiles sold by Realme in March =  $5x$

Mobiles sold by Xiomi in February = 75% of  $8x = 6x$

Mobiles sold by Xiomi in January = 120% of  $6x = 7.2x$

Mobiles sold by Realme in February =  $8x - 350$

Mobiles sold by Xiomi in March =  $2270 - 6x - 7.2x = 2270 - 13.2x$

Mobiles sold by Vivo in March = 80% of  $8x = 6.4x$

$$\text{So } 5x + 2270 - 13.2x + 6.4x = 2090$$

$$1.8x = 180$$

$$x = 100$$

For Xiomi:

Mobiles sold in January = 720

Mobiles sold in February = 600

Mobiles sold in March = 950

Total mobiles sold = 2270

For Vivo:

Mobiles sold in January = 540

Mobiles sold in February = 800

Mobiles sold in March = 640

Total mobiles sold = 1980

For Realme:

Mobiles sold in January =  $1250 - 450 - 500 = 300$

Mobiles sold in February = 450

Mobiles sold in March = 500

Total mobiles sold = 1250

Difference =  $2270 - 1980 = 290$

Hence, option A is correct.

#### 7 Correct Option: B

Let mobiles sold by Vivo in February be  $8x$

Mobiles sold by Realme in March =  $5x$

Mobiles sold by Xiaomi in February =  $75\%$  of  $8x = 6x$

Mobiles sold by Xiaomi in January =  $120\%$  of  $6x = 7.2x$

Mobiles sold by Realme in February =  $8x - 350$

Mobiles sold by Xiaomi in March =  $2270 - 6x - 7.2x = 2270 - 13.2x$

Mobiles sold by Vivo in March =  $80\%$  of  $8x = 6.4x$

So  $5x + 2270 - 13.2x + 6.4x = 2090$

$1.8x = 180$

$x = 100$

For Xiaomi:

Mobiles sold in January =  $720$

Mobiles sold in February =  $600$

Mobiles sold in March =  $950$

Total mobiles sold =  $2270$

For Vivo:

Mobiles sold in January =  $540$

Mobiles sold in February =  $800$

Mobiles sold in March =  $640$

Total mobiles sold =  $1980$

For Realme:

Mobiles sold in January =  $1250 - 450 - 500 = 300$

Mobiles sold in February =  $450$

Mobiles sold in March =  $500$

Total mobiles sold =  $1250$

Mobiles sold by Xiaomi in February and March together  
 $= 600 + 950 = 1550$

Mobiles sold by Realme in January and February together =  $300 + 450 = 750$

Ratio =  $1550 : 750 = 31 : 15$

Hence, option B is correct.

### 8 Correct Option: D

Let mobiles sold by Vivo in February be  $8x$

Mobiles sold by Realme in March =  $5x$

Mobiles sold by Xiaomi in February =  $75\%$  of  $8x = 6x$

Mobiles sold by Xiaomi in January =  $120\%$  of  $6x = 7.2x$

Mobiles sold by Realme in February =  $8x - 350$

Mobiles sold by Xiaomi in March =  $2270 - 6x - 7.2x = 2270 - 13.2x$

Mobiles sold by Vivo in March =  $80\%$  of  $8x = 6.4x$

So  $5x + 2270 - 13.2x + 6.4x = 2090$

$1.8x = 180$

$x = 100$

For Xiaomi:

Mobiles sold in January =  $720$

Mobiles sold in February =  $600$

Mobiles sold in March =  $950$

Total mobiles sold =  $2270$

For Vivo:

Mobiles sold in January =  $540$

Mobiles sold in February =  $800$



Mobiles sold in March = 640

Total mobiles sold = 1980

For Realme:

Mobiles sold in January =  $1250 - 450 - 500 = 300$

Mobiles sold in February = 450

Mobiles sold in March = 500

Total mobiles sold = 1250

Mobiles sold by Xiomi and Vivo in February together =

$$600 + 800 = 1400$$

$$\begin{aligned} \text{Mobiles sold by all three in January} &= 720 + 540 + 300 \\ &= 1560 \end{aligned}$$

$$\text{Percentage} = \frac{1400}{1560} \times 100 = 90\%$$

Hence, option D is correct.

### 9 Correct Option: B

Let mobiles sold by Vivo in February be  $8x$

Mobiles sold by Realme in March =  $5x$

Mobiles sold by Xiomi in February =  $75\%$  of  $8x = 6x$

Mobiles sold by Xiomi in January =  $120\%$  of  $6x = 7.2x$

Mobiles sold by Realme in February =  $8x - 350$

$$\begin{aligned} \text{Mobiles sold by Xiomi in March} &= 2270 - 6x - 7.2x = \\ &2270 - 13.2x \end{aligned}$$

Mobiles sold by Vivo in March =  $80\%$  of  $8x = 6.4x$

$$\text{So } 5x + 2270 - 13.2x + 6.4x = 2090$$

$$1.8x = 180$$

$$x = 100$$

For Xiomi:

Mobiles sold in January = 720

Mobiles sold in February = 600

Mobiles sold in March = 950

Total mobiles sold = 2270

For Vivo:

Mobiles sold in January = 540

Mobiles sold in February = 800

Mobiles sold in March = 640

Total mobiles sold = 1980

For Realme:

Mobiles sold in January =  $1250 - 450 - 500 = 300$

Mobiles sold in February = 450

Mobiles sold in March = 500

Total mobiles sold = 1250

$$\begin{aligned} \text{Revenue earned by Xiomi in January} &= 8000 \times 720 = \\ &\text{Rs. } 57,60,000 \end{aligned}$$

$$\begin{aligned} \text{Revenue earned by Realme in March} &= 8800 \times 500 = \\ &\text{Rs. } 44,00,000 \end{aligned}$$

$$\text{Difference} = 57,60,000 - 44,00,000 = \text{Rs. } 13,60,000$$

Hence, option B is correct.

### 10 Correct Option: B

Let mobiles sold by Vivo in February be  $8x$

Mobiles sold by Realme in March =  $5x$

Mobiles sold by Xiomi in February =  $75\%$  of  $8x = 6x$

Mobiles sold by Xiomi in January =  $120\%$  of  $6x = 7.2x$

Mobiles sold by Realme in February =  $8x - 350$

Mobiles sold by Xiomi in March =  $2270 - 6x - 7.2x = 2270 - 13.2x$

Mobiles sold by Vivo in March = 80% of  $8x = 6.4x$

So  $5x + 2270 - 13.2x + 6.4x = 2090$

$1.8x = 180$

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For Xiomi:

Mobiles sold in January = 720

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Total mobiles sold = 2270

For Vivo:

Mobiles sold in January = 540

Mobiles sold in February = 800

Mobiles sold in March = 640

Total mobiles sold = 1980

For Realme:

Mobiles sold in January =  $1250 - 450 - 500 = 300$

Mobiles sold in February = 450

Mobiles sold in March = 500

Total mobiles sold = 1250

Total mobiles sold =  $2270 + 1980 + 1250 = 5500$

Hence, option B is correct.

### 11 Correct Option: B

Following the common explanation, we get

So, the total number of passengers who had left the train

at the station C = 820

Hence, option B is correct.

### Common explanation:

Let, the number of passengers boarded and left the train at station A be  $9x$  and  $7x$ , respectively

And, the total number of passengers left the train at station A and at station B be  $7y$  and  $6y$ , respectively

Since the total amount earned by selling Rs. 5 tickets at station P was Rs. 2800

So, the total number of passengers left the train at station A

$$= \frac{2800}{5} = 560$$

$$\text{Therefore, } 7x = 560, x = \frac{560}{7} = 80$$

So, the number of passengers boarded the train at station A =  $9x = 9 \times 80 = 720$

Also,  $7y = 560$

$$y = \frac{560}{7} = 80$$

Therefore, the total number of passengers left the train at

station B = 6y = 6 × 80 = 480

The total number of passengers boarded the train at

station B = 210 + 140 = 350

And, the total number of passengers boarded the train at station C

$$= \frac{1250}{5} = 250$$

Let, the total number of passengers who left the train at station C be ‘z’

So, 2310 + 250 – z = 1740

z = 2310 + 250 – 1740 = 820

	Boarded	Left	Number of passengers in the train
Station P	2280	—	2280
Station A	720	560	2440
Station B	350	480	2310
Station C	250	820	1740
Station Q	—	1740	—

**12 Correct Option: C**

following the  $\frac{2280}{\text{common}}$

explanation, we get  $\frac{57}{=40}$

Let, the number

of Rs. 5 tickets,

Rs. 10 tickets,

Rs. 15 tickets,

and Rs. 20 tickets

sold at the station

P be 14x, 6x, 8x,

and 29x

respectively

So, 14x + 6x +

8x + 29x = 2280

57x = 2280 ; x

=40

Thus, total number of passengers who left the train at station B and had boarded at the station P = 6x = 240

So, total number of passengers who left the train at station B and had boarded at the station A i.e. purchased Rs. 5 ticket from station A = 480 – 240 = 240

Therefore, the total number of Rs. 5 tickets sold at the station A was 240.

Hence, option C is correct.

**Common explanation :**

Let, the number of passengers boarded and left the train at station A be 9x and 7x, respectively

And, the total number of passengers left the train at

station A and at station B be 7y and 6y, respectively

Since the total amount earned by selling Rs. 5 tickets at station P was Rs. 2800

So, the total number of passengers left the train at station A

$$= \frac{2800}{5} = 560$$

$$\text{Therefore, } 7x = 560, x = \frac{560}{7} = 80$$

So, the number of passengers boarded the train at station

$$A = 9x = 9 \times 80 = 720$$

Also, 7y = 560

$$y = \frac{560}{7} = 80$$

Therefore, the total number of passengers left the train at

$$\text{station B} = 6y = 6 \times 80 = 480$$

The total number of passengers boarded the train at

$$\text{station B} = 210 + 140 = 350$$

And, the total number of passengers boarded the train at station C

$$= \frac{1250}{5} = 250$$

Let, the total number of passengers who left the train at station C be 'z'

$$\text{So, } 2310 + 250 - z = 1740$$

$$z = 2310 + 250 - 1740 = 820$$

	Boarded	Left	Number of passengers in the train
Station P	2280	—	2280
Station A	720	560	2440
Station B	350	480	2310
Station C	250	820	1740
Station Q	—	1740	—

### 13 Correct Option: D

Following the common explanation, we get

So, the total number of passengers were on the train between station B and station C = 2310

Hence, option D is correct.

### Common explanation :

Let, the number of passengers boarded and left the train at station A be 9x and 7x, respectively

And, the total number of passengers left the train at station A and at station B be 7y and 6y, respectively

Since the total amount earned by selling Rs. 5 tickets at station P was Rs. 2800

So, the total number of passengers left the train at station

A

$$= \frac{2800}{5} = 560$$

$$\text{Therefore, } 7x = 560, x = \frac{560}{7} = 80$$

So, the number of passengers boarded the train at station

$$A = 9x = 9 \times 80 = 720$$

$$\text{Also, } 7y = 560$$

$$y = \frac{560}{7} = 80$$

Therefore, the total number of passengers left the train at

$$\text{station B} = 6y = 6 \times 80 = 480$$

The total number of passengers boarded the train at

$$\text{station B} = 210 + 140 = 350$$

And, the total number of passengers boarded the train at

station C

$$= \frac{1250}{5} = 250$$

Let, the total number of passengers who left the train at station C be 'z'

$$\text{So, } 2310 + 250 - z = 1740$$

$$z = 2310 + 250 - 1740 = 820$$

	Boarded	Left	Number of passengers in the train
Station P	2280	—	2280
Station A	720	560	2440
Station B	350	480	2310
Station C	250	820	1740
Station Q	—	1740	—

#### 14 Correct Option: A

Following the common explanation, we get

Total weight of all passengers who were travelling from station A to station B =  $2440 \times 35 = 85400$  kg

Weight of the train =  $(200000 - 85400)$  kg = 114600 kg = 114.6 ton

Hence, option A is correct.

#### Common explanation :

Let, the number of passengers boarded and left the train at station A be  $9x$  and  $7x$ , respectively

And, the total number of passengers left the train at station A and at station B be  $7y$  and  $6y$ , respectively

Since the total amount earned by selling Rs. 5 tickets at station P was Rs. 2800

So, the total number of passengers left the train at station

A

$$= \frac{2800}{5} = 560$$

$$\text{Therefore, } 7x = 560, x = \frac{560}{7} = 80$$

So, the number of passengers boarded the train at station

$$A = 9x = 9 \times 80 = 720$$

$$\text{Also, } 7y = 560$$

$$y = \frac{560}{7} = 80$$

Therefore, the total number of passengers left the train at

$$\text{station B} = 6y = 6 \times 80 = 480$$

The total number of passengers boarded the train at

$$\text{station B} = 210 + 140 = 350$$

And, the total number of passengers boarded the train at

station C

$$= \frac{1250}{5} = 250$$

Let, the total number of passengers who left the train at

station C be 'z'

$$\text{So, } 2310 + 250 - z = 1740$$

$$z = 2310 + 250 - 1740 = 820$$

	Boarded	Left	Number of passengers in the train
Station P	2280	—	2280
Station A	720	560	2440
Station B	350	480	2310
Station C	250	820	1740
Station Q	—	1740	—

### 15 Correct Option: B

Following the common explanation, we get

Given, total tickets sold for station Q at station B was 140 and the total number of Rs. 5 tickets sold at station B was 210.

$$\text{Therefore, total amount collected} = \text{Rs. } (140 \times 10 + 210 \times 5) = \text{Rs. } (1400 + 1050) = \text{Rs. } 2450$$

Hence, option B is correct.

### Common explanation :

Let, the number of passengers boarded and left the train at station A be  $9x$  and  $7x$ , respectively

And, the total number of passengers left the train at station A and at station B be  $7y$  and  $6y$ , respectively

Since the total amount earned by selling Rs. 5 tickets at station P was Rs. 2800

So, the total number of passengers left the train at station A

$$= \frac{2800}{5} = 560$$

Therefore,  $7x = 560, x = \frac{560}{7} = 80$

So, the number of passengers boarded the train at station A =  $9x = 9 \times 80 = 720$

Also,  $7y = 560$

$$y = \frac{560}{7} = 80$$

Therefore, the total number of passengers left the train at station B =  $6y = 6 \times 80 = 480$

The total number of passengers boarded the train at station B =  $210 + 140 = 350$

And, the total number of passengers boarded the train at station C

$$= \frac{1250}{5} = 250$$

Let, the total number of passengers who left the train at station C be ‘z’

So,  $2310 + 250 - z = 1740$

$$z = 2310 + 250 - 1740 = 820$$

	Boarded	Left	Number of passengers in the train
Station P	2280	—	2280
Station A	720	560	2440
Station B	350	480	2310
Station C	250	820	1740
Station Q	—	1740	—

16 Correct Option: C

Year	Investment by Venture Capitalists		
	Arjun	Bikram	Chandan
1993	44000	36000	40000

Ratio of profit =  $44000 : 36000 : 40000$

Ratio of profit =  $44 : 36 : 40$

So the profit shared by the venture capitalist would be in the ratio of  $44 : 36 : 40$

Share of Bikram =  $\frac{36}{120} \times 15000 = 4500$

Hence, option C is correct.

17Correct Option: E

1995	Investment	Profit	Months
Arjun	56000	12600	24
Bikram		11200	16
Chandan	64000	16800	

Let A and B be the investment made by Arjun and Bikram respectively.

$$\frac{24A}{16B} = \frac{12600}{11200}$$

$$\frac{12A}{8B} = \frac{126}{112}$$

$$\frac{A}{B} = \frac{126 \times 8}{12 \times 112} = \frac{3}{4}$$

$$\text{Therefore, investment of Arjun} = \frac{3}{7} \times 56000 = 24000$$

So, the investment made by Bikram = 32000

Let, Chandan invested for C months

So, the ratio of Arjun and Chandan's profit

$$\frac{24000 \times 24}{64000 \times C} = \frac{12600}{16800}$$

$$C = 12$$

Hence, option E is correct.

18 Correct Option: D

Year	Investment		Profit	
	Arjun	Chandan	Arjun	Chandan
1991	32000	22000	A	7700
1992	48000	22000	B	8800

For the year 1991,

$$\frac{32000}{22000} = \frac{A}{7700} ; A = 11200$$

For the year 1992,

$$\frac{48000}{22000} = \frac{A}{8800} ; B = 19200$$

So, the ratio of profits of Arjun

$$\frac{11200}{19200} = \frac{112}{192} = \frac{28}{48} = \frac{7}{12}$$

Hence, option D is correct.

19 Correct Option: A



For the year 1994,

$$\text{Profit of Chandan} = \frac{8000}{7000} = \frac{4000}{C} ; c = \frac{7 \times 4000}{8} = 3500$$

So, amount of Profit shared by Chandan in 1995

$$= 3500 \times \frac{3}{4} = 2625$$

Hence, option A is correct.

## 20 Correct Option: B

Year	Investment	
	Bikram	Chandan
1992	30000	22000

For the year 1996,

$$\text{Profit of Bikram} = \frac{8}{100} \times 30000 = \text{Rs. } 2400$$

For the year 1996,

$$\text{Profit of Chandan} = \frac{10}{100} \times 22000 = \text{Rs. } 2200$$

So, the ratio of profit of Chandan in 1996 to that of Bikram in 1996

$$\frac{2200}{2400} = \frac{22}{24} = \frac{11}{12}$$

Hence, option B is correct.

## 21 Correct Option: C

From common explanation, we have

Chennai = 1600

Calcutta = 800

Mumbai = 1500

Total = 3900

Average = 1300

Hence, option C is correct.

## Common explanation :

Let the number of patients in Delhi, Jaipur, Chennai, Calcutta, Mumbai were D, J, Ch, Cal, M respectively.

Then we have

$$D = 1.6J = 1.6(400 + Ch)$$

$$Cal = \frac{1}{2} Ch$$

$$M = Ch - 100$$

Therefore, we have

$$D + J + Ch + Cal + M = 9100$$

$$1.6(400 + Ch) + (400 + Ch) + Ch + 1Ch + Ch - 100 = 9100$$

$$940 + 5.1Ch = 9100$$

$$Ch = 1600$$

Thus, patients in various cities are

$$\text{Delhi} = 3200$$

$$\text{Jaipur} = 2000$$

$$\text{Chennai} = 1600$$

$$\text{Calcutta} = 800$$

$$\text{Mumbai} = 1500$$

## 22Correct Option: B

From common explanation, we have

$$\text{Jaipur} = 2000$$

$$\text{Calcutta} = 800$$

$$\text{Percent difference} = \frac{2000 - 800}{800} \times 100 = 150\%$$

Hence, option B is correct.

## Common explanation :

Let the number of patients in Delhi, Jaipur, Chennai, Calcutta, Mumbai were D, J, Ch, Cal, M respectively.

Then we have

$$D = 1.6J = 1.6(400 + Ch)$$

$$Cal = \frac{1}{2} Ch$$

$$M = Ch - 100$$

Therefore, we have

$$D + J + Ch + Cal + M = 9100$$

$$1.6(400 + Ch) + (400 + Ch) + Ch + \frac{1}{2}Ch + Ch - 100 = 9100$$

$$940 + 5.1Ch = 9100$$

$$Ch = 1600$$

Thus, patients in various cities are

Delhi = 3200  
 Jaipur = 2000  
 Chennai = 1600  
 Calcutta = 800  
 Mumbai = 1500

**23 Correct Option: E**

From common explanation, we have  
 For each 1000 tests we have 130 positive.  
 Thus for 9100 = 70 ( × 130), we should have 70 (× 1000)  
 = 70,000 tests.  
 Hence, option E is correct.

**Common explanation :**

Let the number of patients in Delhi, Jaipur, Chennai,  
 Calcutta, Mumbai were D, J, Ch, Cal, M respectively.  
 Then we have

$$D = 1.6J = 1.6(400+Ch)$$

$$Cal = \frac{1}{2} Ch$$

$$M = Ch - 100$$

Therefore, we have

$$D + J + Ch + Cal + M = 9100$$

$$1.6 (400 + Ch) + (400 + Ch) + Ch + \frac{1}{2} Ch + Ch - 100 = 9100$$

$$940 + 5.1Ch = 9100$$

$$Ch = 1600$$

Thus, patients in various cities are

Delhi = 3200  
 Jaipur = 2000  
 Chennai = 1600  
 Calcutta = 800  
 Mumbai = 1500

**24 Correct Option: D**

From common explanation, we have

It is given that out of 200 patients, 180 recovered within  
 14 days, 18 takes 30 days to recover

Number of patients in Delhi, Jaipur and Calcutta = 3200,  
 2000, and 800 = 6000

From 31 March to 30 April,  $180 + 18 = 198$  people out of 200 will recovered,

$$\text{means } \frac{198}{200} \times 100 = 99\% \text{ people will recover.}$$

Thus, number of people who will recover from the three cities = 99% of 6000 = 5940.

Hence, option D is correct.

### Common explanation :

Let the number of patients in Delhi, Jaipur, Chennai, Calcutta, Mumbai were D, J, Ch, Cal, M respectively.

Then we have

$$D = 1.6J = 1.6(400 + Ch)$$

$$Cal = \frac{1}{2} Ch$$

$$M = Ch - 100$$

Therefore, we have

$$D + J + Ch + Cal + M = 9100$$

$$1.6(400 + Ch) + (400 + Ch) + Ch + \frac{1}{2}Ch + Ch - 100 = 9100$$

$$940 + 5.1Ch = 9100$$

$$Ch = 1600$$

Thus, patients in various cities are

$$\text{Delhi} = 3200$$

$$\text{Jaipur} = 2000$$

$$\text{Chennai} = 1600$$

$$\text{Calcutta} = 800$$

$$\text{Mumbai} = 1500$$

### 25 Correct Option: B

From the common explanation, we have

It is given that out of 200 patients, only 2 dies,

$$\text{thus } \frac{2}{200} \times 100 = 1\% \text{ die.}$$

$$\begin{aligned} \text{Number of patients in Jaipur, Mumbai and Chennai} &= \\ 2000 + 1500 + 1600 &= 5100 \end{aligned}$$

$$\text{Number of people who will die} = 1\% \text{ of } 5100 = 51$$

Hence, option B is correct.

### Common explanation :

Let the number of patients in Delhi, Jaipur, Chennai, Calcutta, Mumbai were D, J, Ch, Cal, M respectively.

Then we have

$$D = 1.6J = 1.6(400 + \text{Ch})$$

$$\text{Cal} = \frac{1}{2} \text{Ch}$$

$$M = \text{Ch} - 100$$

Therefore, we have

$$D + J + \text{Ch} + \text{Cal} + M = 9100$$

$$1.6(400 + \text{Ch}) + (400 + \text{Ch}) + \text{Ch} + \frac{1}{2} \text{Ch} + \text{Ch} - 100 = 9100$$

$$940 + 5.1\text{Ch} = 9100$$

$$\text{Ch} = 1600$$

Thus, patients in various cities are

$$\text{Delhi} = 3200$$

$$\text{Jaipur} = 2000$$

$$\text{Chennai} = 1600$$

$$\text{Calcutta} = 800$$

$$\text{Mumbai} = 1500$$

### 26 Correct Option: C

Let the Population of Town A in first year be 100.

Thus, population of town A in third year = 105% of 107.50% of 100 = 112.875 i.e. 180600.

∴ Population of Town A in first year

$$= \frac{180600 \times 100}{112.875} = 160000$$

Thus, population of town A in second year = 105% of 160000 = 168000

Population of town B in second year = 150% of 160000 = 240000

As given, growth rate of population for town B in the second year was 25%, thus population in first year  
$$= \frac{240000 \times 100}{125} = 192000$$

As growth year became half of previous years' growth rate, Population of town B in third year = 240000 + [240000 × 12.50% (half of 25%)] = 240000 + 30000 = 270000

For town C, population in second year = Population density × Area = 250 × 1250 = 312500

As growth rate for town C was 11.11% and 10% for second and third year respectively, population of C in first year

$$= \frac{312500 \times 100}{111.11} = 281250$$

Population of C in third year = 110% of 312500 = 343750.

Thus, we can present above data in tabular form as follows:

Towns	Population		
	First Year	Second Year	Third Year
A	160000	168000	180600
B	192000	240000	270000
C	281250	312500	343750

Required difference = Population of town B in third year – Population of town A in second year

$$= 270000 - 168000 = 102000$$

Hence, option C is correct.

### 27 Correct Option: B

Average population of town B

$$= \frac{192000 + 240000 + 270000}{3} = \frac{702000}{3} = 234000$$

Average population of town C

$$= \frac{281250 + 312500 + 343750}{3} = \frac{937500}{3} = 312500$$

$$\therefore \text{Reqd. \%} = \frac{234000}{312500} \times 100 = 74.88\%$$

Hence, option B is correct.

### 28 Correct Option: D

Number of male in town B for Second year

$$= 7 \times 240000 = 140000$$

12

Number of male in town B for third year

$$= \frac{7 \times 270000}{12} = 157500$$

Number of illiterate male in second year

$$= \frac{1 \times 140000}{5} = 28000$$

Number of literate male in third year

$$= \frac{4 \times 157500}{5} = 126000$$

Thus, required ratio = 28000 : 126000 i.e. 2 : 9

Hence, option D is correct.

### 29 Correct Option: A

Number of illiterate male in third year for town B

$$= \frac{1 \times 157500}{5} = 31500$$

Number of female in third year for town B

$$= 5 \times 270000 = 112500$$

12

$$\therefore \text{Reqd. \%} = \frac{112500 - 31500}{112500} \times 100 = 72\%$$

Hence, option A is correct.

### 30 Correct Option: D

Population above 20 years in town A

$$= 180600 - \frac{180600 \times 3}{8} = 112875$$

Population above 20 years in town B = (100 – 33)% of 270000 = 180900

Population above 20 years in town C = 70% of 343750 = 240625

Thus, required total = 112875 + 180900 + 240625 = 534400

Hence, option D is correct.

### 31 Correct Option: D

Let the total population of India in 2016 = x million then

20% of x million = 100 million

$$x = 100 \times 5 = 500 \text{ million}$$

2% of the total population of India sold products online  
 = 2% of 500 million = 10 million

Hence, option D is correct.

### 32 Correct Option: D

Let the total population of India in 2016 = x million then  
 20% of x million = 100 millions

$$x = 100 \times 5 = 500 \text{ millions}$$

2% of the total population of India sold products online =  
 2% of 500 million = 10 million

In 2017, the number of sellers remained constant then in  
 2017, the revenue per sellers

$$= \frac{50 \text{ billion}}{10 \text{ million}} = \frac{50 \times 1000}{10} = 5000 \text{ million}$$

= 5 billion = revenue per seller in 2016

Hence, option D is correct.

### 33 Correct Option: B

In 2016, 100 million people bought products online

In 2017, 120% of 100 = 120 million people brought  
 products online

In 2018, 130% of 120 =  $13 \times 12 = 156$  million people  
 will buy products online

Hence, option B is correct.

### 34 Correct Option: C

Let the total population of India in 2016 = x million then

20% of x million = 100 millions

$$x = 100 \times 5 = 500 \text{ millions}$$

$$\text{The reqd. \%} = \frac{(900 - 500) \times 100}{500} = \frac{400 \times 100}{500} = 80\%$$

Hence, option C is correct.

### 35 Correct Option: A

Let the total population of India in 2016 = x million then

20% of x million = 100 millions

$$x = 100 \times 5 = 500 \text{ millions}$$

The population of India in 2017 = 110% of 500 = 550  
 million

The population of India in 2018 = 105% of 550 million =  
 577.5 million

In 2018, because of JIO, 40% of the total population of  
 India will buy product online = 40% of 577.5

$$= 40 \times 577.5 = 231 \text{ million}$$



100

Hence, option A is correct.

### 36 Correct Option: B

Total marked price of 3 juicers =  $2000 \times 3 = 6000$

The total money paid by them =  $90x + 72x + 54x = 216x$   
 $= 4320$

$$\text{The reqd. \%} = \frac{4320 \times 100}{6000} = 72\%$$

Hence, option B is correct.

### Common explanation:

Let the marked price of juicer =  $100x$

Then, The amount Chand paid =  $(100 - 10)\%$  of  $100x = 90\%$  of  $100x = 90x$

The amount Chandni will pay =  $90\%$  of  $80\%$  of  $100x = 72x$

The amount Chanchal will pay =  $90\%$  of  $80\%$  of  $75\%$  of  $100x = 54x$

According to the question,  $72x - 54x = 18x = 360$   
 $x = 20$

### 37 Correct Option: D

The amount paid by Chand =  $90x$

the amount paid by Chanchal =  $54x$

$$\begin{aligned} \text{The reqd. \%} &= \frac{(90x - 54x) \times 100}{54x} = \frac{36 \times 100}{54} = \frac{200}{3} = 66.67\% \end{aligned}$$

Hence, option D is correct.

### Common explanation :

Let the marked price of juicer =  $100x$

Then, The amount Chand paid =  $(100 - 10)\%$  of  $100x = 90\%$  of  $100x = 90x$

The amount Chandni will pay =  $90\%$  of  $80\%$  of  $100x = 72x$

The amount Chanchal will pay =  $90\%$  of  $80\%$  of  $75\%$  of  $100x = 54x$

According to the question,  $72x - 54x = 18x = 360$   
 $x = 20$

### 38 Correct Option: D

The amount paid by Chand =  $90x$

the amount paid by Chanchal =  $54x$

The required ratio =  $90x : 54x = 5 : 3$

Hence, option D is correct.

**Common explanation :**

Let the marked price of juicer =  $100x$

Then, The amount Chand paid =  $(100 - 10)\%$  of  $100x = 90\%$  of  $100x = 90x$

The amount Chandni will pay =  $90\%$  of  $80\%$  of  $100x = 72x$

The amount Chanchal will pay =  $90\%$  of  $80\%$  of  $75\%$  of  $100x = 54x$

According to the question,  $72x - 54x = 18x = 360$

$$x = 20$$

**39 Correct Option: C**

The amount Chand paid =  $(100 - 10)\%$  of  $100x = 90\%$  of  $100x = 90x = 90 \times 20 = 1800$

The money left with him =  $2500 - 1800 = 700$

Hence, option C is correct.

**Common explanation :**

Let the marked price of juicer =  $100x$

Then, The amount Chand paid =  $(100 - 10)\%$  of  $100x = 90\%$  of  $100x = 90x$

The amount Chandni will pay =  $90\%$  of  $80\%$  of  $100x = 72x$

The amount Chanchal will pay =  $90\%$  of  $80\%$  of  $75\%$  of

$$100x = 54x$$

According to the question,  $72x - 54x = 18x = 360$

$$x = 20$$

**40 Correct Option: C**

$$MP = 100X = 100 \times 20 = 2000$$

Hence, option C is correct.

**Common explanation :**

Let the marked price of juicer =  $100x$

Then, The amount Chand paid =  $(100 - 10)\%$  of  $100x = 90\%$  of  $100x = 90x$

The amount Chandni will pay =  $90\%$  of  $80\%$  of  $100x = 72x$

The amount Chanchal will pay =  $90\%$  of  $80\%$  of  $75\%$  of  $100x = 54x$

According to the question,  $72x - 54x = 18x = 360$

$$x = 20$$

**41 Correct Option: D**

Following the common explanation, we get

At  $40\%$  per annum,  $120x$  gives compound interest of  $57600$  in two years or Rs.  $24000$  in one year

$$CI = P (1 + R)^N - P$$

100

$$120x \left(1 + \frac{40}{100}\right) - 120x = 24000$$

$$120x \times 1.4 - 120x = 24000$$

$$168x - 120x = 48x = 24000$$

$$x = \frac{24000}{48} = 500$$

The sum of money he had invested in Axis bank =  $100x$   
 $= 100 \times 500 = \text{Rs. } 50000$

Hence, option D is correct.

Common explanation :

Let the sum of money he invested in Axis bank =  $100x$   
then at the end of one year

$$\text{Amount} = \frac{100x \times 1 \times 20}{100} + 100x = 120x$$

The CI of 2 years = 57600

The CI of 1 year = 24000

$$\text{Difference} = 57600 - 24000 = 33600$$

$$\text{Now, } 33600 - 24000 = 9600$$

At R% per annum, 24000 gives compound interest of Rs. 9600

$$\frac{24000 \times R}{100} = 9600$$

R = 40% per annum

#### 42 Correct Option: B

Following the common explanation, we get

The interest, Krishna received from Axis bank =  $20x =$   
 $20 \times 500 = 10,000$

The interest from Bandhan bank = 57600

The required sum =  $10,000 + 57600 = 67600$

Hence, option B is correct.

#### Common explanation :

Let the sum of money he invested in Axis bank =  $100x$   
then at the end of one year

$$\text{Amount} = \frac{100x \times 1 \times 20}{100} + 100x = 120x$$

The CI of 2 years = 57600

The CI of 1 year = 24000

$$\text{Difference} = 57600 - 24000 = 33600$$

$$\text{Now, } 33600 - 24000 = 9600$$

At R% per annum, 24000 gives compound interest of Rs. 9600

$$\frac{24000 \times R}{100} = 9600$$

$$R = 40\% \text{ per annum}$$

### 43 Correct Option: A

Following the common explanation, we get

$$P = 50000$$

$$R = 40\%$$

1st year = 40% per annum SI

Next 2 years = 20% per annum CI

Amount at the end of 1st year i.e. received from the Axis bank = 50000 + 40% of 50000 = 70000

$$SI = 70000 - 50000 = 20000$$

From the Bandhan bank

$$CI = P \left(1 + \frac{R}{100}\right)^N - P$$

$$CI = 70000 \left(1 + \frac{20}{100}\right)^2 - 70000$$

$$CI = 30800$$

$$\text{Total interest} = 20000 + 30800 = 50800$$

$$\begin{aligned} \text{The interest, Krishna received from Axis bank} &= 20x = \\ 20 \times 500 &= 10,000 \end{aligned}$$

$$\text{The interest from Bandhan bank} = 57600$$

$$\text{The required sum} = 10,000 + 57600 = 67600$$

$$\text{The required difference} = 67600 - 50800 = 16800$$

Hence, option A is correct.

### Common explanation :

Let the sum of money he invested in Axis bank = 100x  
then at the end of one year

$$\text{Amount} = \frac{100x \times 1 \times 20}{100} + 100x = 120x$$

The CI of 2 years = 57600

The CI of 1 year = 24000

$$\text{Difference} = 57600 - 24000 = 33600$$

$$\text{Now, } 33600 - 24000 = 9600$$

At R% per annum, 24000 gives compound interest of Rs. 9600

$$\frac{24000 \times R}{100} = 9600$$

R = 40% per annum

#### 44 Correct Option: B

Following the common explanation, we get

$$P = 50000$$

$$\text{SI at the end of 3 years} = \frac{50000 \times 20 \times 3}{100} = \text{Rs. } 30,000$$

Hence, option B is correct.

#### Common explanation :

Let the sum of money he invested in Axis bank = 100x  
then at the end of one year

$$\text{Amount} = \frac{100x \times 1 \times 20}{100} + 100x = 120x$$

The CI of 2 years = 57600

The CI of 1 year = 24000

$$\text{Difference} = 57600 - 24000 = 33600$$

$$\text{Now, } 33600 - 24000 = 9600$$

At R% per annum, 24000 gives compound interest of Rs. 9600

$$\frac{24000 \times R}{100} = 9600$$

R = 40% per annum

#### 45 Correct Option: C

Following the common explanation, we get

$$P = 50,000$$

Let the interest received from the Axis bank = Rs. x then

the first year's interest at Bandhan bank = 40% of (50000 + x) = x

$$20000 + 0.4x = x$$

$$0.6x = 20000$$

$$x = \frac{200000}{6} = \frac{100000}{3}$$

$$R = \frac{SI \times 100}{P \times T}$$

$$R = \frac{(100000/3) \times 100}{50000 \times 1} = \frac{1000}{15} = \frac{200}{3} \% = 66\frac{2}{3} \%$$

Hence, option C is correct.

### Common explanation :

Let the sum of money he invested in Axis bank = 100x then at the end of one year

$$\text{Amount} = \frac{100x \times 1 \times 20}{100} + 100x = 120x$$

The CI of 2 years = 57600

The CI of 1 year = 24000

$$\text{Difference} = 57600 - 24000 = 33600$$

$$\text{Now, } 33600 - 24000 = 9600$$

At R% per annum, 24000 gives compound interest of Rs. 9600

$$\frac{24000 \times R}{100} = 9600$$

$$R = 40\% \text{ per annum}$$

46 Correct Option: B

In the year 2007, 30% of the population was affected by malaria out of which 10% were house-wives.

$\therefore$  The number of house-wives affected by malaria in the year 2007 = 10% of 30% of 1000 =  $0.1 \times 0.3 \times 1000 = 30$

Hence, option B is correct.

**47 Correct Option: E**

The number of house-wives, students and drivers were in the ratio 20 : 11 : 9 in each year.

Let the common factor be  $x$ .

Also, every year 1000 people were surveyed.

$$\therefore 20x + 11x + 9x = 1000$$

$$\therefore x = 25$$

$\therefore$  The total number of house-wives, students and drivers was 500, 275 and 225 respectively.

Now, in the year 2009, 45% of the total population was affected by malaria.

$$45\% \text{ of } 1000 = 450$$

Out of the 450 affected people, 30% were drivers.

$$30\% \text{ of } 450 = 135$$

Hence, the numbers of drivers who were not affected by malaria in the year 2009 =  $225 - 135 = 90$

Hence, option E is correct.

**48. Correct Option: A**

Total population of students for each year = 275

In the year 2006, the numbers of students affected by malaria = 60% of 40% of 1000 =  $0.6 \times 0.4 \times 1000 = 240$  students

$$\therefore \text{The number of students not affected by malaria} = 275 - 240 = 35$$

$$\therefore \text{Difference between the two} = 240 - 35 = 205$$

Hence, option A is correct.

**49 Correct Option: C**

The number of house-wives affected by malaria in the year 2005 = 10% of 30% of 1000 =  $0.1 \times 0.3 \times 1000 = 30$

The number of house-wives affected by malaria in the year 2008 = 10% of 20% of 1000 =  $0.1 \times 0.2 \times 1000 = 20$

$$\text{The required ratio} = 30 : 20 = 3 : 2$$

Hence, option C is correct.

**50 Correct Option: D**

Total number of students = 275

The number of students affected by malaria in the year 2005 = 60% of 30% of 1000 = 180

$\therefore$  The number of students not affected by malaria =  $275 - 180 = 95$

The number of students affected by malaria in the year 2006 = 60% of 40% of 1000 = 240

$\therefore$  The number of students not affected by malaria =  $275 - 240 = 35$

The number of students affected by malaria in the year 2007 = 60% of 30% of 1000 = 180

$\therefore$  The number of students not affected by malaria =  $275 - 180 = 95$

The number of students affected by malaria in the year 2008 = 60% of 20% of 1000 = 120

$\therefore$  The number of students not affected by malaria =  $275 - 120 = 155$

The number of students affected by malaria in the year 2009 = 60% of 45% of 1000 = 270

$\therefore$  The number of students not affected by malaria =  $275 - 270 = 5$

Thus, 2008 had the maximum number of students not affected by malaria.

Hence, option D is correct.

## Data Sufficiency

**1. What is marked price of the the product?**

**Statement I – After giving the 10% discount on mark price the shopkeeper make a profit of 26% by selling the item. Ratio of cost price and mark price is 5:7.**

**Statement II – Difference of mark price and cost price is 40. Difference of selling price and marked price is 14. Marked price is 40% of the cost price.**

- A. Only Statement I alone.
- B. Only Statement II alone.
- C. Both Statements I and II together.
- D. Neither Statement I nor II is sufficient.
- E. Either Statement I or II.

**2. How many tiles is needed to fit tiles in the rectangular floor of a room?**

**Statement I – Ratio of length and breadth of the room is 9:5 and peremeter of the floor is 140 m.**

**Statement II – Price of 100 tiles is 500. And total expenditure to fit the floor is 12000.**

- A. Only Statement I alone.
- B. Only Statement II alone.
- C. Both Statements I and II together.
- D. Neither Statement I nor II is sufficient.
- E. Either Statement I or II.

**3. Lina buy braslet. Find the iner radius of braslet?**

**Statement I – Braslet is made with 269.5sqm metel.**

**Statement II – length of outer diameter is 28m.**

- A. Only Statement I alone.
- B. Only Statement II alone.



- C. Both Statements I and II together.
- D. Neither Statement I nor II is sufficient.
- E. Either Statement I or II.

**4. Find the length of the train P?**

**Statement I – The train P cross the train Q in 6 sec when train Q is not moving. Train Q cross train R in 68 sec when both are moving same direction, speed of train R is 25m/sec.**

**Statement II – Train P cross train R in 64 sec when both are moving same direction. Length of train Q is 140m.**

- A. Only Statement I alone.
- B. Only Statement II alone.
- C. Both Statements I and II together.
- D. Neither Statement I nor II is sufficient.
- E. Either Statement I or II.

**5. How many days A, B and C can complete the work together?**

**Statement I – Ratio of effieency of A and B is 2:1. B and C can complte the work in 12 days.**

**Statement II – Ratio of effieency of A and C is 3:1. C can alone complte the work in 30 days.**

- A. Only Statement I alone.
- B. Only Statement II alone.
- C. Both Statements I and II together.
- D. Neither Statement I nor II is sufficient.
- E. Either Statement I or II.

**6. Is A is an even number?**

**Statement I –  $6A+3B$  is even number.**

**Statement II –  $3A+6B$  is even number.**

- A. Only Statement I alone.
- B. Only Statement II alone.
- C. Both Statements I and II together.
- D. Neither Statement I nor II is sufficient.
- E. Either Statement I or II.

**7. Find the present age of B?**

**Statement I – Age A 2years ago equal to the age of C 4 years ago. Age of C is average age of A and B.**

**Statement II – ratio of present age of B and age of C after 2 years is 1:1. A is 2 years younger than C.**

- A. Only Statement I alone.
- B. Only Statement II alone.
- C. Both Statements I and II together.
- D. Neither Statement I nor II is sufficient.
- E. Either Statement I or II.

**8. There is three number, first, second and third. What is the 45% of first number?**

**Statement I –  $\frac{6}{11}$  of the first number is equal to the 22% percent of second number. second number is equal to the  $\frac{1}{4}$  of third number.**

**Statement II – First number is 92 more than the  $\frac{1}{4}$  of the second number. Difference of first and second number is 458.**

- A. Only Statement I alone.

**B.** Only Statement II alone.

**C.** Both Statements I and II together.

**D.** Neither Statement I nor II is sufficient.

**E.** Either Statement I or II.

**9. In a company there are two type of employee in a company either 25 year or more than 25 year. Find how many male are 25 year old?**

**Statement I – There is 45 % male employee in the company. Out of the total female employee 60% is 25 years age.**

**Statement II – Total employee of the company is 4800. Out of that 40% is above 25 years age.**

**A.** Only Statement I alone.

**B.** Only Statement II alone.

**C.** Both Statements I and II together.

**D.** Neither Statement I nor II is sufficient.

**E.** Either Statement I or II.

**10. Find the rate of interest?**

**Statement I – The simple interest accrued of Rs.22500 at the end of four years is Rs 10800.**

**Statement II – The compound interest accrued on the Rs.22500 at certain time at certain rate is Rs.5724**

**A.** Only Statement I alone.

**B.** Only Statement II alone.

**C.** Both Statements I and II together.

**D.** Neither Statement I nor II is sufficient.

**E.** Either Statement I or II.

**11. What was annual income of M?**

**Statement I – R's monthly income is three times V's monthly income. V's monthly income is 15% more than C's monthly income. C's monthly income is 32000.**

**Statement II – V's monthly income is Rs 4800 more than the monthly income of C's. Total income of V and C is Rs.68800. V's monthly income is  $\frac{1}{3}$  of M's monthly income.**

**A.** Only Statement I alone.

**B.** Only Statement II alone.

**C.** Both Statements I and II together.

**D.** Neither Statement I nor II is sufficient.

**E.** Either Statement I or II.

**12. What are maximum marks of the examination?**

**Statement I – Average marks of three students is 643. First student get 56% second student gets 634 marks.**

**Statement II – Third students gets 92% marks in the exam which is 171 marks less than Second student. Second student gets 144 more marks than First student.**

**A.** Only Statement I alone.

**B.** Only Statement II alone.

**C.** Both Statements I and II together.

**D.** Neither Statement I nor II is sufficient.

**E.** Either Statement I or II.

**13. What is the present age of D?**

**StatementI – Ratio between present age of M and D is**

**5:13. M is 9 year younger than P.**

**Statement II – P's age after 9 year will be 33 years.**

**The difference between D's age and M's age is same as the present age of P.**

**A. Only Statement I alone.**

**B.Only Statement II alone.**

**C. Both Statements I and II together.**

**D. Neither Statement I nor II is sufficient.**

**E. Either Statement I or II.**

**14. What is the perimeter of the rectangle?**

**StatementI – Area of the rectangle is seventh fourth area of square whose side is 7 more than the breadth of Rectangle .**

**Statement II – Breadth of rectangle equal to the radius of circle whose perimeter is 176cm and ratio of length and bradth of rectangle is 9:7.**

**A. Only Statement I alone.**

**B.Only Statement II alone.**

**C. Both Statements I and II together.**

**D. Neither Statement I nor II is sufficient.**

**E. Either Statement I or II.**

**15. If taps A, B and C are open simultaneously, how long will it take to fill the tank completely where C is out let pipe?**

**StatementI – When pipe A and B is open together the tank fill in 2.4 hr.**

**Statement II – When pipe c is open it can empty the full tank in 3 hr.**

**A. Only Statement I alone.**

**B.Only Statement II alone.**

**C. Both Statements I and II together.**

**D. Neither Statement I nor II is sufficient.**

**E. Either Statement I or II.**

**16. What is M's share of profit?**

**StatementI – M started the business with investment Rs.29500. S joined with him after 4 months.**

**Statement II – S investment 33500 and after 3 month he spend 1500 more. Where M invest 3000 after 6 month from the beginning.**

**A. Only Statement I alone.**

**B.Only Statement II alone.**

**C. Both Statements I and II together.**

**D. Neither Statement I nor II is sufficient.**

**E. Either Statement I or II.**

**17. What is the percent profit earedned byselling a car?**

**StatementI – The amount of profit earned on selling the car was 320000.**

**Statement II – The selling price of the car is double of cost price**

**A. Only Statement I alone.**

**B.** Only Statement II alone.

**C.** Both Statements I and II together.

**D.** Neither Statement I nor II is sufficient.

**E.** Either Statement I or II.

**18. How many students from AEC College got placement?**

**Statement I** – 75% student from the XYZ college got placement. Number of student who got placement from AEC is 120% percent of number of students who got placement from college XYZ.

**Statement II** – Ratio of Number of students of college AEC and XYZ is 4:3. Difference of number of student in this college is 400.

**A.** Only Statement I alone.

**B.** Only Statement II alone.

**C.** Both Statements I and II together.

**D.** Neither Statement I nor II is sufficient.

**E.** Either Statement I or II.

**19. What is average of a,b,c,d and e?**

**Statement I** –  $a+e=50$ ,  $c:d=6:7$ , average of a and c is equal to b.

**Statement II** –  $d+e=58$  and  $b+d=50$ .  $b:e=11:15$ .

**A.** Only Statement I alone.

**B.** Only Statement II alone.

**C.** Both Statements I and II together.

**D.** Neither Statement I nor II is sufficient.

**E.** Either Statement I or II.

**20. What is the ratio of length and breadth of recangle?**

**Statement I** – area of a rectangle is twice area of circle. Radius of a circle is equal to the side of a square whose area is 196sqm.

**Statement II** – perimeter of the rectangle is 28m more than the circumference of the circle.

**A.** Only Statement I alone.

**B.** Only Statement II alone.

**C.** Both Statements I and II together.

**D.** Neither Statement I nor II is sufficient.

**E.** Either Statement I or II.

**21. What is distance of office from ram's house?**

**Statement I** – one day ram goes 10km/hr more than his achual speed then he reached office 45 min earlier whereas one day he goes 5km/hr less than his real speed then he reached 30 min after.

**Statement II** – Ram start his jouerney at 8.30am and reached his office by 10.15am. After walking 100 meter in 5 min he goes in car with the speed of 40km/hr, then again walk 400 meter in 15 min

**A.** Only Statement I alone.

**B.** Only Statement II alone.

**C.** Both Statements I and II together.

**D.** Neither Statement I nor II is sufficient.

**E.** Either Statement I or II.

**22. in how many days 1 men and 2 women complete the work?**

**Statement I – 5 women complete the work in 42 days and 15 men take 15 days to complete the work.**

**Statement II – 7 women and 3 men can complete the work in 8 days and 3 women and 7 men takes 10 days to complete the work.**

- A. Only Statement I alone.
- B. Only Statement II alone.
- C. Both Statements I and II together.
- D. Neither Statement I nor II is sufficient.
- E. Either Statement I or II.

**23. Find the rate of interest?**

**Statement I – An amount doubles itself in 8 years in simple interest.**

**Statement II – Difference of Si and Ci for 2 years is Rs220.**

- A. Only Statement I alone.
- B. Only Statement II alone.
- C. Both Statements I and II together.
- D. Neither Statement I nor II is sufficient.
- E. Either Statement I or II.

**24. Find the A's share of profit?**

**Statement I – Ratio of time of investment are in the ratio of 3:4:5 and ratio of investment amount is 5:4:3.**

**Statement II – The total amount of investment is 96000 and total profit is 48000.**

- A. Only Statement I alone.
- B. Only Statement II alone.
- C. Both Statements I and II together.
- D. Neither Statement I nor II is sufficient.
- E. Either Statement I or II.

**25. Find the total cost of flooring a room?**

**Statement I – ratio of length and breadth of the floor are in the ratio of 9:5. The perimeter of the floor is 140m.**

**Statement II – The cost of the flooring is Rs.35 per sqm.**

- A. Only Statement I alone.
- B. Only Statement II alone.
- C. Both Statements I and II together.
- D. Neither Statement I nor II is sufficient.
- E. Either Statement I or II.

**26. What is the total profit or loss percentage made by shopkeeper?**

**Statement I – The shopkeeper mixed Rs. 38 per kg 4kg rice with Rs. 34 per kg rice and sells the total rice at Rs. 36 per kg.**

**Statement II – shopkeeper sell total 9 kg of rice and also give 950gm rice in place of 1kg.**

- A. Only Statement I alone.
- B. Only Statement II alone.
- C. Both Statements I and II together.
- D. Neither Statement I nor II is sufficient.

E. Either Statement I or II.

**27. Find the present age of C?**

**Statement I – Average age of A, B, C, D, E is 34 years.**

**Total age of A and E is 70 years. Ratio of age of B and D is 8:9.**

**Statement II – total age of B, D and C is 112 years.**

**Difference of B and C is 2 years and ratio of C and D is 17:18.**

A. Only Statement I alone.

B. Only Statement II alone.

C. Both Statements I and II together.

D. Neither Statement I nor II is sufficient.

E. Either Statement I or II.

**28. What is the monthly income of A?**

**Statement I – Monthly saving of A is 4800. A spends  $\frac{1}{5}$  of his income in food,  $\frac{1}{3}$  in rent and  $\frac{2}{5}$  in others. Rest amount he saves.**

**Statement II – ratio of expenditure and saving of A is 33:12. Difference of income and saving is Rs.13200**

A. Only Statement I alone.

B. Only Statement II alone.

C. Both Statements I and II together.

D. Neither Statement I nor II is sufficient.

E. Either Statement I or II.

**29. What is the two-digit?**

**Statement I – sum of the digits is 9 and difference of the digits is 1.**

**Statement II – if we added sum of the digits then we get the reverse of the number.**

A. Only Statement I alone.

B. Only Statement II alone.

C. Both Statements I and II together.

D. Neither Statement I nor II is sufficient.

E. Either Statement I or II.

**30. What is three digit number?**

**Statement I – Three digit number is combination of three odd numbers. Two digits may be same or same not. But three digits are not same.**

**Statement II – The difference of 100 place digit and 10 place digit is 4. Difference of unit place and 10 place is 2 and difference unit place and 100 place is 6.**

A. Only Statement I alone.

B. Only Statement II alone.

C. Both Statements I and II together.

D. Neither Statement I nor II is sufficient.

E. Either Statement I or II.

**31. Number of pages typed by A on Thursday is what percent less than that of Monday?**

**Statement I – The average pages typed by A on Monday, Tuesday and Wednesday is 39. A typed 36 pages on Thursday**

**Statement II – Average number of pages typed by A on Tuesday, Wednesday and Thursday is 26.**

- A. Only Statement I alone.
- B. Only Statement II alone.
- C. Both Statements I and II together.
- D. Neither Statement I nor II is sufficient.
- E. Either Statement I or II.

**32. Find the cost price of the product?**

**Statement I – when shopkeeper give 20% discount on marked price shopkeeper earn 5% profit.**

**Statement II – when shopkeeper gives 10% discount then there is profit of Rs.58.**

- A. Only Statement I alone.
- B. Only Statement II alone.
- C. Both Statements I and II together.
- D. Neither Statement I nor II is sufficient.
- E. Either Statement I or II.

**33. What is the capacity of cylindrical tank?**

**Statement I – Radius of the base is half of its height. Area of base is 616 sqm. height of the cylinder is 28m.**

**Statement II – Radius of the cylinder equal to the height of a cone whose volume is 1224 cbm, height of the cone equal to the side of square whose perimeter is 96m**

- A. Only Statement I alone.
- B. Only Statement II alone.
- C. Both Statements I and II together.
- D. Neither Statement I nor II is sufficient.

- E. Either Statement I or II.

**34. Find the total distance from A to B?**

**Statement I – A person goes A to B with a certain speed. If he increased its speed by 6km/hr, it would take 4 hours less to cover the distance.**

**Statement II – If he travel 6km/hr lower than the original speed then it takes 10 hours more time than actual time.**

- A. Only Statement I alone.
- B. Only Statement II alone.
- C. Both Statements I and II together.
- D. Neither Statement I nor II is sufficient.
- E. Either Statement I or II.

**35. When solid right circular cylinder melted down and makes a new cylinder then find the total surface area of new cylinder?**

**Statement I – Radius of old cylinder is 12 cm and height is 13cm.**

**Statement II – radius of new cylinder 8 cm and height is 29.24cm.**

- A. Only Statement I alone.
- B. Only Statement II alone.
- C. Both Statements I and II together.
- D. Neither Statement I nor II is sufficient.
- E. Either Statement I or II.

**36. What is Ram's present age?**

**Statement I – Ratio of Ram’s age and his mother’s age is 2:3. Difference of his mother and son’s age is 60 years.**

**Statement II – After 4 year Ratio of Ram’s and his son’s age will be 13:24. Ram’s present age is double of his son’s age.**

- A. Only Statement I alone.
- B. Only Statement II alone.
- C. Both Statements I and II together.
- D. Neither Statement I nor II is sufficient.
- E. Either Statement I or II.

**37. What is the speed of the boat?**

**Statement I – the boat takes 4 hours to travel a distance of 12km and the boat takes 15 hours to travel a distance of 30 km upstream.**

**Statement II – The boat takes 9 hours to travel a distance of 27km in downstream.**

- A. Only Statement I alone.
- B. Only Statement II alone.
- C. Both Statements I and II together.
- D. Neither Statement I nor II is sufficient.
- E. Either Statement I or II.

**38. Find the marked price of the product?**

**Statement I – selling price after offering 5% discount on the marked price is Rs.608.**

**Statement II – Cost price of the product is Rs. 500 and if the product sell on marked price then there is 28% profit.**

- A. Only Statement I alone.
- B. Only Statement II alone.
- C. Both Statements I and II together.
- D. Neither Statement I nor II is sufficient.
- E. Either Statement I or II.

**39. when A left the business?**

**Statement I – ratio of time of investment of A and C is 4:5. B invests with amount of Rs.32000.**

**Statement II – A start the business with the amount of 36000 and after some time he left. Total profit earn from the business is 18000 which is  $\frac{5}{3}$ rd of C’s investment.**

- A. Only Statement I alone.
- B. Only Statement II alone.
- C. Both Statements I and II together.
- D. Neither Statement I nor II is sufficient.
- E. Either Statement I or II.

**40. Find the ratio cost price and selling price of the product?**

**Statement I – There is 20% profit if the Product sells at 384.**

**Statement II – There is 25% loss if the product sells at 240.**

- A. Only Statement I alone.



**B.** Only Statement II alone.

**C.** Both Statements I and II together.

**D.** Neither Statement I nor II is sufficient.

**E.** Either Statement I or II.

**41. What is the amount of the principle?**

**Statement I** – The simple interest was 1800 after three year of investment.

**Statement II** – The compound interest was Rs.1224 after 2 years.

**A.** Only Statement I alone.

**B.** Only Statement II alone.

**C.** Both Statements I and II together.

**D.** Neither Statement I nor II is sufficient.

**E.** Either Statement I or II.

**42. What is B's present age?**

**Statement I** – ratio of age of A and B is 4:5 and ratio between present age of C and D is 7:5.

**Statement II** – D's age 3 years hence will be 14 years less than A's present age. difference of age of A and C is 11 years.

**A.** Only Statement I alone.

**B.** Only Statement II alone.

**C.** Both Statements I and II together.

**D.** Neither Statement I nor II is sufficient.

**E.** Either Statement I or II.

**43. What is quantity of mixture in the large bottle?**

**Statement I** – there three bottle, all are equal quantity. Ratio of milk and water in the 1<sup>st</sup> bottle is 2:1 and water in the large bottle is 106 liter.

**Statement II** – ratio of milk and water in 2<sup>nd</sup> bottle is 4:11.

**A.** Only Statement I alone.

**B.** Only Statement II alone.

**C.** Both Statements I and II together.

**D.** Neither Statement I nor II is sufficient.

**E.** Either Statement I or II.

**44. What is initial speed of the bus?**

**Statement I** – Speed of the bus increase every hour by 9km/hr and it takes 11 hours to cover a distance of 572km.

**Statement II** – If bus goes with initial speed than it takes 6 hours to cover 42 km.

**A.** Only Statement I alone.

**B.** Only Statement II alone.

**C.** Both Statements I and II together.

**D.** Neither Statement I nor II is sufficient.

**E.** Either Statement I or II.

**45. what is the speed of the stream?**

**Statement I** – A boat goes 15 km upstream and 22 km downstream in 5 hours.

**Statement II** – The boat goes 20 km upstream and 55/2 km downstream in 6.5 hours.

**A.** Only Statement I alone.

**B.** Only Statement II alone.

**C.** Both Statements I and II together.

**D.** Neither Statement I nor II is sufficient.

**E.** Either Statement I or II.

**46.** What is speed of the train?

**Statement I** – train cross another 120m long train with speed of 54km/hr in 30 sec when they are running same direction.

**Statement II** – train crosses another train with double of its length when both are running in opposite direction in 6 sec.

**A.** Only Statement I alone.

**B.** Only Statement II alone.

**C.** Both Statements I and II together.

**D.** Neither Statement I nor II is sufficient.

**E.** Either Statement I or II.

**47.** What is B's monthly income?

**Statement I** – A's annual income is Rs.21800. ratio of monthly income of A and C is 4:5.

**Statement II** – ratio of monthly income of B and C is 4:3. Difference of monthly income B and C is Rs.12000

**A.** Only Statement I alone.

**B.** Only Statement II alone.

**C.** Both Statements I and II together.

**D.** Neither Statement I nor II is sufficient.

**E.** Either Statement I or II.

**48.** What is the total wage of the work?

**Statement I** – A can alone do the work in 5 days Q alone can do the same work in 6 days. M can do the work in 12 days.

**Statement II** – When they all together work M gets Rs.1000.

**A.** Only Statement I alone.

**B.** Only Statement II alone.

**C.** Both Statements I and II together.

**D.** Neither Statement I nor II is sufficient.

**E.** Either Statement I or II.

**49.** What is the total surface area of the cone?

**Statement I** – base of the perimeter cone is equal to the perimeter of a square whose diagonal is  $22\sqrt{2}$  cm.

**Statement II** – ratio of height and slant height is 24:25.

**A.** Only Statement I alone.

**B.** Only Statement II alone.

**C.** Both Statements I and II together.

**D.** Neither Statement I nor II is sufficient.

**E.** Either Statement I or II.

**50.** What is quantity of milk in the vessel C?

**Statement I** – Vessel A contains x litre milk. 60% milk taken from A and put in the C. Ratio of milk and water in vessel C is 25:4.

**Statement II** – Vessel B contains y litre of water and 12% water put it into vessel C.

- A. Only Statement I alone.
- B. Only Statement II alone.
- C. Both Statements I and II together.

- D. Neither Statement I nor II is sufficient.
- E. Either Statement I or II.

## Data Sufficiency - Answer and Explanation

### Q1) Answer e

From Statement I we can calculate the marked price.  
From Statement II we can calculate the marked price.  
Either Statement I or II is sufficient.

### Q2) Answer d

From both statements we can not calculate the area of each tiles so we cannot calculate the numbers of tiles required.

### Q3) Answer c

To calculate the inner radius we have to use both Statement I and Statement II.

### Q4) Answer D

From two statements we can not calculate the length of train R, speed of train Q so we cannot able to know the length of train. because lots unknown value.

### Q5) Answer c

From both statements we can calculate the efficiency of A, B and C. And from statements 2 we know the days of C to complete the work. From that we can easily calculate total days to complete the work by A, B and C.

### Q6) Answer B

From Statement I we cannot say about A is even or not because we don't know B is even or not. But Statement II we can say A is even because  $6B$  is always even and  $3A$  have to be even.

### Q7) Answer d

From both Statements I and II we cannot calculate the exact age of any one. So we cannot calculate the age of B.

### Q8) Answer b

Statement I we cannot calculate the first number but from Statement II we can calculate the first number from the relation between first and second number.

### Q9) Answer C

Statement I we calculate the total male employee and total female employee who are 25 years age in from of percentage. And with the help Statement II we can calculate the exact value.

### Q10) Answer a

From statement I we can calculate the rate because we know the principle, time and interest, but Statement II we don't know the time so we cannot calculate the rate.

**Q11) Answer c**

From Statement I we can calculate the monthly income C,V and R but we don't know about the monthly income of M but with help Statement II we can calculate monthly income M and from that annual income.

**Q12) Answer c**

**From each** Statement I or II. We cannot calculate the maximum marks because we don't know the any one percentage and marks both. But with both Statement I and II we get marks third student and also gets third student percentage, from that we can calculate the maximum marks..

**Q13) Answer c**

**To calculate the age of D we need to both statements.**

**Q14) Answer b**

**From** Statement II we can calculate the length and breadth of rectangle and from that perimeter can easily calculate.

**Q15) Answer c**

Each Statement I or II we can get the answer but if we use both Statement I and II then we can calculate the answer.

**Q16) Answer c**

**From both** Statements I and II we calculate the investment of each one but we don't the total profit so we cannot calculate the share of profit of M.

**Q17) Answer b**

**From** Statement II we can easily get the profit percentage.

**Q18) Answer c**

From Statement I we get the percentage of number of student got placement but we don't know exact number because number of student is unknown from Statement II we get the number of student, and from that we can calculate the number of student gets placement.

**Q19) Answer c**

**From both statements we can calculate the exact value and from that we can calculate average.**

**Q20) Answer c**

**If we calculate the ratio of** length and breadth then we have to use both Statements.

**Q21) Answer e**

**From each statements we calculate the distance of office from house**

**Q22) Answer e**

From each statements we calculate the relation men and women. And from that we can calculate in number of days to complete the work.

**Q23) Answer A**

**From** Statement I we calculate the rate of interest but in Statement II we don't know the principle so we cannot calculate the rate.

**Q24) Answer c**

From both Statement I and II we get individual investment amount and also get time ratio of investment.

From total profit we get A's share of profit.

**Q25) Answer c**

From Statement I we get length and breadth and from that we get area of the floor and from the Statement II we get the per sqm cost, and from that we get total cost.

**Q26) Answer c**

From Statement I cannot calculate the amount of 34kg rice the shopkeeper mixed. So we cannot calculate the profit percentage. From Statement II we get that and calculate profit percentage easily.

**Q27) Answer b**

From Statement II we can easily calculate the age of C and from Statement I we cannot.

**Q28) Answer c**

From each Statement I or II we can get the monthly income of A.

**Q29) Answer c**

From Statement I we get two numbers 54 and 45 but we cannot confirm the correct one. Statement II we get the correct one.

**Q30) Answer d**

From Statement I we cannot get the answer but Statement II we get two numbers 157 and 953, so we cannot calculate the exact number.

**Q31) Answer c**

By using both statements we calculate exact number of page type A on Monday and Thursday. From that we get the percentage.

**Q32) Answer c**

By using both the Statement I and II we get the cost price but each statement alone we can't get.

**Q33) Answer a**

From Statement I we can calculate the capacity of cylinder with radius and height but in statements 2 we cannot because height of cylinder is unknown.

**Q34) Answer C**

From Statement 1 & 2 we can get distance

**Q35) Answer b**

From Statement II we can calculate easily the surface area of new cylinder but we cannot calculate from Statement I

**Q36) Answer b**

From Statement I we cannot calculate the exact age of ram because relation of his mother and son given. no common relation is given. from Statement II we get age of ram from given equation.

**Q37) Answer c**

Either Statement I or II alone cannot give the answer but if we use both we get the speed of the boat.

**Q38) Answer e**

Either Statements alone can be able to give the answer.

**Q39) Answer d**

**From** Statement I and II we don't know how much time they invest the money so cannot answer..

**Q40) Answer e**

**Each** Statements can able to give answer. i.e ratio of selling price and cost price.

**Q41) Answer d**

**We don't know the rate of interest so we cannot get the answer from** Statement I and II.

**Q42) Answer C**

**From each** Statement I or II alone we cannot get the answer but with the help of two we get the answer easily.

**Q43) Answer d**

**We don't know the ratio of milk and water in third bottle so we cannot calculate the total amount because we cannot calculate the final ratio.**

**Q44) Answer b**

**From** Statement II we get the speed easily but from Statement I we cannot.

**Q45) Answer c**

**To calculate the speed of the stream we have to use both statements.**

**Q46) Answer d**

From statement 1 we don't know length of the train. So we don't get the speed of train

In statement 2 don't know about length of the trains and speed of the other train

So we don't get the answer

**Q47) Answer b**

**From statement 1 we get monthly income of A&C**

**From statement 2 we easily get the monthly income of B**

**Q48) Answer c**

In statement there is no information about wages. In statement 2 we get M's wages |

From the both statement we can calculate the value

**Q49) Answer c**

In statement 1 we get radius but don't know about height.

In statement 2 from the ratio we can calculate height using statement 1.. also we can calculate the surface .

**Q50) Answer D**

In both statement we don't know total quantity of the mixture . so we can't calculate it

## Quantity I and Quantity II

**1. Quantity I: Aman is 3 years younger than Mohan and the ratio of their ages is 7 : 8. Age of Aman?**

**Quantity II: Average age of Meet and Aman is 25 years and Meet is 2 years older than Aman. Age of Aman?**

**A. Quantity I > Quantity II**

**B. Quantity I < Quantity II**

**C. Quantity I  $\geq$  Quantity II**

**D. Quantity I  $\leq$  Quantity II**

**E. Quantity I = Quantity II or Relation cannot be Established.**

**2. In an envelope there are 5 green, 3 yellow and 4 pink tablets. 3 tablets are picked at random**

**Quantity I: The probability that 2 tablets are yellow in colour and 1 tablet is pink in colour.**

**Quantity II: The probability that all the tablets are green in colour.**

**A. Quantity I > Quantity II**

**B. Quantity I < Quantity II**

**C. Quantity I  $\geq$  Quantity II**

**D. Quantity I  $\leq$  Quantity II**

**E. Quantity I = Quantity II or Relation cannot be Established.**

**3. Quantity I: The curved surface area of the cylinder is 220 cm<sup>2</sup> and the height of the cylinder is 2 cm less than the radius of the cylinder. What is the volume of cylinder.**

**Quantity II: 770 cm<sup>3</sup>.**

**A. Quantity I > Quantity II**

**B. Quantity I < Quantity II**

**C. Quantity I  $\geq$  Quantity II**

**D. Quantity I  $\leq$  Quantity II**

**E. Quantity I = Quantity II or Relation cannot be Established.**

**4. Quantity I: Find the percentage of boys in the class this year. This year the percentage of girls in the class is 60%**

**Quantity II: Find the percentage of boys in the class this year. Last years out of the 300 students, 50% was girls and this year the number of girls are increased by 10% but total students remains same.**

**A. Quantity I > Quantity II**

**B. Quantity I < Quantity II**

**C. Quantity I  $\geq$  Quantity II**

**D. Quantity I  $\leq$  Quantity II**

**E. Quantity I = Quantity II or Relation cannot be Established.**

**5. If a and b are natural numbers and  $6 > a > b > 3$ .**

**Quantity I:  $4a^3b$**

**Quantity II:  $2a^2b^2$**

**A. Quantity I > Quantity II**

**B. Quantity I < Quantity II**

**C. Quantity I  $\geq$  Quantity II**

**D. Quantity I  $\leq$  Quantity II**

**E. Quantity I = Quantity II or Relation cannot be Established.**

**6. Quantity I: Speed of boat in still water, if a man can travel 54 km downstream in 9 hours and 40 km upstream in 10 hours.**

**Quantity II: Speed of boat in still water, if a man can travel 45 km downstream in 9 hours and the speed of stream is 1 kmph.**

- A. Quantity I > Quantity II
- B. Quantity I < Quantity II
- C. Quantity I  $\geq$  Quantity II
- D. Quantity I  $\leq$  Quantity II
- E. Quantity I = Quantity II or Relation cannot be Established.

**7. Quantity I: Age of mother, if the age of Smiti is  $\frac{1}{7}$ th of her mother's age and after 5 years Smiti's age will be 12 years.**

**Quantity II: Age of mother, if the ratio of the ages of Sukriti and her mother is 3 : 7 and after 3 years the ratio of their ages will be 6 : 13.**

- A. Quantity I > Quantity II
- B. Quantity I < Quantity II
- C. Quantity I  $\geq$  Quantity II
- D. Quantity I  $\leq$  Quantity II
- E. Quantity I = Quantity II or Relation cannot be Established.

**8. Quantity I: The area of the rectangle is equal to the area of the square whose side is 24 cm. Find the Area.**

**Quantity II: The perimeter of the rectangle is 88cm, if the ratio of the length and the breadth of the rectangle is 6 : 5. Find the Area.**

- A. Quantity I > Quantity II
- B. Quantity I < Quantity II
- C. Quantity I  $\geq$  Quantity II
- D. Quantity I  $\leq$  Quantity II
- E. Quantity I = Quantity II or Relation cannot be Established.

**9. A 250 metres long train running at the speed of 100 kmph crosses another train running in opposite direction at the speed of 60 kmph in 9 seconds.**

**Quantity I: The length of the other train**

**Quantity II: The length of the first train shrinks by  $\frac{3}{4}$ th of that of the other train**

- A. Quantity I > Quantity II
- B. Quantity I < Quantity II
- C. Quantity I  $\geq$  Quantity II
- D. Quantity I  $\leq$  Quantity II
- E. Quantity I = Quantity II or Relation cannot be Established.

**10. Amazon listed two headphones for Rs. 476. One of the headphones was sold at a loss of 25% and the other at a gain of 29% and the company found that each headphone was sold at the same price**

**Quantity I: The cost price of the headphone which was sold at 29% profit**

**Quantity II: The selling price of the headphone which was sold at 25% loss**

- A. Quantity I > Quantity II



B. Quantity I < Quantity II

C. Quantity I  $\geq$  Quantity II

D. Quantity I  $\leq$  Quantity II

E. Quantity I = Quantity II or Relation cannot be Established.

**11. The total surface area of a cube, sphere and cylinder are same. The height of the cylinder is double of its radius.**

**Quantity I: Volume of Cube**

**Quantity II: Volume of Sphere**

A. Quantity I > Quantity II

B. Quantity I < Quantity II

C. Quantity I  $\geq$  Quantity II

D. Quantity I  $\leq$  Quantity II

E. Quantity I = Quantity II or Relation cannot be Established.

**12. Find the distance if:**

**Quantity I: A man covers a distance in 15 hours. He covers first half at 12 km/h and second half at 15 km/h.**

**Quantity II: Two buses moves towards each other at a speed of 30 km/h and 40 km/h respectively. When they meet it is found that faster bus covers 30 km more than slower one.**

A. Quantity I > Quantity II

B. Quantity I < Quantity II

C. Quantity I  $\geq$  Quantity II

D. Quantity I  $\leq$  Quantity II

E. Quantity I = Quantity II or Relation cannot be Established.

**13. Quantity I: Two equal amounts are invested for 2 years at 9% per annum by Viraj, one at simple interest and the other at compound interest. If the difference in the interests for the two years on the two amounts is 100, then what is the amount?**

**Quantity II: Two equal amounts are invested for 2 years at 11% per annum by Viraj, one at simple interest and the other at compound interest. If the difference in the interests for the two years on the two amounts is 97, then what is the amount?**

A. Quantity I > Quantity II

B. Quantity I < Quantity II

C. Quantity I  $\geq$  Quantity II

D. Quantity I  $\leq$  Quantity II

E. Quantity I = Quantity II or Relation cannot be Established.

**14. Quantity I: A shopkeeper bought five toffees in one rupee and marks them up by 25%. If he allows a 12% discount, then how many toffees should be he sells at Rs.22?**

**Quantity II: A shopkeeper bought four toffees in one rupee and marks them up by 26%. If he allows a 10% discount, then how many toffees should be he sells at Rs.28.35?**

- A. Quantity I > Quantity II
- B. Quantity I < Quantity II
- C. Quantity I  $\geq$  Quantity II
- D. Quantity I  $\leq$  Quantity II
- E. Quantity I = Quantity II or Relation cannot be Established.

**15. Quantity I: Radhika Farm has only Hens and Goats, total count of legs was 14 less than 4 times the total count of heads. How many legs are counted in total?**

**Quantity II: Radhika Farm has only Hens and Goats, total count of legs was 15 less than 5 times the total count of heads. How many legs are counted in total?**

- A. Quantity I > Quantity II
- B. Quantity I < Quantity II
- C. Quantity I  $\geq$  Quantity II
- D. Quantity I  $\leq$  Quantity II
- E. Quantity I = Quantity II or Relation cannot be Established.

**16. Quantity I: Rs.12700 was lent in two parts by Swati. One part was lent at 4.5% simple interest per annum and the rest was lent at 11% simple interest p.a. The total interest received from both the parts is Rs.1150 per year. What was the amount lent at 11%p.a?**

**Quantity II: Rs.12000 was lent in two parts by Swati. One part was lent at 5% simple interest per annum and the rest was lent at 10% simple interest p.a. The total interest received from both the parts is Rs.1200 per year. What was the amount lent at 10%p.a?**

- A. Quantity I > Quantity II
- B. Quantity I < Quantity II
- C. Quantity I  $\geq$  Quantity II
- D. Quantity I  $\leq$  Quantity II
- E. Quantity I = Quantity II or Relation cannot be Established.

**17. The speed of a motorboat in upstream is 75% less than that of downstream.**

**Quantity I: The speed of the stream is how much percentage of the speed of the motorboat in downstream?**

**Quantity II: The speed of the stream is how much percentage less than the speed of the motorboat in still water?**

- A. Quantity I > Quantity II
- B. Quantity I < Quantity II
- C. Quantity I  $\geq$  Quantity II
- D. Quantity I  $\leq$  Quantity II
- E. Quantity I = Quantity II or Relation cannot be Established.

**18. A shopkeeper gives 10% discount on the marked price but adds 5% tax on the discounted price.**

**Quantity I: If the selling price of the article is Rs. 850.5 then what is the marked price of the article?**

**Quantity II: 900**

- A. Quantity I > Quantity II**
- B. Quantity I < Quantity II**
- C. Quantity I  $\geq$  Quantity II**
- D. Quantity I  $\leq$  Quantity II**
- E. Quantity I = Quantity II or Relation cannot be Established.**

**19. The ratio of A's income to B's income is 4 : 5 and the difference between their income is Rs. 10000.**

**Quantity I: A saves 30% of his income then what is his expenditure?**

**Quantity II: B spends 45% of his income then what is his saving?**

- A. Quantity I > Quantity II**
- B. Quantity I < Quantity II**
- C. Quantity I  $\geq$  Quantity II**
- D. Quantity I  $\leq$  Quantity II**
- E. Quantity I = Quantity II or Relation cannot be Established.**

**20. A motorboat can travel x km upstream and x + 20 km downstream in 17.5 hours. If the ratio of the**

**speed of the motorboat in still water to the speed of stream is 3: 1 and the difference between their speed is 4 km.**

**Quantity I: What is the value of x?**

**Quantity II: How much distance the motorboat will travel downstream in 5 hours 15 minutes?**

- A. Quantity I > Quantity II**
- B. Quantity I < Quantity II**
- C. Quantity I  $\geq$  Quantity II**
- D. Quantity I  $\leq$  Quantity II**
- E. Quantity I = Quantity II or Relation cannot be Established.**

**21. Two persons, A and B together can do a piece of work in 15 days. B is 80% as efficient as A.**

**Quantity I: If they work on alternate day, starting with A then how many days will they take to complete 50% of the work?**

**Quantity II: How many days, B alone will take to complete 40% of the total work?**

- A. Quantity I > Quantity II**
- B. Quantity I < Quantity II**
- C. Quantity I  $\geq$  Quantity II**
- D. Quantity I  $\leq$  Quantity II**
- E. Quantity I = Quantity II or Relation cannot be Established.**

**22. The speed of a 500 meters long train is 5 km per hour more than that of a car. If the car and the**

train travel in opposite direction then the car can cross the train completely in 1.5 minutes.

**Quantity I:** What is the speed of the train?

**Quantity II:** What will be the speed of car when it is increased by 50%?

- A. Quantity I > Quantity II
- B. Quantity I < Quantity II
- C. Quantity I  $\geq$  Quantity II
- D. Quantity I  $\leq$  Quantity II
- E. Quantity I = Quantity II or Relation cannot be Established.

**23. In a mixture of Milk and Water, the quantity of water is 40% less than the quantity of milk. When 5 litres of pure milk were added then the quantity of milk becomes 80% more than the quantity of water.**

**Quantity I:** What is the quantity of water in the mixture?

**Quantity II:** 40 litres

- A. Quantity I > Quantity II
- B. Quantity I < Quantity II
- C. Quantity I  $\geq$  Quantity II
- D. Quantity I  $\leq$  Quantity II
- E. Quantity I = Quantity II or Relation cannot be Established.

**24. On 1st Jan 2018, the average age of a family of 5 members is 45 years. On 1st July 2018, one of the**

**members of the family died. On 1st Jan 2019, the average age of the family will become 32 years.**

**Quantity I:** At what age, did the person die?

**Quantity II:** 100 years

- A. Quantity I > Quantity II
- B. Quantity I < Quantity II
- C. Quantity I  $\geq$  Quantity II
- D. Quantity I  $\leq$  Quantity II
- E. Quantity I = Quantity II or Relation cannot be Established.

**25. In a mixture of 80 litres acid and water, the ratio of acid to water is 3 : 5.**

**Quantity I:** when half of the mixture was withdrawn and in the same quantity a new solution X of acid and water was added then what should be concentration of acid in the new solution X if the ratio of acid to water in the mixture become 1 : 1.

**Quantity II:** 50%

- A. Quantity I > Quantity II
- B. Quantity I < Quantity II
- C. Quantity I  $\geq$  Quantity II
- D. Quantity I  $\leq$  Quantity II
- E. Quantity I = Quantity II or Relation cannot be Established.

**26. Quantity I:** In a school, 50% of the total number of girls is equal to 30% of the total number

of boys then the number of girls is what percentage of the total number of students of the school?

**Quantity II:** In a school, 33.33% of the total number of girls is equal to 66.67% of the total number of boys then the total number of girls is what percentage of the total number of students of the school?

- A. Quantity I > Quantity II
- B. Quantity I < Quantity II
- C. Quantity I  $\geq$  Quantity II
- D. Quantity I  $\leq$  Quantity II
- E. Quantity I = Quantity II or Relation cannot be Established.

**27. A train of length x meters travelling at the speed of 54 km per hour can cross a boy standing on a platform in 16 seconds but at the speed of 72 km per hour it can cross a platform of y meters long in 24 seconds**

**Quantity I:** What is the length of the train?

**Quantity II:** What is the length of the platform?

- A. Quantity I > Quantity II
- B. Quantity I < Quantity II
- C. Quantity I  $\geq$  Quantity II
- D. Quantity I  $\leq$  Quantity II
- E. Quantity I = Quantity II or Relation cannot be Established.

**28. 10 litres of water were drawn from a cask full of water and it was filled with 30 litres milk then the concentration of milk in the mixture become 20%.**

**Quantity I:** Again, how many litres of mixture should be replaced with 10 litres milk so the concentration of water in the mixture will become 60%.

**Quantity II:** What was the original quantity of water in the cask?

- A. Quantity I > Quantity II
- B. Quantity I < Quantity II
- C. Quantity I  $\geq$  Quantity II
- D. Quantity I  $\leq$  Quantity II
- E. Quantity I = Quantity II or Relation cannot be Established.

**29. Quantity I:** Find the amount on compound interest on a sum of Rs.55000 at the rate of 15% per annum after three years.

**Quantity II:** Find the simple interest on a sum of Rs.60000 at the rate 25% per annum after 5.5 years.

- A. Quantity I > Quantity II
- B. Quantity I < Quantity II
- C. Quantity I  $\geq$  Quantity II
- D. Quantity I  $\leq$  Quantity II
- E. Quantity I = Quantity II or Relation cannot be Established.

**30. Quantity I:** What will be the probability of selecting a letter as vowel from the word KNIFE?

**Quantity II:** Find the probability of selecting 2 Red balls from a bag containing 8 red balls and 10 yellow balls?

- A. Quantity I > Quantity II
- B. Quantity I < Quantity II
- C. Quantity I  $\geq$  Quantity II
- D. Quantity I  $\leq$  Quantity II
- E. Quantity I = Quantity II or Relation cannot be Established.

**31. Quantity I:** The length of a rectangular park is 4 times its breadth. There is a fountain in it of area is 900 square meter and which is one fourth of the total area of the park. What is the breadth of the park?

**Quantity II:** The ratio of length to breadth of the rectangle is 5 : 3. If the length of the rectangle is decreased by 8 m it becomes a square, then what is the area of the square thus formed?

- A. Quantity I > Quantity II
- B. Quantity I < Quantity II
- C. Quantity I  $\geq$  Quantity II
- D. Quantity I  $\leq$  Quantity II
- E. Quantity I = Quantity II or Relation cannot be Established.

**32. Quantity I:** When a motorboat travels in upstream then its speed become 75% of the speed of the motorboat in still water .The speed of the stream is how much percentage of the speed of the motorboat in still water?

**Quantity II:** When a sum of money was invested at simple interest then at the end of 8 years the amount becomes 300% of the sum of money. What is the rate of interest?

- A. Quantity I > Quantity II
- B. Quantity I < Quantity II
- C. Quantity I  $\geq$  Quantity II
- D. Quantity I  $\leq$  Quantity II
- E. Quantity I = Quantity II or Relation cannot be Established.

**33. Quantity I:** A sum of money under simple interest becomes 5 times of itself in x years but it becomes 9 times of itself in  $x^2/2$  years. What is the value of x?

**Quantity II:** 3.5 years

- A. Quantity I > Quantity II
- B. Quantity I < Quantity II
- C. Quantity I  $\geq$  Quantity II
- D. Quantity I  $\leq$  Quantity II
- E. Quantity I = Quantity II or Relation cannot be Established.

**34. The ratio of boys to girls in a school is 4 : 5. If 45 students from the same school left in the same ratio and 40 new girls joined the school, then the ratio of boys to girls becomes 4 : 9.**

**Quantity I: What percentage of total students will be boys if 50% of the total number of boys leaves the school?**

**Quantity II: 30%**

- A. Quantity I > Quantity II
- B. Quantity I < Quantity II
- C. Quantity I  $\geq$  Quantity II
- D. Quantity I  $\leq$  Quantity II
- E. Quantity I = Quantity II or Relation cannot be Established.

**35. In a race of 500 meters, A beats B by 50 meters but in a race of 1 km, B beats C by 250 meters.**

**Quantity I: In a race of 800 meters, by how much distance will A beat C?**

**Quantity II: 250 meters**

- A. Quantity I > Quantity II
- B. Quantity I < Quantity II
- C. Quantity I  $\geq$  Quantity II
- D. Quantity I  $\leq$  Quantity II
- E. Quantity I = Quantity II or Relation cannot be Established.

**36. The compound interest received on Rs. 5000 at x% per annum at the end of 2 years is equal to the**

**simple interest received in four years on Rs. 2650 at the same rate of interest.**

**Quantity I: What is the total simple interest received?**

**Quantity II: Rs. 1275**

- A. Quantity I > Quantity II
- B. Quantity I < Quantity II
- C. Quantity I  $\geq$  Quantity II
- D. Quantity I  $\leq$  Quantity II
- E. Quantity I = Quantity II or Relation cannot be Established.

**37. The average weight of Amey and Aliya is 45 kg and the ratio of the weight of Amey and Aliya is 2 : 3 respectively.**

**Quantity I: Next month, the weight of Amey increased by 20% of his original weight, then what would be the new average (in kg)?**

**Quantity II: Next month, the weight of Aliya increased by 5% of her original weight, then what would be the new average (in kg)?**

- A. Quantity I > Quantity II
- B. Quantity I < Quantity II
- C. Quantity I  $\geq$  Quantity II
- D. Quantity I  $\leq$  Quantity II
- E. Quantity I = Quantity II or Relation cannot be Established.

**38. The ratio of the cost price to selling price of an article is in the ratio of 4 : 5. If the selling price was decreased by Rs. 500 then the ratio of the cost price to selling price will become 6 : 5.**

**Quantity I: At what price (In Rs.) should the article be sold to earn a profit of 40% on the cost price?**

**Quantity II: Rs. 1700**

- A. Quantity I > Quantity II
- B. Quantity I < Quantity II
- C. Quantity I  $\geq$  Quantity II
- D. Quantity I  $\leq$  Quantity II
- E. Quantity I = Quantity II or Relation cannot be Established.

**39. Quantity I: A food stock is available for 500 men at a place for 40 days. If after 30 days, half of the men leave the place, then for how long the remaining stock can last for the remaining number of men?**

**Quantity II: 20 days**

- A. Quantity I > Quantity II
- B. Quantity I < Quantity II
- C. Quantity I  $\geq$  Quantity II
- D. Quantity I  $\leq$  Quantity II
- E. Quantity I = Quantity II or Relation cannot be Established.

**40. Quantity I: Sonali reaches her school from her house in 12 hours. If she increases her speed by**

**20% , then how long will she take to cover the same distance?**

**Quantity II: Sonali reaches her school from her house in 10 hours. If she decreases her speed by 10%, then how long will she take to cover the same distance?**

- A. Quantity I > Quantity II
- B. Quantity I < Quantity II
- C. Quantity I  $\geq$  Quantity II
- D. Quantity I  $\leq$  Quantity II
- E. Quantity I = Quantity II or Relation cannot be Established.

**41. Quantity I: The sum of the four-consecutive multiples of 4 is 440. What would be the smallest number?**

**Quantity II: The sum of three consecutive multiples of 3 is 324. What would be the smallest number?**

- A. Quantity I > Quantity II
- B. Quantity I < Quantity II
- C. Quantity I  $\geq$  Quantity II
- D. Quantity I  $\leq$  Quantity II
- E. Quantity I = Quantity II or Relation cannot be Established.

**42. Quantity I: Which positive number can completely divide (without remainder)  $23^7 + 17^7$**

**Quantity II: What is the unit digit of  $47^{56}$ ?**

- A. Quantity I > Quantity II



- B. Quantity I < Quantity II
- C. Quantity I  $\geq$  Quantity II
- D. Quantity I  $\leq$  Quantity II
- E. Quantity I = Quantity II or Relation cannot be Established.

**43. Quantity I:** In the year 2017, Akhil, a daily worker earned total of Rs. 40150. What was his daily income if he has not taken leave on any single day during the year?

**Quantity II:** In the year 2016, Akhil, a daily worker earned total of Rs. 38500. What was his daily income if he has taken exactly 16 days leave during the year?

- A. Quantity I > Quantity II
- B. Quantity I < Quantity II
- C. Quantity I  $\geq$  Quantity II
- D. Quantity I  $\leq$  Quantity II
- E. Quantity I = Quantity II or Relation cannot be Established.

**44. Quantity I:** How many different ways, can the letter of words INDIA can be arranged?

**Quantity II:** 120

- A. Quantity I > Quantity II
- B. Quantity I < Quantity II
- C. Quantity I  $\geq$  Quantity II
- D. Quantity I  $\leq$  Quantity II

E. Quantity I = Quantity II or Relation cannot be Established.

**45. A and B entered into a partnership and invested money in the ratio 2 : 3.**

**Quantity I:** The value of A's share if the ratio of time period of their investments is 3: 2 and the profit is Rs. 10, 000.

**Quantity II:** C enters the partnership after 4 months and is to be provided some money as monthly salary from the profit at the end of the year. If the profit at the end of the year is Rs. 2,40,000, the ratio of investments by B and C is 6 : 5 and B's share is Rs. 90,000. What is C's monthly salary?

- A. Quantity I > Quantity II
- B. Quantity I < Quantity II
- C. Quantity I  $\geq$  Quantity II
- D. Quantity I  $\leq$  Quantity II
- E. Quantity I = Quantity II or Relation cannot be Established.

**46. Quantity I:** The ratio of speed of stream and speed of a boat is 1 : 3 respectively. If the boat can cover 420 km while travelling downstream in 7 hours, then how long would it take to cover 270 km while travelling upstream?

**Quantity II:** Boat M can travel 400 km upstream and then 400 km downstream in total time of 18

hours. If the speed of the boat is 45 km/hr, then how long would it take boat M to only travel downstream 400 km?

- A. Quantity I > Quantity II
- B. Quantity I < Quantity II
- C. Quantity I  $\geq$  Quantity II
- D. Quantity I  $\leq$  Quantity II
- E. Quantity I = Quantity II or Relation cannot be Established.

47. **Quantity I:** A shopkeeper bought some Apples at the rate of Rs. 24 for 16 and sold all of them at the rate of Rs. 27 for 15. Find his profit percent or loss percent in this transaction?

**Quantity II:** A shopkeeper marked his product 60% above cost price and sold it after two consecutive discounts of 10% and 15% on marked price. Find the profit percent or loss percent in this transaction?

- A. Quantity I > Quantity II
- B. Quantity I < Quantity II
- C. Quantity I  $\geq$  Quantity II
- D. Quantity I  $\leq$  Quantity II
- E. Quantity I = Quantity II or Relation cannot be Established.

48. **Quantity I:** A 300 m long train crosses a 150 m long tunnel at the speed of 108 km/h, then what is the time taken by the train to cross the tunnel?

**Quantity II:** Train A of length 360 m crosses a pole in 18 seconds. What is the time taken by train B of length 340 m coming from the opposite direction running at the speed of 30m/s to cross the running train A?

- A. Quantity I > Quantity II
- B. Quantity I < Quantity II
- C. Quantity I  $\geq$  Quantity II
- D. Quantity I  $\leq$  Quantity II
- E. Quantity I = Quantity II or Relation cannot be Established.

49. Babu divided Rs.1301 between his two sons Ram and Shaym. He divided, so that the amount received by Ram after 7 years is equal to the amount received by Shaym after 9 years at the rate of 4% per annum compounded annually.

**Quantity I:** Share of Ram.

**Quantity II:** Share of Shaym.

- A. Quantity I > Quantity II
- B. Quantity I < Quantity II
- C. Quantity I  $\geq$  Quantity II
- D. Quantity I  $\leq$  Quantity II
- E. Quantity I = Quantity II or Relation cannot be Established.

50. **Quantity I:** Find the interest earned after 3 years, if a person invests Rs. 52000 at C.I. at the rate of 10% per annum.

**Quantity II: Find the interest earned after 3 years, if a person invests Rs. 28750 at S.I. at the rate of 20% per annum.**

A. Quantity I > Quantity II

B. Quantity I < Quantity II

C. Quantity I ≥ Quantity II

D. Quantity I ≤ Quantity II

E. Quantity I = Quantity II or Relation cannot be Established.

## Quantity I and Quantity II - Answer and Explanation

### 1. Answer B

#### Quantity I:

Let the age of Aman = 7x, Mohan = 8x

$$8x - 7x = 3$$

$$x = 3$$

Age of Aman =  $7 \times 3 = 21$  years

#### Quantity II:

Total age of Aman and Meet =  $25 \times 2 = 50$  years

Let the age of Aman = x, Meet = x + 2

$$x + x + 2 = 50$$

$$2x = 50 - 2$$

$$2x = 48$$

$$x = 24$$

Age of Aman = 24 years

Quantity I < Quantity II

### 2. Answer A

#### Quantity I:

Favourable outcomes:

2 yellow + 1 pink tablet =  ${}^3C_2 \times {}^4C_1$

= 12

Total outcomes = 220 Since, =  ${}^{12}C_3$

Probability =  $12 / 220$

#### Quantity II:

Favourable outcomes:

3 green tablet =  ${}^5C_3$

= 10

Total outcomes =  ${}^{12}C_3$

= 220

Probability =  $10 / 220$

Quantity I > Quantity II

### 3. Answer E

#### Quantity I:

Let height = x cm, radius = x + 2 cm, The curved surface area of the cylinder = 220  $\text{cm}^2$

$$2 \pi r h = 220$$

$$2 \times$$

$$\frac{22}{7} \times (x + 2) \times x = 220$$

$$x^2 + 2x = 35$$

$$x^2 + 7x - 5x - 35 = 0$$

$$x(x + 7) - 5(x + 7) = 0$$

$$(x + 7)(x - 5) = 0$$

$$x = 5, -7$$

$$\text{Radius} = 7 \text{ cm, Height} = 5 \text{ cm}$$

$$\text{Volume} = \pi r^2 h$$

$$= \frac{22}{7} \times 7 \times 7 \times 5 = 770 \text{ cm}^3$$

**Quantity II:**

$$= 770 \text{ cm}^3$$

$$\text{Quantity I} = \text{Quantity II}$$

**4. Answer B**

**Quantity I:**

Because percentage of girls = 60%,

So the percentage of boys =  $100 - 60\% = 40\%$

**Quantity II:**

Last year,

$$\text{Girls was } 300 \times 50\% = 150, \text{ boys} = 300 \times$$

$$50\% = 150$$

$$\text{This year, because girls are increased by } 10\% \text{ and total students remain same.} \quad \frac{135}{300} \times 100 = 45\%$$

$$\text{girls} = 150 \times 110\% = 165, \text{ boys} = 300 -$$

$$165 = 135$$

$$\% \text{ of boys} =$$

$$\text{Quantity I} < \text{Quantity II}$$

**5. Answer A**

$$\text{If } b = 4, a = 5$$

$$\text{Quantity I: } a = 5, b = 4$$

$$4a^3b = 4 \times 5 \times 5 \times 5 \times 4 = 2000$$

$$\text{Quantity II: } a = 5, b = 4$$

$$2a^2b^2 = 2 \times 5 \times 5 \times 4 \times 4 = 800$$

$$\text{In all conditions, Quantity I} > \text{Quantity II}$$

**6. Answer A**

**Quantity I:**

$$\text{Let speed of boat} = x \text{ kmph, speed of stream} = y$$

$$\text{kmph}$$

$$\text{upstream speed} = x - y, \text{ downstream speed} = x + y$$

$$x + y =$$

$$x + y = 6 \dots 1$$

$$x - y = \frac{40}{10}$$

$$x - y = 4 \dots 2$$

$$\text{equation 1} + \text{equation 2}$$

$$x = 5$$

$$\text{speed of boat} = 5 \text{ kmph}$$

**Quantity II:**

$$\text{Let speed of boat} = x \text{ kmph, speed of stream} = 1 \text{ kmph}$$

$$\text{downstream speed} = x + 1$$

$$\frac{45}{9} = x + 1$$

$$5 - 1 = x$$

$$x = 4$$

Speed of boat = 4 kmph

Quantity I > Quantity II

### 7. Answer E

#### Quantity I:

Smiti's age after 5 years = 12 years

Present age of Smiti = 7 years

$\frac{\text{Mother's age}}{7} = \text{Smiti's age}$

Mother's age =  $7 \times 7 = 49$  years

#### Quantity II:

Let Sukriti's age =  $3x$ , Mother's age =  $7x$

According to the statement,

$$3x + 3 : 7x + 3 = 6 : 13$$

$$13(3x + 3) = 6(7x + 3)$$

$$39x + 39 = 42x + 18$$

$$39 - 18 = 42x - 39x$$

$$21 = 3x$$

$$x = 7$$

Mother's age =  $7 \times 7 = 49$  years

Quantity I = Quantity II

### 8. Answer A

#### Quantity I:

Area of the square =  $24 \times 24$

$$= 576 \text{ cm}^2$$

Area of the square = Area of the rectangle

Area of the rectangle =  $576 \text{ cm}^2$

#### Quantity II:

Length of the rectangle =  $6x$ , Breadth =  $5x$

Perimeter = 88

$$2(l + b) = 88$$

$$6x + 5x = 44$$

$$11x = 44$$

$$x = 4$$

Length = 24cm, breadth = 20cm

Area of the rectangle =  $24 \times 20$

$$= 480 \text{ cm}^2$$

Quantity I > Quantity II

### 9. Answer A

Relative speed =  $(100+60) \text{ km/hr}$

$$= 160 \times \frac{5}{18} = \frac{400}{9} \text{ m/sec}$$

Let the length of the other train =  $x$  metres

$$\frac{(x + 250)}{9} = \frac{400}{9}$$

$$x + 250 = 400$$

$$x = 150 \text{ metres}$$

**Quantity I:** The length of other train is 150 m.

**Quantity II:** The length of the first train shrinks by  $\frac{3}{4}$ th of that of the other train

Therefore,  $\frac{3}{4}$  of 150 = 112.5 m

Now, length of the first train =  $250 - 112.5 = 137.5 \text{ m}$

Hence, Quantity I > Quantity I

### 10. Answer B

Let the cost price of Quantity II be x. Therefore, the cost price of Quantity I will be = (476 – x)

	Quantity II	Quantity I
Cost price	x	(476 – x)
Selling price =	$x \times \frac{75}{100}$	$(476 - x) \times \frac{129}{100}$

Now as both the SPs are equal,  $\frac{3x}{4} = (476 - x) \times \frac{129}{100}$

$$\text{or, } 25x = (476 - x) \times 43$$

$$\text{or, } 25x + 43x = 476 \times 43$$

$$\text{or, } 68x = 476 \times 43$$

$$\text{or, } x = 301.$$

**Quantity I:** The cost price of the headphone at 29% profit = 476 – 301 = 175

**Quantity II:** Selling price of the headphone sold at 25% loss

$$= 301 \times \frac{75}{100} = 225.75$$

Hence, Quantity I < Quantity II

### 11. Answer B

Let the cube's side is x, then the surface area of cube =  $6x^2$  and volume =  $x^3$

Let the radius of the sphere is r, then its volume =  $\frac{4}{3}\pi r^3$

And its surface area will be  $4\pi r^2$ .

Let the height of cylinder is 2h so, its radius will be h

Surface area of the cylinder =  $2\pi h(2h) + 2\pi h^2 = 6\pi h^2$

Since the surface areas are same,  $6 \times 2 = 4\pi r^2 = 6\pi h^2$

$$\Rightarrow r = \frac{3h}{2\pi}$$

$$\text{Volume of sphere} = \frac{4}{3}\pi r^3$$

This will always be greater than  $x^3$

So, Quantity II > Quantity I

### 12. Answer B

**Quantity I:**

$$\text{Average speed} = \frac{2vu}{v+u} = 2 \times \frac{12 \times 15}{12+15} = 13\frac{1}{3} \text{ km/h}$$

$$\text{Distance} = \text{Speed} \times \text{Time} = 13\frac{1}{3} \times 15 = 200 \text{ km}$$

**Quantity II:**

Speed difference for 1 hour = 40 – 30 = 10 Km/h

Therefore, In 1 hour faster bus will cover 10 km more than slower one

Hence to cover 30 km more it will take 3 hours.

Distance = Relative Speed × Time

$$D = (30 + 40) \times 3 = 210 \text{ km}$$

Hence, Quantity II > Quantity I

### 13. Answer A

#### Quantity I:

The S.I. on amount  $x$  at the rate  $y$  (in % i.e.  $y/100$ ) per annum for 2 years in  $2 \times x \times y \dots\dots\dots$  (i)

And C.I. for 2 year is  $x \times y \times (2 + y) \dots\dots\dots$  (ii)

According to question,

Difference = 100

$$\Rightarrow x \times y \times (2 + y) - 2 \times x \times y = 100$$

$$\Rightarrow x \times y^2 = 100 \Rightarrow x = \frac{100}{0.0081}$$

$$\Rightarrow x = 12345.6$$

Hence amount = Rs. 12345.6

#### Quantity II:

The S.I. on amount  $x$  at the rate  $y$  (in % i.e.  $y/100$ ) per annum for 2 years in  $2 \times x \times y \dots\dots$  (i)

And C.I. for 2 year is  $x \times y \times (2 + y) \dots\dots$  (ii)

According to question,

Difference = 97

$$\Rightarrow x \times y \times (2 + y) - 2 \times x \times y = 97$$

$$\Rightarrow x \times y^2 = 97$$

$$\Rightarrow x = \frac{97}{0.0121}$$

$$\Rightarrow x = 8016.5$$

Hence amount = Rs. 8016.5

### Quantity I > Quantity II

#### 14. Answer E

Quantity I: 1

Cost of each toffee =  $\frac{1}{5}$

As toffees are marked up by 25% then

Marked price per toffee = 125% of  $\frac{1}{5}$

Given that discount is 12%

So, the required selling price per toffee = 88% of  $\frac{1}{5}$   
125% of

$$= \frac{88 \times 125 \times 1}{100 \times 100 \times 5} = 0.22$$

As, in Rs. 0.22 anyone can buy 1 toffee

So, in Rs. 1 anyone can buy  $\frac{1}{0.22}$  toffees

Thus, in Rs. 22 anyone can  $\frac{1}{0.22} \times 22 = 100$   
buy toffees

#### Quantity II:

Cost of each toffee be  $\frac{1}{4}$

As toffees are marked up by 26% then

Marked price per toffee = 126% of  $\frac{1}{4}$

Given that discount is 10%

So, the required selling price per toffee = 90% of  $\frac{1}{4}$   
126% of

$$= \frac{90 \times 126 \times 1}{100 \times 100 \times 4} = 0.2835$$

As, in Rs. 0.2835 anyone can buy 1 toffee

So, in Rs. 1 anyone can buy  $\frac{1}{0.2835}$  toffees

Thus, in Rs. 22 anyone can  $\frac{1}{0.2835} \times 28.35 = 100$   
buy toffees

**Quantity I = Quantity II**

**15. Answer E**

**Quantity I:**

We know that, Hens has 1 head and 2 legs.

Goats has 1 head and 4 legs

Let number of Hens and Goats be x and y respectively.

According to question,

$$(2x + 4y) + 14 = 4 \times (x + y)$$

$$\text{Or, } 2x + 4y - 4x - 4y = -14$$

$$\text{Or, } -2x = -14$$

$$\text{Or, } x = 7$$

So, number of Hens = 7

$$\text{Number of legs} = (2x + 4y) = (2 \times 7 + 4y) = 14 + 4y$$

**Quantity II:**

We know that, Hens has 1 head and 2 legs.

Goats has 1 head and 4 legs

Let number of Hens and Goats be x and y respectively.

According to question,

$$(2x + 4y) + 15 = 5 \times (x + y)$$

$$\text{Or, } 2x + 4y - 5x - 5y = -15$$

$$\text{Or, } -3x - y = -15$$

$$\text{Or, } 3x + y = 15$$

There is 2 unknown and 1 equation so, exactly we can say anything about x and y. Thus, we cannot calculate number of legs exactly.

Hence, we cannot find any relation between quantity I and quantity II.

**16. Answer B**

**Quantity I:**

Let the amount lent at 11% per annum be x

The amount lent at 4.5% per annum be (12700 - x)

According to the question,

$$\frac{(12700 - x) \times 4.5}{100} + \frac{x \times 11}{100} = 1150$$

$$\Rightarrow (12700 \times 4.5) - 4.5 \times x + 11 \times x = 1150 \times 100$$

$$\Rightarrow 51498.5 + 7.17 \times x = 115000$$

$$\Rightarrow 7.17 \times x = 63501.5$$

$$\Rightarrow x = 8856.6$$



Hence, the amount lent at 11.225% per annum be Rs.  
8856.6

**Quantity II:**

Let the amount lent at 10.325% per annum be x

The amount lent at 4.252% per annum be (12000 – x)

According to the question,

$$\frac{(12000 - x) \times 4.252}{100} + \frac{x \times 10.325}{100} = 1200$$

$$\Rightarrow (12000 \times 4.252) - 4.252 \times x + 10.325 \times x = 1200 \times 100$$

$$\Rightarrow 51024 + 6.073 \times x = 120000$$

$$\Rightarrow 6.073 \times x = 68976$$

$$\Rightarrow x = 11357.8$$

Hence, the amount lent at 10.325% per annum be Rs.  
11357.8

**Quantity I < Quantity II**

**17. Answer B**

Let the speed of the motorboat in still water = u km per hour and the speed of the stream = v km per hour

The speed of the motorboat in downstream = (u + v)  
km per hour

And the speed of the motorboat in upstream = (u – v)  
km per hour

According to the question, (u – v) = (100 – 75)% of (u + v) = 25% of (u + v)

$$4u - 4v = u + v$$

$$3u = 5v$$

$$u : v = 5 : 3$$

**Quantity I:** The speed of the motorboat in downstream = 5x + 3x = 8x km per hour

$$\text{The reqd. \%} = 3x \times \frac{100}{8x} = 37.5\%$$

**Quantity II:**

$$\text{Reqd. \%} = \frac{(5 - 3) \times 100}{5} = 40\%$$

Therefore, quantity I < quantity II

**18. Answer E**

Let the marked price of the article = 10x then

discounted price after 10% discount on the marked

price = (100 – 10)% of 10x = 90% of 10x = 9x

The selling price after adding 5% sales tax on the

discounted price = (100 + 5)% of 9x = 105% of 9x =

$$1.05 \times 9x$$

**Quantity I:**

$$1.05 \times 9x = 850.5$$

$$1.05x = 94.5$$

$$x = 90$$

The marked price of the article = 10x = 10 × 90 = Rs.  
900

**Quantity II:** 900

Therefore, Quantity I = Quantity II

**19. Answer A**

Let A's income =  $4x$  then B's income =  $5x$

According to the question,  $5x - 4x = x = 10,000$

A's income =  $4x = 40,000$

B's income =  $5x = 50,000$

Quantity I: A's expenditure =  $(100 - 30)\%$  of  $40,000$   
 $= 70\%$  of  $40,000 = 28,000$

Quantity II: B's saving =  $(100 - 45)\%$  of  $50,000 =$   
 $55\%$  of  $50,000 = 27,500$

Therefore, Quantity I > Quantity II

## 20. Answer B

Let the speed of the motorboat in still water =  $3a$  km/hr  
then the speed of the motorboat in stream =  $a$  km/hr

According to the question,  $3a - a = 2a = 4$

$a = 2$  km/hr

the of the motorboat in still water =  $3a$  km/hr =  $6$   
km/hr

the speed of the motorboat in stream =  $a$  km/hr =  $2$  km  
per hour

Upstream speed =  $6 - 2 = 4$  km/hr

Downstream speed =  $6 + 2 = 8$  km per hour

After Solving speed for  $x$ ,

$12x = 560 - 80 = 480$

$x = 40$

Quantity I: 40

Quantity II :

Distance = speed  $\times$  time =  $\frac{8 \times 21}{4} = 42$  km

Therefore, Quantity I < Quantity II

## 21. Answer A

Let A's efficiency =  $5x$  units then B's efficiency =  
 $80\%$  of  $5x = 4x$

Total work done by A and B together in 15 days =  $(5x$   
 $+ 4x) \times 15 = 9x \times 15 = 135x$  units

Quantity I:  $\frac{135x}{2} = 67.5x$   
50% of the work =  $\frac{135x}{2}$

First day, A will do  $5x$  units

2nd day, B will do  $4x$  units

In the first 2 days, i.e. in one cycle  $5x + 4x = 9x$  units

In 7 cycle i.e. 14 days  $9x \times 7 = 63x$  units

Remaining =  $67.5x - 63x = 4.5x$  units

That A will do in approximately 1 day

Total number of days =  $14 + 1 = 15$  days  
approximately

Quantity II: 40% of the work =  $40\%$  of  $135x$

$= 40 \times \frac{135x}{100} = 54x$

B alone will  $\frac{54x}{4x} = 13.5$   
take, days

Quantity I > Quantity II

## 22. Answer A

Let the speed of the car =  $x$  km per hr =  $x \times \frac{5}{18}$  m/s

The speed of the train =  $x + 5$  km/hr =  $(x + 5) \times \frac{5}{18}$  m/s

If they travel in opposite direction then the relative speed =  $(x + x + 5)$  km per hr

$$= (2x + 5) \times \frac{5}{18} \text{ m/s}$$

We know that, distance = speed  $\times$  time

$$500 = (2x + 5) \times \frac{5}{18} \times 90$$

$$2x + 5 = 20$$

$$x = 7.5 \text{ km per hour}$$

**Quantity I :**

The speed of the train =  $x + 5 = 12.5$  km per hr

**Quantity II :**

$$150\% \text{ of } 7.5 = \frac{150 \times 7.5}{100} = 11.25 \text{ km per hour}$$

Therefore, Quantity: I > Quantity : II

**23. Answer B**

Let the quantity of Milk =  $10x$  litres then the quantity of Water =  $(100 - 40)\%$  of  $10x = 60\%$  of  $10x = 6x$  litres

When 5 litres of Milk was added then the quantity of Milk =  $10x + 5$  litres and the quantity of Water =  $6x$  litres

According to the question,

$$180\% \text{ of } 6x = (10x + 5)$$

$$10.8x = 10x + 5$$

$$0.8x = 5$$

$$8x = 50$$

$$x = 6.25 \text{ litres}$$

**Quantity I :**

The quantity of Water =  $6x = 6 \times 6.25 = 37.5$  litres

Therefore, Quantity : I < Quantity : II

**24. Answer A**

On 1st Jan 2018, the sum of the age of 5 members =  $45 \times 5 = 225$  years

On 1st Jan 2019, the sum of the age of 4 members =  $32 \times 4 = 128$  years

So, on 1st Jan 2018 the sum of the age of 4 members =  $31 \times 4 = 124$  years

So, on 1st Jan 2018 the age of the person who died on 1st July 2018 =  $(225 - 124) = 101$  years

The age of person when he died =  $(101 + 0.5) = 101.5$  years

Therefore, Quantity : I > Quantity : II

**25. Answer A**

$$\text{The quantity of acid} = \frac{80 \times 3}{8} = 30 \text{ litres}$$

$$\text{The quantity of Water} = \frac{80 \times 5}{8} = 50 \text{ litres}$$

When half of the solution was withdrawn then acid and water would be withdrawn in the same ratio

The remaining quantity of acid =  $30 - 15 = 15$  litres

And the remaining quantity of water =  $\frac{50}{2} = 25$  litres

Now, in the same quantity a new solution x of acid and water was added then the ratio become 1 : 1

It means, Acid = 40 litres and water = 40 litres

The quantity of acid in the new solution x = 40 – 15 = 25 litres

The quantity of water in the new solution = 40 – 25 = 15 litres

$$\text{The reqd. \%} = \frac{25 \times 100}{40} = \frac{250}{4} = 62.5\%$$

**Quantity II: 50%**

Quantity I > Quantity II

**26. Answer B**

**Quantity I:**

Let the number of girls = x and the number of boys = y then

50% of x = 30% of y

$$5x = 3y$$

$$x : y = \frac{3}{5}$$

x = number of girls = 3a then y = number of boys = 5a

$$\text{The reqd. \%} = \frac{3a \times 100}{5a} = \frac{300}{5} = 37.5\%$$

**Quantity II:**

Let the number of girls = x and the number of boys = y then

33.33% of x = 66.67% of y

$$x = 2y$$

$$x : y = 2 : 1$$

x = number of girls = 2a then y = number of boys = a

$$\text{The reqd. \%} = \frac{2a \times 100}{3a} = 66.67\%$$

Therefore, Quantity : I < Quantity : II

**27. Answer E**

$$54 \text{ km per hour} = \frac{54 \times 5}{18} = 15 \text{ meters per second}$$

**Quantity I:**

The length of the train = 15 × 16 = 240 meters

**Quantity II :**

$$72 \text{ km per hour} = \frac{72 \times 5}{18} = 20 \text{ meters per second}$$

Let the length of the platform = y meters then

$$(240 + y) = 20 \times 24 = 480$$

$$y = 480 - 240 = 240 \text{ meters}$$

Therefore, Quantity : I = Quantity : II

**28. Answer B**

**Quantity I:** Let the quantity of water in the cask = x litres then

$$x - 10 + 30 = x + 20 \text{ litres} = \text{quantity of mixture}$$

$$\text{The quantity of milk in } x + 20 \text{ litres} = 30 \text{ litres}$$

$$\text{According to the question, } 20\% \text{ of } (x + 20) = 30$$

$$x + 20 = 150$$

$$x = 130 \text{ litres}$$

$$\text{And the quantity of mixture} = x + 20 = 150 \text{ litres}$$

$$\text{The quantity of water} = x - 10 = 120 \text{ litres}$$

$$\text{In 1 litre mixture, the quantity of water} = \frac{120}{150} \text{ litres}$$

$$\text{In } y \text{ litres mixture, the quantity of water} = \frac{12y}{15} \text{ litres}$$

$$\text{Now, let } y \text{ litres of mixtures was replaced with 10 litres of milk}$$

$$\text{Then, the quantity of mixture} = 150 - y + 10 = 160 - y \text{ litres}$$

$$60\% \text{ of } (160 - y) = 120 - \frac{12y}{15}$$

$$96 - 0.6y = 120 - 0.8y$$

$$0.2y = 24$$

$$y = 120$$

$$\text{Quantity II : } 130 \text{ litres}$$

$$\text{Therefore, Quantity : I} < \text{Quantity : II}$$

## 29. Answer A

### Quantity I:

Find the amount on compound interest on a sum of Rs.55000 at the rate of 15% per annum after three

years.

$$\text{Reqd. amt.} = 55000 \times \frac{115}{100} \times \frac{115}{100} \times \frac{115}{100} = \text{Rs. } 10083648.125$$

### Quantity II:

Find the simple interest on a sum of Rs.60000 at the rate 25% per annum after 5.5 years.

$$\text{Reqd. SI} = \frac{60000 \times 25 \times 5.5}{100} = \text{Rs. } 82500$$

Hence, Quantity I > Quantity II

## 30. Answer A

### Quantity I :

Number of letters in 'KNIFE' = 5

Number of vowels in 'KNIFE' = 2

$$\text{Reqd. Probability} = \frac{2}{5}$$

### Quantity II :

Total number of balls in bag = 10 + 8 = 18

Number of way in which 2 balls can be drawn =  $^{18}C_2$

Number of ways in which 2 blue balls can drawn =  $^8C_2$

$$\text{Reqd. Probability} = \frac{{}^8C_2}{{}^{18}C_2}$$

$$= \frac{8}{2} \times \frac{7}{2} = \frac{28}{28}$$

$$\frac{18}{2} \times 17 = 153$$

Here,

Quantity I > Quantity II

### 31. Answer B

#### Quantity I :

Let the length of the rectangular park is L.

then,

$$\text{Breadth} = \frac{\text{length}}{4} = \frac{L}{4}$$

$$\text{So, area of the park} = \frac{L^2}{4}$$

$$\text{And, area of fountain} = \frac{1}{4} (\text{Area of park})$$

$$\Rightarrow 900 = \frac{1}{4} \times \frac{L^2}{4}$$

$$\Rightarrow L^2 = 16 \times 900$$

$$\Rightarrow L = 4 \times 30 = 120$$

Here,

$$\text{the breadth of park is} = \frac{120}{4} = 30 \text{ m}$$

#### Quantity II :

Let the side of the square be x metres

then,

$$\text{Area of square} = x^2 \text{ sq.m}$$

Since, the square is made by decreasing the length of rectangle.

So, the length of the rectangle be equal to the side of square plus the value decreased.

$$\text{length} = (x + 8) \text{ m}$$

As, there is no change in breadth.

$$\text{So breadth} = x \text{ m}$$

we have

$$\Rightarrow \frac{x + 8}{x} = \frac{5}{3}$$

$$\Rightarrow 3x + 24 = 5x$$

$$\therefore x = 12$$

$$\text{then area of square} = 144 \text{ m}^2$$

Here, Quantity I < Quantity II

### 32. Answer E

#### Quantity I:

Let the speed of the motorboat in still water = x km per hour

and the speed of the stream = y km per hour

then, according to the question,  $x - y$

$$= 75\% \text{ of } x$$

$$25x = 100y$$

$$\frac{x}{y} = 4 : 1$$

$$\text{The reqd. \%} = \frac{1 \times 100}{4} = 25\%$$

### Quantity II:

Let the sum of money = x

then,

$$x + x \times 8 \times \frac{r}{100} = 3x$$

$$x \times 8 \times \frac{r}{100} = 2x$$

$$R = \frac{200}{8} = 25\%$$

Therefore, Quantity I = Quantity II

### 33. Answer A

#### Quantity I:

Let the sum of money was P and rate of interest is R  
then we know that SI

$$= \frac{P \times R \times T}{100}$$

$$\text{SI in } x \text{ years} = 5P - P = 4P$$

$$4P = \frac{P \times R \times x}{100} \dots\dots\dots(i)$$

$$\text{SI in } x^2/2 \text{ years} = 9P - P = 8P$$

$$8P = \frac{P \times R \times x^2}{2 \times 100} \dots\dots\dots(ii)$$

Divide equation (i) to equation (ii)

$$\frac{4}{8} = \frac{x^2}{x}$$

$$x = 4 \text{ years}$$

### Quantity II : 3.5 years

Therefore, Quantity I > Quantity II

### 34. Answer B

Let the number of boys = 4x and the number of girls = 5x

If 45 students from the same school leave the school

$$\text{Then the number of boys left} = \frac{45 \times 4}{9} = 20$$

$$\text{Then the number of girls left} = \frac{45 \times 5}{9} = 25$$

According to the question,

$$\frac{4x - 20}{5x - 25 + 40} = \frac{4}{9} \Rightarrow \frac{4x - 20}{5x + 15} = \frac{4}{9}$$

$$36x - 180 = 20x + 60$$

$$16x = 240$$

$$x = 15$$

$$\text{the number of boys} = 4x = 4 \times 15 = 60$$

$$\text{and the number of girls} = 5x = 5 \times 15 = 75$$

When, 50% of the boys left then the remaining number of boys = 50% of 60 = 30

$$\text{Total students} = 30 + 75 = 105$$

$$\text{Reqd. \%} = \frac{30 \times 100}{105} = 28.57\% \text{ approximately}$$

Therefore, Quantity : I < Quantity : II

### 35. Answer A

Case 1,

When A goes for 500 meters B goes for 450 meters

$$A : B = 500 : 450 = 10 : 9$$

Case 2,

When B goes for 1000 meters, C goes for 750 meters

$$B : C = 1000 : 750 = 4 : 3$$

$$A : B : C = 40 : 36 : 27$$

**Quantity I:** When A travels 40x meters C travels 27x meters

When A travels  $40 \times 20 = 800$  meters

C will travel  $27 \times 20 = 540$  meters

It means, A will beat C by  $800 - 540 = 260$  meters

Therefore, Quantity I > Quantity II

### 36. Answer B

Let the rate of interest = r% per annum then

$$5000 \left(1 + \frac{r}{100}\right)^2 - 5000 = \frac{2650 \times 4 \times r}{100}$$

$$5000(1 + 0.01r)^2 - 5000 = 106r$$

$$5000(1 + 0.0001r^2 + 0.02r) - 5000 = 106r$$

$$5000 + 0.5r^2 + 100r - 5000 = 106r$$

$$0.5r^2 - 6r = 0$$

$$0.5r = 6$$

$$r = 12$$

$$\text{The S. I.} = \frac{2650 \times 12 \times 4}{100} = 106 \times 12 = \text{Rs. } 1272$$

So, Quantity I = Rs. 1272

Quantity II = Rs. 1275

Quantity I < Quantity II

### 37. Answer A

The sum of the weight of Amey and Aliya =  $45 \times 2 = 90$  kg

$$\text{The weight of Amey} = \frac{2 \times 90}{5} = 36 \text{ kg}$$



$$\text{The weight of Aliya} = \frac{3 \times 90}{5} = 54 \text{ kg}$$

**Quantity I :** Next month, Amey's weight = 120% of 36 = 43.2 kg

$$\text{The average} = \frac{(43.2 + 54)}{2} = 48.6 \text{ kg}$$

**Quantity II :** Next month, Aliya's weight = 105% of 54 = 56.7 kg

$$\text{The average} = \frac{(56.7 + 36)}{2} = \frac{92.7}{2} = 46.35 \text{ kg}$$

Therefore, Quantity: I > Quantity: II

### 38. Answer B

Let the CP = Rs. 4x then SP = Rs. 5x

According to the question,

$$\frac{4x}{5x - 500} = \frac{6}{5}$$

$$20x = 30x - 3000$$

$$10x = 3000$$

$$x = 300$$

$$\text{Cost price} = 4x = \text{Rs. } 1200$$

**Quantity I :** SP to earn a profit of 40% = 140% of 1200 = Rs. 1680

Therefore, Quantity : I < Quantity : II

### 39. Answer E

**Quantity I :** M1D1 = M2D2

Let the remaining stock last for x days

$$500 \times 40 = 30 \times 500 + 250 \times x$$

$$500 \times 10 = 250 \times x$$

$$x = 20 \text{ days}$$

Therefore, Quantity: I = Quantity: II

### 40. Answer B

**Quantity I :** Let Sonali's speed = 5x km per hour

$$\text{Total distance} = 5x \times 12 = 60x \text{ km}$$

New speed = 120% of 5x = 6x km per hour

$$\text{New time} = \frac{60x}{6x} = 10 \text{ hours}$$

**Quantity II :** Let Sonali's speed = 5x km per hour

$$\text{Total distance} = 5x \times 10 = 50x \text{ km}$$

New speed = 90% of 5x = 4.5x km per hour

$$\text{New time} = \frac{50x}{4.5x} = \frac{100}{9} \text{ hours}$$

Therefore, Quantity : I < Quantity : II

### 41. Answer B

**Quantity I :** Let the first number of x

Then the next number should be x + 4

The third number = x + 4 + 4 = x + 8

The fourth number =  $x + 4 + 4 + 4 = x + 12$

According to the question,

$$4x + 4 + 8 + 12 = 440$$

$$4x = 416$$

Therefore, the smallest number =  $x = 104$

**Quantity II :** let the first number of  $x$

Then the next number should be  $x + 3$

The third number =  $x + 3 + 3 = x + 6$

According to the question,

$$3x + 3 + 6 = 324$$

$$3x = 315$$

Therefore, the smallest number =  $x = 105$

Therefore, Quantity : I < Quantity : II

#### 42. Answer C

**Quantity I :** we know that,  $a^n + b^n$  is completely divisible by  $(a + b)$  if  $n$  is odd

Therefore,  $23^7 + 17^7$  will completely divisible by  $23 + 17 = 40$

It means,  $23^7 + 17^7$  will be completely divisible by 1, 2, 4, 8, 10, 20, and 40

**Quantity II :** Unit digit of  $47^{56} = \text{Unit digit of } 7^{56} = 7^{14 \times 4}$

We know that, the unit digit of  $7^{4n} = 1$

Therefore, the unit digit of  $7^{14 \times 4} = 1$

Therefore, Quantity : I  $\geq$  Quantity : II

#### 43. Answer E

**Quantity I :** In the year 2017, the total number of days = 365

The total money Akhil earned = 40150

$$\text{Per day income} = \frac{40150}{365} = \text{Rs. 110 per day}$$

**Quantity II :** In the year 2016, the total number of days = 366

The total number of days he worked =  $366 - 16 = 350$  days

The total money he earned = 38500

$$\text{His daily income} = \frac{38500}{350} = 110$$

Therefore, Quantity : I = Quantity : II

#### 44. Answer B

**Quantity I :**

The number of letters in INDIA = 5

The number of I = 2

$$\text{The reqd. number of ways} = \frac{5!}{2!} = \frac{120}{2} = 60$$

Therefore, Quantity : I < Quantity : II

#### 45. Answer E

**Quantity I :**

Ratio of investments = 2 : 3

Ratio of time periods of investments = 3 : 2

Profit will be shared in the ratio  $(2 \times 3) : (3 \times 2) = 1 : 1$

$$\text{A's share} = \frac{1}{2} \times 10000 = \text{Rs. } 5000$$

### Quantity II :

C has invested his money for 8 months.

Let Rs. 'x' be C's monthly salary.

Profit = Rs. 2,40,000

Therefore, profit to be shared = Rs.  $(240000 - 8x)$

Ratio of investments by A and B = 2 : 3 = 4 : 6

Ratio of investments by B and C = 6 : 5

Ratio of investments by A, B and C = 4 : 6 : 5

Profit will be shared in the ratio  $(4 \times 12) : (6 \times 12) : (5 \times 8) = 6 : 9 : 5$

Given, B's share = 90000

$$= \frac{9}{20} \times (240000 - 8x) = 90000$$

$$= 240000 - 8x = 200000$$

$$= 8x = 40000 ; x = \text{Rs. } 5000$$

Therefore, Quantity I = Quantity II

### 46. Answer A

#### Quantity I:

Let the speed of the boat and the speed of the stream

be '3x' km/hr and 'x' km/hr respectively

According to the question

$$= \frac{420}{3x + x} = 7; x = 15$$

So, the speed of the boat and the speed of the stream be '45' km/hr and '15' km/hr respectively

So, the time taken by boat to cover 270 km while travelling upstream

$$= \frac{270}{45 - 15} = \frac{270}{30} = 9 \text{ hours}$$

### Quantity II :

Let the speed of the stream be 'x' km/hr

According to the question,

$$= \frac{400}{45 + x} + \frac{400}{45 - x} = 18$$

So, the time taken by boat M to only travel downstream 400 km

$$= \frac{400}{45 + 5} = \frac{400}{50} = 8 \text{ hours}$$

So, Quantity I > Quantity II

### 47. Answer B

#### Quantity I :

CP of one Apple = 24 = Rs. 1.50

16

$$\text{SP of one Apple} = \frac{27}{15} = \text{Rs. } 1.80$$

$$\text{Profit} = 1.80 - 1.50 = 0.30$$

$$\text{Profit percent} = \frac{0.30}{1.50} \times 100 = 20\%$$

**Quantity II :**

Let the cost price of the product = Rs. 100

Marked price of the product =  $1.60 \times 100 = 160$

Selling price of the product =  $0.85 \times 0.90 \times 160 = \text{Rs. } 22.40$

$$\text{So profit percent} = \frac{22.40}{100} \times 100 = 22.4\%$$

Thus, Quantity I < Quantity II

**48. Answer A**

**Quantity I :**

$$\text{Speed of train in m/s} = \frac{108 \times 5}{18} = 30 \text{ m/s}$$

Time taken to cross the tunnel

$$= \frac{300 + 150}{30} = \frac{450}{30} = 15 \text{ seconds}$$

**Quantity II :**

$$\text{Speed of train A} = \frac{360}{18} = 20 \text{ m/s}$$

Time taken to cross each other

$$= \frac{360 + 340}{20 + 30} = \frac{700}{50} = 14 \text{ seconds}$$

Quantity I > Quantity II

**49. Answer A**

Let the share of Ram and Shaym be Rs. x and Rs.

(1301 - x) respectively.

Then, according to the question,

$$\Rightarrow x \left(1 + \frac{4}{100}\right)^7 = (1301 - x) \left(1 + \frac{4}{100}\right)^9$$

$$\Rightarrow 625x = 676(1301 - x)$$

$$\Rightarrow 1301x = 676 \times 1301$$

$$\Rightarrow x = 676$$

$$\therefore \text{Share of Shaym} = (1301 - 676) = \text{Rs. } 625$$

$\therefore$  Quantity I > Quantity II

**50. Answer B**

**Quantity I :**

$$\text{Compound interest} = 52000 \times [(1.1)^3 - 1] = \text{Rs. } 17212$$

**Quantity II:**

$$\text{Simple interest} = \frac{28750 \times 3 \times 20}{100} = \text{Rs. } 17250$$

$\therefore$  Quantity I < Quantity II

## Mensuration

1. If the side of the square is 14 cm and the perimeter of the rectangle is double the perimeter of the square and the length of the rectangle is 4 cm more than its breadth, then what is the area of the rectangle?

- A.780 cm<sup>2</sup>
- B.785 cm<sup>2</sup>
- C.790 cm<sup>2</sup>
- D.800 cm<sup>2</sup>
- E.820 cm<sup>2</sup>

2. Height of the cylinder is 50% more than its radius. If the volume of cylinder is 12936 cm<sup>3</sup>, then find the curved surface of cylinder?

- A.1848 cm<sup>2</sup>
- B.616 cm<sup>2</sup>
- C.1232 cm<sup>2</sup>
- D.3696 cm<sup>2</sup>
- E.None of these

3. Ratio of the length, breadth and height of the cuboid is 4:7:5 respectively. If the length of the cuboid is 80% of the length of the rectangle whose perimeter is 80 cm and the breadth of the rectangle is 60% of the length of the rectangle. Find the volume of the cuboid?

- A.18200 cm<sup>3</sup>
- B.17500 cm<sup>3</sup>
- C.14000 cm<sup>3</sup>

- D.21000 cm<sup>3</sup>
- E.16800 cm<sup>3</sup>

4. Area of the circle is 2464 cm<sup>2</sup> and the area of the square is 900 cm<sup>2</sup>. Find the difference between the side of the square and radius of the circle?

- A.4 cm
- B.2 cm
- C.1 cm
- D.6 cm
- E.3 cm

5. The ratio of the length and breadth of the rectangle is 5:4. If its values are increased by 200% and 225% respectively, then find the total increase in area of the rectangle?

- A.765
- B.785
- C.795
- D.825

E.None of these

6. Volume of the cone is 1848 cm<sup>3</sup> and sum of the height of cone and radius is equal to the side of the square. If the radius of the cone is 14 cm, then find the area of the square?

- A.484 cm<sup>2</sup>
- B.529 cm<sup>2</sup>
- C.576 cm<sup>2</sup>

**D.441 cm<sup>2</sup>**

**E.None of these**

**7. The volume of a cylindrical can is 8316 cm<sup>3</sup>. If the ratio of the radius to its height is 7: 2, then find the can's height.**

**A.2cm**

**B.3cm**

**C.5cm**

**D.6cm**

**E.None of these**

**8. The ratio of the length and breadth of the rectangular box is 4: 3. The perimeter of both the rectangular box and a square box are equal. What is the ratio of the area of rectangular box to the area of square box?**

**A.12: 13**

**B.19: 24**

**C.48: 49**

**D.13: 19**

**E.None of these**

**9. If the side of the square is 14 cm and the perimeter of the rectangle is double the perimeter of the square and the length of the rectangle is 4 cm more than its breadth, then what is the area of the rectangle?**

**A.780 cm<sup>2</sup>**

**B.785 cm<sup>2</sup>**

**C.790 cm<sup>2</sup>**

**D.800 cm<sup>2</sup>**

**E.820 cm<sup>2</sup>**

**10. The ratio of the area of the square A to B is 9:16. If the difference between the sides of both squares is 8 cm, then find the difference between the perimeter of square A and B?**

**A.30 cm**

**B.32 cm**

**C.28 cm**

**D.36 cm**

**E.24 cm**

**11. Height of the cylinder is 50% more than its radius. If the volume of cylinder is 12936 cm<sup>3</sup>, then find the curved surface of cylinder?**

**A.1848 cm<sup>2</sup>**

**B.616 cm<sup>2</sup>**

**C.1232 cm<sup>2</sup>**

**D.3696 cm<sup>2</sup>**

**E.None of these**  
**12. How many solid cylinder of radius 14 cm and the height 12 cm formed by melting a hemisphere of radius 42 cm?**

**A.21**

**B.24**

**C.26**

**D.18**

**E.28**

13. The area of a square is 784 sq. cm. whose side is half the radius of a circle. The circumference of the circle is equal to breadth of a rectangle. If perimeter of the rectangle is 1154 cm, then find the circumference of the circle is how much percentage more or less than the length of the rectangle?

- A.33.33% less
- B.56.44% more
- C.48.25% more
- D.72.66% less

E.None of these14. The ratio of the length and breadth of the rectangle is 7:5. Find the value of x if on increasing the length and breadth by x cm, the ratio becomes 4:3?

- A.5 cm
- B.8 cm
- C.12 cm
- D.10 cm
- E.Cannot be determined

15. A circular box A of thickness 2 cm is made around another circular box B along its perimeter. Find the radius of the circular box B, if the area of the circular box A is  $88\text{cm}^2$ .

- A.2cm
- B.4cm
- C.6cm
- D.9cm

E.None of these

16. Ratio of the length to breadth of the rectangle is 3:2 and the perimeter of the square is 10 cm more than the perimeter of rectangle. If the difference between the length and breadth of the rectangle is 7 cm, then find the area of the square?

- A.400  $\text{cm}^2$
- B.441  $\text{cm}^2$
- C.361  $\text{cm}^2$
- D.484  $\text{cm}^2$

E.None of these

17. What is the ratio of the surface areas of two spherical metal balls whose radius is in the ratio 3: 5?

- A.25: 9
- B.9: 25
- C.4: 9
- D.9: 5
- E.None of these

18. If the ratio of the radius to height of cylinder is 7:10 and the curved surface area of the cylinder is  $1760\text{ cm}^2$  and the side of the square is equal to the height of the cylinder. If the ratio of the perimeter of rectangle to square is 5:4 and the length of the rectangle is 35 cm, then find the breadth of the rectangle?

- A.10 cm
- B.12 cm

- C.18 cm
- D.15 cm
- E.20 cm

19. A circular wire of radius 42cm is folded in the shape of a rectangle whose sides are in the ratio of 7:4, then find the side of the square which area is more than the area of the rectangle by  $64\text{cm}^2$ .

- A.48cm
- B.36cm
- C.60cm
- D.64cm
- E.55cm

20. If the curved surface area of the cylinder is  $528\text{ cm}^2$  and the height of the cylinder is  $42\frac{6}{7}\%$  of its radius, then what is the volume of the cylinder?

- A.1848  $\text{cm}^3$
- B.3696  $\text{cm}^3$
- C.2462  $\text{cm}^3$
- D.1232  $\text{cm}^3$
- E.None of these

21. The ratio of the length and breadth of the rectangle is 7:5. Find the value of x if on increasing the length and breadth by x cm, the ratio becomes 4:3?

- A.5 cm
- B.8 cm
- C.12 cm

D.10 cm

E.Cannot be determined

22. A conical vessel covers a base area of  $154\text{ cm}^2$ . If the height of the vessel is 45% more than the radius of its base, find its volume approximately.

- A.450 $\text{cm}^3$
- B.500 $\text{cm}^3$
- C.521 $\text{cm}^3$
- D.678 $\text{cm}^3$

E.None of these

23. A wire of 2mm in radius is formed from a cube of area  $308\text{ cm}^3$ . Find the length of the wire.

- A.20m
- B.24.5m
- C.26m
- D.30m

E.None of these

24. A circular box A of thickness 2 cm is made around another circular box B along its perimeter. Find the radius of the circular box B, if the area of the circular box A is  $88\text{cm}^2$ .

- A.2cm
- B.4cm
- C.6cm
- D.9cm

E.None of these



25. Ratio of the side of the square to breadth of the rectangle is 2:1. If the perimeter of the rectangle is 48 cm and the length of the rectangle is double of the breadth of the rectangle, then what is the area of the square?

- A.196 cm<sup>2</sup>
- B.256 cm<sup>2</sup>
- C.225 cm<sup>2</sup>
- D.324 cm<sup>2</sup>

26. Ratio of sides of a right angled triangle is 9:40:41 and area of triangle is 720 units. Find the area of rectangle whose length is 50% of length of longest side of triangle and breadth is 25% more than shortest side of triangle?

- A.962.5 cm<sup>2</sup>
- B.972.5 cm<sup>2</sup>
- C.982.5 cm<sup>2</sup>
- D.912.5 cm<sup>2</sup>
- E.None of these

27. The perimeter of a rectangular box is 36m and the length is  $\frac{5}{4}$ <sup>th</sup> of breadth of the box. The diameter of the circular box is  $\frac{5}{4}$ <sup>th</sup> of the product of length and breadth of rectangular box. What is the area of the circular box?

- A.2500πm<sup>2</sup>
- B.1000πm<sup>2</sup>
- C.3500πm<sup>2</sup>

D.4000πm<sup>2</sup>

E.None of these

28. If retiling of 6m \* 3m floor with tiles of dimensions 12cm \* 8 cm, how many tiles would be required?

- A.1875
- B.1895
- C.1925
- D.1975
- E.1985

29. Ratio of the height to radius of cone is 6:7. If the radius of the cone is equal to the side of the cube, then the volume of the cone is what percent of the volume of the cube?

- A.87.78%
- B.89.79%
- C.91.34%
- D.93.78%

30. The diagonals of Square is  $12\sqrt{2}$  and the perimeter of the rectangle is 64 cm. If the perimeter of the square is 28 cm more than the length of the rectangle, then find the area of the rectangle?

- A.240 cm<sup>2</sup>
- B.320 cm<sup>2</sup>
- C.300 cm<sup>2</sup>
- D.280 cm<sup>2</sup>
- E.None of these

31. The ratio of the diagonals of two square boxes is 3: 4. What is the ratio of their areas?

- A.3: 4
- B.9: 16
- C.8: 9
- D.9: 8
- E.None of these

32. The base and height of a triangle is 60 cm and 44 cm respectively. Find the height of another triangle whose area is 300% more than previous triangle and base is 80 cm?

- A.124 cm
- B.142 cm
- C.132 cm
- D.136 cm
- E.None of these

33. What is the surface area of cubical box having side equal to radius of cylinder having total surface area  $1760 \text{ cm}^2$  and the height of the cylinder is 6 cm?

- A.294  $\text{cm}^2$
- B.2646  $\text{cm}^2$
- C.882  $\text{cm}^2$
- D.1176  $\text{cm}^2$
- E.None of these

34. Cost of fencing of square field at the rate of Rs.20 per cm is Rs.1440. If the radius of the circle is

77(7/9)% of the side of the square, then what is cost of flooring of circular field at the rate of Rs.15 per cm?

- A.Rs.8850
- B.Rs.9240
- C.Rs.7470
- D.Rs.7575
- E.None of these

35. The area of the triangle is equal to the area of the square whose perimeter is 100 cm. If the altitude of the triangle is 40 cm, then find the side of the triangle?

- A.31.25 cm
- B.29.5 cm
- C.30.25 cm
- D.32.75 cm
- E.None of these

36. Perimeter of a square is 380% more than the length of the rectangle. The breadth of a rectangle is 2 cm more than 60% of length of rectangle. Find the area of rectangle if area of square is  $1296 \text{ cm}^2$ ?

- A.800  $\text{cm}^2$
- B.600  $\text{cm}^2$
- C.750  $\text{cm}^2$
- D.900  $\text{cm}^2$
- E.None of these

37. Mahi wants to paint sides of a pentagonal prism whose side is 8cm and the height of the prism is 6cm

more than the side of the prism, what is the total cost if the cost per  $\text{cm}^2$  is Rs.15 ?

- A.Rs.4800
- B.Rs.8100
- C.Rs.7500
- D.Rs.8400
- E.None of these

38. Two cylindrical vessels A , B with radius 14cm, 21cm and heights 20cm, 30cm respectively are filled with water, if this water is poured into a third cylindrical vessel C of height 35cm then find the radius (approx.) of the vessel C.

- A.29 cm
- B.22 cm
- C.24 cm
- D.Can't be determined
- E.None of these

39. The breadth of a rectangular field is same as hypotenuse of right angles isosceles triangle whose area is  $32 \text{ m}^2$ . The cost of Gardening that rectangular field is Rs. 1836 at the rate of Rs. 8.5 per  $\text{m}^2$ . Find the cost of fencing of same rectangular field if cost of fencing is Rs.  $48\sqrt{2}$  per meter

- A.Rs. 4128
- B.Rs. 2064
- C.Rs. 1032
- D.Rs. 2752
- E.None of these

40. The perimeter of a rectangle having length and breadth 30 cm and 26 cm is equal to the perimeter of a square. Then find the circumference of a circle whose diameter is equal to the side of a square.

- A.76 cm
- B.58 cm
- C.44 cm
- D.86 cm
- E.None of these

41. The difference between the length and breadth of a rectangular sized box is 6cm. If its perimeter is 84cm, find the area of the rectangular sized box?

- A.400sq.cm
- B.412sq.cm
- C.432sq.cm
- D.450sq.cm
- E.None of these

42. A cow can graze a circular field of radius 14 cm in 8 hours. In how many hours, the same cow grazes a parallelogram field, the area of which is  $154 \text{ cm}^2$  more than that of circle?

- A.18 hours
- B.10 hours
- C.12 hours
- D.16 hours
- E.17 hours

43. A rope can be bent in the form of a circle of radius 84cm. What is the area, if the rope is bent in the form of a square?

- A.14500sq.cm
- B.15690sq.cm
- C.17424sq.cm
- D.18908sq.cm
- E.None of these

44. At the rate of Rs. 2 per sq. m, cost of painting a rectangular floor is Rs 5760. If the length of the floor is 80% more than its breadth, then what is the length of the floor?

- A.96 m
- B.84 m
- C.72 m
- D.60 m
- E.None of these

45. Area of a square is  $576 \text{ cm}^2$ . A rectangle has length 37.5% more than side of given square and breadth is 25% less than side of the square. Find the area of rectangle is how much % more or less than area of square?

- A.3.250% less
- B.3.375% more
- C.3.500% less
- D.3.125% more
- E.None of these

46. A rectangle diagram is drawn in a paper. If each side of the rectangle is increased by 10%, what is the percentage increase in its area?

- A.21%
- B.24%
- C.28%
- D.38%
- E.None of these

47. The length of the rectangular field is 60% more than the breadth, if the total cost of flooring the field at the rate of Rs.15 per square meter is Rs.21600, then find the difference between sides of the rectangular field.

- A.16 cm
- B.18 cm
- C.18 m
- D.11 m
- E.14 cm

48. A cylindrical bar is casted and melted into smaller spherical balls, radius of the cylinder is twice the height of the cylinder and radius of the sphere is  $\frac{1}{4}$ <sup>th</sup> of radius of cylindrical bar, then find the number of spherical balls formed?

- A.30
- B.20
- C.24
- D.28

E.32

49. The radius of two cylinders are in the ratio of 8: 13 and the curved surface area of those two cylinders are in the ratio 5: 13. What is the ratio of their volumes?

A.25: 24

B.40: 169

C.24: 25

D.169: 40

E.None of these

50. If the diameter of the wheel is 14m, then the number of times the wheel of the bus rotates in a journey of 11km will be,

A.250

B.220

C.330

D.440

E.520

## Mensuration – Answer and Explanation

**Answer: A**

Perimeter of the square =  $14 * 4 = 56$  cm

Perimeter of the rectangle =  $56 * 2 = 112$

$$2 * (b + 4 + b) = 112$$

$$b = 26 \text{ cm}$$

$$\text{Length of rectangle} = 26 + 4 = 30 \text{ cm}$$

$$\text{Area of the rectangle} = 30 * 26 = 780 \text{ cm}^2$$

**Answer: A**

Radius of cylinder =  $2x$

$$\text{Height of cylinder} = 2x * 150/100 = 3x$$

$$22/7 * (2x * 2x) * 3x = 12936$$

$$x = 7$$

$$\text{Radius} = 2 * 7 = 14 \text{ cm}$$

$$\text{Height} = 3 * 7 = 21 \text{ cm}$$

$$\text{CSA} = 2 * 22/7 * 14 * 21$$

$$= 1848 \text{ cm}^2$$

**Answer: B**

Perimeter of the rectangle = 80

Length of rectangle =  $100x$

$$\text{Breadth of the rectangle} = 100x * 60/100 = 60x$$

$$(60x + 100x) * 2 = 80$$

$$x = 0.25$$

$$\text{Length of rectangle} = 100 * 0.25 = 25 \text{ cm}$$

$$\text{Length of cuboid} = 25 * 80/100 = 20 \text{ cm}$$

$$\text{Breadth of cuboid} = 20 * 7/4 = 35 \text{ cm}$$

$$\text{Height of cuboid} = 20 * 5/4 = 25 \text{ cm}$$

$$\text{Required volume} = 20 * 35 * 25 = 17500 \text{ cm}^3$$

**Answer: B**

$$\text{Radius of the circle} = \sqrt{2464} * 7/22 = 28 \text{ cm}$$

$$\text{Side of the square} = \sqrt{900} = 30 \text{ cm}$$

$$\text{Difference} = 30 - 28 = 2 \text{ cm}$$

**Answer: E**

$$\text{Original area} = 5x * 4x$$

$$\text{New area} = 5x * 300/100 * 4x * 325/100$$

$$= 15x * 13x$$

$$\text{Area increase by} = (15x * 13x - 5x * 4x) / 5x * 4x * 100$$

$$= ((195x^2 - 20x^2) / 20x^2) * 100$$

$$= (175/20) * 100$$

$$= 875$$

**Answer: B**

$$\text{Volume of cone} = 1848$$

$$1848 = 1/3 * 22/7 * 14 * 14 * h$$

$$\text{Height of the cone} = 9 \text{ cm}$$

$$\text{Side of the square} = 9 + 14 = 23 \text{ cm}$$

$$\text{Area of square} = 23 * 23 = 529 \text{ cm}^2$$

**Answer: D**

$$\text{Radius} = 7x \text{ and Height} = 2x$$

$$\text{Volume} = 8316 \text{ cm}^3$$

$$\Rightarrow 22/7 * 7x * 7x * 2x = 8316$$

$$\Rightarrow x = 3$$

$$\text{Can's height} = 2x = 6 \text{ cm}$$

**Answer: C**

$$\text{Length of rectangular box} = 4x \text{ and breadth of rectangular box} = 3x$$

$$2(4x + 3x) = 4 * (\text{Side of square box})$$

$$\Rightarrow \text{Side of square box} = 7/2 * x$$

$$\text{Required ratio} = (4x * 3x) : (7/2 * x * 7/2 * x)$$

$$= 48 : 49$$

**Answer: A**

$$\text{Perimeter of the square} = 14 * 4 = 56 \text{ cm}$$

$$\text{Perimeter of the rectangle} = 56 * 2 = 112$$

$$2 * (b + 4 + b) = 112$$

$$b = 26 \text{ cm}$$

$$\text{Length of rectangle} = 26 + 4 = 30 \text{ cm}$$

$$\text{Area of the rectangle} = 30 * 26 = 780 \text{ cm}^2$$

**Answer: B**

$$\text{Let Side of square A} = x$$

$$\text{Area of square A} = x * x$$

$$\text{Area of square B} = x^2 * 16/9$$

$$\text{Side of square B} = x * 4/3$$

$$4x/3 - x = 8$$

$$x = 24$$

$$\text{Perimeter of square A} = 24 * 4 = 96 \text{ cm}$$

$$\text{Perimeter of square B} = 24 * 4/3 * 4 = 128$$

$$\text{Difference} = 128 - 96 = 32 \text{ cm}$$

**Answer: A**

$$\text{Radius of cylinder} = 2x$$

$$\text{Height of cylinder} = 2x * 150/100 = 3x$$

$$22/7 * (2x * 2x) * 3x = 12936$$

$$x = 7$$

$$\text{Radius} = 2 * 7 = 14 \text{ cm}$$

$$\text{Height} = 3 * 7 = 21 \text{ cm}$$

$$\text{CSA} = 2 * 22/7 * 14 * 21$$

$$= 1848 \text{ cm}^2$$

**Answer: A**

$$\text{Number of cylinder} = (2/3 * 22/7 * 42 * 42 * 42) / (22/7 * 14 * 14 * 12)$$

$$= 21$$

**Answer: B**

Side of the square is =  $\sqrt{784} = 28$  cm

So, the radius of the circle is = 56 cm

Now, the circumference of the circle is =  $2\pi r$

$$= 2 \times 22/7 \times 56$$

$$= 352 \text{ cm}$$

Let the length of the rectangle is = x cm

So, according to the question,

$$= 2 (352 + x) = 1154$$

$$= 704 + 2x = 1154$$

$$= 2x = 1154 - 704$$

$$= 2x = 450$$

$$= x = 450/2$$

$$= x = 225 \text{ cm}$$

So, the required percentage is =  $(352 - 225)/225 \times 100$

$$= 127/225 \times 100$$

$$= 56.44\% \text{ more}$$

**Answer: E**

$$(7k + x)/(5k + x) = 4/3$$

We cannot be determined

**Answer: C**

Radius of circular box B = r cm

$$\pi * [(r + 2)^2 - r^2] = 88$$

$$22/7 * (r^2 + 4 + 4r - r^2) = 88$$

$$\Rightarrow r + 1 = 7 \text{ cm}$$

$$\Rightarrow r = 6 \text{ cm}$$

**Answer: A**

$$3x - 2x = 7$$

$$x = 7$$

$$\text{Perimeter of the rectangle} = 2 * (21 + 14) = 70 \text{ cm}$$

$$\text{Perimeter of the square} = 70 + 10 = 80$$

$$\text{Side of the square} = 80/4 = 20$$

$$\text{Area of the square} = 20 * 20 = 400 \text{ cm}^2$$

**Answer: B**

$$\text{Required ratio} = 4\pi r_1^2 : 4\pi r_2^2$$

$$= r_1^2 : r_2^2$$

$$= 3^2 : 5^2$$

$$= 9 : 25$$

**Answer: D**

$$2 * 22/7 * 7x * 10x = 1760$$

$$x = 2$$

$$\text{Height of the cylinder} = 10 * 2 = 20 \text{ cm}$$

$$\text{Side of the square} = 20 \text{ cm}$$

$$\text{Perimeter of the square} = 20 * 4 = 80 \text{ cm}$$

$$\text{Perimeter of the rectangle} = 80 * 5/4 = 100 \text{ cm}$$

$$2 * (35 + b) = 100$$

$$b = 15 \text{ cm}$$

**Answer: D**

Circular ring is made into rectangle, therefore perimeter of both the shapes is same.

$$\text{Perimeter of the circle} = \text{perimeter of the rectangle}$$

$$2\pi r = 2(l+b)$$

$$\pi r = (7x+4x)$$

$$22/7 (42) = 11x$$

$$x = 12$$

Therefore length of the rectangle is  $7x = 84\text{cm}$ , breadth of the rectangle  $4x = 48\text{cm}$

Therefore area of the enclosed region is  $l \cdot b = 84 \cdot 48 = 4032\text{cm}^2$

$$\begin{aligned}\text{Area of the square} &= 4032 + 64 = 4096\text{cm}^2 \\ a^2 &= 4096\end{aligned}$$

Side of the square  $= 64\text{cm}$

**Answer: B**

$$\begin{aligned}528 &= 2 \cdot \frac{22}{7} \cdot r \cdot \frac{300}{700} \cdot r \\ r^2 &= 196\end{aligned}$$

Radius of the cylinder  $= 14\text{ cm}$

Height of the cylinder  $= \frac{3}{7} \cdot 14 = 6\text{ cm}$

$$\begin{aligned}\text{Volume of the cylinder} &= \frac{22}{7} \cdot 14 \cdot 14 \cdot 6 \\ &= 3696\text{ cm}^3\end{aligned}$$

**Answer: E**

$$(7k + x)/(5k + x) = 4/3$$

We cannot be determined

**Answer: C**

$$\pi \cdot r^2 = 154 \Rightarrow r = 7\text{cm}$$

$$\begin{aligned}\text{Required volume} &= \frac{1}{3} \cdot \pi \cdot r^2 \cdot h \\ &= \frac{1}{3} \cdot \frac{22}{7} \cdot 7 \cdot 7 \cdot (145\% \text{ of } 7) \\ &= 521.03 = 521\text{ cm}^3\end{aligned}$$

**Answer: B**

Length of wire  $= h\text{ meters}$

Radius  $= 2\text{mm} = \frac{2}{10}\text{ cm} = \frac{1}{5}\text{ cm}$

$$\pi \cdot r^2 \cdot h = \text{Area}$$

$$\Rightarrow \frac{22}{7} \cdot \frac{1}{5} \cdot \frac{1}{5} \cdot h = 308$$

$$\Rightarrow h = 2450\text{cm}$$

$$\Rightarrow h = 24.5\text{m}$$

**Answer: C**

Radius of circular box  $B = r\text{ cm}$

$$\pi \cdot [(r + 2)^2 - r^2] = 88$$

$$\frac{22}{7} \cdot (r^2 + 4 + 4r - r^2) = 88$$

$$\Rightarrow r + 1 = 7\text{ cm}$$

$$\Rightarrow r = 6\text{cm}$$

**Answer: B**

Side of the square  $= 2x$

Breadth of the rectangle  $= x$

Length of the rectangle  $= 2x$

$$2 \cdot (x + 2x) = 48$$

$$x = 8$$

Side of the square  $= 2 \cdot 8 = 16\text{ cm}$

$$\text{Area of the square} = 16 \cdot 16 = 256\text{ cm}^2$$

**Answer: E**

According to question

Area of triangle  $= 720$

$$\frac{1}{2} \times 9a \times 40a = 720$$

$$a^2 = 4$$

$$a = 2$$

Length of rectangle  $= \frac{1}{2} \times 41 \times 2 = 41$

Breadth of rectangle  $= \frac{5}{4} \times 9 \times 2 = \frac{45}{2} = 22.5$

$$\text{Area of rectangle} = 41 \times 22.5 = 922.5\text{ cm}^2$$

**Answer: A**



$$\text{Perimeter of rectangle} = 2(l + b) = 36$$

$$\Rightarrow 2(5/4b + b) = 36$$

$$\Rightarrow b = 8\text{m}$$

$$l = 5/4 * b = 10\text{m}$$

$$\text{Diameter} = 5/4 * lb = 5/4 * 10 * 8 = 100\text{m}$$

$$\text{Area of circular box} = \pi r^2 = \pi * 100/2 * 100/2 = 2500\pi \text{m}^2$$

**Answer: A**

$$\text{Required number of tiles} = (600 * 300)/(12 * 8)$$

$$= 1875$$

**Answer: B**

$$\text{Volume of the cone} = 1/3 * 22/7 * 7x * 7x * 6x$$

$$= 308x^3$$

$$\text{Volume of the cube} = 7x * 7x * 7x$$

$$= 343x^3$$

$$\text{Required percentage} = 308x^3/343x^3 * 100$$

$$= 89.79\%$$

**Answer: A**

$$d = 12\sqrt{2}$$

$$d = a\sqrt{2}$$

$$\text{Side of the square} = 12 \text{ cm}$$

$$\text{Perimeter of the square} = 12 * 4 = 48 \text{ cm}$$

$$\text{Length of the rectangle} = 48 - 28 = 20 \text{ cm}$$

$$\text{Breadth of the rectangle} = 64/2 - 20 = 12 \text{ cm}$$

$$\text{Area of the rectangle} = 20 * 12 = 240 \text{ cm}^2$$

**Answer: B**

$$\text{Let the diagonals be } 3x \text{ and } 4x.$$

$$\text{Ratio} = [((1/2) * (3x))^2] : [((1/2) * (4x))^2]$$

$$= 9: 16$$

**Answer: C**

$$\text{Area of given triangle} = 1/2 * 60 * 44$$

$$\text{Area of new triangle} = 1/2 * 80 * h$$

According to question,

$$4 * 1/2 * 60 * 44 = 1/2 * 80 * h$$

$$\text{So, } h = 44 * 3 = 132 \text{ cm}$$

**Answer: D**

$$1760 = 2 * 22/7 * r * (6 + r)$$

$$280 = 6r + r^2$$

$$r^2 + 6r - 280 = 0$$

$$r^2 - 14r + 20r - 280 = 0$$

$$r(r - 14) + 20(r - 14) = 0$$

$$(r + 20)(r - 14) = 0$$

$$r = -20, 14$$

$$\text{SA of the cube} = 6 * 14 * 14 = 1176 \text{ cm}^2$$

**Answer: B**

$$\text{Perimeter of the square} = 1440/20 = 72 \text{ cm}$$

$$\text{Side of the square} = 72/4 = 18 \text{ cm}$$

$$\text{Radius of the circle} = 18 * 700/900 = 14 \text{ cm}$$

$$\text{Required cost} = 22/7 * 14 * 14 * 15 = \text{Rs.}9240$$

**Answer: A**

$$\text{Side of the square} = 100/4 = 25 \text{ cm}$$

$$\text{Area of the square} = 25 * 25 = 625 \text{ cm}^2$$

$$\text{Side of the triangle} = 2 * 625/40$$

$$= 31.25 \text{ cm}$$

**Answer: B**

Area of square =  $1296 \text{ cm}^2$

Side of square =  $\sqrt{1296} = 36 \text{ cm}$

Perimeter of square =  $4 \times 36 = 144$

Length of rectangle =  $144/480 \times 100 = 30 \text{ cm}$

Breadth of rectangle =  $2 + 60\% \text{ of } 30 = 20 \text{ cm}$

Area of rectangle =  $30 \times 20 = 600 \text{ cm}^2$

**Answer: D**

Pentagon has 5 sides, therefore pentagonal prism has 5 faces of rectangular shape, i.e side & height are different values.

Let side of the pentagon is equal to length of the rectangle, therefore height of the prism is equal to breadth of the rectangle.

Mahi wants to paint sides of the pentagonal prism, therefore total area = sum of the area of 5 rectangles

=  $5 (\text{length} \times \text{breadth})$

=  $5 (8 \times 14)$

=  $560 \text{ cm}^2$

Cost of painting per  $\text{cm}^2 = \text{Rs.}15$

Therefore total cost =  $560 \times 15 = \text{Rs.}8400$

**Answer: B**

Volume of cylinder C = volume of Cylinder A + volume of cylinder B

$$\pi r_c^2 h_c = \pi r_a^2 h_a + \pi r_b^2 h_b$$

$$r_c^2 (35) = 14^2(20) + 21^2(30)$$

$$r_c^2 (35) = 3920 + 13230$$

$$r_c^2 = 490$$

$$r_c = 22 \text{ cm (approx.)}$$

Radius of the cylinder C = 22 cm

**Answer: A**

Let the side of triangle other than hypotenuse = a meters

According to question

$$\frac{1}{2} \times a \times a = 32$$

$$a = 8 \text{ meter}$$

$$\text{Hypotenuse of triangle} = (8^2 + 8^2)^{1/2} = 8\sqrt{2} \text{ m}$$

$$\text{Breadth of rectangle} = 8\sqrt{2}$$

$$\text{Also, } 8\sqrt{2} \times \text{length} = 1836 / 8.5 = 216$$

$$\text{Length} = 27/\sqrt{2}$$

$$\text{Required cost} = 2 (8\sqrt{2} + 27/\sqrt{2}) \times 48\sqrt{2}$$

$$= (43 \times 48) \times 2 = \text{Rs. } 4128$$

**Answer: E**

Perimeter of rectangle = perimeter of Square

So, according to the question,

$$2 \times (30 + 26) = 4x$$

$$112 = 4x$$

$$x = 28 \text{ cm}$$

So, side of square is = 28 cm

Now, Radius of the circle is =  $28/2 = 14 \text{ cm}$

So, circumference of the circle is =  $2\pi r$

$$= 2 \times 22/7 \times 14$$

$$= 88 \text{ cm}$$

**Answer: C**

$$1 - b = 6 \text{ --- (I)}$$

$$2(l + b) = 84 \text{ --- (II)}$$

On solving (I) and (II) we get,  $l = 24\text{cm}$  and  $b = 18\text{cm}$

$$\text{Area} = lb = 432\text{sq.cm}$$

**Answer: B**

$$\text{Area of the circle} = 22/7 * 14 * 14 = 616 \text{ cm}^2$$

$$\text{Area of the parallelogram} = 616 + 154 = 770 \text{ cm}^2$$

$$\text{Required time} = 770/616 * 8 = 10 \text{ hours}$$

**Answer: C**

$$\text{Length of the rope} = 2\pi r = 2 * 22/7 * 84 = 528\text{cm}$$

$$\text{Side of the square} = 528/4 = 132\text{cm}$$

$$\text{Area} = 132 * 132 = 17424\text{sq.cm}$$

**Answer: C**

$$\text{Let the length of the floor} = x \text{ m}$$

$$\text{And the breadth of the floor} = y \text{ m}$$

So, according to the question,

$$x = y + 80\% \text{ of } y$$

$$x = 1 + 0.8y = 1.8y$$

$$\text{Now, area of the floor} = 5760/2 = 2880 \text{ sq. m}$$

$$\text{So, } x * y = 2880$$

$$= x * (x/1.8) = 2880$$

$$= x^2 = 5184$$

$$= x = 72$$

**Answer: D**

$$\text{Side of square} = \sqrt{576} = 24 \text{ cm}$$

$$\text{Length of rectangle} = 137.5\% \text{ of } 24 = 11/8 * 24 = 33 \text{ cm}$$

$$\text{Breadth of rectangle} = 75\% \text{ of } 24 = 3/4 * 24 = 18 \text{ cm}$$

$$\text{Area of rectangle} = 33 * 18 = 594 \text{ cm}^2$$

$$\text{Required \% change} = (594 - 576)/576 * 100 = 3.125\% \text{ more}$$

**Answer: A**

$$\text{Length} = x \text{ meter and Breadth} = y \text{ meter}$$

$$\text{Original area} = xy \text{ meter}^2$$

$$\text{New area} = (110/100)^2 * xy = 121/100 * xy \text{ meter}^2$$

$$\% \text{ increase} = [(121xy/100) - xy]/xy * 100$$

$$= 21\%$$

**Answer: C**

$$\text{Let breadth of the rectangle} = 5x$$

$$\text{Length of the rectangle} = 160\% \text{ of } 5x = 8x$$

$$\text{Total cost of fencing} = \text{Rs.}21600$$

$$15(5x * 8x) = 21600$$

$$40x^2 = 1440$$

$$x^2 = 36$$

$$x = 6$$

$$\text{Difference between the sides of the rectangle} = 8x - 5x = 3x = 18 \text{ m}$$

**Answer: C**

During melting no materials are spilled out,

Therefore

$$\text{Volume of cylindrical bar} = \text{no. of spherical balls} * \text{volume of spherical ball}$$

$$\pi r^2 h = (4/3) \pi R^3 * x$$

$$(4h^2)h = (4/3) (2h/4)^3 x$$

$$x = 24$$

**Answer: B**

$$R_1/R_2 = 8/13$$

$$\text{Hence } (2\pi R_1 h_1)/(2\pi R_2 h_2) = 5/13$$

$$\Rightarrow h_1/h_2 = 5/13 * 13/8 = 5/8$$

$$\text{Volume1/Volume2} = \pi R_1^2 h_1 / \pi R_2^2 h_2$$

$$= 8/13 * 8/13 * 5/8 = 40/169$$

**Answer: A**

Diameter of the wheel = 14m

Radius of the wheel = 7m,

Distance covered by wheel per rotation =  $2\pi r$

$$= 2\pi(7)$$

$$= 44\text{m}$$

Total distance covered by the wheel = 11km = 11000

44 (no of rotation made by the wheel) = 11000

No. of rotation = 250

## Permutations and Combinations

**1. In how many ways can five boys be made to stand in a row such that two of them, P and Q are always together?**

A.24

B.48

C.12

D.36

E. None of these

**2. In how many ways the letters of the word “WORDART” be arranged?**

A.720

B.360

C.5040

D.2520

E. None of these

**3. In how many number of ways the word “TYPICAL” be arranged?**

A.5040

B.2520

C.10040

D.720

E.1440

**4. In an auditorium the chairs were arranged such that the number of rows was 3 more than the number of columns. The chairs are rearranged by removing 4 columns and adding 8 rows without adding or removing any chair. How many people can sit in that auditorium at a time?**

A.158

B.154

C.174

D.152

E. None of these

**5. In how many ways word “ENERGY” be arranged in that all vowels and consonants come together?**

A.48

**B.36**

**C.24**

**D.18**

**E.12**

**6. In how many ways a selection of 4 students having at least 2 girls can be selected from 4 girls and 5 boys?**

**A.80**

**B.60**

**C.90**

**D.120**

**E. None of these**

**7. In how many ways the word “PRIDE” be arranged so that all vowels and consonants come together?**

**A.12**

**B.18**

**C.24**

**D.32**

**E. None of these**

**8. In how many ways a committee of 5 members can be formed from 6 men and 7 women in which at least 3 men should come?**

**A.531**

**B.359**

**C.429**

**D.542**

**E.325**

**9. How many 3 digit numbers can be formed from the digit 1, 2, 3, 5, 7 which are divisible by 5 and none of the digits is repeated?**

**A.3**

**B.6**

**C.9**

**D.12**

**E. None of these**

**10. How many words of 4 consonants and 4 vowels can be formed, out of 8 consonants and 5 vowels?**

**A.240 \* 5!**

**B.350 \* 8!**

**C.240 \* 8!**

**D.350 \* 5!**

**E. None of these**

**11. The number of words that can be formed out of the letters of the word PICTURE, so that the vowels occupy even places is?**

**A.120**

**B.144**

**C.165**

**D.188**

**E. None of these**

**12. A bundle of five pencils is to be formed from a bundle A of 5 different pencils and another bundle B of 4 different Pencils, taking at least one pencil from each bundle. In how many ways bundle can be**

formed where number of pencils from Bundle A should be less than Bundle B?

- A.95
- B.85
- C.75
- D.35
- E. None of these

13. There are 10 boys and 8 girls out of which a team of 8 players to be selected. In how many ways team can be selected if at least 4 girls and 2 boys should be in team?

- A.21840
- B.22880
- C.21420
- D.22480
- E. None of these

14. In how many ways 6 Teachers, 7 Doctors and 8 Engineers be seated in a row in the conference hall, so that all person of same profession sits together?

- A. $6!7!8!1!$
- B. $6!7!8!2!$
- C. $6!7!8!3!$
- D. $6!7!8!4!$
- E. None of these

15. A team of 11 players is to be selected out of 6 defenders, 4 mid-fielders and 5 strikers. Find the

number of ways of selecting at least 3 strikers in the team?

- A.1200
- B.1280
- C.1160
- D.1050
- E.1260

16. In how many ways a selection of 4 students having at least 2 boys can be selected from 4 boys and 5 girls?

- A.63
- B.72
- C.81
- D.90
- E. None of these

17. In how many different ways a pack of cards can be arranged such that first four cards are king, last four cards are queen, aces are exactly at the middle and rest of the cards are arranged in such a way that a black card always follow a red card?

- A. $(4!)^3 \times (20!)^2$
- B. $12! \times 40!$
- C. $(4!)^3 \times 40!$
- D. $52!$
- E. None of these

18. How many ways the word 'MANAGEMENT' can be arranged without repetition?

- A.226800
- B. 114400
- C. 156200
- D. 172000
- E.220400

19. In a group, there are 4 Arts students, 8 Commerce students and some Science students. Number of ways in which 1 Arts student, 1 Commerce student and 1 Science student can be selected from the group is 192. A committee of six members is to be formed such that the group contains 3 Science students, 2 Commerce students and 1 Arts students. Find the total number of ways in which the committee can be formed.

- A.2240
- B.1680
- C.1240
- D.1060
- E. None of these

20. In a group of 4 boys and 3 girls, three children are to be selected. In how many different ways can they be selected such that at least one boy should be there?

- A.60
- B.35
- C.42
- D.34
- E.38

21. In a group of 7 boys and 9 girls, 5 members are to be selected. In how many different ways can they be selected such that at least one boy should be there?

- A.2450
- B.4242
- C.1840
- D.4280
- E. None of these

22. 17 buses are running between two places Nagercoil and Madurai. In how many ways can a family go from Nagercoil to Madurai and return by a different bus?

- A.220 ways
- B.210 ways
- C.252 ways
- D.272 ways
- E. None of these

23. In a party hall, 10 persons are to be arranged around a round table. If two particular persons are not to be seated side by side, then what is the total number of arrangements?

- A. $9 * 10!$
- B. $7 * 8!$
- C. $35 * 7!$
- D. $40 * 6!$
- E. None of these

**24. When 3 fair dice are rolled simultaneously, in how many outcomes will at least one of the dice show 3?**

- A.91**
- B.87**
- C.68**
- D.69**
- E. None of these**

**25. In a group of 6 girls and 5 boys, 3 members are to be selected. In how many different ways can they be selected such that at least one girl should be there?**

- A.195**
- B.210**
- C.155**
- D.180**
- E. None of these**

**26. A teacher wants to select a boy out of 8 boys and a girl out of 7 girls for the writing competition. In how many ways can be select?**

- A.42**
- B.60**
- C.28**
- D.56**
- E.3627**

**27. In how many different ways a group of 5 men and 7 women can be formed out of 8 men and 10 women?**

- A.4240**
- B.6380**

**C.6720**

**D.5860**

**E. None of these**

**28. In a bag contains 2 orange and 3 apples. If 2 fruits are selected, in how many ways that can be selected such that at least one apple?**

- A.8**
- B.9**
- C.10**
- D.11**
- E. None of these**

**29. The bank manager forms a secret 2 – digit code from the numbers 0 -9. But he set code as the first digit will not be 0 and the second number will not be even number. Then what are the possible ways to set the code?**

- A.54**
- B.55**
- C.64**
- D.45**
- E.50**

**30. How many words can be formed by using all the letters of the word “NISARGA” so that the vowels are never together?**

- A.2640**
- B.1230**
- C.2460**



**D.4920**

**E. None of these**

**31. In how many different ways can the letters of the word “PHONE” be arranged so that the vowels may occupy only odd positions?**

**A.54**

**B.27**

**C.9**

**D.18**

**E. None of these**

**32. In how many ways can a group of 4 men and 3 women can be made out of a total of 6 men and 5 women?**

**A.150**

**B.120**

**C.180**

**D.210**

**E. None of these**

**33. In how many ways can the person sent letters to 10 different persons, if the latter distributed by three different postmen?**

**A.410**

**B.210**

**C.510**

**D.310**

**E. None of these**

**34. In how many different ways can the letters of the word “salty” be arranged?**

**A.24**

**B.60**

**C.80**

**D.110**

**E.120**

**35. There are 7 periods in each working day of a college. In how many ways can one organize 6 subjects such that each subject is allowed at least one period?**

**A.33200**

**B.15120**

**C.10800**

**D.43600**

**E. None of these**

**36. Among a set of 5 blue balls and 7 red balls, how many selections of 5 balls can be made such that at least 3 of them are blue balls?**

**A.234**

**B.280**

**C.186**

**D.215**

**E.246**

**37. How many ways the letters of the word “CURRENT” be arranged?**

**A.2520**

**B.1260**

**C.5040**

**D.720**

**E. None of these**

**38. In how many ways a selection of 4 students having at least 2 boys can be selected from 4 boys and 5 girl students?**

**A.36**

**B.72**

**C.80**

**D.81**

**E. None of these**

**39. In how many ways the word “IBPSGUIDE” be arranged so that all the consonants and vowels always come together?**

**A.2880**

**B.1440**

**C.720**

**D. 360**

**E.180**

**40. In how many ways the letters of word “SIMPLE” can be arranged so that all vowels come together?**

**A.180**

**B.210**

**C.240**

**D.270**

**E.120**

**41. In how many different ways can the letters of the word ‘CABINET’ be arranged?**

**A.5040**

**B.2520**

**C.720**

**D.240**

**E.360**

**42. A teacher and head master are chosen out of a group having 15 persons. How many ways are there?**

**A.120**

**B.180**

**C.210**

**D.240**

**E.280**

**43. In how many ways the letters of the word ‘ARMOUR’ can be arranged?**

**A.720**

**B.360**

**C.120**

**D.650**

**E. None of These**

**44. How many four letter words can be formed out of the letters of the word is “LOGARITHMS”?**

**A.2520**

**B.720**

**C.5040**

**D.360**

E. None of these

45. In how many ways word "BANKING" can be arranged in such a way that all vowels and consonants comes together?

A.120

B.280

C.360

D.240

E. None of these

46. In a class has 3 boys and 2 girls, two students were selected. In how many different ways can they be selected such that at least one girl should be there?

A.5

B.8

C.7

D.6

E. None of these

47. Two students are selected from 8 students. How many ways are there to achieve this?

A.68

B.64

C.56

D.52

E. None of these

48. In how many ways the letters of the word "COURSE" can be arranged?

A.360

B.240

C.540

D.128

E. None of these

49. A bag contains 4 red balls and three green balls. If two balls are selected, in how many different ways the balls selected such that at least one red ball should be there?

A.18

B.20

C.36

D.40

E. None of these

50. How many three digit numbers can be formed with the digits 2, 3, 5, 6, 9, if repetition of digits is allowed?

A.120

B.240

C.144

D.720

E. None of these

## Permutations and Combinations – Answer and Explanation

1. Answer: B

If P and Q are always together, then total number of boys is 4. No. of ways =  $4!$

P and Q also interchange their place. No. of ways =  $2!$

Total ways =  $4! * 2! = 48$

**2. Answer: D**

Required number of ways =  $7!/2! = 2520$

**3. Answer: A**

Required number of ways =  $7! = 5040$

**4. Answer: B**

Since no chair was added or removed, the capacity of the auditorium remains constant.

The capacity of the auditorium is the product of the number of rows and number of columns.

Let there be  $x$  columns and  $x + 3$  rows, then

$$\Rightarrow x(x + 3) = (x - 4)(x + 3 + 8)$$

$$\Rightarrow x(x + 3) = (x - 4)(x + 11)$$

$$\Rightarrow x^2 + 3x = x^2 + 11x - 4x - 44$$

$$\Rightarrow 4x = 44$$

$$\Rightarrow x = 11$$

Therefore, there were 11 columns and 14 rows, So,  $11 \times 14 = 154$  people can sit in the auditorium at a time.

**5. Answer: A**

Number of vowels = E, E = 2

Number of consonants = N, R, G, Y = 4

Number of ways =  $(2! * 4! * 2!)/2!$

$$= 48$$

**6. Answer: E**

Number of ways =  $5C_2 * 4C_2 + 5C_1 * 4C_3 + 4C_4$

$$= 10 * 6 + 5 * 4 + 1$$

$$= 60 + 20 + 1$$

$$= 81$$

**7. Answer: C**

Number of vowels = 2

Number of consonants = 3

Number of ways =  $2! * 3! * 2!$

$$= 24$$

**8. Answer: A**

Possible selection = 3 men + 2 women, 4 men + 1 woman, 5 men

$$= 6C_3 * 7C_2 + 6C_4 * 7C_1 + 6C_5$$

$$= (6 * 5 * 4 / 1 * 2 * 3) * (7 * 6 / 1 * 2) + (6 * 5 / 1 * 2) * 7 + 6$$

$$= 20 * 21 + 15 * 7 + 6$$

$$= 531$$

**9. Answer: D**

Number is divisible by 5. Hence third digit should be 5.

Remaining 1, 2, 3, 7 = 4 digits

Second digit can be filled in 4 number of ways and First digit can be filled in 3 number of ways.

Total required number of ways =  $3 * 4 * 1 = 12$

**10. Answer: B**

No. of ways to choose 4 consonants out of 8 consonants

$$= {}^8C_4$$

No. of ways to choose 4 vowels out of 5 vowels =  ${}^5C_4$

These 8 letters can be arranged in  $8!$  ways.

Required number of words =  ${}^8C_4 * {}^5C_4 * 8! = 350 * 8!$

**11. Answer: B**

Number of vowels = I U E = 3

Number of even places = 3

Number of consonants = P C T R = 4

Remaining places = 4

Required number of words =  ${}^3P_3 * {}^4P_4 = 144$

**12. Answer: E**

Number of ways =  ${}^5C_1 * {}^4C_4 + {}^5C_2 * {}^4C_3$

=  $5 * 1 + 10 * 4$

= 45

**13. Answer: E**

Required number of ways

=  ${}^8C_6 * {}^{10}C_2 + {}^8C_5 * {}^{10}C_3 + {}^8C_4 * {}^{10}C_4$

=  $45 * 28 + 120 * 56 + 210 * 70$

=  $1260 + 6720 + 14700 = 22680$  ways

**14. Answer: C**

6 Teachers can be seated together in 6! ways.

Similarly for Doctors and Engineers in 7! and 8! respectively.

Required number of ways =  $6! 7! 8! 3!$

**15. Answer: E**

A team of 11 players consisting at least 3 strikers can be formed in the following ways.

**Case 1:** When 3 strikers are selected

=  $5C_3 * 10C_8 = 5C_2 * 10C_2$

=  $(5 * 4/2 * 1) * (10 * 9/2 * 1)$

=  $10 * 45$

= 450

**16. Answer: C**

Number of ways =  $4C_2 * 5C_2 + 4C_3 * 5C_1 + 4C_4$

=  $6 * 10 + 4 * 5 + 1$

=  $60 + 20 + 1 = 81$

**17. Answer: A**

Total number of cards in a pack of cards = 52

Red = 26

Black = 26

King = 4 (red 2 and black 2)

Queen = 4 (red 2 and black 2)

Aces = 4 (red 2 and black 2).

First four kings can be arranged in 4! Ways.

Last four queens can be arranged in 4! Ways

In, Middle aces can be arranged in 4! Ways

Remaining red cards can be arranged in 20! Ways.

Remaining black cards can be arranged in 20! Ways.

Required number of ways =  $(4!)^3 * (20!)^2$

**18. Answer: A**

Required number of ways =  $(10!)/(2! * 2! * 2! * 2!)$

= 226800

**19. Answer: A**

Arts students = 4

Commerce students = 8

Let, Science students = n

${}^4C_1 * {}^8C_1 * {}^nC_1 = 192$

=>  $4 * 8 * n = 192$

=>  $n = 192/32$

$$\Rightarrow n = 6$$

$$\text{Required number of ways} = {}^6C_3 \times {}^8C_2 \times {}^4C_1$$

$$= 20 \times 28 \times 4$$

$$= 2240$$

**20. Answer: D**

At least one boy = Total ways – ways of no boys

$$= {}^7C_3 - {}^3C_3$$

$$= (7 \times 6 \times 5) / (3 \times 2 \times 1) - 1$$

$$= 35 - 1$$

$$= 34$$

**21. Answer: B**

Required number of ways

$$= > ({}^7C_4 \text{ and } {}^9C_1) \text{ or } ({}^7C_3 \text{ and } {}^9C_2) \text{ or } ({}^7C_2 \text{ and } {}^9C_3) \text{ or } ({}^7C_1 \text{ and } {}^9C_4) \text{ or } {}^7C_5$$

$$= > (35 \times 9) + (35 \times 36) + (21 \times 84) + (7 \times 126) + 21$$

$$= > 315 + 1260 + 1764 + 882 + 21 = 4242$$

**22. Answer: D**

They can go in any bus out of the total 17 buses.

They return by different buses, hence they cannot come back in the same bus.

Hence they can return in 16 ways.

$$\text{Total number of ways} = 17 \times 16 = 272 \text{ ways}$$

**23. Answer: B**

$$\text{No. of ways to arrange 10 persons around the table} = (10 - 1)! = 9!$$

$$\text{No. of ways in which 2 particular persons sit side by side} = 8! \times 2!$$

$$\text{Therefore, required no. of arrangements} = 9! - (8! \times 2!)$$

$$= 9 \times 8! - 8! \times 2 \times 1$$

$$= (9 - 2) \times 8! = 7 \times 8!$$

**24. Answer: A**

$$\text{When 3 dice rolled} \Rightarrow \text{Number of outcomes} = 6^3 = 216$$

$$\text{Number of outcomes in which none of the 3 dice show 3} = 5^3 = 125$$

$$\text{Required no. of outcomes} = 216 - 125 = 91$$

**25. Answer: C**

The possibilities are,

$$= > (1 \text{ girl and } 2 \text{ boys}) \text{ or } (2 \text{ girls and } 1 \text{ boy}) \text{ or } (3 \text{ girls})$$

Required number of ways

$$= > ({}^6C_1 \text{ and } {}^5C_2) + ({}^6C_2 \text{ and } {}^5C_1) + ({}^6C_3)$$

$$= > [6 \times ((5 \times 4) / (1 \times 2))] + [((6 \times 5) / (1 \times 2)) \times 5] + [(6 \times 5 \times 4) / (1 \times 2 \times 3)]$$

$$= > 60 + 75 + 20 = 155$$

**26. Answer: D**

$$\text{Select a boy out of 8 boys and a girl out of 7 girls} = 8 \times 7$$

$$\text{Total ways} = 56$$

**27. Answer: C**

Required number of ways

$$= > {}^8C_5 \text{ and } {}^{10}C_7$$

$$= > [(8 \times 7 \times 6 \times 5 \times 4) / (5 \times 4 \times 3 \times 2 \times 1)] \times [(10 \times 9 \times 8 \times 7 \times 6 \times 5 \times 4) / (7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1)]$$

$$= > 56 \times 120 = 6720$$

**28. Answer: B**

$$\text{Required ways} = {}^5C_2 - {}^2C_2$$

$$= 10 - 1 = 9$$

**29. Answer: D**

First number will not be zero implies there are 9 possible way for digit one =  ${}^9C_1$  And for second digit we have 5 possibilities =  $(1, 3, 5, 7, 9) = {}^5C_1$

So the possible number of ways =  $9 \times 5 = 45$

**30. Answer: C**

Required number of ways =  $(7!/2!) - (5! \cdot 3!/2!)$

$$= [(7 * 6 * 5 * 4 * 3 * 2 * 1)/(2 * 1)] - [(5 * 4 * 3 * 2 * 1)/(2 * 1)]$$

$$= 2460$$

**31. Answer: E**

Number of ways of arranging the vowels in odd positions =  ${}^3P_2 = 3 * 2 = 6$

Number of ways of arranging the remaining letters =  $3! = 6$

Required number of ways =  $6 * 6 = 36$

**32. Answer: A**

Required ways =  ${}^6C_4$  and  ${}^5C_3$

$$=> [(6 * 5 * 4 * 3) / (1 * 2 * 3 * 4)] * [(5 * 4 * 3) / (1 * 2 * 3)]$$

$$=> 15 * 10 = 150$$

**33. Answer: D**

Total ways =  $3^{10}$

**34. Answer: E**

The number of ways =  $5! = 120$

**35. Answer: B**

6 subjects can be arranged in periods in  ${}^7P_6$  ways.

Remaining 1 period can be arranged in  ${}^6P_1$  ways.

Two subjects are alike in each of the arrangement. So we need to divide by  $2!$  to avoid over counting.

Total number of arrangements =  $({}^7P_6 \times {}^6P_1)/2!$

$$= 5040 \times 6 / 2$$

$$= 30240 / 2$$

$$= 15120$$

**36. Answer: E**

Combinations:

3 blue and 2 red

4 blue and 1 red

5 blue and 0 red

Hence,

$${}^5C_3 * {}^7C_2 + {}^5C_4 * {}^7C_1 + {}^5C_5 * {}^7C_0$$

$$= 10 * 21 + 5 * 7 + 1$$

$$= 246 \text{ ways}$$

**37. Answer: A**

Required ways =  $7!/2! = 2520$

**38. Answer: D**

Number of ways =  ${}^5C_2 * {}^4C_2 + {}^4C_3 * {}^5C_1 + {}^4C_4$

$$= 10 * 6 + 4 * 5 + 1$$

$$= 60 + 20 + 1$$

$$= 81$$

**39. Answer: A**

Number of vowels = I, U, I, E = 4

Number of consonants = B, P, S, G, D = 5

Required ways =  $(4!/2!) * 5! * 2!$

=2880

**40. Answer: C**

Total letters = 6

Vowels = I, E = 2

Required ways =  $2! * 5!$

= 240

**41. Answer: A**

Required ways =  $7!=5040$

**42. Answer: C**

Total number of ways= $15 * 14=210$

**43. Answer: B**

Total letters = 6,

but R has come twice.

No of arrangements =  $6!/2! = (6 * 5 * 4 * 3 * 2 * 1)/(2 * 1) = 360$

**44. Answer: C**

Number of letters = 10

$10!/(10 - 4)! = 720 * 7$

= 5040

**45. Answer: D**

Vowels=A, I=2!

Consonant=B, N, K, N, G=5!

Required ways= $2! * 5!/2! * 2!$

=240

**46. Answer: C**

Total number of ways= $5C_2$

No girls selected = $3C_2$

Required ways= $5C_2 - 3C_2 = 10 - 3 = 7$

**47. Answer: C**

Number of ways= $8 * 7=56$

**48. Answer: E**

Required ways= $6!=720$

**49. Answer: A**

Total number of ways =  $7C_2$

No red balls =  $3C_2$

Required ways =  $7C_2 - 3C_2$

=  $7 * 6/2 - 3 * 2/2 = 36/2 = 18$

**50. Answer: E**

Options for hundred's place = 5 (all digits)

Options for ten's place = 5 (all digits)

Options for unit's place = 5 (all digits)

Total number of ways =  $5 * 5 * 5 = 125$  ways

## Average

1. Average weight of the class is 28 kg and the average weight of class is increased by 3 kg when the teacher is included. If the number of students in the class is 27, then find the weight of teacher?

A.108 kg

B.112 kg

C.116 kg

D.104 kg



E.None of these

2. The average age of A, B and C is 57 years. If D includes in the group, then the average age becomes 52.5 years. If the average age of A, B and D is 55.5 years, then what is the average age of C and D?

A.41.25 years

B.43.50 years

C.45.51 years

D.47.83 years

E.49.20 years

3.The average weight of all the students in the class is 40 kg. If the average weight of 40 students is 36 kg and the average weight of the remaining students in the class is 48 kg. How many students are there in the class?

A.50

B.60

C.70

D.80

E.90

4. The average weight of the boys and girls in the class is 24 kg and 50 kg respectively. Total weight of the class is 1470 kg and the number of boys and girls in the class is  $x$  and  $(x - 15)$  respectively. Find the value of  $x$ ?

A.25

B.20

C.30

D.35

E.40

5. The ratio of the number of shirts to the number of Saree and T-shirt together of 1:4. The average cost of Shirt is Rs.200 and the average cost of Saree is Rs.220 and the average cost of T-shirt is Rs.300. If the total revenue collected by shopkeeper is Rs.48000 and the total number of shirts, sarees and T-shirt together is 200, then find the total cost of T-shirt?

A.Rs.18000

B.Rs.24000

C.Rs.27000

D.Rs.15000

E.Rs.9000

6. The average age of Anil, Bala and Nirmala is 35 years while the average of these three along with Dinesh and Kani is 41 years. If Kani is 20 years elder than Dinesh, then what is the present age of Dinesh?

A.30 years

B.20 years

C.40 years

D.60 years

E.50 years

7.The total number of student takes admission in a coaching class on 4 weeks is 364. Average number of student takes admission in first week is 12 and

average number of students take admission in third week is 2 less than that of second week. Find total number of students takes admission in second week if average number of student takes admission in fourth week is 10?

- A.98
- B.128
- C.84
- D.112
- E.None of these

8. The average number of students in class A, B, C and D is 52. Ratio of the number of students in class A, B and C is 5:4:3 and the number of students in D is  $6\frac{2}{3}\%$  more than the number of students in A. Find the number of students in C?

- A.24
- B.30
- C.36
- D.42
- E.45

9. Average number of toys sold on Tuesday, Thursday and Sunday is 320 while average number of toys sold for the whole week except Friday and Saturday is 282. If the number of toys sold on Monday is 80% of the number of toys sold on Wednesday, then find the number of toys sold on Wednesday.

- A.120
- B.134
- C.140
- D.250
- E.None of these

10. The average weight of 6 persons is 60 kg. If the weight of lightest person in the group is 10 kg, then what is the average weight of the first five heaviest persons in the group?

- A.60 kg
- B.65 kg
- C.70 kg
- D.75 kg
- E.None of these

11. The average weight of 26 students in the class is 39 kg. If 9 new students joined the class, then the average weight of the class is increased by one kg. Find the average weight of new students of the class?

- A.40.56 kg
- B.42.89 kg
- C.44.44 kg
- D.46.92 kg
- E.48.23 kg

12. The average weight of the class is 36 kg. If the teacher weight is added, then the average weight is increased by 2 kg and the total number of students in

the class is 22 and the ratio of the weight of teacher to HM is 41:45. Find the weight of HM?

- A.90 kg
- B.135 kg
- C.45 kg
- D.120 kg
- E.None of these

13. S1 is a series of 6 consecutive odd numbers whose average is 26 and the S2 series is a series of 6 consecutive even numbers. If the fourth term of S2 is equal to the half of the sum of the third and last term of S1, then what is the average of S2?

- A.23
- B.25
- C.27
- D.29
- E.21

14. The average weight of 20 students increases from 20kg to 25kg, when P, Q and R join them. The weight of P, Q and R are in the ratio 5: 3: 6. Find the weight difference between Q and R.

- A.35kg
- B.36.5kg
- C.37kg
- D.37.5kg
- E.None of these

15. The average price of four cars is Rs.12.5 Lakhs. The average price of two costliest cars and the least priced car is 13 lakhs. Find the price of second least priced car.

- A.12 Lakhs
- B.11 Lakhs
- C.15 Lakhs
- D.13 Lakhs
- E.16 Lakhs

16. Average marks of Aman, Suman and Raman is 75. The marks of Aman is 25 less than Pawan and 10 more than Suman. If Pawan scored 57 marks more than the average scores of Aman, Suman and Raman, then find the average of the scores of Suman and Raman?

- A.76
- B.48
- C.55
- D.62
- E.None of these

17. The average age of 45 boys of a class is 20 years, if the age of teacher is included, the average age becomes 21 years, then find the age of teacher?

- A.56 years
- B.66 years
- C.65 years
- D.55 years

E.58 years

18. The ratio of the salary of P and Q is 9: 13 and each of them saves Rs.2000. What is the average of the salary of P and Q, if the ratio of the expenses of P and Q is 17: 29?

A.Rs.6600

B.Rs.7200

C.Rs.7680

D.Rs.8900

E.None of these

19. 4 years ago, average age of 6 employees in the company is  $x$  years. A new employee joined the company, now the average age of the company is  $x$  years. If the present age of new employee is 22 years, then find the value of  $x$ ?

A.22

B.24

C.36

D.40

E.46

20. The average weight of 26 students in the class is 39 kg. If 9 new students joined the class, then the average weight of the class is increased by one kg. Find the average weight of new students of the class?

A.40.56 kg

B.42.89 kg

C.44.44 kg

D.46.92 kg

E.48.23 kg

21. The average weight of the class is 36 kg. If the teacher weight is added, then the average weight is increased by 2 kg and the total number of students in the class is 22 and the ratio of the weight of teacher to HM is 41:45. Find the weight of HM?

A.90 kg

B.135 kg

C.45 kg

D.120 kg

E.None of these

22. The average weight of Apple, Orange and Guava is 40 kg. The weight of Apple is 12 kg more than that of Orange and the average weight of Apple and Guava is 39 kg. What is the weight of Guava?

A.45 kg

B.24 kg

C.52 kg

D.42 kg

E.None of these

23. The average weight of 15 students in class A is 32 kg and the average weight of 12 students in class B is 47.75 kg. What is the average weight of class A and B together?

A.35 kg

B.37 kg

- C.39 kg
- D.41 kg
- E.None of these

24. Out of the three numbers, b is 25% more than a, c is equal to the sum of a and b and d is 2 more than the c. The average of the numbers a, b, c and d is 14. Find the value of d.

- A.10
- B.15
- C.20
- D.25
- E.None of these

25. Average weight of the males in the class is 55 and females is 47. The ratio of number of females to total persons in the class is 3:10. Find the total number of females in the class.

- A.82
- B.41
- C.45
- D.50
- E.Can't be determined

26. For a test cricket career of a batsman, while calculating the average of 150 matches, which came out to be 30, scores of two matches of 130 and 270 are wrongly noted as 60 and 110. Find the percentage error in calculating his average?(Approximately).

- A.7%

- B.5%
- C.8%
- D.3%
- E.None of these

27. Average age of 13 persons is 45 years such that average age of first six persons is 48 years and the age of last six persons is 40 years. What is the age of 7<sup>th</sup> person?

- A.52
- B.55
- C.57
- D.59
- E.61

28. The average age of 45 boys of a class is 20 years, if the age of teacher is included, the average age becomes 21 years, then find the age of teacher?

- A.56 years
- B.66 years
- C.65 years
- D.55 years
- E.58 years

29. The ratio of the salary of P and Q is 9: 13 and each of them saves Rs.2000. What is the average of the salary of P and Q, if the ratio of the expenses of P and Q is 17: 29?

- A.Rs.6600
- B.Rs.7200

C.Rs.7680

D.Rs.8900

E.None of these

30. The average weight of 10 students in a school is 38kg. If two new students whose weights are 'x' kg and 'x + 4' kg join in the school, average becomes 39kg. What is the average weight of two new students?

A.40kg

B.41kg

C.42kg

D.43kg

E.44kg

31. Average age of boys in a class is 33.33 years while average age of girls is 37.5 years. If sum of the age of total students in a class is 2800 and number of girls in class is 16 less than boys, then find the number of boys in a class?

A.24

B.16

C.48

D.54

E.None of these

32. Arvind owns a general store. He had a sale of Rs 325, 295.5 , 368.2 and 494.3 respectively on the first four days of the week starting from Monday. In the entire week, he had an average sale of Rs 309.6. If it is

given that his sale on Friday is equal to sale on Sunday and half the sale on Saturday, then what is the difference between his sale on Tuesday and Saturday?

A.33.7

B.43.4

C.46.6

D.57.5

E.None of these

33. Suraj organized a party by taking contributions from the participants. 60% of the participants contributed 80% of the funds. The average contribution of all the people who attended is Rs. 80. What is the average contribution of the remaining 40% of the people?

A.Rs. 28

B.Rs. 100

C.Rs. 72

D.Rs. 40

E.None of these

34. The average marks scored by Rahim in five engineering papers i.e.P, Q, R, S and T is 81 while marks scored by him in paper R is 92. The average marks scored in P and Q is 64 and marks scored in S is 98. Find the marks he scored in T.

A.64

B.87

C.48

D.56

E.None of these

**35.The average height of 12 boys in the class is 152cm and the average height is increased by 4cm when two more boys are included. Find the average height of new boys included.**

A.180cm

B.200cm

C.220cm

D.240cm

E.None of these

**36. The average of the ages of Nila, Nithish and Nirmal is 18 years and the average of the ages of Nithish and Nirmal is 18 years. If Nithish is 6 years elder than Nila, then what is the ratio of the ages of Nila, Nithish and Nirmal?**

A.2:3:4

B.3:2:4

C.4:3:2

D.3:4:2

E.None of these

**37. 4 years ago, average age of 6 employees in the company in is x years. A new employee joined the company, now the average age of the company is x**

**years. If the present age of new employee is 22 years, then find the value of x?**

A.22

B.24

C.36

D.40

E.46

**38. The average weight of 45 persons in a group is 27 kg, while average weight of 30 persons in same group is 24 kg. Find the average weight of rest members of the group in Kg?**

A.34 kg

B.29 kg

C.31 kg

D.33 kg

E.None of these

**39. The ratio of present ages of 4 members of a family is in 3:4:7:9. Average age of all members after 4 years from now is 27 years. Find present age of youngest person of a family?**

A.15 years

B.12 years

C.18 years

D.21 years

E.None of these

40. The average weight of 35 students in the class is 25 kg. If include the teacher, then average weight is increased by 1.25 kg. Find the weight of the teacher?

- A.60 kg
- B.63 kg
- C.68 kg
- D.70 kg
- E.56 kg

41. Average age of x members in a class is 35. If the age of 3 persons i.e. 12, 24, 10 not included in the list then the average increased by 1, then find the total members of the class?

- A.58
- B.62
- C.64
- D.66
- E.56

42. The average salary of the entire person in the company is Rs.525. If average salary of 24 supervisors of the company is Rs.600 and the average salary of rest of the workers is Rs.480. Find the total workers in the company.

- A.64
- B.60
- C.56
- D.68
- E.72

43. Average temperature of a week is  $70.4^{\circ}\text{C}$  while average temperature except Thursday and Friday is  $55^{\circ}\text{C}$ . Total temperature on Friday is 25% more than the total temperature on Thursday. Find the temperature on Thursday?

- A.92.80c
- B.96.80c
- C.106.80c
- D.90.80c
- E.None of these

44. A taxi driver levies Rs.50 as a basic charge for up to 5 kms, and 11% of basic charge per kilometre for the next 5 km and levies 12% of the basic charge after that if a customer paid Rs.100, How many kilometer he had travelled?

- A.14.25 KM
- B.15.15 KM
- C.12.90 KM
- D.13.75 KM
- E.12.75 KM

45. If average weight of 33 members of a class is 18. If the average of first 16 persons is 14 while average of last 16 persons is 22, and the weight of the teacher of this class is thrice the weight of the 17<sup>th</sup> student, then find the weight of the teacher?

- A.54kg
- B.52kg



C.56kg

D.60kg

E.58kg

46. Average weight of five members A, B, C, D and E is  $(K + 12)$  kg and average weight of C and E is 24 kg less than average weight of all five members. If weight of another person F is included then average weight of all members is reduced by 10 kg. Find the value of 50% of K, if average weight of A, B, D and F is 189 kg?

A.180 kg

B.90 kg

C.45 kg

D.135 kg

E.None of these

47. The average age of 40 girls is 20 years. The average age of the first 25 girls is 20 years. The average age of last 10 girls is 15 year. find the average of the remaining 5 girl.

A.30 years

B.45 years

C.38 years

D.25 years

E.22 years

48. The average weight of IT and HR department in the company is 117 kg and average weight of Sales and IT department in the company is 108 kg. If the

average weight of HR and Finance department in the company is 120 kg, then what is the average weight of Finance and Sales department in the company?

A.111 kg

B.113 kg

C.115 kg

D.117 kg

E.114 kg

49. Average weight of 5 persons Ram, Rinni, Ronit, Ronny and Rocky is 42 kg. If another person Ramu joined them, average weight decreased by 2.5 kg. If Ronny and Rocky leaves the group then average weight of Ram, Rinni and Ronit becomes 43.5 kg. Find the average weight of Ramu and Ronny if weight of Rocky is 37.5 kg

A.33.5 kg

B.34.5 kg

C.32.5 kg

D.38.5 kg

E.39.5 kg

50. The average weight of the class is  $x$  kg. The one of the student left the class whose weight is 25 kg. If one new student joined the class whose weight is  $y$  kg, then the average weight of the class is increased by 1 kg. If the initial number of students in the class is 20, then find the value of  $y$ .

A.40 kg

B.45 kg

C.30 kg

D.35 kg

E.50 kg

## Average – Answers and Explanation

### 1. Answer: B

$$28 * 27 + x = 28 * 31$$

$$X = 868 - 756$$

$$x = 112 \text{ kg}$$

### 2. Answer: A

$$A + B + C = 57 * 3 = 171$$

$$A + B + C + D = 52.5 * 4 = 210$$

$$D = 210 - 171 = 39$$

$$A + B + D = 55.5 * 3 = 166.5$$

$$A + B = 166.5 - 39 = 127.5$$

$$C = 171 - 127.5 = 43.5$$

$$C + D = (39 + 43.5)/2$$

$$= 82.5/2$$

$$= 41.25$$

### 3. Answer: B

$$\text{Total number of students} = x$$

$$\text{Total weight of the class} = 40 * x$$

$$\text{Total weight of 40 students} = 40 * 36 = 1440$$

$$\text{Total weight of remaining students} = (x - 40) * 48$$

$$= 48x - 1920$$

$$40x = 1440 + 48x - 1920$$

$$x = 60$$

4.: C

$$24 * x + 50 * (x - 15) = 1470$$

$$24x + 50x - 750 = 1470$$

$$x = 30$$

### 5. Answer Answer: A

$$\text{Number of shirts} = 1/5 * 200 = 40$$

$$\text{Number of T-shirts and sarees} = 200 - 40 = 160$$

$$\text{Total cost of Shirts} = 40 * 200 = 8000$$

$$(160 - x) * 220 + x * 300 = 48000 - 8000$$

$$35200 - 220x + 300x = 40000$$

$$x = 60$$

$$\text{Required total} = 60 * 300 = 18000$$

### 6. Answer: C

$$A + B + N = 35 * 3 = 105$$

$$A + B + N + D + K = 41 * 5 = 205$$

$$D + K = 205 - 105 = 100 \text{ ---(1)}$$

$$K - D = 20 \text{ ---(2)}$$

From (1) and (2)

$$2K = 120$$

$$K = 60$$

$$D = 60 - 20 = 40 \text{ years}$$

### 7. Answer: D

Let average number of students takes admission in third week = a

Average number of students takes admission in second week =  $a + 2$

According to question

$$12 + a + a + 2 + 10 = 364/7$$

$$2a = 52 - 24$$

$$a = 28/2 = 14$$

Total number of students takes admission in second week =  $7 \times (14 + 2) = 112$

**8. Answer: C**

$$A + B + C + D = 52 * 4 = 208$$

$$D = 5x * (320/300) = 16x/3$$

$$5x + 4x + 3x + 16x/3 = 208$$

**9. Answer: D**

Number of toys sold on Tuesday, Thursday and Sunday =  $320 * 3 = 960$

Number of toys sold on Monday, Tuesday, Wednesday, Thursday and Sunday =  $282 * 5 = 1410$

Number of toys sold on Monday and Wednesday =  $1410 - 960 = 450$

Number of toys sold on Wednesday =  $x$

$$\Rightarrow 80\% \text{ of } x + x = 450$$

$$\Rightarrow x = 250$$

**10. Answer: C**

Total weight of the group =  $60 * 6 = 360$

Required average =  $(360 - 10)/5 = 350/5 = 70 \text{ kg}$

**11. Answer: B**

Initial weight of the class =  $39 * 26 = 1014$

New weight of the class =  $(26 + 9) * 40 = 1400$

Required average =  $(1400 - 1014)/9$

$$= 386/9$$

$$= 42.89 \text{ kg}$$

**12. Answer: A**

Weight of teacher =  $38 * 23 - 36 * 22 = 874 - 792 = 82 \text{ kg}$

Weight of HM =  $82 * 45/41 = 90 \text{ kg}$

**13. Answer: C**

$S_1 = x, x + 2, x + 4, x + 6, x + 8$  and  $x + 10$

$$(x + x + 2 + x + 4 + x + 6 + x + 8 + x + 10)/6 = 26$$

$$6x = 126$$

$$x = 21$$

Fourth term of  $S_2 = 1/2 * (21 + 4 + 21 + 10)$

$$= 28$$

Average of  $S_2 = (22 + 24 + 26 + 28 + 30 + 32)/6$

$$= 27$$

**14. Answer: D**

Average weight increases by 5

Total increase in weight =  $3 * 20 + 23 * 5 = 175 \text{ kg}$

P: Q: R = 5: 3: 6

$$\Rightarrow 5x + 3x + 6x = 175$$

$$\Rightarrow x = 12.5$$

$$R - Q = 6x - 3x = 3x = 37.5 \text{ kg}$$

**15. Answer: B**

Let the cars be A, B, C, D in descending order of price.

A being costliest car and D be the least priced car.

Given average price of cars is 12.5 Lakhs.

$$(A+B+C+D)/4 = 12.5$$

$$A+B+C+D = 50 \text{ lakhs} \text{---(i)}$$

Average price of first two costliest cars and the least priced car = 13 lakhs.

$$(A+B+D)/3 = 13$$

$$A+B+D = 39 \text{ lakhs} \text{---(ii)}$$

(ii) in (i)

$$39 + C = 50$$

$$C = 11 \text{ Lakhs.}$$

**16. Answer: E**

Let the score of Pawan is = x

So, the score of Aman is = x – 25

And the score of Suman is = x – 35

Then, according to the question,

$$= x = 75 + 57$$

$$= x = 132$$

So, the score of Pawan is = 132

Score of Aman is = 132 – 25 = 107

Score of Suman is = 132 – 35 = 97

Now, total marks of Aman, Suman and Raman is =  $3 \times 75 \Rightarrow 225$

Score of Raman is =  $225 - (107 + 97) = 21$

So, the average score of Suman and Raman is =  $(97 + 21)/2$

$$= 118/2 \Rightarrow 59$$

**17. Answer: B**

Age of 45 boys =  $45 \times 20$

$$= 900$$

when age of teacher included, =  $46 \times 21 = 966$

Hence teacher age =  $966 - 900$

$$= 66$$

**18. Answer: A**

Salary of P and Q be 9x and 13x.

$$(9x - 2000) : (13x - 2000) = 17 : 29$$

$$261x - 58000 = 221x - 34000$$

$$\Rightarrow x = 600$$

$$\text{Required average} = (9x + 13x)/2 = \text{Rs.}6600$$

**19. Answer: E**

$$(x + 4) * 6 + 22 = 7x$$

$$6x + 24 + 22 = 7x$$

$$x = 46$$

**20. Answer: B**

Initial weight of the class =  $39 * 26 = 1014$

New weight of the class =  $(26 + 9) * 40 = 1400$

Required average =  $(1400 - 1014)/9$

$$= 386/9$$

$$= 42.89 \text{ kg}$$

**21. Answer: A**

Weight of teacher =  $38 * 23 - 36 * 22 = 874 - 792 = 82 \text{ kg}$

Weight of HM =  $82 * 45/41 = 90 \text{ kg}$

**22. Answer: B**

$$A + O + G = 40 * 3 = 120 \text{ kg}$$

$$A - O = 12 \text{ kg}$$

$$A + G = 39 * 2 = 78 \text{ kg}$$

$$O = 120 - 78 = 42 \text{ kg}$$

$$A = O + 12 = 42 + 12 = 54 \text{ kg}$$

$$G = 78 - 54 = 24 \text{ kg}$$

**23. Answer: C**

$$\text{Total weight of class A} = 32 * 15 = 480 \text{ kg}$$

$$\text{Total weight of class B} = 47.75 * 12 = 573 \text{ kg}$$

$$\text{Required average} = (480 + 573)/(15 + 12) = 39 \text{ kg}$$

**24. Answer: C**

$$125/100 * a = b$$

$$c = a + b = a + 125/100 * a = 225a/100$$

$$d = 2 + c = 2 + 225a/100$$

$$\text{Hence, } a + b + c + d = 56$$

$$\Rightarrow a + 125/100 * a + 225a/100 + 2 + 225a/100 = 56$$

$$\Rightarrow a = 8$$

$$d = 2 + 225a/100 = 20$$

**25. Answer: E**

From the given values we can calculate, average weight of females only. Because total persons in the class (or) number of females in the classes were not given

**26. Answer: B**

$$\text{Total score in the 150 matches is} = 150 \times 30 = 4500$$

$$\text{Runs wrongly added is} = 60 + 110 = 170$$

$$\text{So, it is first deleted} = 4500 - 170 = 4330$$

$$\text{Now, rightly scored added} = 130 + 270 = 400$$

$$\text{So, the actual score is} = 4330 + 400 = 4730$$

$$\text{So, the percentage error is} = (4730 - 4500)/4730 \times 100$$

$$= 230/4730 \times 100 \approx 5\%$$

Hence, the required answer is = **5% (approx.)**

**27. Answer: C**

$$\text{Total age of 13 persons} = 13 * 45 = 585$$

$$\text{Total age of first six persons} = 6 * 48 = 288$$

$$\text{Total age of last six persons} = 6 * 40 = 240$$

$$\text{Age of 7}^{\text{th}} \text{ person} = 585 - 288 - 240 = 57 \text{ years}$$

**28. Answer: B**

$$\text{Age of 45 boys} = 45 * 20$$

$$= 900$$

$$\text{when age of teacher included,} = 46 * 21 = 966$$

$$\text{Hence teacher age} = 966 - 900$$

$$= 66$$

**29. Answer: A**

Salary of P and Q be  $9x$  and  $13x$ .

$$(9x - 2000): (13x - 2000) = 17: 29$$

$$261x - 58000 = 221x - 34000$$

$$\Rightarrow x = 600$$

$$\text{Required average} = (9x + 13x)/2 = \text{Rs.}6600$$

**30. Answer: E**

$$10 * 38 + x + x + 4 = 12 * 39$$

$$\Rightarrow x = 42$$

$$\text{Required average} = (42 + 46)/2 = 44\text{kg}$$

**31. Answer: C**

Let number of boys in a class =  $a$

Number of girls =  $a - 16$

According to question

$$100/3 \times a + 37.5 \times (a - 16) = 2800$$

$$(100/3 + 300/8) a = 2800 + 600$$

$$1700a/24 = 3400$$

$$a = 48$$

Answer is option C

**32. Answer: C**

As per the given information,

Let N be the sale on Friday = sale on Sunday

2N will be the sale on Saturday.

$$\text{Sale from Monday to Thursday} = 325 + 295.5 + 368.2 + 494.3 = 1483$$

$$\text{Total sale in the week} = 309.6 \times 7 = 2167.2$$

$$\text{Sale from Friday to Sunday} = 2167.2 - 1483 = 684.2$$

$$\text{Now, } N + 2N + N = 684.2$$

$$N = 684.2/4$$

$$N = 171.05$$

$$\text{Sale on Tuesday} = 295.5$$

$$\text{Sale on Saturday} = 171.05 \times 2 = 342.1$$

$$\text{Required difference} = (342.1 - 295.5)$$

$$= 46.6$$

**33. Answer: D**

Let the total number of participants are = x

Then the total fund will be = 80x

$$\text{Then } x \text{ of the participants contributed} = 80x - (80x \times 80/100)$$

$$= 80x - 64x$$

$$= 16x$$

$$\text{So, the required average is} = 16x/(2x/5)$$

$$= (16x \times 5)/2x$$

$$= 40$$

**34. Answer: B**

$$(P + Q + R + S + T)/5 = 81$$

$$\Rightarrow (P + Q) + 92 + 98 + T = 81 \times 5$$

$$\Rightarrow (64 \times 2) + 92 + 98 + T = 405$$

$$\Rightarrow T = 87$$

**35. Answer: A**

Let x be the total weight of newly included boys.

$$12 \times 152 + x = 156 \times 14$$

$$\Rightarrow x = 360$$

$$\text{Average height of the new boys} = 360/2 = 180\text{cm}$$

**36. Answer: D**

$$\text{Nila} + \text{Nithish} + \text{Nirmal} = 18 \times 3 = 54 \text{ years}$$

$$\text{Nithish} + \text{Nirmal} = 18 \times 2 = 36$$

$$\text{Nila} = 54 - 36 = 18$$

$$\text{Nithish} = 18 + 6 = 24$$

$$\text{Nirmal} = 36 - 24 = 12$$

$$\text{Required ratio} = 18:24:12$$

$$= 3:4:2$$

**37. Answer: E**

$$(x + 4) \times 6 + 22 = 7x$$

$$6x + 24 + 22 = 7x$$

$$x = 46$$

**38. Answer: D**

$$\text{Sum of weight of all 45 members} = 45 \times 27 = 1215 \text{ kg}$$

$$\text{Sum of weight of 30 members} = 30 \times 24 = 720 \text{ kg}$$

Sum of weight of 15 members =  $1215 - 720 = 495$  kg

Required average =  $495/15 = 33$  kg

**39. Answer: B**

Sum of ages after 4 years =  $27 \times 4 = 108$  years

Sum of present ages =  $108 - 4 \times 4 = 92$  years

$3a + 4a + 7a + 9a = 92$  years

$23a = 92$

So,  $a = 4$

Age of youngest person =  $3 \times 4 = 12$  years

**40. Answer: D**

Weight of teacher =  $(26.25 \times 36) - 35 \times 25 =$

$= 945 - 875$

$= 70$  kg

**41. Answer: B**

Average age of  $x$  members = 35

Sum of the total age of  $x$  members =  $35x$

$(35x - (12 + 24 + 10))/(x - 3) = 35 + 1$

$35x - 46 = 36x - 108$

$x = 62$

Therefore total members in the class  $x = 62$

**42. Answer: A**

Let total number of workers =  $x$

Therefore total salary of all the workers together =  $525x$

Total salary of supervisors of the company =  $24 \times 600 = 14400$

Remaining workers =  $x - 24$

Total salary of remaining persons =  $(x - 24) \times 480$

Therefore,

$14400 + (x - 24) \times 480 = 525x$

$14400 + 480x - 11520 = 525x$

$2880 = 45x$

$x = 64$

Total number of workers in the company = 64

**43. Answer: B**

Total temperature for the week =  $70.4 \times 7 = 492.8^\circ\text{C}$

Total temperature on Thursday and Friday =  $492.8 - 5 \times 55 = 217.8^\circ\text{C}$

Temperature on Thursday =  $x$

Temperature on Friday =  $x \times 125/100 = 1.25x$

$x + 1.25x = 217.8^\circ\text{C}$

$x = 96.8^\circ\text{C}$

**44. Answer: D**

For 1<sup>st</sup> 5kms = Rs.50

$6 - 10$  KMs =  $(50) \times (11/100) \times (5) = 27.5$

11 – Destination ->  $50 \times (12/100) = \text{Rs.6 per Km}$

Let 'x' be the distance travelled after the 10<sup>th</sup> kilometer.

$(50) + (50 \times (11/100) \times 5) + (50 \times (12/100) \times x) = 100$

$50 + 27.5 + 6 \times x = 100$

$77.5 + 6x = 100$

$6x = 22.5$

$x = 3.75$

Total Distance Travelled =  $10 + 3.75 = 13.75$  KMs

**45. Answer: A**

Total weight of the class =  $33 \times 18 = 594$

Total weight of first 16 persons =  $16 \times 14 = 224$

Total weight of last 16 persons =  $16 \times 22 = 352$

Weight of 17<sup>th</sup> person =  $594 - (224 + 352) = 18$

Therefore weight of the teacher =  $18 \times 3 = 54 \text{ kg}$

**46. Answer: B**

Sum of weight of  $(A + B + C + D + E) = (K + 12) \times 5 = 5K + 60$

Sum of weight of  $(C + E) = (K + 12 - 24) \times 2 = 2K - 24$

Sum of weight of  $(A + B + D) = (5K + 60) - (2K - 24) = 3K + 84$

Weight of F =  $(K + 12 - 10) \times 6 - (5K + 60) = K - 48$

According to question

$3K + 84 + K - 48 = 189 \times 4$

$4K = 720$

$K = 180$

Desired value =  $\frac{1}{2} \times 180 = 90$

**47. Answer: A**

Total age of 40 girls =  $40 \times 20 = 800$  years

Total age of the first 25 girls =  $25 \times 20 = 500$  years

Total age of the last 10 girls =  $10 \times 15 = 150$  years

The average of remaining 3 girls =  $\frac{150}{3} = 50$  years

**48. Answer: A**

$IT + HR = 117 \times 2 = 234 \text{ kg}$

$Sales + IT = 108 \times 2 = 216 \text{ kg}$

$HR + \text{finance} = 120 \times 2 = 240 \text{ kg}$

$HR + \text{Finance} + \text{Sales} + IT = 456 \text{ kg}$

$\text{Finance} + \text{Sale} = 456 - 234 = 222$

Required average =  $222/2 = 111 \text{ kg}$

**49. Answer: B**

Sum of weight of  $(\text{Ram} + \text{Rinni} + \text{Ronit} + \text{Ronny} + \text{Rocky}) = 42 \times 5 = 210 \text{ kg}$

Sum of weight of  $(\text{Ram} + \text{Rinni} + \text{Ronit} + \text{Ronny} + \text{Rocky} + \text{Ramu}) = (42 - 2.5) \times 6 = 237$

Weight of Ramu =  $237 - 210 = 27 \text{ kg}$

Average weight of  $(\text{Ram} + \text{Rinni} + \text{Ronit}) = 43.5 \times 3 = 130.5$

Sum of weight of  $(\text{Ronny} + \text{Rocky}) = 210 - 130.5 = 79.5$

Weight of Ronny =  $79.5 - 37.5 = 42 \text{ kg}$

Required average =  $(42 + 27)/2 = 34.5 \text{ kg}$

**50. Answer: B**

$20x - 25 + y = 20 \times (x + 1)$

$20x - 25 + y = 20x + 20$

$y = 45 \text{ kg}$

## Profit and Loss

1. A shopkeeper gives two successive discounts of 10% and 20% on the marked price of shirt. If he

received the profit is  $\frac{1}{10}$  of the total discount, then find the approximate profit percentage?

A. 2%



B.4%

C.6%

D.8%

E.10%

2. The marked price of the bulb is 60% more than its cost price. A shopkeeper offers a discount of  $x\%$  on marked price of the bulb while he gets the profit of 36%. Find the value of  $x$ ?

A.10

B.15

C.18

D.12

E.20

3. The shopkeeper sold the watch at the profit of 20% and the cost price of watch is Rs.3600. He earns  $x\%$  profit on pendrive costing Rs.3000. If the overall profit on selling both watch and pendrive is 25%, then find the value of  $x$ ?

A.24%

B.27%

C.29%

D.31%

E.33%

4. Sum of the selling price of mobile and watch is Rs.9000. Ratio of the discount offered by shopkeeper on mobile and watch is 1:3. If the sum of the marked

price of mobile and watch is Rs.15000, then find the discount offered by shopkeeper on watch?

A.Rs.4500

B.Rs.4200

C.Rs.3600

D.Rs.4800

E.Rs.33005 . Ragu, Ragava and Rishi started the business and invested their money in the ratio of  $1/12:1/15:1/9$  and for time period in the ratio of  $1/8:1/6:1/4$ . If Rishi's share out of profit at the end of year is Rs.4800, then what is the total profit of the business?

A.Rs.8220

B.Rs.8320

C.Rs.8420

D.Rs.8520

E.Rs.88206. What will be the percentage profit after selling the Perfume at Rs. $x$  if there is a loss of 20% when the perfume is sold at two-third of  $x$ ?

A.20%

B.25%

C.30%

D.40%

E.35%

7. Ram and Janu sold their TV at Rs.14000 each, but Ram faced a loss of 10%, while Janu gained 30%.

**What is the ratio of the cost price of the TV sold by Ram to that of Janu?**

- A.12: 7**
- B.13: 9**
- C.14: 3**
- D.19: 7**
- E.None of these**

**8. Ratio of the marked to cost price of the Plane is 6:5 and the ratio of the marked to selling price of the plane is 12:11. What is the profit percentage of the plane?**

- A.8%**
- B.10%**
- C.6%**
- D.15%**
- E.12%**

**9. The shopkeeper offers a discount of 20% on marked price of laptop and the ratio of the marked price of the laptop to mobile is 3:1. If the shopkeeper offers a discount of 10% on marked price of mobile while he gets the profit of 20% and the selling price of the laptop is Rs.14400, then find the cost price of the mobile?**

- A.Rs.4000**
- B.Rs.4500**
- C.Rs.5000**
- D.Rs.6000**

**E.Rs.3000**

**10. A seller makes 10% profit when he gives 12% discount on marked price of his pencil box. After sometimes, he begins to provide 10% discount on its marked price. Now what is his percentage of profit?**

- A.12%**
- B.12.5%**
- C.13%**
- D.13.5%**
- E.None of these**

**11. Dress A is sold at 10% discount and earned a profit of Rs.525. Dress B is sold at 20% profit for Rs.840. Find the marked price of Dress A, if Cost price of dress A is 5% more than the cost price of Dress B.**

- A.Rs.1400**
- B.Rs.1700**
- C.Rs.2100**
- D.Rs.2900**
- E.None of these**

**12. A shopkeeper earned a profit equal to cost price of 3 items while selling 18 items at actual profit. If each item is marked 25% above its actual cost and Rs.40 discount is given while selling then what is the difference between Cost price and profit.**

- A.Rs.720**
- B.Rs.240**

C.Rs.400

D.Rs.360

E.Rs.480

13. The selling price of the Laptop is 40% more than the selling price of the mobile and the selling price of the watch is 40% less than the selling price of the mobile. If the selling price of the laptop is Rs.4000 more than the selling price of the mobile, then what is the average of the selling price of the watch and mobile?

A.Rs.2000

B.Rs.4000

C.Rs.6000

D.Rs.5000

E.None of these

14. If the profit earned on selling an article for Rs.2400 is 75% of the loss incurred on selling the same article for Rs.1700, then find the selling price of the article earn a profit of 20%?

A.Rs.2540

B.Rs.2580

C.Rs.2590

D.Rs.2500

E.Rs.2520

15. A toy was sold by the seller after giving a discount of 24% for Rs.114. What is the cost price of the toy if the ratio of marked price to cost price is 5: 7?

A.Rs.200

B.Rs.205

C.Rs.208

D.Rs.210

E.None of these

16. The marked price of cycle and Watch is Rs.2800 and Rs.3000 respectively. If the shopkeeper allows the discount on marked price of the cycle is Rs.800 which is 80% of the discount of watch, then what is the difference between the selling price of watch and cycle?

A.Rs.500

B.Rs.550

C.Rs.600

D.Rs.450

E.None of these

17. The marked price of the Doll is 25% more than its cost price. The shopkeeper offers the discount of Rs.360 on marked price of doll. If the doll sold for Rs.200 more while he gets the profit of 15%, then find the marked price of the doll?

A.Rs.2000

B.Rs.4000

C.Rs.3500

D.Rs.2500

E.Rs.3000

18. The marked price of the table is 25% more than the cost price of the table and the shopkeeper offers two successive discounts of 20% and 10% respectively on marked price of the table. If the shopkeeper gets the loss of Rs.1200, then what is the selling price of the table?

- A.Rs.10800
- B.Rs.9600
- C.Rs.11400
- D.Rs.13500
- E.None of these

19. The marked price of a laptop is Rs.16000 and the shopkeeper bought a laptop at the rate of Rs.12500. If the shopkeeper offers a discount of 10% on marked price of the laptop, then what is the percentage of profit earned by shopkeeper?

- A.14.5%
- B.15.2%
- C.16.8%
- D.17.4%
- E.18.9%

20. If the profit earned on selling an article for Rs.2400 is 75% of the loss incurred on selling the same article for Rs.1700, then find the selling price of the article earn a profit of 20%?

- A.Rs.2540
- B.Rs.2580

C.Rs.2590

D.Rs.2500

E.Rs.2520

21. In the Diwali sale, Dinesh expects a profit of 35% on the cost price of his fruits. What will be his profit, if he sells the fruits worth Rs.4050 in a week?

- A.Rs.1050
- B.Rs.2050
- C.Rs.3000
- D.Rs.2800
- E.None of these

22. If a toy is sold at 10% discount, then the amount gained is Rs.80, while if the discount given was 5%, then the amount gained is 100. What is the marked price of the toy?

- A.Rs.200
- B.Rs.400
- C.Rs.500
- D.Rs.700
- E.None of these

23. Renuka purchased a laptop for Rs.10200 from flipkart. If the flipkart sold the laptop at the profit of 20% and the flipkart also offers 20% discount on marked price of the laptop, then what is the difference between the cost and marked price of the laptop?

A.Rs.4250

**B.Rs.4450**

**C.Rs.4860**

**D.Rs.4550**

**E.None of these**

**24. In the Diwali sale, Dinesh expects a profit of 35% on the cost price of his fruits. What will be his profit, if he sells the fruits worth Rs.4050 in a week?**

**A.Rs.1050**

**B.Rs.2050**

**C.Rs.3000**

**D.Rs.2800**

**E.None of these**

**25. A toy was sold by the seller after giving a discount of 24% for Rs.114. What is the cost price of the toy if the ratio of marked price to cost price is 5: 7?**

**A.Rs.200**

**B.Rs.205**

**C.Rs.208**

**D.Rs.210**

**E.None of these**

**26. After selling a Toy at 50% profit, a seller earned Rs.300. Find the marked price of the toy, if the discount of 20% is given by the seller.**

**A.Rs.1000**

**B.Rs.1100**

**C.Rs.1125**

**D.Rs.2500**

**E.None of these**

**27. The profit earned after selling the Toy for Rs.340 is the same as loss incurred after selling the Toy for Rs.278. What is the selling price of the toy at 20% profit?**

**A.Rs.370.8**

**B.Rs.378.8**

**C.Rs.376.8**

**D.Rs.380.8**

**E.None of these**

**28. Rahul spends 12% of the salary on transport, 20% on shopping, 40% on house rent and 50% of the remaining on education fee. Now he left with him is Rs.2800. Find Rahul's salary?**

**A.Rs.30000**

**B.Rs.20000**

**C.Rs.40000**

**D.Rs.50000**

**E.None of these**

**29. A shopkeeper gives discount of 12.5% on an article and charged 10% for service tax and then he sells article at Rs. 385. Find the selling price of article when discount is 25%?**

**A.Rs. 240**

**B.Rs. 320**

**C.Rs. 360**

**D.Rs. 300**

E.None of these

30. Aman buys two articles for Rs. 960. He sells article X at 37.5% loss and article Y at 12.5% profit. In overall transaction there is no profit no loss. Find 50% of cost price of article Y?

A.Rs. 720

B.Rs. 360

C.Rs. 420

D.Rs. 840

E.None of these

31. A shopkeeper bought an article at 25% discount. Then he sets a different marked price for the article and allow a discount of 10% and earns a profit of 42%. Find the percentage change in marked price sets by shopkeeper with respect to original marked price of article.

A.17.33%

B.20%

C.19.33%

D.21.33%

E.None of these

32. A shopkeeper sells two refrigerators one at a loss of 25% and the other at a profit of 22%. If the cost price of the loss and profit refrigerators are in the ratio of 3 : 4 respectively. Then find how much profit percentage he made on selling both the refrigerators?

A.8 4/5%

B.1 6/7%

C.4 4/5%

D.6 2/3%

E.None of these

33. A shop owner sold one-third of his item at 20% profit, one-sixth of the item at 20% loss and the rest of the item is sold at the cost price. Find how much profit or loss percentage in the whole transaction?

A.7 2/5 %

B.6 2/3%

C.3 1/3%

D.4 3/4%

E.None of these

34. The profit percent earned by Kavin for a chair by selling it for Rs.5800 is equal to the loss percent incurred by Kamal by selling the same priced chair for Rs.2200. At what price should the chair be sold to make 40% profit?

A.Rs.5000

B.Rs.5200

C.Rs.5400

D.Rs.5600

E.None of these

35. In a Diwali sale, a seller plans to sell his toy at 10% discount and he earned Rs.250. If he sells the same toy at a discount of 8%, then he earns Rs.300. What is the marked price of the toy?

A.Rs.2000

B.Rs.2200

C.Rs.2100

D.Rs.2430

E.Rs.2500

36. Mani sold his radio after giving two successive discounts of 10% and d% and sold the radio for Rs.2736. Find the value of d if the marked price of the radio is Rs.3200.

A.3%

B.5%

C.7%

D.9%

E.None of these

37. A calculator is sold at a profit of 20% at the actual cost price. If the manufacturer makes a profit of 10%, then find the profit percent made by the seller. (approx..)

A.9%

B.18%

C.25%

D.34%

E.56%

38. Ramesh resells his laptop with 20% discount, after he marked the price 8% more than its cost price. Find his loss percent.

A.13.6%

B.12.5%

C.10.8%

D.9.7%

E.None of these

39. A bought two bicycle he sold the first bicycle at a profit of 40% and the second bicycle at a loss of 15%. If the selling price of both the bicycle is equal i.e. Rs 7140. Then find his overall profit or loss percentage.

A.7.82%

B.6.66%

C.5.65%

D.4.77%

E.5.77%

40. The shopkeeper gives  $33\frac{1}{3}\%$  of discount on marked price of Bottle while he gets the loss of 20%. If he sold at the marked price, then he got the profit of Rs.5, find the cost price of the bottle?

A.Rs.30

B.Rs.20

C.Rs.25

D.Rs.35

E.None of these

41. The marked price of cycle and Watch is Rs.2800 and Rs.3000 respectively. If the shopkeeper allows the discount on marked price of the cycle is Rs.800 which is 80% of the discount of watch, then what is the

difference between the selling price of watch and cycle?

A.Rs.500

B.Rs.550

C.Rs.600

D.Rs.450

E.None of these

42. A shopkeeper marked an article at 50% above the cost price and sold it after two successive discounts of 10% and 20% respectively. If the shopkeeper gets the profit of Rs.960, then find the marked price of the article?

A.Rs.18000

B.Rs.20000

C.Rs.15000

D.Rs.22000

E.Rs.12000

43. If an article is sold after allowed two successive discounts of  $x\%$  and 20% and the profit earned after selling the article is  $x\%$ . If the ratio of the cost price to marked price of the article is 36:55 and the cost price of the article is Rs.7200, then find the value of  $x$ ?

A.10%

B.15%

C.20%

D.5%

E.None of these

44. A shopkeeper gives a discount of 10% on marked price of every shirt and when he sells 12 shirts he gives one shirt free. What is the approximate real rate of discount offered by shopkeeper?

A.15%

B.17%

C.19%

D.21%

E.23%

45. Ratio of the marked price of shoe and bag is 2:1. If there is a discount of  $x\%$  on marked price of the shoe and the discount of 40% on marked price of the bag and total discount got for both bag and shoe is 30%. Find the value of  $x$ ?

A.20%

B.25%

C.30%

D.35%

E.None of these

46. An article was purchased for Rs. 44900. Its price was marked up by 30%. It was sold at a discount of 10%. Find the selling price of the article?

A.52355

B.52735

C.52566

D.52533



E.52463

47. An article is marked up by 80% and sold after successive discounts of 25% and x% thereby earned a profit of 15%. Find the value of x?

A.14.81%

B.12.61%

C.12.44%

D.11.28%

E.16.32%

48. A shopkeeper has three different mobiles Nokia, Samsung and Redmi and the total price of all the mobiles together is Rs.109000. The ratio of the cost price of Nokia to Samsung is 5:7 and the ratio of the cost price of Redmi to Nokia is 5:7. Find the cost price of Nokia?

A.Rs.35000

B.Rs.36000

C.Rs.42000

D.Rs.28000

E.Rs.56000

49. A shopkeeper sold SD card at the profit of 8% and Pendrive at a loss of 10% thus making a profit of Rs.6. If he had sold SD card at 10% loss and Pendrive at 8% profit thus he suffers a loss of Rs.30, then find the cost price of SD card?

A.Rs.500

B.Rs.2200

C.Rs.900

D.Rs.1800

E.None of these

50. Harshit purchased an air conditioner and a washing machine for Rs. 19,500 and Rs. 15,200 respectively. He sold the air conditioner at a profit of 18% and the washing machine at a loss of 31%. Find the overall profit or loss percentage made in the business.(Approximately).

A.4.85% profit

B.3.50% loss

C.5.75% profit

D.8.20% loss

E.None of these

## Profit and Loss – Answer and Explanation

1. **Answer: B**

MP of shirt = x

SP of shirt =  $x * 90/100 * 80/100 = 0.72x$

Discount =  $x - 0.72x = 0.28x$

Profit =  $0.28x/10 = 0.028x$

CP of shirt =  $0.72x - 0.028x = 0.692x$

Required percentage =  $0.028x/0.692x * 100$

= 4%

2. **Answer: B**

CP of bulb = 100a

$$\text{MP of bulb} = 100a * 160/100 = 160a$$

$$160a * (100 - x)/100 = 100a * 136/100$$

$$x = 15$$

**3. Answer: D**

$$\text{Overall profit} = 25/100 * (3600 + 3000) = 1650$$

$$\text{Profit on Watch} = 3600 * 20/100 = 720$$

$$\text{Profit on Pendrive} = 1650 - 720 = 930$$

$$x = 930/3000 * 100$$

$$= 31\%$$

**4. Answer: A**

$$\text{Discount of mobile and watch} = 15000 - 9000 = 6000$$

$$3x + x = 6000$$

$$x = 1500$$

$$\text{Discount of watch} = 1500 * 3 = 4500$$

**5. Answer: D**

$$\text{Ratio of the investment of Ragu, Ragava and Rishi} =$$

$$1/12:1/15:1/9$$

$$= 15:12:20$$

$$\text{Ratio of the time period of Ragu, Ragava and Rishi} =$$

$$1/8:1/6:1/4$$

$$= 3:4:6$$

$$\text{Ratio of the profit share of Ragu, Ragava, Rishi} =$$

$$15*3:12*4:20*6$$

$$= 45:48:120$$

$$= 15:16:40$$

$$\text{Total profit of the business} = 71/40 * 4800$$

$$= \text{Rs.}8520$$

$$x * 120/100 = 930$$

$$x = 775$$

**6. Answer: A**

$$\text{Original SP} = x$$

$$\text{New SP} = 2/3 * x$$

$$20/100 = (CP - 2/3 * x)/CP$$

$$CP/5 = CP - 2/3 * x$$

$$CP = 5CP - 10x/3$$

$$3CP = 15CP - 10x$$

$$10x = 12CP$$

$$x/CP = 6/5$$

$$\text{Profit percentage} = 6k - 5k/5k * 100$$

$$= 20\%$$

**7. Answer: B**

$$\text{CP of TV of Ram} = x$$

$$\text{CP of TV of Janu} = y$$

$$x * 90/100 = y * 130/100$$

$$\Rightarrow x:y = 13:9$$

**8. Answer: B**

$$\text{MP} = 6x$$

$$\text{CP} = 5x$$

$$\text{SP} = 11/12 * 6x = 5.5x$$

$$\text{Required percentage} = (5.5x - 5x)/5x * 100$$

$$= 10\%$$

**9. Answer: B**

$$\text{MP of laptop} = 100/80 * 14400 = 18000$$

$$\text{MP of mobile} = 18000 * 1/3 = 6000$$

$$\text{SP of mobile} = 6000 * 90/100 = 5400$$

$$\text{CP of mobile} = 5400 * 100/120 = 4500$$

**10. Answer: B**

$$\text{Let marked price} = \text{Rs.}100$$

$$\text{SP} = 100 * 88/100 = \text{Rs.}88$$

$$\text{CP} = 88/110 * 100 = \text{Rs.}80$$

$$\text{New selling price} = 100 * 90/100 = \text{Rs.}90$$

$$\text{New profit} = 90 - 80 = \text{Rs.}10$$

$$\text{Profit \%} = 10/80 * 100 = 12.5\%$$

**11. Answer: A**

$$\text{MP of Dress A} = x$$

$$\text{CP of Dress B} = 840/1.2 = \text{Rs.}700$$

$$\text{CP of Dress A} = 1.05 * 700 = \text{Rs.}735$$

$$\Rightarrow 735 + 525 = (100 - 10)\% \text{ of } x$$

$$\Rightarrow x = \text{Rs.}1400$$

**12. Answer: C**

Profit earned while selling 18 items = cost price of 3 items

$$18(\text{SP} - \text{CP}) = 3\text{CP}$$

$$18\text{SP} - 18\text{CP} = 3\text{CP}$$

$$18\text{SP} = 21\text{CP}$$

$$\text{Profit percentage} = 16.67\%$$

$$\text{Let cost price of a product} = 6x$$

$$\text{Marked price} = 125\% \text{ of } 6x = 7.5x$$

$$\text{Selling price} = 116.67\% \text{ of } 6x = 7x$$

$$\text{Discount offered} = \text{Rs.}40$$

$$7.5x - 7x = 40$$

$$0.5x = 40$$

$$x = 80$$

$$\text{Difference between CP and profit} = 6x - x = 5x = \text{Rs.}400$$

**13. Answer: E**

$$\text{Let SP of mobile} = 500x$$

$$\text{SP of laptop} = 500x * 140/100 = 700x$$

$$\text{SP of watch} = 500x * 60/100 = 300x$$

$$700x - 500x = 4000$$

$$x = 20$$

$$\text{SP of watch} = 300 * 20 = \text{Rs.}6000$$

$$\text{SP of mobile} = 500 * 20 = \text{Rs.}10000$$

$$\text{Average} = (6000 + 10000)/2 = 16000/2 = 8000$$

**14. Answer: E**

$$2400 - \text{CP} = (\text{CP} - 1700) * 75/100$$

$$9600 - 4\text{CP} = 3\text{CP} - 5100$$

$$7\text{CP} = 14700$$

$$\text{CP} = 2100$$

$$\text{Required SP} = 2100 * 120/100 = \text{Rs.}2520$$

**15. Answer: D**

$$\text{Let } x = \text{Marked price of the toy}$$

$$(100 - 24)\% \text{ of } x = 114$$

$$\Rightarrow x = 150$$

$$\text{Required Cost price} = 7/5 * 150 = \text{Rs.}210$$

**16. Answer: E**

$$\text{MP of cycle} = \text{Rs.}2800$$

$$\text{MP of Watch} = \text{Rs.}3000$$

$$\text{SP of Cycle} = 2800 - 800 = \text{Rs.}2000$$

$$\text{Discount of watch} = 800 * 100/80 = \text{Rs.}1000$$

$$\text{SP of watch} = 3000 - 1000 = \text{Rs.}2000$$

$$\text{Difference} = 2000 - 2000 = 0$$

**17. Answer: A**

$$\text{CP of doll} = 4x$$

$$\text{MP of doll} = 4x * 125/100 = 5x$$

$$\text{Initial SP of doll} = 5x - 360$$

$$\text{New sp of doll} = 5x - 360 + 200 = 5x - 160$$

$$(5x - 160) * 100/115 = 4x$$

$$500x - 16000 = 460x$$

$$x = 400$$

$$\text{MP of Doll} = 400 * 5 = 2000$$

**18. Answer: A**

$$\text{CP of table} = 4x$$

$$\text{MP of table} = 4x * 125/100 = 5x$$

$$5x * 80/100 * 90/100 = 4x - 1200$$

$$1200 = 0.4x$$

$$x = 3000$$

$$\text{CP of table} = 4 * 3000 = 12000$$

$$\text{SP of table} = 12000 - 1200 = 10800$$

**19. Answer: B**

$$\text{CP} = \text{Rs.}12500$$

$$\text{MP} = 16000$$

$$\text{SP} = 16000 * 90/100 = 14400$$

$$\text{Profit} = (14400 - 12500)/12500 * 100 = 15.2\%$$

**20. Answer: E**

$$2400 - \text{CP} = (\text{CP} - 1700) * 75/100$$

$$9600 - 4\text{CP} = 3\text{CP} - 5100$$

$$7\text{CP} = 14700$$

$$\text{CP} = 2100$$

$$\text{Required SP} = 2100 * 120/100 = \text{Rs.}2520$$

**21. Answer: A**

$$\text{CP} = (100/135) * 4050 = \text{Rs.}3000$$

$$\text{Profit} = 4050 - 3000 = \text{Rs.}1050$$

**22. Answer: B**

$$\text{Marked price of the toy} = x$$

$$(100 - 10)/100 * x - 80 = (100 - 5)/100 * x - 100$$

$$\Rightarrow x = \text{Rs.}400$$

**23. Answer: A**

$$\text{SP of laptop} = \text{Rs.} 10200$$

$$\text{CP} = 100/120 * 10200 = \text{Rs.} 8500$$

$$\text{MP} * 80/100 = \text{Rs.} 10200$$

$$\text{MP} = \text{Rs.} 12750$$

$$\text{Difference} = 12750 - 8500 = \text{Rs.} 4250$$

**24. Answer: A**

$$\text{CP} = (100/135) * 4050 = \text{Rs.}3000$$

$$\text{Profit} = 4050 - 3000 = \text{Rs.}1050$$

**25. Answer: D**

$$\text{Let } x = \text{Marked price of the toy}$$

$$(100 - 24)\% \text{ of } x = 114$$

$$\Rightarrow x = 150$$

$$\text{Required Cost price} = 7/5 * 150 = \text{Rs.}210$$

**26. Answer: C**

$$\text{CP} = 300/50\% = \text{Rs.}600$$

$$SP = 600 + 300 = \text{Rs.}900$$

$$MP = 900/(100\% - 20\%) = \text{Rs.}1125$$

**27. Answer: A**

$$340 - CP = CP - 278$$

$$CP = 309$$

$$SP \text{ of toy at the profit of } 20\% = 309 * 120/100 = \text{Rs.}370.8$$

**28. Answer: B**

$$\text{Salary} = 100x$$

$$\text{Transport} + \text{Shopping} + \text{House rent} = 12x + 20x + 40x = 72x$$

$$\text{Remaining} = 100x - 72x = 28x$$

$$28x * 50/100 = 2800$$

$$x = 200$$

$$\text{Salary} = 100 * 200 = 20000$$

**29. Answer: D**

$$\text{Let the MRP of article} = a$$

According to question

$$a * 7/8 * 11/10 = 385$$

$$77a/80 = 385$$

$$\text{So, } a = 385 * 80/77 = 400$$

$$\text{When discount is } 25\%, \text{ MRP} = 75\% \text{ of } 400 = \text{Rs. } 300$$

**30. Answer: B**

There is no profit and no loss overall so

$$3/8 \text{ of } X = 1/8 Y$$

$$X/Y = 1/3$$

$$\text{Cost price of } Y = 3/4 * 960 = 720$$

$$\text{Required value} = 50\% \text{ of } 720 = \text{Rs.}360$$

**31. Answer: E**

$$\text{Let the original marked price of article} = 100a$$

$$\text{Price at which shopkeeper bought the article} = 75\% \text{ of } 100a = 75a$$

$$\text{Price at which shopkeeper sells the article} = 75a * 1.42 = 106.5a$$

$$\text{Marked price set by shopkeeper} = 106.5a/90 * 100 = 118.333a$$

$$\text{Required \% change} = (118.333a - 100a)/100a * 100 = 18.33\%$$

**32. Answer: B**

$$\text{Cost price of both refrigerator is in ratio} = 3 : 4$$

$$\text{Let the cost price of first refrigerator} = \text{Rs. } 300$$

$$\text{And the cost price of second refrigerator} = \text{Rs. } 400$$

Then, according to the question,

$$\begin{aligned} \text{Selling price of first refrigerator} &= 300 - (25/100 * 300) \\ &= 300 - 75 \Rightarrow \text{Rs. } 225 \end{aligned}$$

$$\begin{aligned} \text{Selling price of second refrigerator} &= 400 + (22/100 * 400) \\ &= 400 + 88 \Rightarrow \text{Rs. } 488 \end{aligned}$$

$$\text{Now, total cost price of both refrigerator} = 300 + 400 = \text{Rs. } 700$$

$$\text{And selling price of both refrigerator} = 225 + 488 = \text{Rs. } 713$$

$$\text{So, the required profit percentage is} = (713 - 700)/700 * 100 \Rightarrow 1 \frac{6}{7}\%$$

**33. Answer: C**

Let the cost price of the whole item is = Rs.  $x$

So, cost price of one-third item is = Rs.  $x/3$

And the cost price of one-sixth of item is = Rs.  $x/6$

Then, according to the question,

Total selling price of the item is,

$$= (x/3 \times 120/100) + (x/6 \times 80/100) + x/2$$

$$= 6x/15 + 4x/30 + x/2$$

$$= (12x + 4x + 15x)/30$$

$$= 31x/30$$

So, the required profit percentage is =  $(31x/30 - x)/x \times 100$

$$= x/30x \times 100$$

$$= 3 \frac{1}{3}\%$$

**34. Answer: D**

Let the CP of the chair be  $x$ .

$$(5800 - x)/x \times 100 = (x - 2200)/x \times 100$$

$$\Rightarrow x = \text{Rs. } 4000$$

Required SP = 140% of  $x$  = Rs. 5600

**35. Answer: E**

Let  $x$  be the marked price of the toy.

$$0.90x - 250 = 0.92x - 300$$

$$\Rightarrow x = \text{Rs. } 2500$$

**36. Answer: B**

$$3200 \times (100 - 10/100) \times (100 - d)/100 = 2736$$

$$\Rightarrow d = 5\%$$

**37. Answer: A**

Let CP = Rs. 100

Manufacturer makes 10% profit on CP = Rs. 110

Overall profit = 20% = Rs. 120

Profit % made by the seller =  $(120 - 110)/110 \times 100 \approx 9\%$

**38. Answer: A**

Let CP = Rs. 100 and MP =  $108/100 \times x$  = Rs. 108

$$SP = (1 - 20/100) \times 108 = \text{Rs. } 86.4$$

$$\text{Loss \%} = (100 - 86.4)\% = 13.6\%$$

**39. Answer: E**

Let the CP of 1<sup>st</sup> bicycle be  $Y$

And the CP of 2<sup>nd</sup> bicycle be  $Z$

CP of 1<sup>st</sup> bicycle,

$$SP = CP \times (100 + P)/100$$

$$\text{Or, } 7140 = Y \times 140/100$$

$$Y = \text{Rs. } 5100$$

CP of 2<sup>nd</sup> bicycle,

$$SP = CP \times (100 - L)/100$$

$$\text{Or, } 7140 = Z \times 85/100$$

$$Z = \text{Rs. } 8400$$

Thus, total CP of two bicycle = Rs.  $(5100 + 8400)$  = Rs. 13500

And, total SP of two bicycle = Rs.  $(7140 + 7140)$  = Rs. 14280

So, overall profit % =  $780/13500 \times 100 = 5.77\%$

**40. Answer: C**

$$MP \times 200/300 = CP \times 80/100$$

$$MP/CP = 6/5$$

$$6k = 5k + 5$$

$$k = 5$$

$$CP \text{ of bottle} = 5 * 5 = 25$$

**41. Answer: E**

$$MP \text{ of cycle} = \text{Rs.}2800$$

$$MP \text{ of Watch} = \text{Rs.}3000$$

$$SP \text{ of Cycle} = 2800 - 800 = \text{Rs.}2000$$

$$\text{Discount of watch} = 800 * 100/80 = \text{Rs.}1000$$

$$SP \text{ of watch} = 3000 - 1000 = \text{Rs.}2000$$

$$\text{Difference} = 2000 - 2000 = 0$$

**42. Answer: A**

$$CP * 150/100 * 90/100 * 80/100 = CP + 960$$

$$0.08 CP = 960$$

$$CP = 12000$$

$$MP = 12000 * 150/100$$

$$= 18000$$

**43. Answer: A**

$$11000 * (100 - x)/100 * 80/100 = 7200 * (100 + x)/100$$

$$8800/7200 = (100 + x)/(100 - x)$$

$$720000 + 7200x = 880000 - 8800x$$

$$x = 10\%$$

**44. Answer: B**

$$MP \text{ of one shirt} = x$$

$$SP \text{ of shirt} = 12x * 90/100 = 10.8x$$

$$\text{Real discount} = ((12 + 1)x - 10.8x)/(12 + 1)x * 100$$

$$= 17\%$$

**45. Answer: B**

$$SP \text{ of bag} = 60/100 * a = 3a/5$$

$$\text{Total SP of bag and Shoe} = 3a * 70/100 = 21a/10$$

$$SP \text{ of shoe} = 21a/10 - 3a/5$$

$$= 15a/10 = 3a/2$$

$$\text{Discount of shoe } x = 100 - (3a/2 * 100/2a)$$

$$= 25\%$$

**46. Answer: D**

$$\text{Cost price} = 44900$$

$$\text{marked up by } 30\%$$

$$\text{so the marked price} = 130\% \text{ of } 44900$$

$$\text{marked price} = 58370$$

$$\text{now gave } 10\% \text{ discount}$$

$$\text{therefore the selling price} = 90\% \text{ of marked price}$$

$$= 90\% \text{ of } 58370$$

$$= 52533$$

**47. Answer: A**

$$\text{Let cost price of the product} = 100a$$

$$\text{Marked price of the product} = 180\% \text{ of } 100a = 180a$$

$$\text{Profit} = 15\%$$

$$\text{Profit} = 15\% \text{ of } 100a = 15a$$

$$\text{Therefore selling price} = 100a + 15a = 115a$$

$$115a = 180a ((100 - 25)/100) ((100 - x)/100)$$

$$115 = 135((100 - x)/100)$$

$$2300 = 2700 - 27x$$

$$27x = 2700 - 2300$$

$$27x = 400$$

$$x=14.81\%$$

Discount offered while selling  $x=14.81\%$

**48. Answer: A**

$$N + K + R = 109000$$

Ratio of the CP of Nokia and Samsung = 5:7

Ratio of the CP of Redmi and Nokia = 5:7

Ratio of the CP of Nokia, Samsung and Redmi =  
35:49:25

$$\begin{aligned}\text{CP of Nokia} &= 35/109 * 109000 \\ &= 35000\end{aligned}$$

**49. Answer: E**

Let cost price of SD card =  $100x$

Cost price of Pendrive =  $100y$

From the given statements,

$$8x - 10y = 6$$

$$8y - 10x = -30$$

Solving this equations, we get  $x=7$ ,  $y=5$

$$\text{Cost price of SD card} = 100x = \text{Rs. } 700$$

**50. Answer: B**

Total cost price of air conditioner and washing machine is,

$$= 19,500 + 15,200 \Rightarrow \text{Rs. } 34,700$$

$$\begin{aligned}\text{Now, profit made on air conditioner is} &= 19,500 \times 18/100 \\ &= \text{Rs. } 3510\end{aligned}$$

$$\begin{aligned}\text{So, selling price of air conditioner is} &= 19,500 + 3510 \\ &= \text{Rs. } 23,010\end{aligned}$$

$$\begin{aligned}\text{Now, loss on washing machine is} &= 15,200 \times 31/100 \\ &= \text{Rs. } 4712\end{aligned}$$

$$\begin{aligned}\text{So, selling price of washing machine is} &= 15,200 - 4712 \\ &= \text{Rs. } 10,488\end{aligned}$$

$$\begin{aligned}\text{Total selling price of both the items is} &= 23,010 + 10,488 \\ &= \text{Rs. } 33,498\end{aligned}$$

$$\begin{aligned}\text{Thus, the overall loss on both items is} &= 34,700 - 33,498 \\ &= \text{Rs. } 1202\end{aligned}$$

$$\begin{aligned}\text{And the overall loss percentage is} &= 1202/34,700 \times 100 \approx \\ &3.50\% \text{ loss}\end{aligned}$$

## Partnership

**1. Vimal and Amal started the business with the investment of Rs.3000 and Rs.4000 respectively. After some months, Diya enter into partnership with the investment of Rs.3000. At the end of year, Vimal's share is 40% of the total profit of the business, after how many months did Diya invest her amount?**

**A. 4 months**

**B. 2 months**

**C. 8 months**

**D. 7 months**

**E. 10 months**

**2. Virat and Anushka together started a business with the initial investment of Rs.8000 and Rs.16000 respectively and the time period of investment for**



**Virat and Anushka in the ratio of 4:3. If the profit of Virat is Rs.4000, then find the profit of Anushka?**

**A.Rs.9000**

**B.Rs.3000**

**C.Rs.6000**

**D.Rs.12000**

**E.None of these**

**3. A started the business with the investment of Rs.6000. After 4 months, B joined him with the investment is 25% more than the initial investment of A. At the end of year, A received Rs.2700 as profit share out of the total profit, then find the profit share of B?**

**A.Rs.2250**

**B.Rs.2450**

**C.Rs.2500**

**D.Rs.2000**

**E.None of these**

**4. Nisha, Manisha and Oviya started the business with the investment in the ratio of 1/3:4/5:5/6 respectively. After 6 months Manisha left the business. At the end of year, the total profit of the business is Rs.14100, find the profit of Nisha?**

**A.Rs.2700**

**B.Rs.2800**

**C.Rs.2400**

**D.Rs.3000**

**E.Rs.3200**

**5. A and B started the business with the investment of Rs.4200 and Rs.4800 respectively. After 3 years, C joined the business with the investment of Rs.4000. At the end of 12 years, the total profit of the business is Rs.7200. Find the profit of B?**

**A.Rs.2400**

**B.Rs.2600**

**C.Rs.2880**

**D.Rs.3000**

**E.Rs.3200**

**6. There are two partners P and Q enters into a partnership with the capital of Rs.(x + 1000) and Rs.(x + 3000) respectively. After 5 months, R joined him with the capital of Rs.(x + 7000). The ratio of the profit shares of P, Q and R at the end of one year is 2: 3: 5 respectively. Find the sum of the capitals invested by P, Q and R together.**

**A.Rs.10000**

**B.Rs.20000**

**C.Rs.30000**

**D.Rs.40000**

**E.None of these**

**7. Arjun invested Rs.500 while Badri invested Rs.800 in a partnership business. After 1 year, Arjun withdrew Rs.200 while Badri withdrew Rs.300 and Keshav joined them with a capital of Rs.600. Find**

the profit share of Keshav, if the total profit received by all of them after 3 years is Rs.2050.

- A.Rs.250
- B.Rs.300
- C.Rs.450
- D.Rs.600
- E.None of these

8. Vishnu and Anu started the business with the investment of Rs.(x + 500) and Rs.(x - 1000) respectively. After 1 year Vishnu withdrew Rs.1500 and Anu withdrew Rs.500. At the end of two years, the total profit of the business is Rs.20800 and the profit of Vishnu is Rs.12000. Find the value of x?

- A.Rs.3200
- B.Rs.3600
- C.Rs.4000
- D.Rs.4500
- E.Rs.5000

9. P and Q started a partnership business with the capital of Rs.15000 and Rs.12000 respectively. After certain months, R joined with the capital of Rs.45000. After 1 year, the ratio of the profit obtained by them is 2: 5: 2 respectively. After how many months did R invest his capital?

- A.2
- B.4
- C.6

D.8

E.None of these

10. Yashni and Yuvi started the business with the investment of Rs.3000 and Rs.3200 respectively. After 5 months Yashika joined with the investment of Rs.2800. At the end of 15 months Yashni left the business, then what is the profit ratio of Yashni, Yuvi and Yashika after 20 months?

- A.45:64:42
- B.42:63:41
- C.42:64:45
- D.45:60:44
- E.45:60:40

11. Modi and Nirmala started the business and investing the total amount is Rs.18000. After one year Modi added 25% more for his initial investment and Nirmala withdrew 30% of his initial investment. At the end of 2 years, the total profit of the business is Rs.7000 and the profit share of Nirmala is Rs.3400. Find the initial investment of Modi?

- A.Rs.10000
- B.Rs.8000
- C.Rs.12000
- D.Rs.7000
- E.Rs.9000

12. Gifty and Lifty started the business with the investment of Rs.5000 and Rs.6000 respectively.

After 8 months, Gifty withdrew Rs.2000. At the end of year, they earned the total profit of Rs.9300. What is the sum of the three-fourth of the profit of Gifty and one-fourth of the profit of Lifty?

- A.Rs.4275
- B.Rs.4280
- C.Rs.4355
- D.Rs.4365
- E.None of these

13. Ambi, Bommi and Tomi started the business with the investment of Rs.15000, Rs.18000 and Rs.6000 respectively. After 4 months, Ambi left the business. x months after Bommi also left the business. At the end of the year, the profit of Bommi is 80% more than Ambi. Bommi invests her capital for how many months?

- A.8 months
- B.6 months
- C.10 months
- D.7 months
- E.Cannot be determined

14. Sahitya started a business by investing Rs.2700. After 6 months Santhosh joined with him by investing Rs.2000. At the end of 3 years they gained Rs.131000 then find the Sahitya's share?

- A.62000
- B.57000

C.34000

D. 81000

E.60431

15. A and B started the business with the investment of Rs.x and Rs.(x + 2000) respectively and the time period of A and B is 12 months and 10 months respectively. If the total profit of the business is Rs.19600 and the profit of A is Rs.9600, then find the investment of B?

- A.Rs.10000
- B.Rs.12000
- C.Rs.8000
- D.Rs.14000
- E.Rs.6000

16. P started a business investing Rs. 57,250. Q Joined him after six months with an amount of Rs. 68,700 and R Joined them with Rs.80,150 after another six months. The amount of profit earned should be distributed in 3 years after P started the business. Find the share of R if the total profit is Rs. 81,400?

- A.Rs. 21,650
- B.Rs. 25,900
- C.Rs. 26,745
- D.Rs. 28,928
- E.None of these

17. P, Q, R started a business by investing , 15000, 20000, 30000 respectively. At the end of the year, they got profit of 10140. Find P's Share?

- A.3150
- B. 2250
- C.2340
- D.4230
- E.1233

18. Einstein, Newton and Edison started the business with the investment in the ratio of 1/24:4/27:8/31 respectively. Einstein invests his capital for 2 years and Newton invests his investment for 75% of the investment period of Einstein and the investment period of Edison is 13 months more than Newton. What is the profit ratio of Einstein, Newton and Edison at the end of business?

- A.3:4:11
- B.1:3:8
- C.3:2:6
- D.3:8:22
- E.None of these

19. A and B started the business with the investment of Rs.6000 and Rs.9000 respectively. After 6 months C joined with the investment of Rs.8000 and A withdrew Rs.1000 and B added Rs.1000. If at the end of the year the total profit of the business is Rs.19000, then find the profit share of C?

- A.Rs.2000
- B.Rs.4000
- C.Rs.6000
- D.Rs.8000
- E.None of these

20. P and Q entered into a partnership business. P invested Rs.7000 and Q invested Rs.9400. After 5 months, R entered with the amount of Rs.8600. If Q withdrew all his investment after 7 months, find the profit of R at the end of the year. Total profit received is Rs.15000.

- A.Rs.4000
- B.Rs.4100
- C.Rs.4200
- D.Rs.4300
- E.None of these

21. Kamala and Biden started the business with the investment of Rs.x and Rs.24000 respectively. At the end of one year, the profit of Kamala and Biden in the ratio of 4:5, then find the value of x?

- A.Rs.18600
- B.Rs.18800
- C.Rs.19000
- D.Rs.19200
- E.Rs.19600

22. P and Q started a business by investing the amount of Rs.4000 and Rs.6000 respectively. After 4

months, R joined them with the amount of Rs.8000. Find the total profit after 1 year, if the difference between the profit of P and R is Rs.500.

- A.Rs.4050
- B.Rs.5750
- C.Rs.6210
- D.Rs.7350
- E.None of these

23. Bala started the business with the investment of Rs.8000 and invests his amount for x months while Mala invested Rs.2000 more than that of Bala and invests her amount for 18 months. At the end of business the total profit of the business is Rs.14500 and the profit share of Mala is Rs.7500, find the value of x?

- A.12
- B.15
- C.18
- D.20
- E.None of these

24. P and Q started a partnership business with the capital of Rs.15000 and Rs.12000 respectively. After certain months, R joined with the capital of Rs.45000. After 1 year, the ratio of the profit obtained by them is 2: 5: 2 respectively. After how many months did R invest his capital?

- A.2

- B.4
- C.6
- D.8
- E.None of these

25. Saran and Anand started a partnership business with investment of Rs.1500 and Rs.3400 respectively. After 4 months, Saran and Anand increased their investment by 15% and 25% respectively. What is the profit of Saran after 1 year, if the total profit earned is Rs.6740.

- A.Rs.1540
- B.Rs.1680
- C.Rs.1790
- D.Rs.1980
- E.None of these

26. Aman started a business with an investment of Rs. 50,000. Raman joins him after 6 months with a investment 20% less than the investment of Aman. If Aman withdraws 5 months before the end of the year, then find the profit of Aman is how much percentage more or less than Raman?

- A.33.33%less
- B.37.75% more
- C.50.55%less
- D.45.83% more
- E.Cannot be determined

27. Nitin and Jatin invested Rs. 60,000 each and started a business. After one year Nitin invests an additional amount of Rs. 30,000 and Jatin withdraws Rs. 10,000. At the end of two years they earn a profit of Rs. 74,100. Find the share of Nitin in the profit?

- A.Rs. 42,750
- B.Rs. 43,128
- C.Rs. 44,320
- D.Rs. 38,915
- E.None of these

28. Homer, Shiv and Bern started the business. If the investment of Bern is 25% more than Shiv and the investment of Homer 25% less than Shiv and at the end of business Homer's profit is half of the profit share of Bern and the profit share of Shiv is  $6\frac{2}{3}\%$  more than the profit share of Homer. Find the ratio of the investment period of Homer, Shiv and Bern?

- A.3:4:9
- B.3:2:5
- C.4:3:5
- D.5:4:6
- E.None of these

29. Raman starts business with Rs.8700 and after 7 months, Saranya joins with Raman. After 1 year, the profit is divided between them in the ratio 4: 3. What is Saranya's investment?

- A.Rs.15660

B.Rs.15700

C.Rs.18900

D.Rs.18090

E.None of these

30. Pravin and Saju entered into a partnership business with investments of Rs.(a + 200) and Rs.(a + 50) respectively. After 1 year, Pravin and Saju added an extra amount of Rs.150 and Rs.50 such that the ratio of their profit shares at the end of 2 years is 4: 3. Find the value of a.

A.520

B.525

C.580

D.590

E.None of these

31. Pavan started a business investing Rs.9000 and after 4 months, Hari joined him. If the profit is divided in the ratio 3: 4 after a year, then find the amount invested by Hari.

A.Rs.12000

B.Rs.14000

C.Rs.16000

D.Rs.18000

E.None of these

32. P and Q entered into a partnership business. P invested Rs.7000 and Q invested Rs.9400. After 5 months, R entered with the amount of Rs.8600. If Q

withdrew all his investment after 7 months, find the profit of R at the end of the year. Total profit received is Rs.15000.

A.Rs.4000

B.Rs.4100

C.Rs.4200

D.Rs.4300

E.None of these

33. Nilan invested Rs.12000 in a business. Fazil joined him after n months with an investment of Rs.6000 less than Nilan. If the ratio of the profits received by them after 3 years is 5: 2, then find the time after which Fazil joined.

A.7 months

B.8 months

C.7.2 months

D.8.5 months

E.None of these

34. The monthly income of A and B in the ratio of 5:6 and the ratio of the expenses of A and B is 3:4. If the ratio of the savings of A and B is 1:1 and the difference between the expenses of A and B is Rs.10000, then find the savings of A?

A.Rs.10000

B.Rs.15000

C.Rs.20000

D.Rs.25000

E.Rs.30000

35. A and B entered into a partnership by investing Rs.15000, Rs.24000 respectively. After that A changed his investments by +20%, +25%, +30% more than the previous investments for the next consecutive years, while B changed as +16.66%, +25%, +40%. Find the profit ratio after the mentioned time period?

A.339:514

B.339:524

C.339:474

D.339:434

E.339:544

36. Ravi and Raj invested a certain amount in a private bank for a period of 6 months and 8 months respectively. The profit ratio of Ravi and Raj is 4: 3. If they invested Rs.9000, find the amount invested by Ravi.

A.Rs.4200

B.Rs.4850

C.Rs.5760

D.Rs.6400

E.None of these

37. Anu and Rana invested amounts in the ratio 2: 3 in a partnership business. Anu and Kavya invested amounts in the ratio 3: 4. If their annual profit Rs.115000, then find Kavya's share in the profit?

A.Rs.10000

B.Rs.20000

C.Rs.40000

D.Rs.50000

E.None of these

38. Anu and Rana invested amounts in the ratio 2: 3 in a partnership business. Anu and Kavya invested amounts in the ratio 3: 4. If their annual profit Rs.115000, then find Kavya's share in the profit?

A.Rs.10000

B.Rs.20000

C.Rs.40000

D.Rs.50000

E.None of these

39. P started a fruit business by investing Rs.20000. After 4 months, Q joined him with an amount of Rs.30000. After 2 years, they earned a profit of Rs.36000. What was P's share in the profit?

A.Rs.10000

B.Rs.12000

C.Rs.16000

D.Rs.20000

E.None of these

40. X, Y and Z start a business. Ratio of investment of X and Y is 5 : a while ratio of investment of Y and Z is 7 : 10. X, Y and Z invested for 8 months, 6 months and 12 months respectively. Then find the

value of a, if out of total profit of Rs. 3130, in which X shared a profit of Rs. 700?

A.4

B.6

C.8

D.9

E.None of these

41. Amit, Rishi and Vinod invested Rs 15000, 10000 and 5000 respectively in partnership business. The annual profit share of Vinod is Rs 15000 out of the total profit of Rs 60000 and the profit share of Amit is Rs 15000 more than the profit share of Rishi. Then, find the ratio of time period of investment of Amit, Rishi and Vinod in the partnership.

A.4:3:6

B.4:3:5

C.2:3:5

D.3:4:7

E.None of these

42. A, B and C started the business with the investment of Rs.5000, Rs.7000 and Rs.8000 respectively. After 6 months A added Rs.x for his initial investment and B withdrew Rs.(x + 1000) for his initial investment. At the end of one year the total profit of the business is Rs.19500, find the profit share of B?

A.Rs.9000



**B.Rs.11000**

**C.Rs.12000**

**D.Rs.8000**

**E.Cannot be determined**

**43. Raghu and Samuel invested in a partnership business. They received some profit at the end of the year. They divided the profit in the ratio of 3: 4. What amount is invested by Samuel, if Raghu invests Rs.24000?**

**A.Rs.8000**

**B.Rs.16000**

**C.Rs.24000**

**D.Rs.32000**

**E.None of these**

**44. A started the business with an amount of Rs Z. B invested 160% of the A's investment. C started the business with  $33\frac{1}{3}\%$  of the total amount of B. If the annual profit is 75200, then what amount did B invested in the business?**

**A.Rs. 3200**

**B.Rs. 2950**

**C.Rs. 1850**

**D.Rs. 3920**

**E.None of these**

**45. Mithun and Nirmal started the business with the investment of Rs.8000 and Rs.12000 respectively. After 6 months Divya joined with the investment of**

**Rs.14000. At the end of year the total profit of the business is Rs.20250, find the profit share of Mithun?**

**A.Rs.8000**

**B.Rs.10000**

**C.Rs.5000**

**D.Rs.6000**

**E.Rs.4000**

**46. A, B and C started the business with an investment in the ratio of 2:3:6. After one year, A, B and C added the addition investments of Rs.4800, Rs.3900 and Rs.5600 respectively. At the end of 2 years the total profit of the business is Rs.33000, find the profit share of B?**

**A.Rs.8000**

**B.Rs.9000**

**C.Rs.12000**

**D.Rs.10000**

**E.Cannot be determined**

**47. P and Q started a partnership business together with investment of Rs.2000 and Rs.3800 respectively. After 4 months, P and Q increased their invested amount by 10% and 15% respectively. What is the profit share of P after completion of 1 year, if the total profit earned in the year is Rs.5400.**

**A.Rs.1500**

**B.Rs.1600**

**C.Rs.1700**

D.Rs.1800

E.None of these

48. A, B and C started the business with the investment in the ratio of 2:3:4 and the investment period of A, B and C is 8 months, 10 months and 6 months respectively. At the end of business the difference between the profits shares of A and C is Rs.4000, find the total profit of the business?

A.Rs.35000

B.Rs.40000

C.Rs.42000

D.Rs.28000

E.None of these

49. A, B and C started the business with the investment of Rs.13000, Rs.16000 and Rs.15000 respectively. After 4 months A added Rs.3000 for his initial investment. After 4 more months, C withdrew

Rs.3000. At the end of year the total profit of the business is Rs.36000. Find the profit share of C?

A.Rs.11200

B.Rs.11400

C.Rs.11600

D.Rs.11800

E.None of these

50. A started the business with the investment of Rs.18000 and after 4 months B and C joined with the investment of Rs.16000 and Rs.20000 respectively. At the end of one year the total profit of the business is Rs.31500, what is the profit share of B?

A.Rs.4000

B.Rs.6000

C.Rs.12000

D.Rs.8000

E.Rs.10000

## Partnership - Answer and Explanation

1.Answer: E

Profit ratio of Amal, Vimal and Diya =  $4000 * 12:3000 * 12:3000 * x$

= 48:36:3x

$36/(84 + 3x) = 40/100$

$33.6 + 1.2x = 36$

$x = 2$

Diya invested after  $(12 - 2) = 10$  months

2.Answer: C

Profit ratio of Virat and Anushka =  $8000 * 4x: 16000 * 3x$

=2:3

Profit of Anushka =  $3/2 * 4000 = \text{Rs.}6000$

3.Answer: A

Profit share of A and B =  $6000 * 12: 6000 * 125/100 * 8$   
= 72000 : 60000

$$= 6:5$$

$$\text{Profit share of B} = \frac{5}{6} * 2700 = 2250$$

#### 4. Answer: D

$$\text{Profit ratio of Nisha, Manisha and Oviya} = \frac{1}{3} * 12:4/5$$

$$* 6:5/6 * 12$$

$$= 4:24/5:10$$

$$= 20:24:50$$

$$= 10:12:25$$

$$\text{Profit share of Nisha} = \frac{10}{47} * 14100$$

$$= 3000$$

#### 5. Answer: C

$$\text{Profit ratio of A, B and C} = 4200 * 12:4800 * 12:4000 * 9$$

$$9$$

$$= 42*4:48*4:40*3$$

$$= 7:8:5$$

$$\text{Profit share of B} = \frac{8}{20} * 7200$$

$$= 2880$$

#### 6. Answer: B

$$\frac{(x + 1000)}{(x + 3000)} = \frac{2}{3}$$

$$\Rightarrow x = 3000$$

$$\text{Required sum} = x + 1000 + x + 3000 + x + 7000 =$$

$$\text{Rs.}20000$$

#### 7. Answer: D

$$\text{Profit ratio of Arjun, Badri and Keshav} = (500 * 1 + 300$$

$$* 2): (800 * 1 + 500 * 2): (600 * 2)$$

$$= 11: 18: 12$$

$$\text{Profit share of Keshav} = 2050 * \frac{12}{41} = \text{Rs.}600$$

#### 8. Answer: C

$$\text{Profit share of Vishnu and Anu} = ((x + 500) * 1 + (x + 500 - 1500) * 1):((x - 1000) * 1 + (x - 1000 - 500) * 1)$$

$$= (2x - 500):(2x - 2500)$$

$$\frac{(2x - 500)}{(4x - 3000)} = \frac{12000}{20800}$$

$$120x - 90000 = 104x - 26000$$

$$x = 4000$$

#### 9. Answer: D

$$(15000 * 12): (45000 * (12 - x)) = 2: 2$$

$$\Rightarrow x = 8 \text{ months}$$

#### 10. Answer: A

$$\text{Required ratio} = 3000 * 15:3200 * 20:2800 * 15$$

$$= 45:64:42$$

#### 11. Answer: B

$$\text{Investment of Modi} = x$$

$$\text{Investment of Nirmala} = 18000 - x$$

$$\text{Ratio of the Profit share of Modi and Nirmala} = (x * 1 + x * \frac{125}{100} * 1):((18000 - x) * 1 + (18000 - x) * \frac{70}{100} * 1)$$

$$= (x + 5x/4): (18000 - x + 12600 - 7x/10)$$

$$\frac{(9x/4)}{((306000 - 17x)/10)} = \frac{(7000 - 3400)}{3400}$$

$$\frac{(5508000 - 306x)}{10} = 153x/4$$

$$x = 8000$$

#### 12. Answer: A

$$\text{Ratio of the profit share of Gifty and Lifty} = (5000 * 8 + 3000 * 4):6000 * 12$$

$$= 52000:72000$$

$$= 13:18$$

$$\text{Profit share of Gifty} = 13/31 * 9300 = \text{Rs.}3900$$

$$\text{Profit share of Lifty} = 18/31 * 9300 = \text{Rs.}5400$$

$$\text{Required sum} = 3/4 * 3900 + 1/4 * 5400 = \text{Rs.}4275$$

### 13.Answer: B

$$\text{Profit ratio of Ambi, Bommi and Tomi} = 15000 * 4:18000 * x:6000 * 12$$

$$= 60:18x:72$$

$$= 10:3x:12$$

$$10/3x = 100/180$$

$$15x = 90$$

$$x = 6$$

### 14.Answer: D

Sahitya invests Rs.2700 for 3 years (36 months).

And santhosh invests Rs.2000 for 30 months. Then,

$$\text{sahitya: santhosh} = (2700 \times 36) : (2000 \times 30) = 81:50$$

$$\text{Therefore, Sahitya's share} = \text{Rs.}(81/131 \times 131,000) = \text{Rs.}81000$$

Hence the answer is Rs.81,000.

### 15.Answer: A

$$\text{Ratio of the Profit share of A and B} = x * 12:(x + 2000) * 10$$

$$= 6x:(5x + 10000)$$

$$6x/(5x + 10000) = 9600/(19600 - 9600)$$

$$120x + 240000 = 150x$$

$$x = 8000$$

$$\text{B's investment} = 8000 + 2000 = 10000$$

$$\text{B's investment} = 8000 + 2000 = 10000$$

### 16.Answer: B

Ratio of profit share is given by the ratio of = (investment × time)

Ratio of their investment of P, Q and R is,

$$= 57,250 : 68,700 : 80,150$$

$$= 5 : 6 : 7$$

Ratio of the time for which they invested is,

$$= 12 \times 3 : 6 + (12 \times 2) : (12 \times 2)$$

$$= 36 : 30 : 24$$

$$= 6 : 5 : 4$$

So, the profit sharing ratio of P, Q and R is,

$$= (5 \times 6) : (6 \times 5) : (7 \times 4)$$

$$= 30 : 30 : 28$$

$$= 15 : 15 : 14$$

$$\text{Thus, the share of profit of R is} = 14/44 \times 81,400 = \text{Rs.} 25,900$$

### 17.Answer: C

Ratio of shares of P, Q, R = ratio of their investments

$$= 15000: 20000: 30000$$

$$= 15: 20: 30$$

$$= 3: 4: 6$$

$$\text{P's share} = 3/13 * 10140$$

$$= 2340$$

### 18.Answer: E

Investment period of Einstein = 24 months

Newton investment period =  $24 * 75/100 = 18$  months

Edison investment period =  $18 + 13 = 31$  months

Required ratio =  $1/24 * 24:4/27 * 18:8/31 * 31$

= 1:8/3:8

= 3:8:24

**19.Answer: B**

Profit ratio of A, B and C =  $(6000 * 6 + 5000 * 6):(9000$

$* 6 + 10000 * 6):(8000 * 6)$

= 66:114:48

= 11:19:8

Profit share of C =  $8/38 * 19000$

= Rs.4000

**20.Answer: D**

Required ratio =  $(7000 * 12): (9400 * 7): (8600 * 7)$

= 60: 47: 43

Profit of R =  $15000 * 43/150 = \text{Rs.}4300$

**21.Answer: D**

Profit share of Kamala and Biden = 4:5

$(x * 12)/(24000 * 12) = 4/5$

$x = 19200$

**22.Answer: B**

Profit share of P, Q and R =  $(4000 * 12): (6000 * 12):$

$(8000 * 8)$

= 6: 9: 8

Total profit =  $500/(8 - 6) * 23 = \text{Rs.}5750$

**23.Answer: E**

Profit share of Mala = 7500

Profit share of Bala =  $14500 - 7500 = 7000$

$(8000 * x):((8000 + 2000) * 18) = 7000:7500$

$8x/180 = 14/15$

$8x = 168$

$x = 21$

**24.Answer: D**

$(15000 * 12): (45000 * (12 - x)) = 2: 2$

$\Rightarrow x = 8$  months

**25.Answer: D**

Profit ratio =  $(1500 * 4 + 1.15 \text{ of } 1500 * 8): (3400 * 4 +$

$1.25 \text{ of } 3400 * 8)$

= 19800:47600

= 99: 238

Profit share of Saran =  $99/(99 + 238) * 6740 = \text{Rs.}1980$

**26.Answer: D**

Aman invested Rs. 50,000 for 7 months.

So, his total investment is = Rs. 3,50,000

Raman invested Rs. 40,000 for 6 months.

So his total investment is = Rs. 2,40,000

Now, the profit sharing ratio is = 3,50,000 : 2,40,000

= 35 : 24

Thus, the required percentage is =  $(35 - 24)/24 * 100$

$\Rightarrow 45.83\%$  more

Hence, the required answer is = **45.83% more**

**27.Answer: A**

Profit sharing ratio of Nitin and Jatin is as follows:

$$= (60,000 \times 12 + 90,000 \times 12) : (60,000 \times 12 + 50,000 \times 12)$$

$$= (7,20,000 + 10,80,000) : (7,20,000 + 6,00,000)$$

$$= 18,00,000 : 13,20,000$$

$$= 15 : 11$$

So, the profit share of Nitin is  $= 74,100 \times 15/26$

$$= \text{Rs. } 42,750$$

**28.Answer: D**

Investment of Homer  $= 3x$

Investment of Shiv  $= 100/75 * 3x = 4x$

Investment of Bern  $= 125/100 * 4x = 5x$

Let Profit share of Homer  $= 30y$

Profit share of Bern  $= 2/1 * 30y = 60y$

Profit share of Shiv  $= 30y * (320/300) = 32y$

Required ratio  $= 30y/3x : 32y/4x : 60y/5x$

$$= 10:8:12$$

$$= 5:4:6$$

**29.Answer: A**

Saranya's investment  $= \text{Rs. } x$

$$8700 * 12/5x = 4/3$$

$$\Rightarrow x = \text{Rs. } 15660$$

**30.Answer: B**

$$(a + 200 + a + 200 + 150)/(a + 50 + a + 50 + 50) = 4/3$$

$$\Rightarrow 2a = 1050$$

$$\Rightarrow a = 525$$

**31.Answer: D**

Hari's capital  $= \text{Rs. } x$

$$(9000 * 12)/(8 * x) = \frac{3}{4}$$

$$\Rightarrow x = \text{Rs. } 18000$$

**32.Answer: D**

Required ratio  $= (7000 * 12) : (9400 * 7) : (8600 * 7)$

$$= 60: 47: 43$$

Profit of R  $= 15000 * 43/150 = \text{Rs. } 4300$

**33.Answer: C**

$$(12000 * 36) : (6000 * (36 - n)) = 5: 2$$

$$\Rightarrow 144 = 180 - 5n$$

$$\Rightarrow n = 7.2 \text{ months}$$

**34.Answer: C**

Expenses of A  $= 3/1 * 10000 = \text{Rs. } 30000$

Expenses of B  $= 4/1 * 10000 = \text{Rs. } 40000$

$$5x - 30000/6x - 40000 = 1/1$$

$$6x - 40000 = 5x - 30000$$

$$x = 10000$$

Income of A  $= 5 * 10000 = \text{Rs. } 50000$

Savings of A  $= 50000 - 30000 = \text{Rs. } 20000$

**35.Answer: E**

Initial investment of A  $= \text{Rs. } 15000$

Investment of A in the 2<sup>nd</sup> year  $= 120\%$  of 15000  $= \text{Rs. } 18000$

Investment of A in the 3<sup>rd</sup> year  $= 125\%$  of 18000  $= \text{Rs. } 22500$

Investment of A in the 4<sup>th</sup> year  $= 130\%$  of 22500  $= \text{Rs. } 29250$

Therefore total investment of A in the given time period of 4 years is

$$= 15000 + 18000 + 22500 + 29250$$

$$= \text{Rs.}84750$$

Similarly, total investment of B

$$= 24000 + 28000 + 35000 + 49000$$

$$= 136000$$

Required ratio

$$84750 : 136000$$

$$339 : 544$$

**36.Answer: C**

Investment ratio of Ravi and Raj =  $4/6 : 3/8 = 16 : 9$

Amount invested by Ravi =  $9000 * 16/25 = \text{Rs.}5760$

**37.Answer: C**

$$\text{Anu: Kavya} = 3 : 4 = 6 : 8$$

$$\text{Anu: Rana} = 2 : 3 = 6 : 9$$

$$\text{Anu: Kavya: Rana} = 6 : 8 : 9$$

$$\text{Kavya's share} = 8/23 * 115000 = \text{Rs.}40000$$

**38.Answer: C**

$$\text{Anu: Kavya} = 3 : 4 = 6 : 8$$

$$\text{Anu: Rana} = 2 : 3 = 6 : 9$$

$$\text{Anu: Kavya: Rana} = 6 : 8 : 9$$

$$\text{Kavya's share} = 8/23 * 115000 = \text{Rs.}40000$$

**39.Answer: C**

$$\text{Investment ratio} = P : Q = (20000 * 24) : (30000 * 20) = 4 : 5$$

$$P's \text{ share in profit} = 36000 * 4/9 = \text{Rs.}16000$$

**40.Answer: B**

Ratio of investment of X, Y and Z is =  $35 : 7a : 10a$

So, the profit sharing ratio of X, Y and Z is =  $35 \times 8 : 7a$

$$\times 6 : 10a \times 12$$

$$= 140 : 21a : 60a$$

Then, according to the question,

$$= 140/(140 + 21a + 60a) = 700/3130$$

$$= 140/(140 + 81a) = 70/313$$

$$= 43,820 = 9800 + 5670a$$

$$= 5670a = 43,820 - 9800$$

$$= 5670a = 34,020$$

$$= a = 6$$

**41.Answer: A**

Let Amit, Rishi and Vinod invest X, Y and Z months respectively.

Let profit of Rishi be P.

$$\text{So, Profit of Amit} = P + 15000$$

$$\text{Then, } 60000 = 15000 + 15000 + P + P$$

$$P = 15000$$

$$\text{So, profit of Amit} = 15000 + 15000 = 30000$$

$$\text{Profit of Rishi} = 15000$$

Now, profit sharing ratio of Amit, Rishi and Vinod

$$30000 : 15000 : 15000$$

$$2 : 1 : 1$$

$$\text{So, } 15000X : 10000Y : 5000Z = 2 : 1 : 1$$

$$= 3X/2Y = 2$$

$$X/Y = 4/3$$

$$2Y/Z=1$$

$$2Y = Z$$

So, required ratio= X:Y:Z= 4:3:6

**42.Answer: E**

$$\begin{aligned} \text{Profit ratio of A, B and C} &= (5000 * 6 + (5000 + x) * 6):(7000 * 6 + (7000 - x - 1000) * 6):(8000 * 12) \\ &= (60000 + 6x):(78000 - 6x):96000 \end{aligned}$$

$$\begin{aligned} \text{Share of B} &= (78000 - 6x)/(60000 + 6x + 78000 - 6x + 96000) * 19500 \\ &= (78000 - 6x)/12 \end{aligned}$$

We cannot find the answer

**43.Answer: D**

Let x be the amount invested by Samuel.

$$(24000/x) = (3/4)$$

$$\Rightarrow x = \text{Rs.}32000$$

**44.Answer: A**

$$\text{Investment ratio of A to B} = 100: 160 = 5: 8$$

$$\text{Investment ratio of B to C} = 100: 33 \frac{1}{3} = 3: 1$$

$$\text{Investment ratio of A, B and C} = 15: 24: 8$$

Time period is same, Investment ratio = Profit ratio

$$\text{A's share} = 75200 * 15/47 = 24000 = Z * 12$$

$$Z = 2000$$

$$\text{B' investment} = 2000 * 160/100 = 3200$$

**45.Answer: D**

$$\begin{aligned} \text{Profit ratio of Mithun, Nirmal and Divya} &= 8000 * 12:12000 * 12:14000 * 6 \\ &= 96:144:84 \end{aligned}$$

$$= 8:12:7$$

$$\text{Profit share of Mithun} = 8/27 * 20250$$

$$= \text{Rs.}6000$$

**46.Answer: B**

$$\begin{aligned} \text{Profit ratio of A, B and C} &= (2x * 1 + (2x + 4800) * 1):(3x * 1 + (3x + 3900)):(6x * 1 + (6x + 5600) * 1) \\ &= 4x + 4800:6x + 3900:12x + 5600 \end{aligned}$$

$$\begin{aligned} \text{Profit share of B} &= ((6x + 3900)/(22x + 14300)) * 33000 \\ &= 3(2x + 1300)/11(2x + 1300) * 33000 \\ &= 9000 \end{aligned}$$

**47.Answer: B**

$$\begin{aligned} \text{P: Q} &= (2000 * 4 + 1.1 * 2000 * 8): (3800 * 4 + 1.5 * 3800 * 8) \\ &= 8: 19 \end{aligned}$$

$$\text{Profit share of P} = 8/27 * 5400 = \text{Rs.}1600$$

**48.Answer: A**

$$\begin{aligned} \text{Profit ratio of A, B and C} &= 2 * 8:3 * 10:6 * 4 \\ &= 16:30:24 \\ &= 8:15:12 \end{aligned}$$

$$\text{Total profit} = 35/4 * 4000 = 35000$$

**49.Answer: A**

$$\begin{aligned} \text{Profit ratio of A, B and C} &= (13000 * 4 + 16000 * 8):(16000 * 12):(15000 * 8 + 12000 * 4) \\ &= 180:192:168 \\ &= 15:16:14 \end{aligned}$$

$$\begin{aligned} \text{Profit share of C} &= 14/45 * 36000 \\ &= \text{Rs.}11200 \end{aligned}$$



**50. Answer: D**

Profit ratio of A, B and C =  $18000 * 12 : 16000 * 8 : 20000 * 8$

= 27:16:20

B's profit share =  $\frac{16}{63} * 31500$   
= Rs.8000

## Ages

**1. In a family, a couple has a daughter and son. The age of the mother is three times that of his son and the age of the daughter is 50% of his father. The husband is 9 years younger to her wife and the sister is seven years older than his brother. Find the age of the daughter?**

- A. 26 years
- B. 24 years
- C. 30 years
- D. 21 years
- E. None of these

**2. 5 years ago, the average age of Chinnu and Nani is**

**23. At present, the ratio between their ages is 15:13.**

**Find the Chinnu age after 10 years?**

- A. 50 years
- B. 45 years
- C. 60 years
- D. 40 years
- E. 35 years

**4. Ratio of the ages of Priya and Queen is 6:5 and the ratio of the ages of Reshma and Shabhana is 5:6. If Shabhana is 8 years elder than Queen and Reshma is**

**3 years elder than Priya, then find the sum of the ages of Priya, queen, Reshma and Shabhana?**

- A. 66 years
- B. 44 years
- C. 55 years
- D. 33 years
- E. None of these

**5. The present age of a father is 100% more than the present age of his son. 10 years ago, the age of father is 200% more than as that of his son. What will be the ratio of the ages of father and son after 15 years from now?**

- A. 9:5
- B. 11:7
- C. 10:7
- D. 8:3
- E. 12:7

**6. Present age of Pooja is 40% more than the present age of Sharmi and the present age of Ram is 25% more than the age of Pooja 6 years ago. If the present age of Rahul is  $22\frac{2}{9}\%$  more than the present age of**

**Ram and the age of Sharmi after 12 years is 42 years, then find the present age of Rahul?**

- A.50 years**
- B.45 years**
- C.40 years**
- D.55 years**
- E.60 years**

**7. The ratio of the ages of Anil and Sunil, 6 years ago was 8:5 respectively. After 2 years, the age of Sunil will be 25% less than that of Anil. What is the present age of Anil?**

- A.20 years**
- B.21 years**
- C.22 years**
- D.23 years**
- E. None of these**

**8. The ratio of the present age of A and B is 1:3 and after 16 years the ratio of the ages of A to B becomes 3:5. What is the ratio of the ages of A to B 4 years ago?**

- A.2:3**
- B.4:5**
- C.1:4**
- D.2:5**
- E. None of these**

**9. Average ages of Anil, Mathavi and Merlin is 26 years. If the present age of Mathavi is two times of**

**the age of Merlin 6 years ago and the present age of A is 12 years more than Mathavi, then what is the present age of Merlin?**

- A.12 years**
- B.18 years**
- C.15 years**
- D.22 years**
- E.24 years**

**10. The sum of the present ages of mother and daughter is 51 years. Six years ago, mother's age is 12 times of the age of daughter and the ratio of the ages of mother to father is 14:15, then find the difference between the age of Daughter and father.**

- A.30 years**
- B.32 years**
- C.33 years**
- D.27 years**
- E.36 years**

**11. Yuvi's present age is  $33\frac{1}{3}\%$  of the sum of the present age of Som and Ramya. If the present age of Som is 25% more than the present age of Ramya, then what is the ratio of the present age of Yuvi, Ramya and Som?**

- A.1:2:3**
- B.2:3:4**
- C.3:4:6**
- D.5:6:7**

E. None of these

12. Four years hence, Mala will be 5 times of her daughter's age and four years ago, the ratio of the age of Mala and her daughters is 6:1. What is the present age of Mala's daughter?

A.32

B.36

C.48

D.28

E.24

13. The average ages of Amala and Vimala is 28 years. If the ratio of the ages of Amala 12 years hence and the age of Vimala 8 years ago is 3:2, then find the present age of Amala?

A.22

B.20

C.26

D.28

E.24

14. If four years ago, the age of Punitha is half of that of Santhosh and after 4 years, the age of Punitha is 40% less than that of Santhosh, then what is the ratio of the present age of Santhosh and Punitha?

A.10:7

B.9:5

C.11:8

D.12:5

E. None of these

15. Ratio of the ages of A and B is 3:4 and the ratio of the ages of B and C is 8:9. If C is 6 years younger than D and D's age after 10 years is 34 years, then what is the age of A after 8 years?

A.14

B.19

C.20

D.23

E. None of these

16. The age of Uday 8 years ago is 25% more than the age of Tarun at that time. Ratio of the ages of Tarun to Renu is 6:7. 10 years hence the difference between the age of Uday and Tarun is 7 years, find the age of Renu after 6 years?

A.42 years

B.48 years

C.54 years

D.36 years

E.60 years

17. Ratio of the ages of A and B is 4:5. Average age of A, B and C is 47 years. After 12 years the age of C is 72 years. What is the difference between the ages of A and B?

A.9 years

B.11 years

C.12 years

D.15 years

E. None of these

18. Present age of Arun is 10% more than the present age of Ashwin. Arun is 4 years elder than Arjun. Anish will be 3 years elder than Arjun. Find the present age of Anish, if the average present age of all four person together is 31 years.

A.30

B.32

C.34

D.36

E. None of these

19. Ratio of the ages of Sureka and Francis 8 years ago is 7:6. Sureka's age 6 years ago is 25% less than the age of Francis after 8 years. If the average age of Sureka, Francis and Dev is 32 years, find the present age of Dev?

A.22 years

B.24 years

C.26 years

D.28 years

E.20 years

20. 2 years ago, Age of Naren was four times the age of Sam 5 years ago. If the present age of Naren is 150% more than the present age of Sam, then what is the age of Sam?

A.6

B.8

C.10

D.12

E. None of these

21. The sum of the present ages of P and Q is 70 years. If the ratio of the age of P 4 years ago and the age of Q 4 years hence is 3: 4 respectively, then find the ratio of age of P 6 years hence to the age of Q 6 years ago.

A.1: 2

B.2: 1

C.3: 4

D.4: 3

E. None of these

22. Navin is three years older than Babu who is two years younger to Raje. If the total ages of Navin, Babu and Raje be 74, then what is Raje's age?

A.23

B.24

C.25

D.26

E. None of these

23. The ratio of ages of Anvi and Tanvi is 13: 14 respectively. After 4 years, the ratio of their age will become 15: 16 respectively. What is the age of Janani who is 8 years older than Anvi?

A.32 years

**B.33 years**

**C.34 years**

**D.35 years**

**E. None of these**

**24. 8 years hence the ratio of the ages of A and B will be 5:8. 8 years ago the ratio of the ages of A and B is 1:2. What is the average of the present ages of A and B?**

**A.34 years**

**B.38 years**

**C.45 years**

**D.42 years**

**E.44 years**

**25. A is 8 years older than B and B is 12 years younger than C. If the sum of the ages of A, B and C is 80 years, then what is B's age after 10 years?**

**A.20 years**

**B.30 years**

**C.28 years**

**D.22 years**

**E. None of these**

**26. Present age of Arun is 137.5% of what he was 15 years ago. Find the age of son of Arun after 7 years who is 25 years younger than Arun?**

**A.30 years**

**B.33 years**

**C.42 years**

**D.37 years**

**E. None of these**

**27. Average age of  $(k - 14)$  students of a class is 18 years. If the age of 53 years old teacher is included, then average age of group is increased by 1 year. Find  $(k - 10.5)$  % of 7500.**

**A.2712.50**

**B.2812.50**

**C.2912.25**

**D.2812.25**

**E. None of these**

**28. The ratio of the ages of Oviya to Kavin is 5:6. The age of Kavin after 8 years is 100% more than the age of Oviya's two years ago. What is the average present age of Oviya and Kavin?**

**A.22.5 years**

**B.16.5 years**

**C.33.5 years**

**D.18.5 years**

**E.20.5 years**

**29. The sum of the present age of Rani and her age 4 years ago is 84 years. If the ratio of the ages of Bala and Rani after 6 years is 3:5, then what is the present age of Bala?**

**A.12 years**

**B.24 years**

**C.39 years**

D.15 years

E. None of these

30. Age of Ram is one-fifth of his mother's age and two-fifth of his brother Shyam's age. If the difference between the age of Ram and his brother Shyam together to his mother is 18 years, then find the age of his brother Shyam?

A.33 years

B.30 years

C.22 years

D.27 years

E. None of these

31. 8 years hence, Arun will be thrice as old as Magesh's age of 8 years ago. If Arun is 4 years older than Magesh, what is the present age of Magesh?

A.10

B.12

C.14

D.18

E. None of these

32. Nine years ago, ratio of ages of Harsh and Nishant is 5 : 8. And Nishant age 9 years ago is same as present age of Harsh. If Aman's present age is 33.33% of present ages of Harsh and Nishant. Then find the Aman's age 2 years hence?

A.11 years

B.25 years

C.21 years

D.18 years

E. None of these

33. The present age of a father is 100% more than the present age of his son. 10 years ago, the age of father is 200% more than as that of his son. What will be the ratio of the ages of father and son after 15 years from now?

A.9:5

B.11:7

C.10:7

D.8:3

E.12:7

34. Harthik's present age is  $33\frac{1}{3}\%$  of the present age of Vikram. After 6 years the age of Vikram is half of the present age of Benny. If the present age of Benny's daughter is 60% of the present age of Harthik and the Benny's age after 8 years is 80 years, then what is the age of Benny's daughter after 4 years?

A.6 years

B.10 years

C.12 years

D.8 years

E.12 years

35. Five years ago, the ages of Satya and Saran were in the ratio 12: 13 respectively. 13 years from now,

the ratio of the ages of Satya and Saran will be 21: 22 respectively. Find the present average age of Satya and Saran.

- A.15
- B.30
- C.35
- D.40
- E. None of these

36. Navin is three years older than Babu who is two years younger to Raje. If the total ages of Navin, Babu and Raje be 74, then what is Raje's age?

- A.23
- B.24
- C.25
- D.26
- E. None of these

37. The age of Sajan is a multiple of 4. The sum of the age of Sajan and his age four years ago is 44 years. What was the age of Sajan 2 years ago?

- A.20 years
- B.22 years
- C.24 years
- D.25 years
- E. None of these

38. Ramya is three times as old as Riya. Four years hence, Ramya will be two times as old as Riya. What is the average of the ages of Riya and Ramya?

- A.8 years
- B.10 years
- C.12 years
- D.6 years
- E.4 years

39. The average age of 4 persons A, S, D, F is 24 years. Sum of the ages of A and S is 18 years more than age of F. The age of F is 5 years more than S and 7 years more than A. Then find the sum of ages of A,D after 4 years.

- A.41 years
- B.45 years
- C.49 years
- D.43 years
- E.47 years

40. The ratio of the current ages of Amrita and Amala is 3: 2. Three years ago, the ratio of their ages was 5: 3. Find their current age of Amala.

- A.6
- B.12
- C.18
- D.20
- E. None of these

41. 10 years ago age of A is as old B 4 years ago and Age of C after 7 years is 15years. If Present average age of them is 16years, then find the sum of the ages of A and C after 3 years?

- A.32 years
- B.37 years
- C.27 years
- D.42 years
- E.42 years

42. Bala is 4 years older than Ajay. After 4 years, the ratio of their ages becomes 8: 7. What was Ajay's age before 2 years?

- A.20 years
- B.21 years
- C.22 years
- D.24 years
- E.24 years

43. In a group of 4 friends, ratio of present ages of Q and R is 5 : 6 and that of P and S is 6 : 7. Find the present average age of P, Q and R, if 6 years ago P is 36 years younger than R and at present R is thrice of age of P?

- A.35 years
- B.39 years
- C.32 years
- D.25 years
- E. None of these

44. After eight year's age of A is 28.56% more than its present age and two years before age ratio of B and C is 5:6.If Age of B after 7 years is 40% more than that of A then find the present age of C?

- A.54 years
- B.48 years
- C.45 years
- D.50 years
- E.58 years

45. 8 years ago, Age of Mini is  $69\frac{13}{23}\%$  of what her age will be 6 years from now. If the ratio of the age of Mini and Bavi 15 years ago is 5:3, then find the present age of Bavi?

- A.20 years
- B.10 years
- C.24 years
- D.30 years
- E.36 years

46. The age of Seeta after 8 years is 40% less than age of Geeta before 6 years. The age of Neeta is 18 years more than Seeta and 16 years less than Geeta. Find after 14 years age of Neeta is how much % more than age of Seeta at that time.

- A.25%
- B.33.33%
- C.50%
- D.45%
- E. None of these

47. 9 years ago, the ratio of Amit and Punit age is 14 : 17 respectively and the age of Punit 9 years ago is same as the present age of Amit. If another person



Sumit age is the average of the present ages of Amit and Punit, then find the age of Sumit 5 years 6 months ago?

- A.52 years
- B.45 years
- C.50 years
- D.42 years
- E. None of these

48. Ten years hence, the ratio of age of Darshan to Varshan will be 13: 14. Five years ago, age of Varshan was 200/11% more than the age of Darshan at that time. Find the present age of Darshan.

- A.4
- B.8
- C.12
- D.16
- E.20

49. The average age of A, B and C, 4 years ago was 48 years and the sum of age of A and B after 6 years is 100. Find the present age of C.

- A.80yrs
- B.49yrs
- C.52yrs
- D.68yrs
- E. None of these

50. Sum of the ages of Anitha, Bala and Deva is 102 years and Bala is 6 years elder than Anitha. If the ratio of the present age of Anitha and Deva is 3:2, the find the present age of Bala?

- A.42 years
- B.45 years
- C.48 years
- D.39 years
- E.36 years

## Ages – Answer and Explanation

### 1. Answer: C

Let the age of the father= $x$  years.

So, The age of mother is  $= (x + 9)$  years

The age of daughter is  $= x/2$  years

The age of son is  $= (x/2 - 7)$  years

Now according to the question,

$$\begin{aligned} &= 3(x/2 - 7) = (x + 9) \\ &= (3x - 42)/2 = x + 9 \\ &= 3x - 42 = 2x + 18 \end{aligned}$$

$$= 3x - 2x = 42 + 18$$

$$= x = 60 \text{ years}$$

So, age of daughter  $= 60/2 = 30$  years

### 2. Answer: D

5 years ago, their average age is 23

therefore total age  $= 23 \times 2 = 46$

present age of Chinnu and Nani  $= 46 + 5 + 5 = 56$

Chinnu age  $= 15/28 \times 56 = 30$

after 10 years  $= 30 + 10 = 40$  years

**3. Answer: E**

Ratio of the ages of A, B and C = 35:40:48

$$35x + 40x + 48x + D = 40 * 4$$

We can't find the answer

**4. Answer: C**

$$\text{Priya} = 6x$$

$$\text{Queen} = 5x$$

$$\text{Reshma} = 5y$$

$$\text{Shabhana} = 6y$$

$$6y - 5x = 8 \text{ -----(1)}$$

$$5y - 6x = 3 \text{ -----(2)}$$

$$y = 3$$

$$x = 2$$

$$\text{Required total} = (11 * 3) + (11 * 2)$$

$$= 55 \text{ years}$$

**5. Answer: B**

$$\text{Present age of son} = x$$

$$\text{Present age of father} = 200/100 * x = 2x$$

$$(x - 10)/(2x - 10) = 100/300$$

$$2x - 10 = 3x - 30$$

$$x = 20$$

$$\text{Present age of father} = 2 * 20 = 40$$

$$\text{Required ratio} = (40 + 15):(20 + 15)$$

$$= 55:35$$

$$= 11:7$$

**6. Answer: D**

$$\text{Sharmi} = 42 - 12 = 30 \text{ years}$$

$$\text{Present age of Pooja} = 30 * 140/100 = 42$$

$$\text{Ram} = 125/100 * (42 - 6) = 45$$

$$\text{Rahul} = 1100/900 * 45 = 55 \text{ years}$$

**7. Answer: C**

$$6 \text{ years ago, Anil} = 8x \text{ and Sunil} = 5x$$

$$(5x + 8) = (100 - 25)/100 * (8x + 8)$$

$$\Rightarrow x = 2$$

$$\text{Present age of Anil} = 8x + 6 = 22 \text{ years}$$

**8. Answer: E**

$$x + 16/3x + 16 = 3/5$$

$$9x + 48 = 5x + 80$$

$$x = 8$$

$$\text{Present age of A} = 8$$

$$\text{Present age of B} = 3 * 8 = 24$$

$$\text{Required ratio} = 4:20$$

$$= 1:5$$

**9. Answer: B**

$$\text{Anil} + \text{Mathavi} + \text{Merlin} = 26 * 3 = 78$$

$$\text{Mathavi} = 2 * (\text{Merlin} - 6)$$

$$\text{Anil} - \text{Mathavi} = 12$$

$$\text{Anil} = 12 + 2\text{Merlin} - 12$$

$$\text{Merlin} + 2\text{Merlin} - 12 + 2\text{Merlin} = 78$$

$$5 \text{ Merlin} = 90$$

$$\text{Merlin} = 18 \text{ years}$$

**10. Answer: E**

$$M + D = 51 \text{ -----(1)}$$

$$M - 6 = 12 * (D - 6)$$

$$M - 6 = 12D - 72$$

$$12D - M = 66 \text{-----}(2)$$

$$13D = 117$$

$$D = 9$$

$$M = 51 - 9 = 42$$

$$F = 42 * 15/14 = 45$$

$$\text{Difference} = 45 - 9 = 36 \text{ years}$$

**11. Answer: E**

$$\text{Som} = 125/100 * \text{Ramya}$$

$$\text{Som/Ramya} = 5/4$$

$$(5K + 4K) * 100/300 = \text{Yuvi}$$

$$\text{Yuvi} = 3k$$

$$\text{Required ratio} = 3K:4K:5K$$

$$= 3:4:5$$

**12. Answer: B**

$$M + 4 = 5(D + 4)$$

$$M + 4 = 5D + 20$$

$$M - 5D = 16 \text{-----}(1)$$

$$(M - 4)/(D - 4) = 6/1$$

$$6D - 24 = M - 4$$

$$6D - M = 20 \text{-----}(2)$$

$$D = 36$$

**13. Answer: E**

$$\text{Amala} + \text{Vimala} = 28 * 2 = 56 \text{-----}(1)$$

$$(\text{Amala} + 12)/(\text{Vimala} - 8) = 3/2$$

$$3\text{Vimala} - 24 = 2\text{Amala} + 24$$

$$3\text{Vimala} - 2\text{Amala} = 48 \text{-----}(2)$$

From (1) and (2)

$$\text{Vimala} = 32$$

$$\text{Amala} = 56 - 32 = 24$$

**14. Answer: B**

$$P - 4 = 1/2 * (S - 4)$$

$$2P - 8 = S - 4$$

$$2P - S = 4 \text{----}(1)$$

$$(S + 4) * 60/100 = (P + 4)$$

$$3S + 12 = 5P + 20$$

$$3S - 5P = 8 \text{-----}(2)$$

From (1) and (2)

$$S = 36$$

$$P = 20$$

$$\text{Required ratio} = 36:20$$

$$= 9:5$$

**15. Answer: C**

$$\text{D's present age} = 34 - 10 = 24$$

$$C = 24 - 6 = 18$$

$$B = 18 * 8/9 = 16$$

$$A = 3/4 * 16 = 12$$

$$\text{A's age after 8 years} = 12 + 8 = 20$$

**16. Answer: B**

$$\text{Tarun's age 8 years ago} = 4x$$

$$\text{Uday's age 8 years ago} = 4x * 125/100 = 5x$$

$$(5x + 8 + 10) - (4x + 8 + 10) = 7$$

$$x = 7$$

$$\text{Present age of Tarun} = 4 * 7 + 8 = 36$$

Renu age after 6 years =  $(36 * 7)/6 + 6 = 48$  years

**17. Answer: A**

$$A + B + C = 141$$

$$C\text{'s present age} = 72 - 12 = 60$$

$$A + B = 141 - 60 = 81$$

$$\text{Required difference} = 81 * 1/9 = 9 \text{ years}$$

**18. Answer: B**

$$\text{Age of Ashwin} = x$$

$$\text{Arun} = 1.1x$$

$$\text{Arjun} = 1.1x - 4$$

$$\text{Anish} = 1.1x - 4 + 3 = 1.1x - 1$$

$$x + 1.1x + 1.1x - 4 + 1.1x - 1 = 31 * 4$$

$$\Rightarrow x = 30$$

$$\text{Anish} = 1.1x - 1 = 32$$

**19. Answer: D**

$$S = 7x + 8$$

$$F = 6x + 8$$

$$7x + 8 - 6 = 75/100 * (6x + 8 + 8)$$

$$28x + 8 = 18x + 48$$

$$x = 4$$

$$\text{Sureka} = 7 * 4 + 8 = 36$$

$$\text{Francis} = 6 * 4 + 8 = 32$$

$$\text{Sureka} + \text{Francis} + \text{Dev} = 32 * 3 = 96$$

$$\text{Dev} = 96 - 36 - 32 = 28$$

**20. Answer: D**

$$\text{Present age of Sam} = x$$

$$\Rightarrow \text{Age of Sam 6 years ago} = x - 5$$

$$\text{Age of Naren 2 years ago} = 4x - 20$$

$$\text{Present age of Naren} = 4x - 20 + 2 = 4x - 18$$

$$4x - 18 = 250/100 * x$$

$$\Rightarrow x = 12 = \text{Age of Sam}$$

**21. Answer: D**

$$\text{Let the age of P} = x. \text{ Age of P and Q} = 70$$

$$\text{Age of Q} = 70 - x$$

$$(x - 4): (70 - x + 4) = 3: 4$$

$$\Rightarrow x = 34$$

$$\text{Required ratio} = (x + 6): (70 - x - 6)$$

$$= 40: 30 = 4: 3$$

**22. Answer: C**

$$\text{Raje's age} = x \text{ years, Babu's age} = x - 2 \text{ years and}$$

$$\text{Navin's age} = x - 2 + 3 = x + 1 \text{ years}$$

$$\Rightarrow x + x - 2 + x + 1 = 74$$

$$\Rightarrow x = 25 = \text{Raje's age}$$

**23. Answer: C**

$$\text{Anvi's age} = 13x \text{ and Tanvi's age} = 14x$$

$$(13x + 4)/(14x + 4) = 15/16$$

$$\Rightarrow x = 2$$

$$\text{Janani's age} = \text{Anvi's age} + 8 = 13x + 8 = 34 \text{ years}$$

**24. Answer: E**

$$(A + 8)/(B + 8) = 5/8$$

$$5B + 40 = 8A + 64$$

$$5B - 8A = 24 \text{ ----(1)}$$

$$(A - 8)/(B - 8) = 1/2$$

$$B - 8 = 2A - 16$$

$$2A - B = 8 \text{ ----(2)}$$

From (1) and (2)

$$2A = 64$$

$$A = 32$$

$$B = 64 - 8 = 56$$

$$\text{Average} = (32 + 56)/2 = 44 \text{ years}$$

**25. Answer: B**

$$A - B = 8$$

$$C - B = 12$$

$$A + B + C = 80$$

$$B + 8 + B + 12 + B = 80$$

$$3B = 60$$

$$B = 20 \text{ years}$$

$$\text{After 10 years B's age} = 20 + 10 = 30 \text{ years}$$

**26. Answer: D**

Let the present age of Arun = a

According to question

$$11/8 \times (a - 15) = a$$

$$11a - 165 = 8a$$

$$\text{So, } a = 55$$

$$\text{Present age of son of Arun} = 55 - 25 = 30 \text{ years}$$

$$\text{Required age} = 30 + 7 = 37 \text{ years}$$

**27. Answer: B**

$$\text{Sum of ages of all students} = 18 \times (k - 14) = 18k - 252$$

$$\text{When teacher is included, sum of ages of all} = 19 \times (k - 14 + 1) = 19k - 247$$

According to question

$$(19k - 247) - (18k - 252) = 53$$

$$k = 53 - 5 = 48$$

$$\text{Required value} = (48 - 10.5) \% \text{ of } 7500 = 2812.5$$

**28. Answer: B**

$$6x + 8 = 200/100 \times (5x - 2)$$

$$6x + 8 = 10x - 4$$

$$4x = 12$$

$$x = 3$$

$$\text{Oviya's present age} = 3 \times 5 = 15$$

$$\text{Kavin's present age} = 3 \times 6 = 18$$

$$\text{Required average} = (15 + 18)/2 = 33/2 = 16.5 \text{ years}$$

**29. Answer: B**

$$R + R - 4 = 84$$

$$R = 44$$

$$\text{After 6 years Rani's age} = 44 + 6 = 50 \text{ years}$$

$$\text{After 6 years Bala's age} = 3/5 \times 50 = 30 \text{ years}$$

$$\text{Present age of Bala} = 30 - 6 = 24 \text{ years}$$

**30. Answer: B**

Let the age of Ram is = x years

So, the age of his mother is = 5x years

And the age of his brother is = 5x/2 years

So, the ratio of their ages will be,

$$= x : 5x/2 : 5x$$

$$= 2x : 5x : 10x$$

Then, according to the question,

$$= 10x - (2x + 5x) = 18$$

$$= 10x - 7x = 18$$

$$= 3x = 18$$

$$= x = 6$$

Thus, the age of his brother is  $= 6 \times 5 \Rightarrow 30$  years

### 31. Answer: D

Magesh =  $x$  years and Arun =  $x + 4$  years

$$(x + 4) + 8 = 3(x - 8)$$

$$\Rightarrow x = 18 \text{ years}$$

### 32. Answer: C

Let the age of Harsh 9 years ago is  $= 5x$

And the age of Nishant 9 years ago is  $= 8x$

So, according to the question,

$$\Rightarrow 8x = 5x + 9$$

$$\Rightarrow 8x - 5x = 9$$

$$\Rightarrow 3x = 9$$

$$\Rightarrow x = 3$$

So, the present age of Harsh is  $= (5 \times 3) + 9 = 24$  years

And the present age of Nishant is  $= (8 \times 3) + 9 = 33$  years

Now, the present age of Aman is  $= 33.33\%$  of  $(24 + 33)$

$$= \frac{1}{3} \times 57 = 19 \text{ years}$$

So, Aman's age two year hence will be  $= 19 + 2 = 21$  years

Hence, the required answer is **= 21 years.**

### 33. Answer: B

Present age of son =  $x$

Present age of father  $= \frac{200}{100} \times x = 2x$

$$(x - 10)/(2x - 10) = 100/300$$

$$2x - 10 = 3x - 30$$

$$x = 20$$

Present age of father  $= 2 \times 20 = 40$

Required ratio  $= (40 + 15):(20 + 15)$

$$= 55:35$$

$$= 11:7$$

### 34. Answer: B

Benny's present age  $= 80 - 8 = 72$  years

Vikram's age after 6 years  $= 72/2 = 36$

Present age of vikram  $= 36 - 6 = 30$  years

Harthik's age  $= 30 \times \frac{100}{300} = 10$  years

Present age of Benny's daughter  $= 10 \times \frac{60}{100} = 6$

Required age  $= 6 + 4 = 10$  years

### 35. Answer: B

Five years ago, Satya  $= 12x$  and Saran  $= 13x$

$$(12x + 5 + 13)/(13x + 5 + 13) = 21/22$$

$$\Rightarrow 88x + 132 = 91x + 126$$

$$\Rightarrow 6 = 3x$$

$$\Rightarrow x = 2$$

Present ages of Satya  $= 12x + 5 = 29$  years

Present ages of Saran  $= 13x + 5 = 31$  years

Required average  $= (29 + 31)/2 = 30$  years

### 36. Answer: C

Raje's age  $= x$  years, Babu's age  $= x - 2$  years and

Navin's age  $= x - 2 + 3 = x + 1$  years

$$\Rightarrow x + x - 2 + x + 1 = 74$$

$$\Rightarrow x = 25 = \text{Raje's age}$$

### 37. Answer: B

$$\text{Sajan} = 4x$$

$$\Rightarrow 4x + 4x - 4 = 44$$

$$\Rightarrow x = 6$$

$$\text{Age of Sajan 2 years ago} = 4x - 2 = 22 \text{ years}$$

### 38. Answer: A

$$\text{Ramya} = 3 * \text{Riya}$$

$$\text{Ramya} + 4 = 2 * (\text{Riya} + 4)$$

$$3\text{Riya} + 4 = 2\text{Riya} + 8$$

$$\text{Riya} = 4$$

$$\text{Ramya} = 4 * 3 = 12$$

$$\text{Required Average} = (12 + 4)/2 = 8 \text{ years}$$

### 39. Answer: C

$$\text{Total age of the 4 persons} = 24 * 4 = 96$$

$$\text{Let age of F} = x,$$

$$\text{Therefore, present age of S} = x - 5$$

$$\text{Present age of A} = x - 7$$

$$\text{It is given that,}$$

$$x + 18 = x - 5 + x - 7$$

$$x + 18 = 2x - 12$$

$$x = 30 \text{ years}$$

$$\text{Present age of S} = 25$$

$$\text{Present age of A} = 23$$

$$30 + 25 + 23 + D = 96$$

$$\text{Present age of D} = 18 \text{ years}$$

$$\text{Required sum} = (23 + 4) + (18 + 4) = 49 \text{ years}$$

### 40. Answer: B

$$\text{Amrita} = 3x \text{ and Amala} = 2x$$

$$3 \text{ years ago, } (3x - 3) : (2x - 3) = 5 : 3$$

$$\Rightarrow x = 6$$

$$\text{Amala's age} = 2x = 12$$

### 41. Answer: B

$$\text{Let present age of A} = a, \text{ B} = b, \text{ C} = c$$

$$\text{It is given that,}$$

$$(a - 10) = (b - 4)$$

$$(a - b) = 6$$

$$\text{Age of C after 7 years}$$

$$c + 7 = 15$$

$$\text{Present age of C} = 15 - 7 = 8$$

$$\text{Average age of them} = 16 \text{ years}$$

$$\text{Total age of them} = 16 * 3 = 48 \text{ years}$$

$$a + (a - 6) + 8 = 48$$

$$2a - 6 = 40$$

$$a = 23 \text{ years}$$

$$\text{Required sum} = 23 + 3 + 8 + 3 = 37 \text{ years}$$

### 42. Answer: C

$$\text{Bala's age after 4 years} = 8x \text{ and Ajay's age after 4 years} = 7x$$

$$\text{Present age of Bala} = 8x - 4 \text{ and Present age of Ajay} = 7x - 4$$

$$8x - 4 = 7x - 4 + 4$$

$$\Rightarrow x = 4$$

$$\text{Ajay's present age} = 7x - 4 = 24$$

Ajay's age before 2 years = 22 years

**43. Answer: B**

Let the present age of Q and R is 5a and 6a respectively.

And the present age of P and S is 6b and 7b respectively.

Now, the difference of age between P and R will always be = 36 years

So, according to the question,

$$6a - 6b = 36$$

$$a - b = 6 \quad (i)$$

Also,  $6a/6b = 3$

$$a = 3b \quad (ii)$$

$$3b - b = 6$$

$$2b = 6$$

$$b = 3 \text{ years}$$

And  $a = 9$  years

So, the average of P, Q and R is =  $(18 + 45 + 54)/3$

$$= 117/3 \Rightarrow 39 \text{ years}$$

**44. Answer: D**

Let present age of A =  $7x$

After 8 years age of A = 128.56% of  $7x = 9x$

$$7x + 8 = 9x$$

$$x = 4$$

Present age of A =  $7x = 28$  years

Age of B after 7 years = 140% of  $(28 + 7) = 49$

Present age of B =  $49 - 7 = 42$  years

Age of B before 2 years = 40

Age of C before 2 years =  $(40/5) * 6 = 48$  years

Present age of C = 50 years

**45. Answer: D**

$$M - 8 = 1600/2300 * (M + 6)$$

$$23M - 184 = 16M + 96$$

$$M = 40$$

15 years ago Mini's age =  $40 - 15 = 25$  years

Bavi age 15 years ago =  $3/5 * 25 = 15$  years

Present age of Bavi =  $15 + 15 = 30$  years

**46. Answer: C**

Let the present age of Neeta = a

Present age of Seeta =  $a - 18$

Present age of Geeta =  $a + 16$

According to question

$$(a - 18 + 8) / (a + 16 - 6) = 3/5$$

$$5a - 50 = 3a + 30$$

$$2a = 80$$

$$a = 40$$

Age of Neeta after 14 years =  $40 + 14 = 54$

Age of Seeta after 14 years =  $40 - 18 + 14 = 36$

Required % change =  $(54 - 36) / 36 \times 100 = 50\%$

**47. Answer: C**

Let the age of Amit 9 years ago is =  $14x$

And the age of Punit 9 years ago is =  $17x$

So, according to the question,

$$= 17x = 14x + 9$$



$$= 3x = 9$$

$$= x = 3$$

So, the present age of Punit is  $= (17 \times 3) + 9 = 60$  years

And the present age of Amit is  $= (14 \times 3) + 9 = 51$  years

Then, the present age of Sumit 5.5 years ago is  $= (60 + 51)/2 - 5.5$

$$= 55.5 - 5.5$$

$$= 50 \text{ years}$$

#### 48. Answer: D

Darshan's age after 10 years  $= 13x$  and Varshan's age after 10 years  $= 14x$

$$(14x - 15) = (1 + 200/(11 * 100)) * (13x - 15)$$

$$\Rightarrow 15400x - 16500 = 16900x - 19500$$

$$\Rightarrow 3000 = 1500x$$

$$\Rightarrow x = 2$$

$$\text{Dharshan's present age} = 13x - 10 = 26 - 10 = 16$$

#### 49. Answer: D

$$\text{Total age of (A + B + C) 4 years ago} = 48 \times 3 = 144$$

$$\text{Total of present age of (A + B + C)} = 144 + 12 = 156$$

But, according to the question (A + B) after 6 yrs = 100

$$\text{So, sum of present age of (A + B)} = 100 - 12 = 88 \text{ yrs}$$

$$\text{Thus, the present age of C} = 156 - 88 = 68 \text{ yrs.}$$

#### 50. Answer: A

$$\text{Anitha} + \text{Bala} + \text{Deva} = 102$$

$$\text{Bala} - \text{Anitha} = 6$$

$$3x + 2x + 6 + 3x = 102$$

$$8x = 96$$

$$x = 12$$

$$\text{Present age of Bala} = 3x + 6 = 3 * 12 + 6$$

$$= 42 \text{ years}$$

## Mixture and Alligations

1. A vessel contains 180 liter mixture of milk and water. The ratio of the milk to water is 2: 1. How much quantity of water should be added, so that the percentage of milk in the vessel becomes 60% of the total mixture?

A.10 liters

B.20 liters

C.15 liters

D.25 liters

E.None of these

2. A mixture contains 60 liters oil and rest water and the oil which constitutes 75% of the mixture. If x liters of water and 10 liters of oil is added to the mixture, then the quantity of oil in the resultant mixture is double of water. Find the value of x?

A.10

**B.15**

**C.20**

**D.18**

**E.8**

**3. A container contains a mixture of two liquids X and Y in the ratio of 1 : 4 respectively. When 30 litres of the mixture is taken out and 30 litres of liquid X is poured into the container, the ratio becomes 3 : 2 respectively. Then, find how many litres of liquid Y was contained initially in the container?**

**A.36 litre**

**B.42 litre**

**C.32 litre**

**D.48 litre**

**E.None of these**

**4. A mixture of oil and water contains 40% water. If 6 liters of oil is taken out from the mixture, then the quantity of oil and water becomes same, then find the initial quantity of the mixture?**

**A.30 liters**

**B.40 liters**

**C.45 liters**

**D.50 liters**

**E.None of these**

**5. A vessel contains 60 liters milk and water mixture in the ratio of 7:5. If certain quantity of mixture is taken out and replaced with 13 liters of water, then**

**the ratio of the water and milk becomes 4:3, then find the quantity of water in the final solution?**

**A.20 liters**

**B.24 liters**

**C.28 liters**

**D.32 liters**

**E.None of these**

**6. A Jar contains 40 liters of pure milk. If 4 liters of milk is taken out and replaced by water and this process is repeated two more times, then find the quantity of milk in the final mixture?**

**A.28.17 liters**

**B.29.16 liters**

**C.30.19 liters**

**D.32.46 liters**

**E.None of these**

**7. A Jar contains 180 liters mixture of Orange and Apple juice in the ratio of 5:4. What quantity of Apple juice is added to the mixture to reverse the ratio of Orange and Apple juice?**

**A.40 liters**

**B.50 liters**

**C.55 liters**

**D.35 liters**

**E.None of these**

**8. A mixture contains oil and water in the ratio of 5:3. If 120 liters of mixture is taken out and 25 liters of oil**

and 5 liters of water is added in the remaining mixture, then the ratio of the oil to water becomes 2:1. Find the initial quantity of mixture?

- A.160 liters
- B.200 liters
- C.240 liters
- D.280 liters
- E.320 liters

9. Vessel contains 200 liters mixture of milk and water and contains 60% milk. If  $x$  liters of water added to the mixture such that the ratio of milk to water in the final mixture becomes 4:5, find the value of  $x$ ?

- A.50
- B.60
- C.80
- D.70
- E.100

10. A Jar contains 80 liters acid and 40 liters water. If 36 liters of mixture is taken out and replaced with water, then what is the ratio of the acid and water in the final solution?

- A.4:5
- B.6:7
- C.7:8
- D.8:9
- E.None of these

11. Vessel contains 200 liters mixture of milk and water and contains 60% milk. If  $x$  liters of water added to the mixture such that the ratio of milk to water in the final mixture becomes 4:5, find the value of  $x$ ?

- A.50
- B.60
- C.80
- D.70
- E.100

12. A Jar contains the mixture of apple and grapes juice in the ratio of 3: $x$ . If 40 liters of apple juice and 70 liters of grapes juice added in the mixture, then the ratio of the apple and grapes juice in the resultant solution becomes 2:3. If the initial quantity of mixture in Jar is 140 liters, then find the initial quantity of grapes juice?

- A.40
- B.80
- C.120
- D.60
- E.100

13. A Vessel contains the mixture of milk and water in the ratio of 6:5. If  $\frac{1}{10}$  of the mixture is replaced by water and then the quantity of the water in the final mixture is 70 liters. Find the initial quantity of vessel?

A.121 liters

B.132 liters

C.99 liters

D.143 liters

E.None of these

14. Vessel contains 50% of the mixture that has 80% milk. In remaining half of the vessel, there is no milk. How many liters of mixture in vessel is required to obtain 120 liters of pure milk?

A.400 liters

B.300 liters

C.250 liters

D.450 liters

E.280 liters

15. The ratio of lead and tin in two alloys is 2:3 and 3:1 respectively. If these two alloys are mixed in the same quantity, find the ratio of lead and tin in the new alloy.

A.23:17

B.15:13

C.21: 17

D.2:3

E.none of these

16. Beaker A contains the mixture of oil and water in the ratio of 4:3 and the beaker B contains the mixture of oil and water in the ratio of 5:2. If the mixture of beaker A and B is mixed and the quantity of beaker A

and B is equal, then find the ratio of the oil and water in the resultant mixture?

A.4:3

B.3:2

C.2:1

D.9:5

E.1:1

17. A seller sells milk for a wedding function. The ratio of milk and water in the 30 liter mixture is 3: 2. If he add 7 liter milk and 3 liter milk water in the mixture, then find the new ratio of milk and water.

A.5: 3

B.2: 3

C.3: 5

D.3: 2

E.None of these

18. A vessel contains 90 liters of mango juice and remaining water which constitutes 10% of the mixture. 10 liters of mango juice and p liters of water is added to the mixture such that the ratio of mango juice to water in the resultant mixture becomes 4: 3. How much of water added to the mixture?

A.50 liters

B.60 liters

C.55 liters

D.65 liters

E.None of these

19. The ratio of milk and water in a mixture of 50 liters is 3: 2. Find the quantity of water to be added, if we have to make the ratio of milk and water as 1: 2.

- A.20 liters
- B.40 liters
- C.60 liters
- D.25 liters
- E.None of these

20. here are two jars containing acid of 50% and 70% concentration respectively. If 8liters from the first vessel and 30 liters from the second vessel are mixed then what will be the ratio of acid and water in the final mixture?

- A.12:7
- B.2:3
- C.25:13
- D.3:2
- E.7:3

21. A vessel contains 60 liters milk and water mixture in the ratio of 7:5. If certain quantity of mixture is taken out and replaced with 13 liters of water, then the ratio of the water and milk becomes 4:3, then find the quantity of water in the final solution?

- A.20 liters
- B.24 liters
- C.28 liters
- D.32 liters

E.None of these

22. There is a mixture of milk and water in which ratio is 11:18. If 15 litres of milk is added to it, and 30 litres of water removed then, find the ratio of milk and water respectively if initial mixture was 435 litres?

- A.4:3
- B.4:5
- C.5:6
- D.5:8

E.None of these

23. A man consumes mixture of two varieties of milks total of 30 liters daily. First type of milk has 20% water concentration and second type of milk contains 30% of water. If daily consumption of water is 7.8 liters, find the quantity of second type of milk?

- A.12 liters
- B.15 liters
- C.18 liters
- D.20 liters

E.None of these

24. There are two vessels A and B and the capacity of both vessels are equal. Vessel A contains the mixture of milk and water in the ratio of 5:4 and vessel B contains the mixture of milk and water in the ratio of 3:2. If the mixtures of both vessels are mixed, then

**what is the ratio of the milk and water in the final solution?**

- A.26:19**
- B.24:17**
- C.27:20**
- D.28:13**
- E.None of these**

**25. Vessel A contains the mixture of milk and water in the ratio of 5:4 and vessel B contains the mixture of milk and water in the ratio of 3:2. If the mixture from vessel A and B is mixed, then the quantity of milk and water in the final solution is 32 liters and 24 liters respectively. Find the initial quantity of vessel A?**

- A.90 liters**
- B.72 liters**
- C.45 liters**
- D.36 liters**
- E.None of these**

**26. A vessel contains mixture of milk and water in which milk is 375% of water. If 228 litres of mixture is removed and replaced by 28 litres water only then % of milk becomes 250% of water. Find the initial quantity of milk in the vessel.**

- A.290 litres**
- B.195 litres**
- C.390 litres**
- D.420 litres**

**E.None of these**

**27. A milkman has 45 liters mixture of milk and water. If he sold seven-tenth of the milk and two-fifth of the water, then the milkman has half of the mixture. Find the initial quantity of milk?**

- A.20 liters**
- B.15 liters**
- C.60 liters**
- D.40 liters**
- E.30 liters**

**28. Two varieties of wheat mixed with in the ratio of 4:5. The price of first variety of wheat is Rs.35 per kg and that of second type of wheat is Rs.40 per kg. Find the price of 36 kg of the mixture?**

- A.Rs.1280**
- B.Rs.1320**
- C.Rs.1340**
- D.Rs.1360**
- E.None of these**

**29. 450 liters mixture contains 70% of alcohol. If x liters of alcohol added to the mixture, then the quantity of alcohol in the resultant mixture becomes 80%. Find the value of x?**

- A.200 liters**
- B.225 liters**
- C.240 liters**
- D.250 liters**

E.None of these

30. Mixture X contains 70% of juice and remaining water, mixture Y of 64 litres contains juice and water in the ratio 3:1, if both are mixed in the third container, then the quantity of water in the final mixture is 29.5liters. Find the total volume of Mixture X (in litres)?

A.40 litres

B.35 litres

C.50 litres

D.60 litres

E.45 litres

31. A bottle contains 180 liters mixture of milk to water in the ratio of 2: 1. How much water should be added in the bottle so that ratio of milk to water changes to 1: 1?

A.20 liters

B.40 liters

C.60 liters

D.80 liters

E.None of these

32. A vessel has 200 liters of alcohol and water mixture. If 80% of alcohol and 60% of water is removed from the vessel, then the vessel emptied by 74%. Find the initial quantity of water in the mixture.

A.80 liters

B.140 liters

C.120 liters

D.60 liters

E.None of these

33. Two vessels contains acid of 0.5 and 0.8 concentrations, if 3 liters from the first jar and 4 liters from the second jar are mixed together, then what will be the ratio of acid and water in the final mixture?

A.43:27

B.47:23

C.45:25

D.41:29

E.29:41

34. The ratio of led and tin in two alloys is 2:3 and 3:1 respectively. If these two alloys are mixed in the same quantity, find the ratio of led and tin in the new alloy.

A.23:17

B.15:13

C.21: 17

D.2:3

E.none of these

35. Vessel A contains 90 liters milk which is 60% of the quantity of vessel A and rest of quantity is water. If x liters of milk and (x + 10) liters of water is added to vessel A, then the ratio of the milk and water becomes 6:5. If vessel B contains (x + 30) liters

**mixture of milk and water in the ratio of 3:2, then find the quantity of milk in vessel B?**

- A.45 liters**
- B.30 liters**
- C.36 liters**
- D.48 liters**
- E.42 liters**

**36. Vessel A contains 28 liters of milk and x liters of water. If 24 liters of mixture is taken out which is contains 8 liters of water, then find the value of x?**

- A.12 liters**
- B.14 liters**
- C.16 liters**
- D.18 liters**
- E.20 liters**

**37. A drink contains a mixture of 350 ml soda and 1400 ml vodka. Jamini takes sip of 10% of drink it feels harder so she add some amount of Soda to make drink full again. She repeated the process once again. Find the % of soda in drink now.**

- A.25.4 %**
- B.20.5%**
- C.30.3%**
- D.35.2 %**
- E.None of these**

**38. 120 litres of mixture consists of 30% of water, shopkeeper sold 30 litres of the mixture and add 12**

**litres of water with the mixture, then find the ratio of milk and water in the final mixture.**

- A.21:17**
- B.17:21**
- C.13:21**
- D.21:13**
- E.None of the above**

**39. 30g of an alloy of copper and zinc contains 70% copper by weight. The quantity of copper, that is to be mixed up with this alloy so that it may contain 90% copper is:**

- A.30g**
- B.40g**
- C.50g**
- D.60g**
- E.None of these**

**40. Some quantity of rice costing Rs.30/kg is mixed with some quantity of rice costing Rs.35/kg. If final mixture costs Rs.32/kg, then find the ratio of quantity in which they are mixed?**

- A.2: 5**
- B.3: 2**
- C.1: 6**
- D.6: 5**
- E.None of these**

**41. A can contains a mixture of two liquids A and B in the ratio 5: 3. When 4 liters of mixture are drawn off**



and the can is filled with liquid B, the ratio of A and B becomes 5: 7. How many liters of liquid A was contained by the can initially?

- A.6
- B.7.5
- C.8
- D.4.5
- E.None of these

42. There are two vessels A and B contains the mixture of milk and water in the ratio of 3:2 and 5:4. If both vessels are mixed together in vessel C, then what is the ratio of milk and water in vessel c?

- A.18:13
- B.20:17
- C.24:17
- D.26:19
- E.None of these

43. 60 liters of mixture contains in the milk and water in the ratio of 3:2. If 20 liters of mixture is taken out and replaced by 32 liters of water, then what is the ratio of milk and water in the final solution?

- A.1:2
- B.2:3
- C.1:3
- D.4:3
- E.None of these

44. A jar has 25 liters of milk. After selling 5 liters of milk, the milkman adds 5 liters of water to the jar. He repeats the process again. What is the percentage of milk contained in the jar now?

- A.16%
- B.64%
- C.32%
- D.14%
- E.None of these

45. A vessel is full of milk.  $\frac{1}{5}$ <sup>th</sup> of milk is taken out and replaced with water. This process is repeated 2 more times; the remaining milk in the vessel is 51.2 liters. Find the capacity of the vessel.

- A.60
- B.50
- C.200
- D.100
- E.250

46. In what ratio must water be mixed with milk to gain 30% by selling the mixture at cost price?

- A.3: 10
- B.10: 3
- C.2: 5
- D.5: 2
- E.None of these

47. A milkman has 60 liters mixture of milk and water in the ratio of 3: 1. If he added x liters of water

in the mixture, then the ratio of the milk to water becomes 9: 7. Find the value of x?

- A.16 liters
- B.20 liters
- C.24 liters
- D.32 liters
- E.None of these

48. A vessel contains the mixture of milk and water in the ratio of 4: 1. If 25 liters of water is added to the vessel, then the ratio of the milk and water becomes 16: 9, what is the initial quantity of the mixture?

- A.50 liters
- B.75 liters
- C.100 liters
- D.150 liters
- E.None of these

49. 250 liters of mixture contains 28% of water and the rest is milk. The amount of milk that must be

added so that the resulting mixture contains 82.5% milk is:

- A.50 liters
- B.100 liters
- C.150 liters
- D.200 liters
- E.None of these

50. If the vessel A contains mixture of milk and water in the ratio of 4: 3 and vessel B contains 60 litres of mixture of milk and water in the ratio of 7: 5. If the vessel A and B mixture is mixed, then the ratio of the milk to water becomes 11: 8, then find the initial quantity of vessel A?

- A.35 litres
- B.28 litres
- C.56 litres
- D.63 litres
- E.None of these

## Mixture and Alligations – Answers and Explanation

1. Answer: B

$$\text{Milk} = \frac{2}{3} * 180 = 120\text{Liters}$$

$$\text{Water} = 180 - 120 = 60\text{Liters}$$

$$120 = (180 + x) * 60\%$$

$$12000 = 10800 + 60x$$

$$1200 = 60x$$

$$\Rightarrow x = 20\text{Liters}$$

2. Answer: B

$$\text{Water} = 60 * 25/75 = 20$$

$$(60 + 10)/(20 + x) = 2/1$$

$$40 + 2x = 70$$

$$x = 15$$

### 3. Answer: D

$$=(X-6+30)/(4x-24)=3/2$$

$$2x+48=12x+72$$

$$X=12$$

Liquid Y was contained initially in the container=  
 $12*4=48$

### 4. Answer: A

$$\text{Initial quantity of mixture} = 100x$$

$$\text{Oil} = 100x * 60/100 = 60x$$

$$\text{Water} = 40/100 * 100x = 40x$$

$$(60x - 6)/40x = 1/1$$

$$60x - 6 = 40x$$

$$20x = 6$$

$$100x = 6 * 5 = 30$$

### 5. Answer: C

$$\text{Milk in 60 liters} = 60 * 7/12 = 35$$

$$\text{Water in 60 liters} = 60 * 5/12 = 25$$

$$(35 - 7x/12)/(25 - 5x/12 + 13) = 3/4$$

$$114 - 5x/4 = 140 - 7x/3$$

$$7x/3 - 5x/4 = 26$$

$$x = 24$$

Final quantity of water =  $25 - (5 * 24/12) + 13 =$   
28 liters

### 6. Answer: B

$$\text{Milk in the final quantity} = 40 * (1 - 4/40)^3$$

$$= 29.16 \text{ liters}$$

### 7. Answer: E

$$\text{Apple juice} = 4/9 * 180 = 80$$

$$\text{Orange juice} = 5/9 * 180 = 100$$

$$(80 + x)/100 = 5/4$$

$$500 = 320 + 4x$$

$$x = 45 \text{ liters}$$

### 8. Explanation

**Answer: C**

$$\text{Initial quantity} = 8x$$

$$\text{Oil} = 5x$$

$$\text{Water} = 3x$$

$$\text{Oil in 120 liters} = 120 * 5/8 = 75 \text{ liters}$$

$$\text{Water in 120 liters} = 120 * 3/8 = 45 \text{ liters}$$

$$(5x - 75 + 25)/(3x - 45 + 5) = 2/1$$

$$6x - 80 = 5x - 50$$

$$x = 30$$

$$\text{Initial quantity} = 8 * 30 = 240 \text{ liters}$$

**9. Answer: D**

$$\text{Milk in 200 liters} = 60/100 * 200 = 120$$

$$\text{Water in 200 liters} = 40/100 * 200 = 80$$

$$120/(80 + x) = 4/5$$

$$150 = 80 + x$$

$$x = 70$$

**10. Answer: C**

$$\text{Acid} = 80 \text{ liters}$$

$$\text{Water} = 40 \text{ liters}$$

$$\text{Ratio of acid and water} = 80:40 = 2:1$$

$$\text{Acid in 36 liters} = 2/3 * 36 = 24 \text{ liters}$$

$$\text{Water in 36 liters} = 1/3 * 36 = 12 \text{ liters}$$

$$\text{Required ratio} = 80 - 24:40 - 12 + 36$$

$$= 56:64$$

$$= 7:8$$

**11. Answer: D**

$$\text{Milk in 200 liters} = 60/100 * 200 = 120$$

$$\text{Water in 200 liters} = 40/100 * 200 = 80$$

$$120/(80 + x) = 4/5$$

$$150 = 80 + x$$

$$x = 70$$

**12. Answer: B**

$$((3/(3 + x) * 140) + 40)/(x/(x + 3) * 140 + 70) = 2/3$$

$$(140x + 70x + 210) * 2 = 3(420 + 120 + 40x)$$

$$420x + 420 = 1620 + 120x$$

$$1200 = 300x$$

$$x = 4$$

$$\text{Required quantity} = 4/7 * 140 = 80$$

**13. Answer: E**

$$\text{Milk} = 6x$$

$$\text{Water} = 5x$$

$$5x - 1/10 * 5x + 1/10 * 11x = 70$$

$$5x + 1/10 * 6x = 70$$

$$56x = 700$$

$$x = 12.5$$

$$\text{Total quantity of vessel} = 12.5 * 11 = 137.5 \text{ liters}$$

**14. Answer: B**

$$\text{Total quantity of vessel} = 100x \text{ liters}$$

$$\text{Quantity of milk} = 100x * 50/100 * 80/100 = 40x \text{ liters}$$

$$40x = 120$$

$$x = 3$$

$$\text{Total quantity of vessel} = 100 * 3 = 300 \text{ liters}$$

**15. Answer: A**

Let the quantity of each alloy is 20

First alloy:

$$\text{Led} = 2 * 20/5 = 8$$

$$\text{Tin} = 20 - 8 = 12$$

Second alloy:

$$\text{Led} = 3 * 20/4 = 15$$

$$\text{Tin} = 20 - 15 = 5$$

$$\text{Required ratio} = (8+15) : (12+5) = 23:17$$

**16. Answer: D**

$$\text{Required ratio} = (4/7 + 5/7) : (3/7 + 2/7)$$

$$= 9:5$$

**17. Answer: A**

$$\text{Milk} = 3/5 * 30 = 18 \text{ Liters}$$

$$\text{Water} = 2/5 * 30 = 12 \text{ Liters}$$

$$\text{New ratio} = \text{Milk: Water} = (18 + 7) : (12 + 3)$$

$$= 5:3$$

**18. Answer: D**

$$\text{Quantity of water in the initial mixture} = 90/0.90 * 0.10 = 10 \text{ liters}$$

$$(90 + 10)/(10 + p) = 4/3$$

$$\Rightarrow p = 65 \text{ liters}$$

**19. Answer: B**

$$\text{Milk} = 50 * 3/5 = 30 \text{ liters}$$

$$\text{Water} = 50 - 30 = 20 \text{ liters}$$

$$\text{New ratio} = 1:2$$

$$\text{Quantity of water to be added} = x \text{ liters}$$

$$\text{Milk: Water} = 30/(20 + x)$$

$$\Rightarrow 30/(20 + x) = \frac{1}{2}$$

$$\Rightarrow x = 40 \text{ liters}$$

**20. Answer: C**

Ratio of acid and water in the first vessel = 50% : 50% = 1:1

Ratio of acid and water in the second vessel = 70% : 30% = 7:3

8 litres of vessel 1 is taken out,

Acid present in the mixture =  $(\frac{1}{2}) (8) = 4$  litres

Remaining 4litres are water

Similarly, 30 litres of mixture from vessel 2 contains,

70% i.e 21 litres are acid , remaining 9 litres are water

If both are mixed,

Ratio of acid and water in the final mixture

$$=(4+21) : (4+9)$$

$$=25:13$$

**21. Answer: C**

$$\text{Milk in 60 liters} = 60 * \frac{7}{12} = 35$$

$$\text{Water in 60 liters} = 60 * \frac{5}{12} = 25$$

$$(35 - 7x/12)/(25 - 5x/12 + 13) = 3/4$$

$$114 - 5x/4 = 140 - 7x/3$$

$$7x/3 - 5x/4 = 26$$

$$x = 24$$

$$\text{Final quantity of water} = 25 - (5 * 24/12) + 13 = 28 \text{ liters}$$

**22. Answer: E**

Total mixture initially = 435 litres

$$\text{Amount of milk} = \frac{11}{29} \times 435 = 165 \text{ litres}$$

$$\text{Amount of water} = 435 - 165 = 270 \text{ litres}$$

$$\text{Amount of milk after addition} = 165 + 15 = 180 \text{ litres}$$

$$\text{Amount of water after removal} = 270 - 30 = 240$$

$$\text{Required ratio} = 180: 240 = 3: 4$$

**23. Answer: C**

$$\text{First type of milk} = x$$

$$\text{Second type of milk} = 30 - x$$

$$\frac{20}{100} * x + \frac{30}{100} * (30 - x) = 7.8$$

$$x = 12$$

$$\text{Required quantity} = 30 - 12 = 18 \text{ liters}$$

**24. Answer: A**

Milk in vessel A =  $5x/9$

Water in vessel A =  $4x/9$

Milk in vessel B =  $3x/5$

Water in vessel B =  $2x/5$

Required ratio =  $(5x/9 + 3x/5):(4x/9 + 2x/5)$

$$= (25x + 27x):(20x + 18x)$$

$$= 52:38$$

$$= 26:19$$

**25. Answer: D**

Total quantity of vessel A =  $9x$

Total quantity of vessel B =  $5y$

$$5x + 3y = 32 \text{ -----(1)}$$

$$4x + 2y = 24$$

$$2x + y = 12 \text{ -----(2)}$$

From (1) and (2)

$$x = 4$$

Quantity of vessel A =  $4 * 9 = 36$  liters

**26. Answer: C**

Initial ratio of milk and water =  $375/100 = 15:4$

After removal of 228 litres mixture, ratio will be same =  $15:4$

After adding 28 litres water, ratio of milk and water =  $250/100 = 5:2$

According to question,

$$15a / (4a + 28) = 5/2$$

$$30a = 20a + 140$$

$$10a = 140$$

$$a = 14$$

Total mixture after removal of 228 litres =  $14 \times (15 + 4) = 266$

Initial quantity of mixture =  $266 + 228 = 494$

Initial quantity of milk =  $15/19 \times 494 = 390$  litres

**27. Answer: B**

Quantity of milk =  $x$

Quantity of water =  $y$

$$x + y = 45 \text{ -----(1)}$$

$$x * 7/10 + y * 2/5 = 45/2$$

$$7x + 4y = 45 * 5 \text{ -----(2)}$$

From (1) and (2)

$$3y = 90$$

$$y = 30$$

$$x = 45 - 30 = 15 \text{ liters}$$

**28. Answer: D**

$$\text{Required price} = 36 * 4/9 * 35 + 36 * 5/9 * 40$$

$$= 560 + 800$$

$$= \text{Rs.}1360$$

**29. Answer: B**

$$\text{Alcohol} = 450 * 70/100 = 315 \text{ liters}$$

$$(315 + x) = 80/100 * (450 + x)$$

$$31500 + 100x = 36000 + 80x$$

$$x = 225$$

**30. Answer: E**

$$\text{Let initial quantity of mixture } X = 100x$$

$$\begin{aligned} \text{Amount of juice in the mixture} &= 70\% \text{ of } 100x \\ &= 70x \end{aligned}$$

Remaining 30x are water.

$$\begin{aligned} \text{Amount of juice in the another mixture} &= (64/4) \times \\ &3 = 48 \text{ litres} \end{aligned}$$

Remaining 16 litres are water.

It is given that,

$$30x + 16 = 29.5$$

$$30x = 13.5$$

$$x = 0.45$$

$$\begin{aligned} \text{Total quantity of mixture } X &= 100x = 100(0.45) = \\ &45 \text{ litres} \end{aligned}$$

**31. Answer: C**

$$\text{Milk} = 2/3 * 180 = 120$$

$$\text{Water} = 1/3 * 180 = 60$$

Let x be the required amount of water.

$$120/(60 + x) = 1/1$$

$$\Rightarrow x = 60 \text{ liters}$$

**32. Answer: D**

Let total volume of alcohol in the mixture = x liters

Therefore volume of water in the mixture = (200 - x) liters

$$\begin{aligned} \text{Remaining quantity of vessel} &= (100 - 74)\% \text{ of } 200 \\ &= 52 \text{ liters} \end{aligned}$$

$$(100 - 80)\% \text{ of } x + (100 - 60)\% \text{ of } (200 - x) = 52$$

$$20\% \text{ of } x + 40\% \text{ of } (200 - x) = 52$$

$$0.2x + 80 - 0.4x = 52$$



$$0.2x = 28$$

$$x = 140 \text{ liters}$$

$$\text{Initial quantity of water} = 200 - 140 = 60 \text{ liters}$$

**33. Answer: B**

1<sup>st</sup> solution contains 50% acid concentration, and the 2<sup>nd</sup> solution contains 80% acid concentration.

50% of (3 liters), 80% of 4 liters are mixed to form a new mixture,

$$\text{Therefore volume of new mixture} = 4 + 3 = 7 \text{ liters}$$

New mixture contains

(50% of 3 liters, 80% of 4 liters of acid) and (50% of 3 liters, 20% of 4 liters of water)

Required ratio,

$$(1.5 + 3.2) : (1.5 + 0.8)$$

$$4.7 : 2.3$$

$$47 : 23$$

**34. Answer: A**

Let the quantity of each alloy is 20

First alloy:

$$\text{Led} = 2 * 20 / 5 = 8$$

$$\text{Tin} = 20 - 8 = 12$$

Second alloy:

$$\text{Led} = 3 * 20 / 4 = 15$$

$$\text{Tin} = 20 - 15 = 5$$

$$\text{Required ratio} = (8 + 15) : (12 + 5) = 23 : 17$$

**35. Answer: C**

Quantity of water in vessel A =  $40 / 60 * 90 = 60$  liters

$$(90 + x) / (60 + x + 10) = 6 / 5$$

$$450 + 5x = 420 + 6x$$

$$x = 30 \text{ liters}$$

$$\text{Quantity of vessel B} = 30 + 30 = 60 \text{ liters}$$

$$\text{Milk in vessel B} = 3 / 5 * 60 = 36 \text{ liters}$$

**36. Answer: B**

$$\text{Quantity of mixture} = 24 \text{ liters}$$

$$\text{Water in mixture} = 8 \text{ liters}$$

$$\text{Milk in mixture} = 24 - 8 = 16 \text{ liters}$$

$$\text{Ratio of milk and water} = 16 : 8 = 2 : 1$$

$$x = 1 / 2 * 28 = 14 \text{ liters}$$

**37. Answer: D**

When 10% mixture removed, then by same % its components removed.

Amount of Vodka left after 2 process =  $1400 \times 90\% \times 90\% = 1134 \text{ ml}$

Total amount of mixture remains same = 1750 ml

Amount of soda left in drink = 616 ml

Required % =  $616 / 1750 \times 100 = 35.2\%$

**38. Answer: D**

In the given mixture 30% is water i.e 36 liters, remaining 84 liters are milk.

Ratio of milk and water in the mixture = 7:3

30 liters of the mixture is sold by the shopkeeper,

21 liters (i.e 7 parts) of milk is sold and 9 liters (3 parts) of water is sold.

Remaining quantity of milk =  $84 - 21 = 63$  liters

Remaining quantity of water =  $36 - 9 = 27$  liters

12 liters of water is added to this mixture, water in the final mixture is  $27 + 12 = 39$  liters

Ratio of milk and water in the mixture is 63:39 i.e 21:13

**39. Answer: D**

$$\frac{(70/100 \times 30 + x)/(30/100 \times 30)}{(90/100)/(10/100)} =$$

$$\Rightarrow 21 + x = 81$$

$$\Rightarrow x = 60\text{g}$$

**40. Answer: B**

$$x/y = (35 - 32)/(32 - 30) = 3/2$$

**41. Answer: B**

Let the can contains  $5x$  and  $3x$  of mixtures A and B respectively.

Quantity of A in mixture left =  $5x - 5 \times \frac{4}{8} = (5x - \frac{5}{2})$  liters

Quantity of B in mixture left =  $3x - 3 \times \frac{4}{8} = (3x - \frac{3}{2})$  liters

$$\Rightarrow (5x - \frac{5}{2}) / [(3x - \frac{3}{2}) + 4] = \frac{5}{7}$$

$$\Rightarrow (10x - 5) / (6x + 5) = \frac{5}{7}$$

$$\Rightarrow 70x - 35 = 30x + 25$$

$$\Rightarrow x = \frac{3}{2}$$

The can initially has  $5x = 5 \times \frac{3}{2} = 7.5$  liters of liquid A

**42. Answer: D**

Required ratio =  $(\frac{3}{5} + \frac{5}{9}) : (\frac{2}{5} + \frac{4}{9})$

$$= 52:38$$

$$= 26:19$$

**43. Answer: A**

$$\text{Milk in 60 liters} = \frac{3}{5} * 60 = 36 \text{ liters}$$

$$\text{Water in 60 liters} = \frac{2}{5} * 60 = 24 \text{ liters}$$

$$\text{Milk in 20 liters} = \frac{3}{5} * 20 = 12 \text{ liters}$$

$$\text{Water in 20 liters} = \frac{2}{5} * 20 = 8 \text{ liters}$$

$$\text{Required ratio} = (36 - 12):(24 - 8 + 32)$$

$$= 24:48$$

$$= 1:2$$

**44. Answer: B**

$x$  = Quantity of milk,  $y$  = replaced quantity

Amount of milk in the container after  $n$  operations

$$= x(1 - y/x)^n$$

$$= 25(1 - 5/25)^2 = 16 \text{ liters}$$

$$\text{Required percentage} = 16/25 * 100 = 64\%$$

**45. Answer: D**

Remaining milk = total milk  $(1 - \text{taken} / \text{total})^n$

$$51.2 = x(1 - 1/5)^3$$

$$100 = x$$

**46. Answer: A**

$$\text{Required ratio} = P\%: 100$$

$$= 30: 100$$

$$= 3: 10$$

**47. Answer: B**

$$\text{Milk} = \frac{3}{4} * 60 = 45$$

$$\text{Water} = \frac{1}{4} * 60 = 15$$

$$45/(15 + x) = 9/7$$

$$135 + 9x = 315$$

$$9x = 180$$

$$x = 20$$

**48. Answer: C**

$$4x/(x + 25) = 16/9$$

$$16x + 25 * 16 = 36x$$

$$20x = 400$$

$$x = 20$$

$$\text{Total quantity} = 20 * 5 = 100 \text{ liters}$$

**49. Answer: C**

$$\text{Milk} = 72\% \text{ of } 250 = 180 \text{ liters}$$

$$\text{Water} = 28\% \text{ of } 250 = 70 \text{ liters}$$

$$(180 + x)/70 = 82.5/17.5$$

$\Rightarrow x = 150$  liters

**50. Answer: A**

Milk in vessel B =  $\frac{7}{12} * 60 = 35$  liters

Water in vessel B =  $\frac{5}{12} * 60 = 25$  liters

Let us take the quantity of mixture in vessel A be x

$$\frac{(4x/7 + 35)}{(3x/7 + 25)} = \frac{11}{8}$$

$$33x/7 + 275 = 32x/7 + 280$$

$$x/7 = 5$$

$$x = 35 \text{ litres}$$

## SI and CI

1. An amount Rs. P was lent at r% per annum simple interest. After 3 years, total amount becomes Rs.4600 and after 5 years, total amount becomes Rs.5000. What is P?

A.Rs.2000

B.Rs.3000

C.Rs.4000

D.Rs.5000

E. None of these

2. Jenifer invested Rs. x in simple interest scheme at the rate of 20% per annum for 6 years and after 6 years, she received the interest amount is Rs.5880. Find the amount received when Rs. x invested at 10% per annum compounded interest for 3 years?

A.Rs.6521.9

B.Rs.7114.8

C.Rs.8245.13

D.Rs.6935.8

E.Rs.7682.9

3. Meena deposited Rs.7800 in compound interest scheme at the rate of 20% per annum for 2 years. Vinitha deposited Rs.4800 in simple interest scheme at the rate of 15% per annum for 5 years. What is the difference between the interest earned by Meena and Vinitha?

A.Rs.155

B.Rs.158

C.Rs.164

D.Rs.148

E.Rs.168

4. A sum of money becomes Rs.3300 after one year and Rs.3993 after 3 years, when invested in a compound interest scheme. What is the total amount will get if the sum invested in the same scheme for 2 years?

A.Rs.3630

B.Rs.3640

C.Rs.3650

D.Rs.3880

E.None of these

5. Shon invested totally Rs.6000 in two schemes A and B. Scheme A offers simple interest at the rate of 15% per annum while scheme B offers 10% per annum compound interest, compounded annually. If the amount received by Shon after 2 years is Rs.7440, find the sum invested in scheme A?

A.Rs.1000

B.Rs.2000

C.Rs.3000

D.Rs.4000

E.Rs.3200

6. Babu deposited Rs.( $x + 400$ ) at 10% per annum simple interest and earned Rs.480 as interest after 3 years. Find the interest earned by him if he deposited Rs. $3x$  at 10% per annum for 3 years at compound interest.

A.Rs.1191.6

B.Rs.2401

C.Rs.3412.4

D.Rs.4101

E.None of these

7. Renu invests Rs. $x$  in simple interest at the rate of 15% per annum for 3 years. Rama invests Rs. $y$  in simple interest scheme at the rate of 15% per annum for 3 years. If the sum of the value of  $x$  and

$y$  is Rs.11000 and the difference between the interest received by Renu and Rama is Rs.1800, then find the value of  $y$ ?

A.Rs.7500

B.Rs.6000

C.Rs.5100

D.Rs.7000

E.Rs.6800

8. Meena borrows Rs. $x$  from Tina at 20% per annum at compound interest for 3 years. If Meena returned Rs.3660 at the end of second year and she returned Rs.4999.68 at end of third year and cleared all her debt, find the value of  $x$ ?

A.Rs.5345

B.Rs.5245

C.Rs.5235

D.Rs.5435

E.Rs.5425

9. The simple interest on Rs.  $P$  at 15% p.a for 2 years is Rs.300 more than the simple interest on Rs.( $P + 500$ ) at 12% for 2 years. What is the interest if ( $2P + 500$ ) is lent for 2 years at 12% SI rate?

A.Rs.1750

B.Rs.2350

C.Rs.3480

D.Rs.4810

E. None of these

10. A sum of money invested doubles itself in 4 years. In how many years will it become nine times itself at the same rate?

A. 24 years

B. 30 years

C. 28 years

D. 32 years

E. None of these

11. Deepika and Dinesh had sums in the ratio of 13:15. Deepika invested her sum at 15% per annum simple interest for 5 years and Dinesh invested his sum at 10% per annum simple interest for 4 years. If the sum of the amounts received by Deepika and Dinesh is Rs.18375, then find the sum had by Dinesh.

A. Rs.6000

B. Rs.4800

C. Rs.5400

D. Rs.4500

E. None of these

12. A certain sum of money amounts to Rs.6300 in 2 years and to Rs.8550 in 4.5 years. Find the rate of simple interest.

A. 10%

B. 15%

C. 18%

D. 20%

E. 22%

13. Certain sum triples itself in  $x$  years when invested in simple interest scheme at the rate of 20% per annum. Find the value of  $x$ ?

A. 5

B. 8

C. 6

D. 10

E. 12

14. Meena invested Rs.8400 in simple interest scheme at the rate of  $x\%$  per annum for 4 years and after 4 years she received the interest from the scheme is Rs.3360. If Beela invested Rs.9600 in compound interest scheme at the rate of  $2x\%$  per annum for 3 years, then what is the total amount received by Beela after 3 years?

A. Rs.16783.8

B. Rs.16456.8

C. Rs.16965.8

D. Rs.16588.8

E. None of these

15. Amala has Rs. $x$ . She invests 60% of this amount in simple interest scheme at the rate of 15% per annum and rest in compound interest scheme at the rate of 20% per annum. After 2 years she received

**the total interest from both schemes is Rs.2848, find the value of x?**

- A.Rs.3000**
- B.Rs.5000**
- C.Rs.7000**
- D.Rs.6000**
- E.Rs.8000**

**16. A sum of Rs.4600 becomes Rs.6670 after 3 years at simple interest. If the same sum invests on compound interest at the same rate of interest for 2 years, then find the compound interest received by after 2 years?**

- A.Rs.1683.5**
- B.Rs.1483.5**
- C.Rs.1883.5**
- D.Rs.1683.5**
- E.None of these**

**17. The ratio of the amounts on the same sum for 11 years to 9 years is 36:25 when invested to earn compound interest. What is the rate of interest per annum?**

- A.15%**
- B.10%**
- C.20%**
- D.18%**
- E.None of these**

**18. Mini invests Rs.21000 at 10% per annum compound interest scheme A and he also invests Rs.16000 at 15% per annum simple interest scheme B. What is the difference between the interest received from scheme A and B after 2 years?**

- A.Rs.310**
- B.Rs.340**
- C.Rs.390**
- D.Rs.370**
- E.None of these**

**19. Natchathira invests Rs.3000 in simple interest scheme at the rate of 22% per annum for x years. After x years she received the total amount is Rs.4980. If Nandhini invests Rs.8000 in compound interest scheme at 20% per annum for x years, then find the interest received by Nandhini?**

- A.Rs.5824**
- B.Rs.6036**
- C.Rs.5952**
- D.Rs.5734**
- E.Rs.6126**

**20. Sharmi invested half of her PF amount in scheme A at 10% p.a simple interest for 2 years and another half of the amount in scheme B at 15% compounded annually for 2 years. If Sharmi received Rs.661.5 less than scheme A when**

compared to scheme B, then find the amount invested by her in scheme B.

- A.Rs.5200
- B.Rs.5400
- C.Rs.5800
- D.Rs.5900
- E.None of these

21. Raghu invested Rs.x in a scheme offering 10% p.a at compound interest compounded annually for 2 years. Find the value of x, if the interest received by him for only second year is Rs.5500.

- A.Rs.10000
- B.Rs.30000
- C.Rs.50000
- D.Rs.15000
- E.None of these

22. An amount becomes Rs.1950 in 2 years at simple interest at certain rate and becomes Rs.2625 in 5 years. What is the interest earned if the same amount is invested at compound interest at 20% per annum, compounded annually for two years?

- A.Rs.330
- B.Rs.660
- C.Rs.990
- D.Rs.880
- E.None of these

23. Yashika invests Rs.x on simple interest scheme at the rate of y% per annum for y years. If she received the interest amount after y years is 25% of the initial investment of Yashika and Yamini invests Rs.6000 on simple interest at the rate of 12% per annum for y years, then what is the interest amount received by Yamini after y years?

- A.Rs.3200
- B.Rs.3000
- C.Rs.3600
- D.Cannot be determined
- E.None of these

24. Raj invested a sum of money at a certain rate of SI for a period of three years. Had he invested the same sum for a period of 5 years the total interest earned by him would have 38% more than the earlier interest amount. Find the rate of interest per annum?

- A.11.11%
- B.8.25%
- C.15.75%
- D.12.33%
- E.Cannot be determined

25. Aman takes a loan at a simple interest rate of 6% in the first year with an increase by 0.5% in each further year. He paid interest of Rs. 3807 after



**four years. Find the amount of the loan taken by him?**

- A.Rs. 12,723**
- B.Rs. 13,845**
- C.Rs. 14,100**
- D.Rs. 15,784**
- E.None of these**

**26. Losliya invested Rs.12000 for 2 years at the rate of 10% per annum compound interest and Sandy invested Rs.14000 for 4 years at the rate of 15% per annum at simple interest. What is the difference between the interest received by Losliya and Sandy?**

- A.Rs.5880**
- B.Rs.5960**
- C.Rs.5760**
- D.Rs.5480**
- E.None of these**

**27. A sum when invested in a bank at compound interest at 10% p.a amounts to Rs.8470 in 2 years. When the same sum is invested at 20% p.a at simple interest for 4 years, what is the amount received?**

- A.Rs.12600**
- B.Rs.14500**
- C.Rs.15600**
- D.Rs.18900**

**E.None of these**

**28. Saran deposited an amount of Rs.2500 in a private bank at the rate of interest of 12% per annum. How much time it will take to get Rs.1200 as interest in simple interest?**

- A.2 years**
- B.3 years**
- C.4 years**
- D.5 years**
- E.None of these**

**29. Rishi invested Rs.4400 at 12% per annum simple interest and Rs.3000 at 10% per annum compound interest. What is the difference between the simple and compound interest after 2 years?**

- A.Rs.389**
- B.Rs.398**
- C.Rs.418**
- D.Rs.426**
- E.None of these**

**30. 40% of Rs.5000 is deposited at 10% p.a compound interest compounded annually and the remaining at 8% p.a in simple interest. Find the interest earned after 3 years.**

- A.Rs.1300**
- B.Rs.1345**
- C.Rs.1382**
- D.Rs.1390**

E.None of these

31. Vijay invested Rs. X in a scheme for 3 years at the simple interest rate of 10% per annum and Ajay invested Rs.  $(X + 7575)$  in an another scheme for 2 years at the compound interest rate of 20% per annum. If from both the scheme Vijay and Ajay got total interest of Rs. 45,402, then find the value of X?

A.Rs. 56,850

B.Rs. 52,318

C.Rs. 58,580

D.Rs. 52,815

E.None of these

32. A person invested a certain amount in simple interest at the rate of 10% per annum and earned Rs. 4500 as an interest at the end of three years. Had the interest been compounded every year, how much more interest would have been earned by him on the same amount with the same interest rate after three years?

A.Rs. 484

B.Rs. 465

C.Rs. 524

D.Rs. 625

E.None of these

33. Anita invested Rs.4000 at the rate of 20% per annum compounded annually for three years. After

3 years, she deposited the total amount into scheme B which gave a simple interest of 10% for 3 years. What is the amount Anita will have at the end of 6 years?

A.Rs.6260

B.Rs.7950.5

C.Rs.8240

D.Rs.8985.6

E.None of these

. Gopi invests Rs.4400 in a bank in simple interest at 12% per annum for n years and Chandra invests Rs.5400 in the same bank in simple interest at  $(n + 8)\%$  per annum for 2 years. If Gopi received the interest which is Rs.816 more than the interest received by Chandra, find the value of n.

A.1

B.2

C.3

D.4

E.None of these

35. An amount becomes Rs.7000 in 4 years at Simple interest. The same amount becomes Rs.7400 in 4 years if the rate of interest is increased by 20%. Find the rate of interest.

A.5%

B.10%

C.15%

**D.20%**

**E.None of these**

**36. A sum of Rs.8400 amounts to Rs.9438.24 in a period of 2 years, if it is compounded annually. Find the rate of interest.**

**A.2%**

**B.4%**

**C.6%**

**D.8%**

**E.None of these**

**37. An amount of money grows upto Rs. 3960 in 2 yrs and 4356 in 3 yrs on compound interest. Find the rate per cent.**

**A.14%**

**B.10%**

**C.15%**

**D.18%**

**E.None of these**

**38. The compound interest on a certain sum at the rate of 10% half yearly for one year is Rs.695 less than the simple interest on same sum for 3 years at the rate of 15%. Find the sum?**

**A.Rs.2000**

**B.Rs.2400**

**C.Rs.1800**

**D.Rs.2200**

**E.Rs.2100**

**39. Anu deposited Rs. 32000 in bank for 2 years, earning 15% per annum simple interest. Anu also invested 20,000 in stock market for 2 years, earning 12% per annum compounded annually. Find the total interest earned by Anu in rupees?**

**A.Rs.14,688**

**B.Rs.14,678**

**C.Rs.14,988**

**D.Rs.14,698**

**E.None of these**

**40. If Rs.11750.4 amount is received for lending Rs.x for 3 years at 20% per annum compound interest, find the value of x?**

**A.Rs.6500**

**B.Rs.6800**

**C.Rs.7200**

**D.Rs.7800**

**E.Rs.7500**

**41. The difference between compound interest and simple interest for the sum Rs.25000 at the end of two years at the rate of 20% per annum?**

**A.Rs.1200**

**B.Rs.1400**

**C.Rs.1500**

**D.Rs.1600**

**E.None of these**

42. Arun invested Rs.5000 in a bank at Simple interest for 2 years and receives an interest of Rs.500. What is the rate of interest?

- A.3%
- B.5%
- C.7%
- D.9%
- E.None of these

43. Anil invests Rs.24000 on simple interest scheme at the rate of  $x\%$  per annum for 4 years and Divya invests Rs.16000 on simple interest scheme at the rate of  $x\%$  per annum for 5 years. If the difference between the interest received by Anil and Divya is Rs.800, then find the value of  $x$ ?

- A.10%
- B.12%
- C.18%
- D.20%
- E.None of these

44. Prem deposited Rs.30000 in a bank which offers 8% simple Interest, Find the total interest received after 5 years, if rate of interest increased by 2% every year?

- A.Rs.16000
- B.Rs.21000
- C.Rs.24000
- D.Rs.18000

E.Rs.15000

45. A man takes loan of Rs.30000 from the bank which charges 20% per annum compounded annually, if he paid Rs.12000 and Rs.16800 at the end of first and 2<sup>nd</sup> year respectively. Then find the total amount to be paid at the end of 4<sup>th</sup> year?

- A.Rs.21970
- B.Rs.14400
- C.Rs.17280
- D.Rs.13310
- E.None of these

46. In a retail store, the profit on selling a table is 180% of the cost. If the cost of a table is decreases by 15% and the selling price of table remains the same. Then find new profit is what percentage of selling price?

- A.55%
- B.48%
- C.70%
- D.26%
- E.None of these

47. Elango lends 30% of a certain sum at 20% p.a, 50% of the rest at 40% p.a, and the rest at 10% p.a, what would be the rate of interest if the interest is calculated on the whole sum?

- A.22.5%
- B.25%

C.21.75%

D.23.5%

E.26.25%

48. A sum of Rs.(P+2000) is invested in SI for 2 years at 20% per annum, also a sum of Rs.(2P-4000) is invested in CI for 2 years at same rate. If the difference between the interest earned is Rs.3200, then find the value of P.

A.Rs.12000

B.Rs.15000

C.Rs.24000

D.Rs.20000

E.none of these

49. A man invested Rs. 18000 in NIFTY and earning 15% per annum compounded annually. After two years, he invested the whole amount what he have in simple interest for 4 years at k% per

annum and simple interest earned Rs. 9522. Find the value of k?

A.15%

B.5%

C.12%

D.10%

E.None of these

50. Certain sum of money is invested at the rate of 20% simple interest for 5 years after which the amount is invested at the rate of 15% compound interest for 2 years. If the final amount is Rs.7935, then find the initial sum?

A.Rs.2000

B.Rs.2500

C.Rs.3000

D.Rs.4000

E.Rs.4500

## SI and CI – Answer and Explanation

1. **Answer: C**

Interest earned in 2 years = 5000 – 4600 = 400

Interest earned in 1 year = 200

Interest earned in 3 years = 200 \* 3 = 600

x = 4600 – 600 = Rs.4000

2. **Answer: A**

5880 = x \* 20 \* 6/100

x = 4900

$$\begin{aligned} \text{CA} &= 4900 * (1 + 10/100)^3 \\ &= \text{Rs.}6521.9 \end{aligned}$$

3. **Answer: E**

$$\begin{aligned} \text{CI received by Meena} &= 7800 * (1 + 20/100)^2 - 7800 \\ &= 3432 \end{aligned}$$

$$\begin{aligned} \text{SI received by Vinitha} &= 4800 * 15 * 5/100 \\ &= 3600 \end{aligned}$$

$$\text{Required difference} = 3600 - 3432$$

$$= 168$$

**4. Answer: A**

$$CA = P * (1 + R/100)^n$$

$$3300 = P * (1 + R/100)^1 \text{ -----(1)}$$

$$3993 = P * (1 + R/100)^3 \text{ -----(2)}$$

$$\text{From (1) * (2)}$$

$$P^2 * (1 + R/100)^4 = 3300 * 3993$$

$$P * (1 + R/100)^2 = 3630$$

**5. Answer: B**

$$\text{Amount invested in scheme B} = x$$

$$\text{Amount invested in scheme A} = 6000 - x$$

$$SI = (6000 - x) * 15 * 2/100 = 1800 - 0.3x$$

$$CA = x * (1 + 10/100)^2 = 1.21x$$

$$(6000 - x) + 1800 - 0.3x + 1.21x = 7440$$

$$x = 4000$$

$$\text{Sum invested by Scheme A} = 6000 - 4000 = 2000$$

**6. Answer: A**

$$SI = Pnr/100$$

$$\Rightarrow (x + 400) * 3 * 10/100 = 480$$

$$\Rightarrow x = 1200$$

$$\text{Interest earned} = P[1 + r/100]^n - P$$

$$= 3x[1 + 10/100]^3 - 3x$$

$$= 3600[1 + 10/100]^3 - 3600$$

$$= \text{Rs.}1191.6$$

**7. Answer: A**

$$y = 11000 - x$$

$$SI \text{ received by Renu} = x * 15 * 3/100 = 0.45x$$

$$SI \text{ received by Rama} = (11000 - x) * 15 * 3/100$$

$$= 4950 - 0.45x$$

$$4950 - 0.45x - 0.45x = 1800$$

$$x = 3500$$

$$y = 11000 - 3500 = 7500$$

**8. Answer: D**

$$120/100 * (1.44x - 3660) = 4999.68$$

$$1.728x - 4392 = 4999.68$$

$$x = 5435$$

**9. Answer: C**

$$P * 15\% * 2 = (P + 500) * 12\% * 2 + 300$$

$$30\%P = 24\%P + 120 + 300$$

$$6\%P = 420$$

$$\Rightarrow P = \text{Rs.}7000$$

$$\text{Required interest} = (2P + 500) * 2 * 12/100$$

$$= 14500 * 2 * 12/100$$

$$= \text{Rs.}3480$$

**10. Answer: D**

$$2P - P = P * 4 * R/100$$

$$R = 25\%$$

$$9P = P + (P * 25 * N/100)$$

$$N = 32$$

**11. Answer: E**

$$\text{Amount received by Deepika} = 13x + 13x * 15 * 5/100$$

$$= 22.75x$$

$$\text{Amount received by Dinesh} = 15x + 15x * 4 * 10/100$$

$$= 21x$$

$$22.75x + 21x = 18375$$

$$x = 420$$

$$\text{Dinesh sum} = 420 * 15 = \text{Rs.6300}$$

**12. Answer: D**

$$\text{SI for } (4.5 - 2) \text{ years} = 8550 - 6300 = 2250$$

$$\text{SI for 2 years} = 2250 * 2/2.5 = 1800$$

$$\text{Sum} = 6300 - 1800 = 4500$$

$$1800 = 4500 * 2 * R/100$$

$$R = 20\%$$

**13. Answer: D**

$$3P - P = P * x * 20/100$$

$$x = 10$$

**14. Answer: D**

$$3360 = 8400 * 4 * x/100$$

$$x = 10\%$$

$$CA = 9600 * (1 + 20/100)^3$$

$$= \text{Rs.16588.8}$$

**15. Explanation**

**Answer: E**

$$SI = x * 60/100 * 2 * 15/100 = 0.18x$$

$$CI = x * 40/100 * (1 + 20/100)^2 - x * 40/100$$

$$= 0.176x$$

$$0.18x + 0.176x = 2848$$

$$x = 8000$$

**16. Answer: B**

$$CI = P * (1 + R/100)^n - P$$

$$SI = P * N * R/100$$

$$6670 - 4600 = 4600 * R * 3/100$$

$$R = 15\%$$

$$CI = 4600 * (1 + 15/100)^2 - 4600$$

$$CI = \text{Rs.1483.5}$$

**17. Answer: C**

$$CA = P * (1 + R/100)^n$$

$$CA \text{ for 11 years} = P * (1 + R/100)^{11} \text{ -----(1)}$$

$$CA \text{ for 9 years} = P * (1 + R/100)^9 \text{ -----(2)}$$

From (1) and (2)

$$(1 + R/100)^2 = 36/25$$

$$(1 + R/100) = 6/5$$

$$100 + R = 120$$

$$R = 20\%$$

**18. Answer: C**

$$CI = 21000 * (1 + 10/100)^2 - 21000$$

$$= \text{Rs.4410}$$

$$SI = 16000 * 15 * 2/100 = 4800$$

$$\text{Difference} = 4800 - 4410 = \text{Rs.390}$$

**19. Answer: A**

$$SI = P * N * R/100$$

$$CI = P * (1 + R/100)^n - P$$

$$4980 - 3000 = 3000 * 22 * x/100$$

$$x = 3$$

$$CI = 8000 * (1 + 20/100)^3 - 8000$$

$$= 5824$$

**20. Answer: B**

Amount invested in scheme A or B be P.

$$P[(1 + r/100)^n - 1] - Pnr/100 = 661.5$$

$$\Rightarrow P[(1 + 15/100)^2 - 1] - P * 2 * 10/100 = 661.5$$

$$\Rightarrow P = \text{Rs.}5400$$

**21. Answer: C**

Rate of interest of 10% p.a at CI for 2 years =  $(10 + 10 + 10 * 10/100) = 21\%$

$$(x * 21/100) - (x * 10/100) = 5500$$

$$\Rightarrow x = \text{Rs.}50000$$

**22. Answer: B**

$$\text{SI earned for 3 years} = 2625 - 1950 = \text{Rs.}675$$

$$\text{SI earned for 1 year} = \text{Rs.}225$$

$$\text{Amount invested} = 1950 - 2 * 225 = \text{Rs.}1500$$

$$\text{Required interest} = [(1.20)^2 - 1] * 1500 = \text{Rs.}660$$

**23. Answer: C**

$$\text{SI} = P * N * R/100$$

$$25/100 * x = x * y * y/100$$

$$y = 5$$

$$\text{SI received by Yamini} = 6000 * 12 * 5/100 = \text{Rs.}3600$$

**24. Answer: E**

In the question we don't have any information regarding principal and the rate of interest.

So, we cannot find the solution of this question.

**25. Answer: C**

Let the amount of principal is = Rs. x

So, according to the question,

$$= x * (6/100 + 6.5/100 + 7/100 + 7.5/100) = 3807$$

$$= x * (6 + 6.5 + 7 + 7.5)/100 = 3807$$

$$= x * 27/100 = 3807$$

$$= x = 3807 * 100/27$$

$$= x = 14,100$$

**26. Answer: A**

$$\text{CI} = P * (1 + R/100)^n - P$$

$$\text{SI} = P * N * R/100$$

$$\text{Interest received by Losliya} = 12000 * (1 + 10/100)^2 - 12000$$

$$= 2520$$

$$\text{Interest received by Sandy} = 14000 * 4 * 15/100$$

$$= \text{Rs.}8400$$

$$\text{Required Difference} = 8400 - 2520$$

$$= \text{Rs.}5880$$

**27. Answer: A**

$$\text{Sum invested} = x$$

$$x * (1 + 10/100)^2 = 8470$$

$$\Rightarrow x = \text{Rs.}7000$$

$$\text{Amount received by SI} = 7000 * 4 * 20/100 + 7000$$

$$= \text{Rs.}12600$$

**28. Answer: C**

$$n = \text{SI} * 100/(P * r)$$

$$\Rightarrow n = (100 * 1200)/(2500 * 2)$$

$$\Rightarrow n = 4 \text{ years}$$

**29. Answer: D**

$$\text{SI} = 4400 * 12 * 2/100 = 1056$$



$$CI = 3000 \times (1 + 10/100)^2 - 3000$$

$$= \text{Rs.} 630$$

$$\text{Difference} = 1056 - 630 = \text{Rs.} 426$$

**30 Answer: C**

$$\text{Interest earned} = P[(1 + r/100)^n - 1] + Pnr/100$$

$$= (40\% \text{ of } 5000) [(1 + 10/100)^3 - 1] + (60\% \text{ of } 5000) \times 3 \times 8/100$$

$$= 662 + 720$$

$$= \text{Rs.} 1382$$

**31. Answer: A**

$$\text{Amount invested by Vijay is} = \text{Rs. } X$$

$$\text{And the amount invested by Ajay is} = \text{Rs. } (X + 7575)$$

So, according to the question,

$$= 3X \times 10/100 + (X + 7575) \times [(1 + 20/100)^2 - 1] = 45,402$$

$$= 0.3X + (X + 7575) \times [1.44 - 1] = 45,402$$

$$= 0.3X + (X + 7575) \times 0.44 = 45,402$$

$$= 0.3X + 0.44X + 3333 = 45,402$$

$$= 0.74X = 45,402 - 3333$$

$$= 0.74X = 42,069$$

$$= X = 56,850$$

**32. Answer: B**

$$\text{Interest earned by the person is} = \text{Rs. } 4500$$

$$\text{Time period is} = 3 \text{ years}$$

$$\text{And rate of interest is} = 10\%$$

$$\text{So, the amount of principal is} = (4500 \times 100)/(10 \times 3)$$

$$= \text{Rs. } 15,000$$

$$\text{Now, the compound interest in three years} = 15,000 \times (1 + 10/100)^3 - 15,000$$

$$= 15,000 \times (1.1)^3 - 15,000$$

$$= 19,965 - 15,000$$

$$= \text{Rs. } 4965$$

$$\text{So, the required value is} = 4965 - 4500 = \text{Rs. } 465$$

**33. Answer: D**

$$\text{Amount received by Anita after 3 years} = 4000 \times (1.2)^3 = \text{Rs.} 6912$$

$$\text{Amount received by Anita after 6 years} = 6912 + 6912 \times 0.10 \times 3 = \text{Rs.} 8985.6$$

**34. Answer: D**

$$\text{Interest received by Gopi} = 4400 \times n \times 12/100 = 528n$$

$$\text{Interest received by Chandra} = 5400 \times (n + 8) \times 2/100 = 108n + 864$$

$$528n - 108n - 864 = 816$$

$$\Rightarrow n = 4$$

**35. Answer: B**

Let P be the principal amount, n be the number of years and R be the rate of interest.

$$7000 = P + P \times 4 \times R/100 \Rightarrow 4PR/100 = 7000 - P - (I)$$

$$7400 = P + P \times 1.20 \times 4PR/100 \Rightarrow P + 1.20 \times 4PR/100 = 7400 - (II)$$

$$\text{Sub (I) in (II)} \Rightarrow P + 1.20 \times (7000 - P) = 7400$$

$$\Rightarrow P = \text{Rs.} 5000$$

$$(I) \Rightarrow 4 \times 5000 \times R/100 = 7000 - 5000$$

$$\Rightarrow R = 10\%$$

**36. Answer: C**

$$\text{Rate} = r\%$$

$$\text{Amount} = P * [1 + r/100]^n$$

$$\Rightarrow 9438.24 = 8400 * [1 + r/100]^2$$

$$\Rightarrow r = 6\%$$

**37. Answer: B**

$$P + \text{CI of 3 yrs} = \text{Rs. } 4356 \text{ -----(1)}$$

$$P + \text{CI of 2 yrs} = \text{Rs. } 3960 \text{ -----(2)}$$

Subtracting (2) from (1), we get

$$\text{CI for 3}^{\text{rd}} \text{ year} = 4356 - 3960 = \text{Rs. } 396$$

$$\text{So, } r = (396 * 100) / 3960 * 1 = 10\%$$

**38. Answer: A**

$$\text{CI} = P * (1 + R/100)^n - P$$

$$\text{SI} = P * N * R/100$$

$$(x * 3 * 15/100) - (x * (1 + (10/2)/100)^2 - x) = 695$$

$$45x/100 - 0.1025x = 695$$

$$x = 2000$$

**39. Answer: A**

$$\text{Total simple interest earned} = (32000 * 2 * 15)/100 =$$

$$\text{Rs. } 9600$$

$$\text{Total compound interest earned} = 20,000[(1 + 12/100)^2 -$$

$$1)] = \text{Rs. } 5088$$

$$\text{Total interest earned by Anu} = 9600 + 5088 = \text{Rs. } 14,688$$

**40. Answer: B**

$$\text{CA} = P * (1 + r/100)^n$$

$$11750.4 = x * (1 + 20/100)^3$$

$$x = 6800$$

**41. Answer: E**

$$\text{Difference} = (25000 * 20 * 20)/(100 * 100)$$

$$= \text{Rs. } 1000$$

**42. Answer: B**

$$\text{Given that, SI} = \text{Rs. } 500, n = 2 \text{ years and } P = \text{Rs. } 5000$$

$$\text{SI} = Pnr/100$$

$$r = (100 * \text{SI}) / (P * n)$$

$$= (100 * 500) / (5000 * 2)$$

$$= 5\%$$

**43. Answer: E**

$$\text{SI} = P * N * R/100$$

$$\text{Interest received by Anil} = 24000 * x * 4/100$$

$$= 960x$$

$$\text{Interest received by Divya} = 16000 * x * 5/100$$

$$= 800x$$

$$960x - 800x = 800$$

$$x = 5\%$$

**44. Answer: D**

$$\text{Rate of interest for the first year} = 8\%, \text{ second year}$$

$$= 10\%, \text{ third year} = 12\%, \text{ fourth year} = 14\%, \text{ fifth year}$$

$$= 16\%$$

$$\text{Total interest received from the bank}$$

$$= 2400 + 3000 + 3600 + 4200 + 4800$$

$$= \text{Rs. } 18000$$

**45. Answer: C**

$$\text{Amount at the end of 1}^{\text{st}} \text{ year} = 120\% \text{ of } 30000 =$$

$$\text{Rs. } 36000$$

Amount paid at the end of 1<sup>st</sup> year = 12000

Remaining amount = 36000 – 12000 =Rs.24000

Amount at the end of 2<sup>nd</sup>year = 120% of 24000 =  
Rs.28800

Amount paid at the end of 2<sup>nd</sup> year =Rs.16800

Remaining amount = Rs.12000

Amount at the end of 4<sup>th</sup> year = 120% of 120% of 12000  
= Rs.17280

**46. Answer: C**

Let the cost price of a table is = Rs. 100

Then, profit of a table is = Rs. 100 × 180/100 = Rs. 180

So, the selling price of the table is = 100 + 180 = Rs. 280

Now, new cost price after decrease is = 100 × 85/100 =  
Rs. 85

So, the new profit is = (280 – 85) = Rs. 195

Thus, the required percentage is = 195/280 × 100 ≈ 70%

**47. Answer: D**

Let Elango has 100x amount.

Sum of the interest earned = 20% of 30x + 40% of  
(100x-30x)/2 + 10% of 35x

= 6x + 14x + 3.5x

= 23.5x

Rate of interest on the whole sum =  
(23.5x/100x)×100=23.5%

**48. Answer: A**

Difference between interests = Rs.3200

(2P-4000)[(1+(20/100))<sup>2</sup>-1] - ((P+2000)\*2×20)/100  
=3200

(2P-4000)(11/25) - (10(P+2000))/25 =3200

P=Rs.12000

**49. Answer: D**

Total amount after compound interest = 18000(1 +  
15/100)<sup>2</sup>

= 18000 x 23/20 x 23/20 = 23805

According to question,

23805 x k/100 x 4 = 9522

k = 10

**50. Answer: C**

SI = P \* N \* R/100

CA = P \* (1 + R/100)<sup>n</sup>

Amount earning simple interest = P + P \* 20 \* 5/100 =  
2P

7935 = 2P \* (1 + 15/100)<sup>2</sup>

7935 = 2P \* 1.3225

P = 3000

## Time and Work

1.A alone completes the work in 16 days and the efficiency of A is 25% more than B. In how many days they can complete 90% of the work together?

- A.8 days
- B.10 days
- C.6 days
- D.12 days
- E.9 days

2. 20 men in 6 hours complete the work in 3 days and 25 women in 6 hours complete the same work in 4 days. In how many days 4 men and 20 women are working together can complete the work in one hour?

- A.18.5
- B.20.5
- C.22.5
- D.24.5
- E.25.5

3. Amirtha alone complete 75% of work in 15 days and the efficiency of Amirtha is 20% more than Maklin. If Amirtha, Maklin and Selvi together can complete the 75% of work in 6 days, In how many days Selvi alone complete the 80% of work?

- A.20 days
- B.30 days
- C.24 days
- D.28 days
- E.32 days

4. A alone completes the work in 12 days and the ratio of the efficiency of C is 50% more than B. Ratio of the efficiency of A and B is 5:4. If A and B together

can started the work and after 75% of the work is completed A and B together left the work, remaining work done by C alone, in how many days the whole work will be completed?

- A.8 days
- B.6.5 days
- C.7 days
- D.7.5 days
- E.9 days

5. A, B and C alone can complete the work in 21 days, 24 days and 28 days respectively. If A, B and C together started the work, after 3 days A left the work and 6 days before completion of the work B also left the work. In how many days is the work is completed?

- A. $10\frac{4}{13}$  days
- B. $11\frac{4}{13}$  days
- C. $12\frac{4}{13}$  days
- D. $13\frac{4}{13}$  days
- E. $14\frac{4}{13}$  days

6. Anju, Banu and Kavin complete a work in 5 days for which they are paid a sum of Rs.1200. What is the daily wage of Kavin, if the efficiency of Anju, Banu and Kavin are in the ratio 3: 4: 5?

- A.Rs.50
- B.Rs.100
- C.Rs.150

**D.Rs.200**

**E.None of these**

**7. A and B alone can do a work in 10 and 15 days respectively. If both of them started the work together and after 4 days, A left the work. Then in how many days will B do the remaining work?**

**A.5**

**B.6**

**C.7**

**D.8**

**E.None of these**

**8. P and Q alone can paint a wall in 10 days and 12 days respectively. Both P and Q together started painting the wall, but after 5 days, P left the work and the remaining work is completed by Q with 40% of his actual efficiency. Find the time taken to complete the remaining work.**

**A.1 1/24 days**

**B.4 days**

**C.3 days**

**D.5 1/41 days**

**E.None of these**

**9. Swetha can complete the work in 16 days and Chaitra can complete the work in 20 days. Chaitra and Swetha worked alternatively, Swetha started the work. After 12 days Chaitra and Anu together can**

**complete the work in 2 days. In how many days Anu alone complete the whole work?**

**A.9(8/9) days**

**B.7(8/9) days**

**C.10(8/9) days**

**D.8(8/9) days**

**E.None of these**

**10. X takes 16 days to complete 4/5th of a work, Y takes 12 days to complete 3/7th of the same work and Z takes 20 days to complete 5/9th of the same work. If they work together for 5 days and then X and Z leaves the work, then find the number of days to complete the whole work?**

**A.17 1/9 days**

**B.16 2/3 days**

**C.15 3/5 days**

**D.12 1/9 days**

**E.None of these**

**11. Efficiency of P is 60% more than Q and Q takes 40 days to complete a piece of work. Both started the work and work for 6 days and then they decided to work alternatively starting with Q. Find the total time taken by both of them to complete the whole work?**

**A.15 days**

**B.18 days**

**C.25 days**

**D.21 days**

E.None of these

12. , B and C together can complete the work in 15 days. If the efficiency of B is  $\frac{4}{3}$ <sup>rd</sup> of the efficiency of A and the efficiency of C is four-fifth of the efficiency of A, then in how many days A alone complete the work?

A.11.75 days

B.28.5 days

C.38 days

D.47 days

E.52.25 days

13. 40 men have to construct a bridge in 43 days. After 15 days, they found only 30% of the bridge is constructed. How many more men are needed to complete the construction?

A.5

B.10

C.15

D.20

E.None of these

14. 18 typing machine working for 6 hours per day can print 60 notebooks and 9 diaries in 12 days. In how many days 30 machines will print 120 notebooks and 6 diaries working 4.8 hours a day?

A.12

B.15

C.10

D.16

E.14

15. Dilak and Watson together can complete the work in 24 days. Ratio of the efficiency of Watson to both Dilak and Watson together can complete the work is 4:5. In how many days Dilak alone complete the whole work?

A.180 days

B.120 days

C.150 days

D.100 days

E.90 days

16. A alone completes the work in 30 days. Efficiency of B is 50% more than the efficiency of A. If A and B together can starts the work, after 8 days A and B left the work, then C alone complete the remaining work in 4 days. If they gets the wages for the whole work is Rs.9000, then find the C's wages share.

A.Rs.3300

B.Rs.3600

C.Rs.2700

D.Rs.3000

E.Rs.4200

17. 10 workers can do a work in 20 days working 6 hours a day. How much less days 8 workers will take each of them double its efficiency as previous working 5 hours in a day?

- A.2 days
- B.3 days
- C.4 days
- D.5 days
- E.None of these

18. A father and a son working together can complete a certain work in 12 days. But if father worked alone he can complete the work in 18 days. Both of them worked for 2 days and then son had to leave. Find the time taken by father to complete remaining work?

- A.18 days
- B.15 days
- C.13 days
- D.10 days
- E.None of these

19. A, B and C together can complete the work in 15 days. If the efficiency of B is  $\frac{4}{3}$ <sup>rd</sup> of the efficiency of A and the efficiency of C is four-fifth of the efficiency of A, then in how many days A alone complete the work?

- A.11.75 days
- B.28.5 days
- C.38 days
- D.47 days
- E.52.25 days

20. Sravya is 50% more efficient than Nikita, they together can complete a work in 40 days, then find in

how many days Nikita can complete the task individually?

- A.70
- B.80
- C.90
- D.100
- E.60

21.  $(n + 2)$  men working 6 hours a day can complete 30% of a work in 6 days.  $(n + 4)$  men working 4 hours a day can complete the remaining work in 15 days. What is n?

- A.1
- B.2
- C.3
- D.5
- E.None of these

22. Aravind can complete a piece of work in 15 days while Arun can complete the same work in 25 days. Find the time taken by Asha whose efficiency is 50% more than the total efficiency of Aravind and Arun together to complete the work.

- A.6  $\frac{1}{4}$  days
- B.7 days
- C.8  $\frac{1}{4}$  days
- D.8 days
- E.None of these

23. Ram can do a work in 8 days and Ravi in 5 days. If they work together for 2 days, then what part of the work will left?

- A.  $\frac{5}{20}$
- B.  $\frac{6}{20}$
- C.  $\frac{7}{20}$
- D.  $\frac{8}{20}$
- E. None of these

24. Sam and Ravi together can paint a house in 5 days. If Ravi is 20% less efficient than Sam and Saran who is 20% more efficient than Sam, then find the number of days taken by Ravi and Saran together to paint the house.

- A. 4 days
- B. 4.5 days
- C. 6 days
- D. 7.5 days
- E. None of these

25. If 4 boys and 5 girls can do the same piece of job as 3 boys and 6 girls, then what is the ratio of efficiency of boy and girl?

- A. 1: 1
- B. 3: 1
- C. 1: 3
- D. 1: 2
- E. None of these

26. A and B together can complete the work in 30 days. If B alone complete 20% of the work in 16 days. In how many days A alone complete 75% of the work?

- A. 40 days
- B. 36 days
- C. 32 days
- D. 28 days
- E. None of these

27. Four man, five woman and seven children can complete a job together in 21 days. A woman can do 300% work of a man in one day and a man can do 200% of a children in one day. Find time taken by 14 woman to complete the same job?

- A. 11.25 days
- B. 14.25 days
- C. 16.25 days
- D. 17.25 days
- E. None of these

28. Aman and Suman can separately do a piece of work in 20 days and 32 days respectively. They worked together for 4 days, after that Suman was replaced by Raman. If the remaining work was finished in next 6 days, then find the time taken by Aman is how much percentage more or less than the time taken by Raman?

- A. 16% less



**B.28% more**

**C.20% less**

**D.25% more**

**E.None of these**

**29. 5 boys and 2 girls can clean ABC block in 3 days. 6 boys and 5 girls can clean the same block in 2 days. In how many days can the cleaning be done by 3 boys and 2 girls working together?**

**A.2 1/3 days**

**B.4 1/3 days**

**C.6 days**

**D.3 days**

**E.None of these**

**30. Ten men working 5 hours in a day can make 250 candles in 10 days. How many women will be required to make 200 candles working 4 hours per day for 5 days, if the work of 4 men is equal to the work done by 2 women?**

**A.5**

**B.10**

**C.15**

**D.20**

**E.None of these**

**31. P is four times as efficient as Q and R is two times as efficient as Q. What is the ratio of number of days taken by P, Q and R, when they work separately?**

**A.1: 2: 4**

**B.2: 4: 1**

**C.1: 4: 2**

**D.1: 2: 2**

**E.None of these**

**32. Time taken by A to complete the job is 80% more than time taken by A and B together to complete the same job. Find the time taken by A in days to complete the job alone if C is 100% more efficient than B and time taken by B and C together to complete the job is 20/3 days?**

**A.20 days**

**B.10 days**

**C.16 days**

**D.12 days**

**E.None of these**

**33. A, B and C can do a piece of work in 8, 12, and 24 days respectively. They all begin together. C left the job after 2 days and B left 3 days before its completion, whereas A continues to work till it is finished. In what time is the work finished?**

**A.5 3/5 days**

**B.3 1/2 days**

**C.3 4/7 days**

**D.4 5/6 days**

**E.4 3/5 days**

**34. Time taken by A to complete the job is 80% more than time taken by A and B together to complete the**

same job. Find the time taken by A in days to complete the job alone if C is 100% more efficient than B and time taken by B and C together to complete the job is  $20\frac{2}{3}$  days?

A. 20 days

B. 10 days

C. 16 days

D. 12 days

E. None of these

35. Adhi is five times as efficient as Mahi and Suhail is thrice as efficient as Mahi. Find the ratio of number of days taken by Adhi, Mahi and Suhail, if they work independently.

A. 3: 15: 5

B. 5: 15: 3

C. 15: 3: 5

D. 3: 5: 15

E. None of these

36. Anitha finishes her work in 25 minutes and Manisha finishes her work in 20 minutes. If they together can start the work, after 5 minutes Anitha left the work. In how many more days will Manisha finish the remaining work?

A. 15 days

B. 18 days

C. 8 days

D. 11 days

E. None of these

37. Ajay, Vijay and Sanjay alone can complete the piece of work in 36, 50 and 64 days respectively. Ajay started the work and after 4 days Vijay joined with him and after another 5 days both left the work, find the time taken by Sanjay to complete the remaining part of the work alone?

A. 41.6 days

B. 40.8 days

C. 42.4 days

D. 43.2 days

E. 44.4 days

38. A printing machine can print 120 books in a day. If the printing machine is replaced with a new printing machine then the efficiency of the printing machine is decreased by 20%. In how many days, the printing machine can print 1152 books on new printing machine?

A. 12 days

B. 15 days

C. 18 days

D. 9 days

E. 20 days

39. Sanu is twice efficient as Bala and Sen is thrice efficient as Bala. What is the ratio of number of days taken by Sanu, Bala and Sen, when they work alone?

A. 3: 6: 2

**B.2: 3: 6**

**C.3: 2: 6**

**D.6: 3: 2**

**E.None of these**

**40. A and B together can complete the work in  $4\frac{4}{9}$  days, B and C together can complete the work in 6 days and A and C together can complete the work in  $5\frac{5}{23}$  days. If B and C together can start the work and after 3 days they left, then A alone complete the remaining work, in how many days the work will be completed?**

**A.4 days**

**B.5 days**

**C.7 days**

**D.8 days**

**E.6 days**

**41. If efficiency of 'A' is reduced by 37.5% and that of B is reduced by 25%, then total amount of work done by A and B individually in a day is same. If A can complete a job alone in 60 days, then find the time taken by A and B together to complete the same job when A worked with half efficiency and B worked with 40% efficiency.**

**A.72 Days**

**B.60 days**

**C.40 days**

**D.96 days**

**E.None of these**

**42. Abhi started working and left after 10days. Now Jaanu finish the remaining work in 30days. If Abhi left work after working for 15days then Jannu would have finish the remaining work in next 20days. Then find how many days Abhi alone complete the whole work?**

**A.25 days**

**B.20 days**

**C.30 days**

**D.50 days**

**E.None of these**

**43. 8 men and 10 women can complete a job in 18 days. 4 woman and 10 men can complete the same job in 24 days. Find the time taken by 10 men and 10 women to complete the same job together?**

**A.12.32 days**

**B.13.32 days**

**C.16.32 days**

**D.15.32 days**

**E.None of these**

**44. 50 men can do a piece of work in 40days. They start the work after some days 10 men left the work. The remaining work will be completed in 40 days. Find after how many days, 10 men left the work?**

**A.6 days**

**B.7 days**

C.8 days

D.9 days

E.10 days

45. Ragavan alone can complete the work in 30 days and Velavan and Ram together can complete the same work in 24 days. Efficiency of Velavan is 50% more than the efficiency of Ram. In how many days Ragavan and velavan together can complete the work?

A.15(1/7) days

B.16(1/7) days

C.17(1/7) days

D.18(1/7) days

E.19(1/7) days

46. Amala is twice as good a worker as Amrita and they together finish a job in 12 days. What is the number of days taken by Amala alone to finish the job?

A.6

B.12

C.14

D.18

E.None of these

47. A and B together can complete the work in 30 days. Efficiency of A is 50% more than the efficiency of B. If B and C together can complete the work in

33(1/3) days, in how many days A and C together can complete the work?

A.23(3/11) days

B.24(3/11) days

C.27(3/11) days

D.29(3/11) days

E.None of these

48. Seeta, Geeta, Neeta can complete a job in 40 days, 60 days and 30 days respectively. Seeta and Neeta start the work and left after 14 days, remaining work completed by Geeta alone. Find the time taken by Geeta to complete the remaining work.

A.13 days

B.11 days

C.9 days

D.6 days

E.None of these

49. A is 1.5 times as efficient as B. B takes 5 more days than A to complete the work. It is also known that B takes 3 days more than C to complete the work. All of them began working but A leaves the work after 2 days from the start and C leaves 3 days before completing the work. How long does it take to complete the work?

A.5 days

B.11 days

C.10 days

D.7 days

E.None of these

50. A and B together can complete a piece of work in  $6\frac{2}{3}$  days while B and C together can complete the same piece of work in 10 days. Find the number of days taken by B alone to complete the work, if the number of days taken by A, B and C alone to complete the work is in the ratio of 4 : 5: 10?

A.30 days

B.10 days

C.15 days

D.20 days

E.None of these

## Time and Work – Answer and Explanation

### 1. Explanation

**Answer: A**

A alone complete the work = 16 days

B alone complete the work =  $16 * \frac{125}{100} = 20$  days

A and B together can complete the whole work =  $\frac{1}{16} + \frac{1}{20}$

=  $\frac{9}{80}$

Required time =  $\frac{80}{9} * \frac{90}{100} = 8$  days

### 2. Explanation

**Answer: C**

$20m * 6 * 3 = 25w * 6 * 4$

$3m = 5w$

$20w = 12m$

$4men + 20 women = 4 men + 12 men = 16 men$

$20 * 6 * 3 = 16 * 1 * ?$

$? = 22.5$

### 3. Explanation

**Answer: C**

Amirtha alone complete the work =  $\frac{100}{75} * 15 = 20$  days

Maklin alone complete the work =  $20 * \frac{6}{5} = 24$  days

Amirtha, Maklin and Selvi together can complete the whole work =  $\frac{100}{75} * 6 = 8$  days

Selvi alone complete the work =  $\frac{1}{8} - \frac{1}{20} - \frac{1}{24}$

=  $\frac{(15 - 6 - 5)}{120}$

=  $\frac{4}{120}$

=  $\frac{1}{30}$

Selvi alone complete 80% of work =  $\frac{80}{100} * 30 = 24$  days

### 4. Explanation

**Answer: D**

B alone complete the work =  $\frac{5}{4} * 12 = 15$  days

C alone complete the work =  $\frac{100}{150} * 15 = 10$  days

A and B together can complete the 75% of the work =  $(\frac{1}{12} + \frac{1}{15}) * \frac{75}{100}$

= 5 days

C alone complete 25% of the work =  $10 * 25/100 = 2.5$  days

Required time =  $5 + 2.5 = 7.5$  days

### 5. Explanation

**Answer: E**

$$3/21 + (x - 6)/24 + x/28 = 1$$

$$24 + 7x - 42 + 6x = 168$$

$$13x = 186$$

$$x = 14(4/13) \text{ days}$$

### 6. Explanation

**Answer: B**

$$\text{Wage per day} = 1200/5 = \text{Rs.}240$$

Work done by Anju, Banu and Kavin are  $3x$ ,  $4x$  and  $5x$

$$\begin{aligned} \text{Daily wage of Kavin} &= 5x/12x * 240 \\ &= \text{Rs.}100 \end{aligned}$$

### 7. Explanation

**Answer: A**

$$\text{Total work} = 30 \text{ units}$$

$$A = 30/10 = 3 \text{ units}$$

$$B = 30/15 = 2 \text{ units}$$

$$\text{Work done in 5 days} = 4 * 5 = 20$$

$$\text{Remaining work} = 30 - 20 = 10 \text{ units}$$

$$\text{Time taken by B to complete the work} = 10/2 = 5 \text{ days}$$

### 8. Explanation

**Answer: A**

$$\text{Total work} = 60$$

$$P\text{'s efficiency} = 60/10 = 6$$

$$Q\text{'s efficiency} = 60/12 = 5$$

$$(P + Q) \text{ in 5 days} = 5 * (6 + 5) = 55$$

$$\text{Remaining work} = 60 - 55 = 5$$

$$\begin{aligned} \text{Time taken by Q} &= 5/(40/100 * 12) = 50/48 = 1 \frac{1}{24} \\ &\text{days} \end{aligned}$$

### 9. Explanation

**Answer: D**

$$\text{LCM of } 20, 16 = 80$$

$$\text{Chaitra done the work in one day} = 80/20 = 4 \text{ units}$$

$$\text{Swetha done the work in one day} = 80/16 = 5 \text{ units}$$

$$\begin{aligned} \text{Chaitra and swetha together done the work in 12 days} &= \\ 9 * 6 &= 54 \end{aligned}$$

$$\text{Remaining work} = 80 - 54 = 26 \text{ units}$$

$$\text{Chaitra alone done the work in 2 days} = 8 \text{ units}$$

$$\text{Remaining work} = 26 - 8 = 18 \text{ units}$$

$$\text{Anu alone complete 18 units of work in 2 days}$$

$$\text{Required time} = (80/18) * 2 = 8(8/9) \text{ days}$$

### 10. Explanation

**Answer: A**

$$\begin{aligned} \text{Time taken by X to complete work is} &= 16 \times 5/4 \Rightarrow 20 \\ &\text{days} \end{aligned}$$

$$\begin{aligned} \text{Time taken by Y to complete work is} &= 12 \times 7/3 = 28 \\ &\text{days} \end{aligned}$$

$$\begin{aligned} \text{Time taken by Z to complete work is} &= 20 \times 9/5 = 36 \\ &\text{days} \end{aligned}$$

$$\text{Total number of work is} = 1260 \text{ (LCM of } 20, 28 \text{ and } 36)$$

$$\text{One day work of X} = 1260/20 = 63 \text{ units}$$

One day work of Y =  $1260/28 = 45$  units

One day work of Z =  $1260/36 = 35$  units

Work done in 5 days together =  $(63 + 45 + 35) \times 5$

=  $143 \times 5 \Rightarrow 715$  units

Remaining work is =  $1260 - 715 \Rightarrow 545$  units

Time taken by Y alone to complete remaining work =

$545/45 \Rightarrow 12 \frac{1}{9}$  days

Thus, the total time taken is =  $5 + 12 \frac{1}{9} \Rightarrow 17 \frac{1}{9}$  days

### 11. Explanation

**Answer: C**

Working efficiency of P and Q is =  $160 : 100 \Rightarrow 8 : 5$

So, the time taken by P and Q =  $5 : 8$

Q takes 40 days to complete the work.

Then, P will take =  $(40/8) \times 5 = 25$  days

Total number of work is = 200 units (LCM of 25 and 40)

Work done by P in one day =  $200/25 = 8$  units

Work done by Q in one day =  $200/40 = 5$  units

Work done by P and Q together in 6 days =  $(8 + 5) \times 6$

$\Rightarrow 78$  units

Now, the remaining work is =  $200 - 78 = 122$  units

Now, in 2 days (1 cycle) work done by P and Q = 13 units

So, in  $(2 \times 9) = 18$  days work done =  $13 \times 9 = 117$  units

Remaining work = 5 units done by Q in 1 day.

So, the total time to complete the work =  $6 + 18 + 1 = 25$  days.

### 12. , Explanation

**Answer: D**

$A + B + C = 1/15$

Efficiency of B =  $4/3$  \* efficiency of A

Time ratio of A and B = 4:3

Efficiency of C =  $4/5$  \* Efficiency of A

Time ratio of A and C = 4:5

Time ratio of A, B and C = 4:3:5

$1/4x + 1/3x + 1/5x = 1/15$

$(15 + 20 + 12)/60x = 1/15$

$x = 47/4$

A alone complete the work =  $47/4 * 4 = 47$  days

### 13. Explanation

**Answer: B**

Let n be the number of men required.

$40 * 15/30\% = (40 + n) * 28/70\%$

$\Rightarrow n = 10$

### 14. Explanation

**Answer: A**

$(18 * 6 * 12)/(60 * 9) = (30 * 4.8 * x)/(120 * 6)$

$15x = 180$

$x = 12$

### 15. Explanation

**Answer: B**

Efficiency of Dilak and (Dilak and Watson) = 4 : 5

Ratio of time to complete the work = 5 : 4

Watson complete the work =  $5/4 * 24 = 30$

$$\text{Dilak} = 1/24 - 1/30$$

$$= 1/120$$

### 16. Explanation

**Answer: D**

A alone complete the work = 30 days

Ratio of the efficiency of A and B = 100:150 = 2:3

Time ratio of A and B = 3:2

B alone complete the work =  $2/3 * 30 = 20$  days

A and B together can complete the work for 8 days =

$$8/30 + 8/20$$

$$= (16 + 24)/60 = 2/3$$

Remaining work =  $1/3$

C alone complete the whole work =  $3/1 * 4 = 12$  days

Wages ratio of A, B and C = 8/30:8/20:4/12

$$= 16:24:20$$

$$= 4:6:5$$

$$\text{C's share} = 5/15 * 9000 = \text{Rs.}3000$$

### 17. Explanation

**Answer: D**

$$M_1 * D_1 * H_1 * E_1 = M_2 * D_2 * H_2 * E_2$$

$$\Rightarrow 10 * 20 * 6 * 1 = 8 * D_2 * 5 * 2$$

$$\Rightarrow D_2 = 15 \text{ days}$$

$$\text{Required time} = 20 - 15 = 5 \text{ days}$$

### 18. Explanation

**Answer: B**

Total number of work is = 36 units (LCM of 12 and 18)

Efficiency of Father and son together =  $36/12 = 3$  units/day

Efficiency of father =  $36/18 = 2$  units/day

So, efficiency of son =  $3 - 2 = 1$  units/day

Work completed in 2 days by both =  $(3) * 2 = 6$  units

Remaining work is =  $36 - 6 = 30$  units

So, time to complete remaining work by father =  $30/2 = 15$  days

### 19. Explanation

**Answer: D**

$$A + B + C = 1/15$$

Efficiency of B =  $4/3 * \text{efficiency of A}$

Time ratio of A and B = 4:3

Efficiency of C =  $4/5 * \text{Efficiency of A}$

Time ratio of A and C = 4:5

Time ratio of A, B and C = 4:3:5

$$1/4x + 1/3x + 1/5x = 1/15$$

$$(15 + 20 + 12)/60x = 1/15$$

$$x = 47/4$$

A alone complete the work =  $47/4 * 4 = 47$  days

### 20. Explanation

**Answer: D**

ATQ,	ratio	of	efficiency
Sravya:	Nikita	=	150: 100
=			3:2



required number of days =  $5 \times 40 = 200$   
= 100

#### 21. Explanation

**Answer: C**

$$(n + 2) \times 6 \times 6/30\% = (n + 4) \times 4 \times 15/70\%$$
$$\Rightarrow 7(n + 2) = 5(n + 4)$$
$$\Rightarrow n = 3$$

#### 22. Explanation

**Answer: A**

Total work = 75 units  
Aravind's 1 day's work =  $75/15 = 5$  units  
Arun's 1 day's work =  $75/25 = 3$  units  
Asha's 1 day's work = 150% of  $(5 + 3) = 12$  units  
Required time =  $75/12 = 25/4 = 6 \frac{1}{4}$  days

#### 23. Explanation

**Answer: C**

Ram's 1 day's work =  $1/8$  and Ravi's 1 day's work =  $1/5$   
(Ram + Ravi)'s 1 day's work =  $1/8 + 1/5 = 13/40$   
(Ram + Ravi)'s 2 day's work =  $2 \times 13/40 = 13/20$   
Part of work left =  $1 - 13/20 = 7/20$

#### 24. Explanation

**Answer: B**

Efficiency of Sam =  $x$  units per day  
Efficiency of Ravi =  $0.8x$  units per day  
Efficiency of Saran =  $1.2x$  units per day  
Total work done by Sam and Ravi =  $5 \times 1.8x = 9x$  units

Required time taken by Ravi and Saran =  $9x/(0.8 + 1.2)x$   
= 4.5 days

#### 25. Explanation

**Answer: A**

$$4b + 5g = 3b + 6g$$
$$\Rightarrow b = g$$
$$b : g = 1 : 1$$

#### 26. Explanation

**Answer: B**

$A + B = 1/30$   
 $B = 5/1 \times 16 = 80$  days  
 $A = 1/30 - 1/80$   
 $A = (8 - 3)/240 = 5/240$   
 $A = 1/48$   
A complete the 75% of the work in =  $48 \times 3/4 = 36$  days

#### 27. Explanation

**Answer: A**

According to question  
Ratio of efficiency of woman and man =  $3/1$   
Ratio of efficiency of a man and children =  $2/1$   
So, ratio of efficiency =  $6:2:1$   
Total work =  $(4 \times 2 + 5 \times 6 + 7 \times 1) \times 21 = 945$  units  
Required time =  $945/(14 \times 6) = 11.25$  days

#### 28. Explanation

**Answer: D**  
Total number of work is = 160 units (LCM of 20 and 32)

So, the efficiency of Aman =  $160/20 = 8$  unit/day

And the efficiency of Suman =  $160/32 = 5$  unit/day

Work done by Aman and Suman in 4 days =  $(8 + 5) \times 4 = 52$  units

So, the remaining work is =  $160 - 52 = 108$  units

Working efficiency of Aman and Raman together =  $108/6 = 18$  unit/day

So, the efficiency of Raman is =  $18 - 8 = 10$  unit/day

Time taken by Raman alone to complete the work =  $160/10 = 16$  days

Thus, the required percentage is =  $(20 - 16)/16 \times 100 = 4/16 \times 100 \Rightarrow 25\%$  more

Hence, the required answer is = **25% more.**

### 29. Explanation

**Answer: B**

$$(5B + 2G) * 3 = (6B + 5G) * 2$$

$$\Rightarrow 3B = 4G \text{ --- (I)}$$

$$(5B + 2G) * 3 = (3B + 2G) * ? \text{ --- (II)}$$

Sub (I) in (II), we get,

$$(5 * 4/3 * G + 2G) * 3 = (4G + 2G) * x$$

$$x = 26/6 = 4 \frac{1}{3} \text{ days}$$

### 30. Explanation

**Answer: B**

Let the number of women be x.

$$\Rightarrow (10 * 5 * 10 * 2)/250 = (x * 4 * 5 * 4)/200$$

$$\Rightarrow x = 10$$

### 31. Explanation

**Answer: C**

Efficiency ratio  $\Rightarrow P: Q: R = 4: 1: 2$

Days taken  $\Rightarrow P: Q: R = \frac{1}{4}: \frac{1}{1}: \frac{1}{2} = 1: 4: 2$

### 32. Explanation

**Answer: C**

Ratio of time of A and (A + B) = 9:5

Ratio of efficiency of A and (A + B) = 5:9

Ratio of efficiency of A and B = 5:4

Ratio of efficiency of B and C = 1:2

Ratio of efficiency of A, B and C = 5:4:8

Total work =  $(4 + 8) \times 20/3 = 80$  units

Time taken by A alone to complete the job =  $80/5 = 16$  days

### 33. Explanation

**Answer: A**

**Shortcut:**

LCM of 8, 12 and 24 = 24 units

A = 3 units per day

B = 2 units per day  $\Rightarrow$  B's 3 days work = 6 units

C = 1 unit per day  $\Rightarrow$  C's 2 days work = 2 units

Required number of days =  $(24 - 2 + 6)/5$

$$= 28/5 = 5 \frac{3}{5} \text{ days}$$

### 34. Explanation

**Answer: C**

Ratio of time of A and (A + B) = 9:5

Ratio of efficiency of A and  $(A + B) = 5:9$

Ratio of efficiency of A and B = 5:4

Ratio of efficiency of B and C = 1:2

Ratio of efficiency of A, B and C = 5:4:8

Total work =  $(4 + 8) \times 20/3 = 80$  units

Time taken by A alone to complete the job =  $80/5 = 16$  days

### 35. Explanation

**Answer: A**

Efficiency ratio  $\Rightarrow$  Adhi: Mahi: Suhail = 5: 1: 3

Ratio of number of days taken =  $1/5: 1/1: 1/3 = 3: 15: 5$

### 36. Explanation

**Answer: D**

$$5/25 + (x + 5)/20 = 1$$

$$(x + 5)/20 = 4/5$$

$$x + 5 = 16$$

$$x = 11 \text{ days}$$

### 37. Explanation

**Answer: A**

Work done by Ajay and Vijay

$$= [(4+5)/36] + (5/50)$$

$$= (1/4) + (1/10)$$

$$= 7/20$$

$$\text{Remaining work} = 1 - (7/20) = 13/20$$

Let this part of work is done by Sanjay in x days.

$$x/64 = 13/20$$

Remaining part of work is completed by Sanjay in 41.6 days.

### 38. Explanation

**Answer: A**

120 books printed in a day.

Efficiency of new machine and old machine = 80:100 = 4:5

New printing machine can print the number of books in a day =  $4/5 \times 120 = 96$

$$\text{Required time} = 1152/96 = 12$$

### 39. Explanation

**Answer: A**

Efficiency ratio  $\Rightarrow$  Sanu: Bala: Sen = 2: 1: 3

Days ratio  $\Rightarrow$  Sanu: Bala: Sen =  $\frac{1}{2}: 1: \frac{1}{3}$   
 $= 3: 6: 2$

### 40. Explanation

**Answer: C**

$$A + B = 9/40$$

$$B + C = 1/6$$

$$A + C = 23/120$$

$$2A + 2B + 2C = 9/40 + 1/6 + 23/120$$

$$= (27 + 20 + 23)/120$$

$$= 70/120$$

$$A + B + C = 7/24$$

$$A \text{ alone complete the work} = 7/24 - 1/6 = 1/8$$

B + C together can complete the work for 3 days =  $3/6 = \frac{1}{2}$

A alone complete the remaining work =  $1/2 * 8 = 4$  days

Required time =  $3 + 4 = 7$  days

#### 41. Explanation

**Answer: A**

According to question

62.5% of A = 75% of B

$5/8 \times A = 3/4 \times B$

$A/B = 6/5$  (Ratio of efficiency)

Total work = 6 unit  $\times 60 = 360$  units

Required time =  $360 / (1/2 \times 6 + 40\% \text{ of } 5) = 360/5 = 72$  days

#### 42. Explanation

**Answer: A**

$10/A + 30/J = 15/A + 20/J$

$10A = 5J$

$J = 2A$

Then,  $15/A + 20/2A = 1$

$(20 + 30/2A) = 1$

$2A = 50$

A (Abhi) = **25 days**

#### 43. Explanation

**Answer: C**

According to question

$(8M + 10W) \times 18 = (4W + 10M) \times 24$

$24M + 30W = 16W + 40M$

$14W = 16M$

$W/M = 8/7$

Total work =  $(8 \times 7 + 10 \times 8) \times 18 = 2448$  units

Required time =  $2448 / (10 \times 8 + 10 \times 7) = 16.32$  days

#### 44. Explanation

**Answer: C**

50 men can do a piece of work in 40 days

$50\text{men} \times 40 = 50\text{men} \times x + 40\text{men} \times 40$

$2000 = 50x + 1600$

$50x = 400$

$x = 8$  days

#### 45. Explanation

**Answer: C**

Ragavan alone can complete the work = 30 days

Efficiency of velavan and Ram = 150:100 = 3:2

Time ratio of velavan and ram = 2:3

$1/2x + 1/3x = 1/24$

$5/6x = 1/24$

$x = 20$

Velavan can complete the work =  $2 * 20 = 40$  days

Ragavan and Velavan together can complete the work =

$1/40 + 1/30$

$= 7/120$

Required time =  $120/7 = 17(1/7)$  days

#### 46. Explanation

**Answer: D**

(Amala's 1 day's work): (Amrita's 1 day's work) = 2: 1

(Amala + Amrita)'s 1 day's work =  $1/12$

Amala's 1 day's work =  $2/3 * 1/12 = 1/18$

Amala takes 18 days to finish the job.

#### 47. Explanation

**Answer: C**

Efficiency ratio of A and B =  $150:100 = 3:2$

Time ratio of A and B =  $2:3$

$1/2x + 1/3x = 1/30$

$5/6x = 1/30$

$1/x = 1/25$

B alone complete the work =  $25 * 3 = 75$  days

A alone complete the work =  $2 * 25 = 50$  days

C alone complete the work =  $3/100 - 1/75 = 5/300 = 1/60$

A + C together can complete the work =  $1/60 + 1/50 = 11/300$

Required time =  $300/11 = 27(3/11)$  days

#### 48. Explanation

**Answer: B**

Let the total work be LCM of 40, 60 and 30 = 120 units

Efficiency of Seeta =  $120/40 = 3$  units

Efficiency of Geeta =  $120/60 = 2$  units

Efficiency of Neeta =  $120/30 = 4$  units

Work done by Seeta and Neeta in 14 days =  $14 \times (3 + 4) = 98$  units

Remaining work =  $120 - 98 = 22$  units

Time taken by Geeta to complete the remaining work =  $22/2 = 11$  days

#### 49. Explanation

**Answer: D**

Ratio of efficiency of A and B =  $3:2$

Hence ratio of number of days taken to complete the work by A and B =  $2:3$

Let the number of days taken by A =  $2X$

Let the number of days taken by B =  $3X$

$3X - 2X = 5$  (B takes 5 more days than A to complete the work)

$X = 5$

Days taken by A = 10 and by B = 15

Time taken by C = 12

Efficiency of A =

Efficiency of B =

Efficiency of C =

Total efficiency = 25%

Work done in 2 days by all three together = 50%

Also, C leaves 3 days before completing the work.

Thus, B works alone

Work done by B in last three days =  $6.67 \times 3 = 20\%$

Thus (50+20)% of the work has been accounted for.

The remaining work must have been done by C and B.

Remaining work =  $(100-70)\% = 30\%$

C and B have total efficiency =  $6.67 + 8.33 = 15\%$

ie they take 2 days working together to complete the 30% of the work.

Total days = 7 days

#### 50. Explanation

**Answer: C**

The number of days taken by A, B and C alone to complete the work is in the ratio = 4 : 5 : 10 (4x, 5x, 10x)

(A + B)'s 1 day work =  $3/20$

(B + C)'s 1 day work =  $1/10$

(A + 2B + C)'s 1 day work =  $(3/20) + (1/10) = 1/4$

Given,

$(1/4x) + (2/5x) + (1/10x) = 1/4$

$(5 + 8 + 2) / 20x = 1/4$

$15 / 20x = 1/4$

$x = 3$

The number of days taken by B alone to complete the work =  $5x = 15$  days

## Time, Distance, and speed

1. Two cars A and B starts from Chennai and Bangalore respectively with the speed of 56 kmph and 44 kmph respectively in opposite direction. In how much time the distance between these two cars will be cover 900 km?

A.5 hours

B.8 hours

C.9 hours

D.10 hours

E.6 hours

2. Meera started 90 minutes late from home towards his school, so he increased his speed by 60% and reached school in time. If the distance between home and school is 160 km, then find the initial speed of Meera?

A.20 kmph

B.40 kmph

C.50 kmph

D.60 kmph

E.None of these

3. Car A starts at 8 am from Chennai towards Delhi and car B starts at 8.30 am from Delhi towards Chennai. Car B meets car A after 4 hours of starting. If the speed of car A is 70 kmph and the distance between Delhi and Chennai is 615 km, then find the speed of car B?

A.80 kmph

B.90 kmph

C.85 kmph

D.75 kmph

E.100 kmph

4. The bike covers  $x$  km in  $t$  hours and the car covers  $(x + 30)$  km in  $t$  hours. If the speed of bike is 25% less than the speed of car, then what is the distance travelled by car at  $t$  hours?

A.100 km

B.120 km

C.150 km

D.Cannot be determined

E.None of these

5. Train A moving towards Lucknow from Delhi and train B moving towards Delhi from Lucknow. If both train started at the same time and the speed of train A and B is 60 kmph and 80 kmph respectively and the distance between Delhi and Lucknow is 350 km, then what is the time taken by train A to reach Lucknow after meeting train B?

A.4 hours and 15 minutes

B.2 hours and 20 minutes

C.2 hours and 30 minutes

D.3 hours and 20 minutes

E.3 hours and 15 minutes

6. Uday travelled 342 km in 8 hours. He travelled some distance by car at the speed of 30 kmph and rest of the distance by train at the speed of 64 kmph. What is the distance travelled by train?

A.188 km

B.190 km

C.192 km

D.194 km

E.196 km

7. The speed of car is  $x$  kmph and covers 768 km in  $t$  hours. If the same car covers the same distance in  $(t - 0.8)$  hours with the speed of  $(x + 4)$ , then what is the time taken by the car covers 240 km?

A.3 hours

B.4 hours

C.2 hours

D.5 hours

E.None of these

8. If the car covered 60 km in first hour, 90 km in second hour and 120 km in third hour, then find the distance covered in 18<sup>th</sup> hour?

A.550 km

B.570 km

C.590 km

D.600 km

E.640 km

9. The ratio between the speeds of P and Q is 5 : 4 respectively and therefore P takes 15 minutes more than Q to reach a destination. If P had travelled at thrice the speed, then find how much time it will take to covered the distance?

A.28 minutes

- B.30 minutes
- C.20 minutes
- D.24 minutes
- E.None of these

10. There was a race of 2250 meters between P and Q on a circular track of 1080 meters. After 6 minutes of starting the race they meet for the first time during the race. Find the time taken by Q to complete the race, if he runs at one-third of the speed of P?

- A.30 minutes
- B.18 minutes
- C.22 minutes
- D.25 minutes
- E.None of these

11. If the length of the train A is 140 m crossed a platform of length 160 m in 10 seconds and another train B of length 152 m with the speed 30% more than train A. Then how much time will train B take to cover the same platform.

- A.5 sec
- B.6 sec
- C.10 sec
- D.8 sec
- E.None of these

12. In how much time a bicycle can cover a distance of 506 km if the speed of the bicycle is  $\frac{1}{3}$ rd less than the speed of bike and speed of the bike is 12% less

than the speed of the bus which covers 450 km in 15 hours in which it takes 36 minutes break after every 90 km?

- A.23 hours
- B.20 hours
- C.18 hours
- D.25 hours
- E.None of these

13. Ramesh walks to his school and he takes his bicycle from school and ride back to home taking a total time of 23 minutes. He can walk both ways in 35 minutes. How much time will he take to ride both ways?

- A.6 min
- B.18 min
- C.11 min
- D.24 min
- E.None of these

14. Arun started his bike journey at a speed of s kmph. After 2 hours, he reduced his speed by 10kmph and travelled for 1 hour. He again increased his speed by 10% and travelled for 2 hours. Find the value of s if the total distance he covered is 98km.

- A.20 kmph
- B.25 kmph
- C.30 kmph
- D.35 kmph



E.None of these

15. A bus driver drives the bus at 24kmph from Nagercoil to Madurai. Another driver drives at 26kmph from Madurai to Nagercoil, which are 250km apart. After what time, will they cross each other, if they start at the same time?

A.2 hours

B.3 hours

C.4 hours

D.5 hours

E.None of these

16. A man travels a certain distance at an average speed of 60 km/hr without stoppage and with stoppage he covers the same distance at an average speed of 40 km/hr. How many minutes per hour does he stop?

A.20 minutes

B.35 minutes

C.30 minutes

D.40 minutes

E.None of these

17. Time taken by a car running at 30 km/h to cover a certain distance is 2 hour less than time taken by car to cover 10 km more than previous distance with speed of 24 km/h. find the time taken by car to cover 35 km more than initial distance with speed of 12.5 km/h?

A.20 hours

B.22 hours

C.18 hours

D.15 hours

E.None of these

18. Two cities X and Y are  $x$  km apart, person A starts from X at 65kmph and after 2 hours person B starts from city Y at 85kmph, after 3 more hours both of them met. In what time person A completes his journey, if speed of A is 7km/hr less than that of the person who start his journey from city X?

A.12 hours

B.10 hours

C.8 hours

D.9 hours

E.15 hours

19. A boy travelled to his school which is at the distance of 20km in 3 hours. He rode a bicycle at 6kmph for some distance. Then he passed the remaining distance at 7kmph by bus. What is the distance travelled by bus?

A.7km

B.14km

C.21km

D.28km

E.None of these

20. The ratio of the speed of the bike and the car is 6 : 5. To cover a certain distance D, their difference of time is 60minutes. In a particular day, driver noticed that if they are  $(D - 120)$  km apart from one another then they can meet in 120 minutes driving in the opposite direction at their normal speed. Then find the average speed of the bike and the car.

- A.82.5 km/hr
- B.95 km/hr
- C.78 km/hr
- D.91.25 km/hr
- E.None of these

21. The ratio of speed of car A and car B is 4:3. Speed of car C is 10m/s more than speed of car A and car D covered 420km distance in 6 hours which is 1hr more than that of C, then find the speed of car B.

- A.50 km/hr
- B.48 km/hr
- C.36 km/hr
- D.60 km/hr
- E.none of these

22. A person travelling from P to Q at an average speed of 68 km/h and reached at point Q in 3.5 hours. If person covers same distance with stoppage to its average speed reduced by 20.4 km/h as compared to without stoppage speed, then find the number of stoppages if each stoppage is 36 minutes.

- A.12
- B.6
- C.5
- D.4
- E.None of these

23. A person is travelling from Ajmer to Manali by driving Bike at speed of 120 km/h without any halt. Has he taken 6 halts of 12 minutes each, then the total time taken to cover distance from Ajmer to Manali would have been 5 hours. Find the total distance from Ajmer to Manali in Km?

- A.450 km
- B.456 km
- C.432 km
- D.336 km
- E.None of these

24. There is a race between dog, cat and lion and the race start from Delhi to Lucknow. The speed of the lion is 25% more than the speed of dog and the speed of cat is 25% less than the speed of dog. If the total time taken by all the three racers to reach Lucknow is 141 hours, then find the time taken by dog to reach Lucknow?

- A.30 hours
- B.36 hours
- C.42 hours
- D.45 hours

E.None of these

25. Car A starts from Chennai to Bangalore at 8 am and Car B starts from Chennai to Bangalore at 10 am. If car B overtakes car A at 2 pm and the speed of car B is 60 kmph, then what is the speed of car A?

A.50 kmph

B.40 kmph

C.45 kmph

D.55 kmph

E.None of these

26. Person X start from point A and person Y start from point B running towards each and meets first time after 8 hours. (Both start running at same time).

Find speed of Y in km/h if speed of X is 200% more than Y and distance between A and B is 960 km.

A.90 km/h

B.60km/h

C.30 km/h

D.45 km/h

E.None of these

27. A bus starts from point A with the speed of 75km/hr,for every hour it changes its speed by +5km/hr, -10km/hr, +15km/hr and so on, after 5 hours it reaches point B. Find the time taken by a car to travel from point B to A at 60km/hr

A.5hrs 45mins

B.6hrs 15mins

C.6hrs 45mins

D.6hrs 30mins

E.5hrs 15mins

28. Mala traveled one-fifth of the time walking at speed of 20 kmph, half of the time in a bus at 200 kmph and rest of the journey in a bike at 120 kmph. What is the average speed of Mala over entire journey?

A.120 kmph

B.130 kmph

C.150 kmph

D.140 kmph

E.None of these

29. In 12 hours car A covers 36 km more distance than car B covered in 18 hours. If the speed of car A is 12 kmph more than the speed of car B, then how much distance car A covered in 40 hours?

A.1200 km

B.1500 km

C.1800 km

D.1000 km

E.900 km

30. The distance covered by train A is 60% more than the distance covered by train C and the distance covered by train B is 20% more than the distance covered by train C. If the speed of train A is double of the speed of train C and the speed of train B is 50%

more than the speed of train C, then what is the ratio of the time taken by train A, B and C covered the given distance?

- A.4:4:5
- B.4:3:5
- C.3:2:5
- D.4:5:7
- E.None of these

31. Distance between Jhandewalan and Mandi House is 72 km. Tamanna and Kabir starting from Jhandewalan and move towards Mandi house at the same time and Tamanna takes 4 hours more than Kabir to reach Mandi House. Moreover, Tamanna covered the 50% of total distance by 2 hours before Kabir reaches Mandi House. Find speed of Tamanna in Km/h.

- A.4.5 km/h
- B.6 km/h
- C.9 km/h
- D.8 km/h
- E.None of these

32. Walking at  $\frac{5}{6}$ th of the speed, the person reached the destination 10 minutes late, find the time taken by the person to travel same distance on twice the speed?

- A.60 minutes
- B.50 minutes
- C.15 minutes

- D.25 minutes
- E.30 minutes

33. Ratio of the speed of bike and car is 3:4. If the bike covers 240 km in 4 hours, then what is the time taken by car covers 440 km?

- A.4 hours
- B.4.8 hours
- C.5 hours
- D.5.5 hours
- E.6 hours

34. A car travelling from Bihar to UP at the speed of 90 kmph and reached UP in half hour late. If the speed of the car increased by 30 kmph and reached UP on time, then find the distance between Bihar and UP?

- A.180 km
- B.150 km
- C.210 km
- D.120 km
- E.90 km

35. Tina has travel from Chennai to Bangalore in certain time. If she travelling at the speed of 60 kmph and she reaches 48 minutes late and she travelling at the speed of 96 kmph she reaches 15 minutes earlier. What is the distance between Chennai and Bangalore?

- A.138 km

B.148 km

C.158 km

D.168 km

E.None of these

36. Two persons Karan and Anika are travelling from point P to Q. Karan travelling by Bike and Anika by metro train. Find the difference between their speed in Km/h if both start journey at same time and reach destination at same time and metro train takes halts of 45 minutes between the journeys, Speed of Bike is 40% less than metro train and Distance between P to Q is 135 km?

A.36 km/h

B.32 km/h

C.48 km/h

D.96 km/h

E.24 km/h

37. A car starts from S to T at the speed of 80 kmph and the same car reduced the speed by 60 kmph in the return journey from T to S. If the total time taken by the car in the whole journey is 4 hours 30 minutes, then find the distance between S and T?

A.72 km

B.75 km

C.78 km

D.81 km

E.84 km

38. Sachin goes to office from his house. If he decreased his speed by 20% of the usual speed, then reached his office in 30 minutes late, what is the actual time taken by Sachin to reach his office?

A.2 hours

B.3 hours

C.4 hours

D.5 hours

E.Cannot be determine

39. A bike travels with a speed of 40 km/h, its speed is increased by 10 km/h after every 1.5 hours. Find the time taken by bike to cover a distance of 300 km.

A.29/7 hours

B.31/7 hours

C.36/7 hours

D.37/7 hours

E.None of these

40. Two scooters X and Y are running towards each other from two different places which are 135km apart, if the ratio of the time taken by the scooters to meet each other is 4:5, then find the difference of their speeds.

A.9km/hr

B.13.5km/hr

C.18km/hr

D.4.5km/hr

E.Can't be determined

41. Speed of Akbar is 32.5% less than speed of Amina. Amina travelled for 9 hours which is one hour more than the Akbar travelled. If Akbar travelled 24 km less than Amina, then find the distance travelled by Amina and Akbar together.

- A.96 km
- B.108 km
- C.84 km
- D.88 km
- E.None of these

42. Ratio of the speed of car to bike is 3:2 and the car covers 480 km in 8 hours. If the time taken by bike covers x km in 3 hours more than the time taken by the car covers the same distance, then find the value of x?

- A.320 km
- B.300 km
- C.360 km
- D.400 km
- E.None of these

43. A man goes office from his house at the speed of 20 kmph and reached the office at 15 minutes late. If he increased the speed by 5 kmph and he reaches the office on time, then find the distance between office and house?

- A.20 km
- B.25 km

C.30 km

D.40 km

E.None of these

44. The speed of the car A is 50% more than the car B and car A covers 780 km in 13 hours. Car B starts from Chennai to Bangalore at usual speed and reaches Bangalore at 3 minutes late. If speed of car B is increased by 10 kmph, then reaches Bangalore in time, find the distance between Chennai and Bangalore?

- A.10 km
- B.12 km
- C.15 km
- D.18 km
- E.20 km

45. A car starts from Chennai to Tirunelveli at the speed of 40 kmph and reached the destination at 15 minutes late. If the car increased the speed by 10 kmph and reached the destination in time, then find the distance between Chennai and Tirunelveli?

- A.40 km
- B.50 km
- C.60 km
- D.80 km
- E.None of these

46. In T hours a car covers 30 km less than the distance covered by a bus in the same time. The speed

of the car is 10 km/hr less than the speed of the bus.

Find the value of T?

A.3

B.4

C.2

D.5

E.None of these

47. Two stations A and B are 310 km apart on a straight line. One train starts from A at 10 a.m. and travels towards B at 40 km/hr. Another train starts from B at 11 a.m. and travels towards A at a speed of 50 km/hr. At what time will they meet?

A.3 pm

B.1 pm

C.2 pm

D.4 pm

E.None of these

48. A river is flowing at a speed of 10kmph in a particular direction. A man, who can swim at a speed of 30kmph in still water, starts swimming along the direction of flow of the river from point A and reaches another point B which is at a distance of 60km from the starting point A. On reaching point B, the man turns back and starts swimming against the direction of flow of the river and stops after reaching

point A. What is the total time taken by the man to complete his journey?

A.4 hr 30 min

B.2 hr 15 min

C.4 hr 10 min

D.6 hr 15 min

E.None of these

49. Two trains A and B running in opposite direction at the speed of 60 kmph and 72 kmph respectively. Length of train A and B is 300 m and 360 m respectively. In how much time will they take to cross each other?

A.24 seconds

B.18 seconds

C.12 seconds

D.36 seconds

E.None of these

50. Ram walks from house at the speed of 2 kmph, he reaches the school at 10 minutes late. If he increased the speed by 1 kmph, he reaches the school on time, then find the distance between house and school?

A.1 km

B.2 km

C.3 km

D.4 km

E.None of these

## Time, Distance, and speed – Answer and Explanation

### 1. Explanation

**Answer: C**

$$\text{Required time} = 900/(56 + 44)$$

$$= 900/100$$

$$= 9 \text{ hours}$$

### 2. Explanation

**Answer: B**

$$\text{Initial speed} = S$$

$$(160/S) - (160/(S * 160/100)) = 90/60$$

$$60/S = 90/60$$

$$S = 40 \text{ kmph}$$

### 3. Explanation

**Answer: D**

$$(70 * 30/60) + 70 * 4 + 4 * x = 615$$

$$4x = 300$$

$$x = 75 \text{ kmph}$$

### 4. Explanation

**Answer: B**

$$\text{Speed of bike and car} = 75:100 = 3:4$$

$$\text{Speed of bike} = 3a$$

$$\text{Speed of car} = 4a$$

$$3a = x/t$$

$$4a = (x + 30)/t$$

$$x/3a = (x + 30)/4a$$

$$4x = 3x + 90$$

$$x = 90$$

$$\text{Distance covered by car} = 90 + 30 = 120 \text{ km}$$

### 5. Explanation

**Answer: D**

$$\text{Train A and B meet each other in } x \text{ hours}$$

$$60 * x + 80 * x = 350$$

$$x = 2.5 \text{ hours}$$

$$\text{Required time} = 80 * 2.5/60 = 3 \text{ hours and } 20 \text{ minutes}$$

### 6. Explanation

**Answer: C**

$$\text{Time taken by car} = x$$

$$\text{Time taken by train} = 8 - x$$

$$x * 30 + (8 - x) * 64 = 342$$

$$30x + 512 - 64x = 342$$

$$x = 5 \text{ hrs}$$

$$\text{Distance travelled by train} = 3 * 64 = 192 \text{ km}$$

### 7. Explanation

**Answer: B**

$$768/x - 768/(x + 4) = (t - (t - 0.8))$$

$$(x + 4) - x/x(x + 4) = 0.8/768$$

$$X^2 + 4x = 3840$$

$$X^2 - 60x + 64x - 3840 = 0$$

$$x = 60$$

$$\text{Required time} = 240/60 = 4 \text{ hours}$$

### 8. Explanation

**Answer: B**

$$t_n = a + (n - 1) * d$$



$$= 60 + (18 - 1) * 30$$

$$= 570 \text{ km}$$

### 9. Explanation

**Answer: C**

Ratio of the time taken is = 4 : 5

So, according to the question,

If difference between time take is 1 min, P takes 4 minutes to cover distance.

If difference between time taken is 15 min, P takes  $(15 \times 4) = 60$  minutes.

So, at thrice the speed, he will take  $= 60/3 = 20$  minutes.

### 10. Explanation

**Answer: D**

Let the speed of P is =  $3x$

And the speed of the Q is =  $x$

Then, according to the question,

$$= 1080/3x - x = 6 \text{ min.}$$

$$= 3x - x = 1080/6$$

$$\text{So, } 3x - x = 180 \text{ meters/min.}$$

$$= 2x = 180 \text{ metres/min.}$$

$$= x = 90 \text{ metres/min.}$$

So, the speed of Q is = 90 metres/min.

So, the required time is  $= 2250/90 = 25$  minutes.

### 11. Explanation

**Answer: D**

$$\begin{aligned} \text{Total length (length of train + length of platform)} &= 140 \\ + 160 &= 300 \text{ m} \end{aligned}$$

$$\text{Speed of train A} = 300/10 = 30 \text{ m/s}$$

$$\text{Speed of train B} = 130/100 \times 30 = 39 \text{ m/s}$$

$$\text{Time taken by train B to cover the distance} = (152 + 160)/39 = 8 \text{ sec}$$

### 12. Explanation

**Answer: A**

Total stopping time of the bus is  $= 36 \times 5 = 180$  minutes or 3 hours

Then, the speed of the bus is  $= 450/(15 - 3) = 450/12 = 37.5 \text{ km/hr}$

Now, the speed of the bike is  $= 37.5 \times 88/100 = 33 \text{ km/hr}$

So, the speed of the bicycle is  $= 33 \times 2/3 = 22 \text{ km/hr}$

Thus, the time taken by bicycle to cover  $= 506/22 = 23$  hours.

### 13. Explanation

**Answer: C**

Let the distance travelled from his house to school be  $d$  km.

Time taken to walk  $d$  km + Time taken to ride  $d$  km = 23 min

Time taken to walk  $2d$  km + Time taken to ride  $2d$  km =  $23 * 2 \text{ min} = 46 \text{ min}$

Time taken to ride both ways  $= 46 - 35 = 11 \text{ min}$

### 14. Explanation

**Answer: B**

$$2s + (s - 10) * 1 + 1.1 * (s - 10) * 2 = 98$$

$$\Rightarrow 2s + s - 10 + 2.2s - 22 = 98$$

$$\Rightarrow s = 25\text{kmph}$$

### 15. Explanation

**Answer: D**

$$\text{Total distance} = 250\text{km}$$

$$\text{Relative speed} = 24 + 26 = 50\text{kmph}$$

$$\begin{aligned}\text{Time taken to cross each other} &= \text{Distance/Speed} = \\ 250/50 &= 5 \text{ hours}\end{aligned}$$

### 16. Explanation

**Answer: A**

$$\begin{aligned}\text{Time of rest per hour} &= \text{Difference in speed/speed} \\ \text{without stoppage} &= (60 - 40)/60 = 20/60 = 1/3 \times 60 = 20 \text{ minutes}\end{aligned}$$

### 17. Explanation

**Answer: C**

$$\text{Let the initial distance covered by car} = a \text{ km}$$

According to question,

$$(a + 10)/24 - a/30 = 2$$

$$5a + 50 - 4a = 2 \times 120$$

$$a = 190 \text{ km}$$

$$\begin{aligned}\text{Time taken by car to cover } a + 35 \text{ km running at } 12.5 \\ \text{km/h}\end{aligned}$$

$$(190 + 35)/12.5 = 18 \text{ hours}$$

### 18. Explanation

**Answer: B**

$$\text{Distance between two cities} = x$$

If person from city X walked for 5 hours and Y walked for 3 hours, both will meet at a point.

$$\text{Total distance} = 5(65) + 3(85) = 580\text{km}$$

$$\text{Speed of the person A} = 65 - 7 = 58\text{kmph}$$

$$\begin{aligned}\text{Time taken by A to complete entire journey} &= 580/58 = \\ 10 \text{ hours}\end{aligned}$$

### 19. Explanation

**Answer: B**

$$\begin{aligned}\text{Time in which he travelled by bus} &= x \text{ hours and Time in} \\ \text{which he travelled by bicycle} &= 3 - x \text{ hours}\end{aligned}$$

$$\text{Distance} = \text{Speed} \times \text{time}$$

$$20 = x \times 7 + (3 - x) \times 6$$

$$\Rightarrow x = 2 \text{ hours}$$

$$\text{Distance travelled by bus} = 7x = 14 \text{ km}$$

### 20. Explanation

**Answer: A**

$$\text{Let speed of the bike is} = 6x \text{ km/hr}$$

$$\text{And the speed of the car is} = 5x \text{ km/hr}$$

Then, according to the question,

$$D/5x - D/6x = 1$$

$$(6D - 5D)/30x = 1$$

$$D = 30x \quad (\text{i})$$

Now, if both are travelling in the opposite direction,

Then,

$$(D - 120)/(5x + 6x) = 2$$

$$(D - 120) = 22x \quad (\text{ii})$$

Now, solving both equation we get,

$$30x - 120 = 22x$$

$$8x = 120$$

$$x = 15$$

So, the speed of the bike is  $= 6 \times 15 = 90 \text{ km/hr}$

And the speed of the car is  $= 5 \times 15 = 75 \text{ km/hr}$

So, the average speed of both is  $= (90 + 75)/2$

$$= 165/2 = 82.5 \text{ km/hr}$$

### 21. Explanation

**Answer: C**

Speed of car D  $= 420/6 = 70 \text{ km/hr}$

Speed of car C  $= 420/((6-1)) = 84 \text{ km/hr}$

$10 \text{ m/s} = 36 \text{ km/hr}$

Speed of car A  $= 84 - 36 = 48 \text{ km/hr}$

Speed of car B  $= (48/4) \times 3 = 36 \text{ km/hr}$

### 22. Explanation

**Answer: C**

Distance  $= 68 \times 3.5 = 238 \text{ km/h}$

Average speed with stoppage  $= 68 - 20.4 = 47.6 \text{ km/h}$

Time taken to cover same distance with stoppage  $= 238/47.6 = 5 \text{ hours}$

Stoppage time  $= 5 - 3.5 = 1.5 \text{ hours} = 180 \text{ minutes}$

Number of stoppages  $= 180/36 = 5$

### 23. Explanation

**Answer: B**

Total halt time  $= 6 \times 12 = 72 \text{ minutes} = 1.2 \text{ hours}$

Travelling time  $= 5 - 1.2 = 3.8 \text{ hours}$

Required distance  $= 120 \times 3.8 = 456 \text{ km}$

### 24. Explanation

**Answer: D**

Let the speed of dog  $= 100x$

Speed of Lion  $= 100x \times 125/100 = 125x$

Speed of Cat  $= 100x \times 75/100 = 75x$

Speed ratio of dog, Lion and Cat  $= 100x:125:75x = 4:5:3$

Time ratio of Dog, Lion and Cat  $= 15:12:20$

$$15y + 12y + 20y = 141$$

$$y = 3$$

Required time  $= 15 \times 3 = 45 \text{ hours}$

### 25. Explanation

**Answer: B**

Speed of car A  $= x$

$$x \times 6 = 60 \times 4$$

$$x = 40 \text{ kmph}$$

### 26. Explanation

**Answer: C**

Let speed of Y  $= a \text{ km/h}$

Speed of X  $= 300\%$  of  $a = 3a$

According to question

$$960/8 = (3a + a)$$

$$4a = 120$$

$$a = 30$$

Speed of Y  $= 30 \text{ km/h}$

### 27. Explanation

**Answer: B**

Speed of the bus for the first hour  $= 75 \text{ km/hr}$

Speed of the bus for the 2nd hour  $= 75 + 5 = 80 \text{ km/hr}$

Speed of the bus for the 3rd hour  $= 80 - 10 = 70 \text{ km/hr}$

Speed of the bus for the 4th hour =  $70+15=85\text{km/hr}$

Speed of the bus for the 5th hour =  $85-20=65\text{km/hr}$

Distance between point A and B =  $75+70+80+65+85=375\text{km}$

Speed of the car =  $60\text{km/hr}$

Time taken =  $(375/60)=6\text{ hours } 15\text{ minutes}$

## 28. Explanation

**Answer: D**

Total time =  $x$

Total distance =  $(x * 1/5 * 20) + (200 * x/2) + (120 * (x - x/5 - x/2))$   
 $= 4x + 100x + 36x$   
 $= 140x$

Average speed =  $140x/x = 140\text{ kmph}$

## 29. Explanation

**Answer: A**

Speed of car A =  $x$

Speed of car B =  $y$

$12x - 18y = 36$

$2x - 3y = 6$  -----(1)

$x - y = 12$  -----(2)

$y = 18\text{ kmph}$

$x = 18 + 12 = 30\text{ kmph}$

Required distance =  $30 * 40 = 1200\text{ km}$

## 30. Explanation

**Answer: A**

Let assume, distance covered by train C =  $100x$

Distance covered by train A =  $100x * 160/100 = 160x$

Distance covered by train B =  $100x * 120/100 = 120x$

Speed of train A =  $2y$

Speed of train C =  $2y/2 = y$

Speed of train B =  $y * 150/100 = 3y/2$

Required ratio =  $160x / 2y : 120x / (3y/2) : 100x / y$

$= 80:80:100$

$= 4:4:5$

## 31. Explanation

**Answer: B**

Let the time taken by Kabir to covered total distance =  $a$  hours

Time taken by Tamanna to cover total distance =  $a + 4$  hours

According to question

$(a + 4)/2 = a - 2$

$a + 4 = 2a - 4$

$a = 8$

Time taken by Tamanna to cover total distance =  $a + 4 = 12$  hours

Speed of Tamanna =  $72/12 = 6\text{ km/h}$

## 32. Explanation

**Answer: D**

Let actual speed =  $6x$

Change in speed =  $5x$

Due to this change a person reach his destination after 10 minutes.

Ratio of actual time taken to increased time = 5:6

Difference of this ratio is 10 minutes,

Therefore actual time taken = 50 minutes

Distance covered = speed \* time =  $6x * 50 = 300x$

Time taken (twice the speed) =  $300x/12x = 25$  minutes

### 33. Explanation

**Answer: D**

Speed of bike =  $240/4 = 60$  kmph

Speed of car =  $60 * 4/3 = 80$  kmph

Required time =  $440/80 = 5.5$  hours

### 34. Explanation

**Answer: A**

Distance =  $x$

$x/90 = y + (30/60)$

$x/120 = y$

$x/90 = (x+60)/120$

$4x = 3x + 180$

$X = 180$  km

**(OR)**

Distance =  $(90 * 120 * 30/60)/30$

= 180 km

### 35. Explanation

**Answer: D**

Usual speed =  $S$

Distance =  $D$

$D/60 - D/S = 48/60$

$D/S - D/96 = 15/60$

$D/60 - 48/60 = 15/60 + D/96$

$D/60 - D/96 = (15 + 48)/60$

$D = 168$  km

### 36. Explanation

**Answer: C**

Ratio of speed of metro train and bike = 5:3

Ratio of time = 3:5

According to question

2 unit = 45 minutes

1 unit = 22.5 minutes

Speed of Train =  $135 * 60 / 22.5 * 3 = 120$  km/h

Speed of bike =  $135 * 60 / 22.5 * 5 = 72$  km/h

Difference of speed =  $120 - 72 = 48$  km/h

### 37. Explanation

**Answer: A**

$d/80 + d/(80 - 60) = 4.5$

$5d/80 = 4.5$

$d = 72$  km

### 38. Explanation

**Answer: A**

$d = s * t$

$d = s * 80/100 * (t + 30)$

$s * t = s * 4/5 * (t + 30)$

$5t = 4t + 120$

$t = 120$  minutes

### 39. Explanation

**Answer: E**

Distance covered by bike in 1.5 hours =  $40 \times 1.5 = 60$  km

Distance covered in 3 hours =  $60 + 50 \times 1.5 = 135$  km

Distance travelled in 4.5 hours =  $135 + 60 \times 1.5 = 225$  km

Rest of the distance covered by bike with speed of 70 km/h

=  $(300 - 225)/70 = 15/14$  hours

Total time =  $4.5 + 15/14 = 39/7$  hours

#### 40. Explanation

**Answer: E**

In this question, time taken by any of the scooters to reach the destination is not given, or speed of any of the scooter is not given. Therefore solution can't be determined.

#### 41 Explanation

**Answer: A**

$32.5\% = 32.5/100 = 13/40$

Ratio of speed of Amina and Akbar = 40:27

Ratio of distance =  $40 \times 9 : 27 \times 8 = 5:3$

Akbar travelled 24 km less than Amina

2 units = 24 km

1 unit = 12 km

Total distance travelled by both =  $(5 + 3)$  units  $\times 12 = 96$  km

#### 42. Explanation

**Answer: C**

Speed of car =  $480/8 = 60$  kmph

Speed of the bike =  $2/3 \times 60 = 40$  kmph

$x/40 - x/60 = 3$

$3x - 2x = 3 \times 120$

$x = 360$  km

#### 43. Explanation

**Answer: B**

Distance =  $(20 \times 25 \times 15/60)/5$

= 25 km

#### 44. Explanation

**Answer: A**

Let assume, Speed of car B =  $100x$

Speed of car A =  $100x \times 150/100 = 150x$

Speed of car A =  $780/13 = 60$  kmph

Speed of car B =  $60 \times 100x/150 = 40$  kmph

Distance =  $(40 \times 50 \times 3/60)/10 = 10$  km

#### 45. Explanation

**Answer: B**

Distance = speed  $\times$  time

Distance =  $(40 \times 50 \times 15/60)/10$

= 50 km

#### 46. Explanation

**Answer: A**

Let the speed of the bus and the car be  $S_b$  and  $S_c$  respectively,

ATQ,

$$S_b - S_c = 10$$

In T hours distance covered by bus =  $S_b T$

In T hours distance covered by car =  $S_c T$

$$S_b T - S_c T = 30$$

$$T (S_b - S_c) = 30$$

$$T = 3$$

The value of  $T = 3$  hours

#### 47. Explanation

**Answer: C**

They meet x hours after 10 a.m.

Distance covered by A in x hours =  $40x$  km

Distance covered by B in  $(x - 1)$  hours =  $50 * (x - 1)$  km

$$40x + 50 * (x - 1) = 310$$

$$40x + 50x - 50 = 310$$

$$9x = 360$$

$$x = 4$$

They meet at 2 p.m.

#### 48. Explanation

**Answer: A**

$$x = 30\text{kmph and } y = 10\text{kmph}$$

$$\text{Total time taken} = 60/40 + 60/20$$

$$= 4.5 \text{ hours} = 4 \text{ hours } 30 \text{ min}$$

#### 49. Explanation

**Answer: B**

$$\text{Required time} = (300 + 360)/((60 + 72) * 5/18)$$

$$= 18 \text{ seconds}$$

#### 50. Explanation

**Answer: A**

$$\text{Distance} = (2 * 3 * 10/60)/1$$

$$= 1 \text{ km}$$

## Train and Platform

1. Train crosses 300 m long tunnel in 18 seconds and also crosses a man running opposite direction at the speed of 10 kmph in 12 seconds. Find the length of train?

A. 600 m

B. 500 m

C. 700 m

D. 400 m

E. 800 m

2. Train A crosses a pole in 16 seconds and also crosses train B running opposite direction in 14.4 seconds. Train A crosses 500 m long tunnel in 36 seconds and the speed of train B is 60 kmph. Find the length of train B?

A. 300 m

B. 400 m

C.200 m

D.450 m

E.450 m

3. Train M leaves a place P by travelling at a speed of 60 km/hr. 6 hours later another train N leaves same place by travelling in same direction as train M. Train N will be 50 km ahead of train M in X hours and speed of train N is 80 km/hr, then find the distance travel by a car in  $(X + 2.5)$  hours, if the speed of car is 15% less than speed of train N?

A.1224 km

B.2036 km

C.1564 km

D.1628 km

E.None of these

4. The ratio of the speed of the boy A and the train is 1: 3. Train's length is 400m and crosses a boy B standing in the platform in 40 seconds. In how much time the boy A can cross the 200m long bridge?

A.20 seconds

B.40 seconds

C.60 seconds

D.85 seconds

E.None of these

5. A train is running at a speed of 24kmph and passes a tunnel of length 100m in 36 seconds. Find the ratio between the length of train and the length of tunnel.

A.5: 7

B.7: 5

C.3: 2

D.2: 3

E.None of these

6. A boy running at 12m/s crosses a train which is running in opposite direction at 180kmph in 10 seconds. What is the train length?

A.310km

B.390km

C.440km

D.580km

E.620km

7. Nellai express which is 300m long passes a boy running at 10kmph in the same direction in which the Nellai express is going in 20 seconds. What is the speed of the train?

A.60kmph



**B.64kmph**

**C.68kmph**

**D.72kmph**

**E.None of these**

**8. Two trains of the same length but with different speeds pass an electric pole in 6 seconds and 8 seconds respectively. In what time will they cross each other?**

**A.5  $\frac{3}{7}$  sec**

**B.6  $\frac{6}{7}$  sec**

**C.10  $\frac{8}{9}$  sec**

**D.8  $\frac{6}{7}$  sec**

**E.None of these**

**9. A train crosses a man standing in a platform in 24 seconds and crosses 520 m tunnel in 50 seconds. Find the speed of train?**

**A.60 kmph**

**B.45 kmph**

**C.72 kmph**

**D.80 kmph**

**E.90 kmph**

**10. Ratio of the speed of train A to B is 4:5 and the length of train A is 400 m. If train B crosses a pole in 28.8 seconds and train A crosses train**

**B running same direction in 4.4 minutes, then find the length of train B?**

**A.420 m**

**B.450 m**

**C.480 m**

**D.510 m**

**E.540 m**

**11. Two trains crosses each other in 14 seconds and 182 seconds when running in opposite direction and same direction respectively. Find speed of faster train is how much % of slower train?**

**A.25%**

**B.20%**

**C.15%**

**D.16.66%**

**E.14.28%**

**12. A train can cross an electric pole in 10 seconds and a bridge of length 440 m in 32 seconds. Find the time taken by (in seconds) train to cross a car running at 27 km/h in same direction as that of train?**

**A.16 seconds**

**B.18 seconds**

C.24 seconds

D.28 seconds

E.None of these

**13. Train P and Train Q of lengths 240m and 260m travel at the speeds of 40m/s and 36m/s respectively in opposite direction to each other.**

**Find the total time taken by the trains to cross each other approximately.**

A.2 sec

B.2.51 sec

C.3 sec

D.6.57 sec

E.9 sec

**14. A train crosses 280 m long tunnel in 23.2 seconds and the same train crosses a pole in 12 seconds. Find the length of train?**

A.250 m

B.300 m

C.350 m

D.400 m

E.450 m

**15. Kanyakumari express train passes the platform in Nagercoil station in 24 seconds and a boy standing on the platform in 12 seconds. If**

**the speed of the train is 20m/s, find the length of the platform?**

A.120m

B.240m

C.260m

D.280m

E.None of these

**16. A train crosses 360 m long stationary train in 24 seconds and the train crosses a man standing in a platform in 9.6 seconds. Find the speed of the train?**

A.60 kmph

B.80 kmph

C.45 kmph

D.90 kmph

E.72 kmph

**17. Kanyakumari express train of length 250 meters crosses a boy standing in the platform in 10 seconds. Find the time taken by the train to cover a distance of 540km, if the speed of the train is increased by 20%.**

A.2 hours

B.3 hours

C.5 hours

**D.7 hours**

**E.None of these**

**18. Train A crosses train B running opposite direction at the speed of 45 kmph in 21 seconds and the ratio of the length train A to B is 16:19. If the difference between length of train A and B is 60 m, then find the speed of train A?**

**A.60 m/s**

**B.55 m/s**

**C.80 m/s**

**D.75 m/s**

**E.90 m/s**

**19. Train A crosses a pole in 16 seconds and also crosses train B running opposite direction in 14.4 seconds. Train A crosses 500 m long tunnel in 36 seconds and the speed of train B is 60 kmph. Find the length of train B?**

**A.300 m**

**B.400 m**

**C.200 m**

**D.450 m**

**E.450 m**

**20. Train crosses 360 m long platform in 30 seconds and also crosses a pole in 12 seconds. Find the length of train?**

**A.240 m**

**B.180 m**

**C.200 m**

**D.300 m**

**E.360 m**

**21. The speed of train P is 30kmph and it can cross the train Q in 10 seconds running in opposite direction. What is the speed of train Q if the length of the train P and Q are 100m and 120m respectively?**

**A.49.2kmph**

**B.35kmph**

**C.37.4kmph**

**D.30kmph**

**E.None of these**

**22. Train A crosses train B running same direction at the speed of 54 kmph in 75 seconds. If the length of train A is 450 meter and the speed of train A is 108 kmph, then find the length of train B?**

**A.600 m**

- B.625 m
- C.650 m
- D.675 m
- E.700 m

23. Two trains of equal length are running at a speed of 40 m/s and 60 m/s respectively. Second train can cross a bridge of 160m long in 5 sec. In how much time the first train can cross the same bridge?

- A.7.5
- B.7
- C.8.5
- D.8
- E.none of these

24. The respective ratio of length of two trains A and B is 5:7 and length of train B is 168 m. If train B can cross a platform of length 93 m in 9 seconds, then find the time taken by train A to cover a bridge of length which is 66.66% of platform length of B and speed of train B is 45% more than train A?

- A.9.9 seconds
- B.10.1 seconds
- C.9.1 seconds

D.10.9 seconds

E.None of these

25. Train A crosses a car running opposite direction at the speed of 12 kmph in 18 seconds and the length of train A is 300 m. If train A increased the speed by 25% and crosses train B running opposite direction at the speed of 60 kmph in 21.6 seconds, then find the length of train B?

- A.450 m
- B.360 m
- C.400 m
- D.420 m
- E.300 m

26. A train can cross a platform of 720m in 48 seconds, and a bridge which is  $\frac{3}{2}$  of length of platform in 66 seconds. Find the speed of train in km/h.

- A.60km/h
- B.20km/h
- C.36km/h
- D.72km/h
- E.144km/h

27. Two trains A and B running on parallel tracks in the same direction at the speed of 45 kmph and 60 kmph respectively. If train B crosses train A in 144 seconds and the length of trains are equal, then find the length of each train?

- A.240 m
- B.200 m
- C.280 m
- D.300 m
- E.360 m

28. train can cross a cyclist running at speed of 5 m/s in 40 seconds in opposite direction, while the same train cross the same cyclist in 360/7 seconds while running in same direction. Find the length of train in meters.

- A.1600 m
- B.1800 m
- C.600 m
- D.900 m
- E.None of these

29. A train of length of 450 m can cross a car in opposite direction in 27 seconds, running in opposite direction of train. Find the length of

platform in meters if same train can cross a platform in 150 seconds, speed of car is 25% of speed of train

- A.1150
- B.1550
- C.1650
- D.1250
- E.None of these

30. Train A crosses an electric pole in 25 seconds running at 20 m/sec. find the time taken by train B to cross a bridge of length 300 m, if speed of train B is 25% more than A and length is 20% less than train A?

- A.32 seconds
- B.30 seconds
- C.28 seconds
- D.40 seconds
- E.None of these

31. Train A crosses a stationary train in 36 seconds and crosses a pole in 14.4 seconds. If the length of train A is 240 m, then find the length of stationary train?

- A.300 m
- B.160 m

- C.440 m
- D.360 m
- E.460 m

32. Train A crosses 280m long train B running opposite direction in 14.4 seconds and train B crosses a man standing in a platform in 11.2 seconds. If speed of train B is 50% more than the speed of train A, then find the length of train A.

- A.300 m
- B.320 m
- C.360 m
- D.400 m
- E.None of these

33. Train A crosses a pole in 12 seconds and train A crosses 300 m long tunnel in 30 seconds. If train A crosses train B running same direction at the speed of 40 kmph in 63 seconds, then find the length of train B?

- A.180 m
- B.120 m
- C.150 m
- D.200 m
- E.210 m

34. The speed of train A is 50% more than the speed of train B. If the time taken by train A is covers d km in 2.5 hours more than the time taken by train B covers the same distance, then what is the time taken by train A covers the distance?

- A.4 hours
- B.5 hours
- C.3 hours
- D.2 hours
- E.Cannot be determine

35. Two trains of equal length are running on parallel lines in opposite direction at the speed of 45 kmph and 75 kmph respectively. If the faster train crosses a slower train in 14.4 seconds, find the length of each train?

- A.120 m
- B.240 m
- C.280 m
- D.300 m
- E.320 m

36. Train Starts from station A at 04.00pm with the speed of 56km/hr, another train starts from station B at 06.30pm with the speed of 20m/s, if

both the train meet at 09.00pm, then find the distance between station A and B.

A.460km

B.230km

C.345km

D.575km

E.None of the above

37. A train cross a man running at opposite direction in 5 seconds, with speed of  $(54/4)$  km/h. The same train cross the other man who is running at 5 m/s in same direction of train in 6.5 seconds. Find the approximate length of train?

A.195.5 meters

B.192.5 meters

C.199.5 meters

D.179.5 meters

E.189.5 meters

38.A train without stopping travels at an average speed of 60 km/hr and with stoppages at an average speed of 40 km/hr. What is the total time taken by the train for stoppages on a route of length 300 km?

A.2.5 hr.

B.7.5 hr

C.5 hr

D.15 hr.

E.None of these

39. Chennai express train leaves from the Chennai railway station at a certain time. After 3 hours, Kanyakumari express train leaves from the same railway station and moves in the same direction at a uniform speed of 30kmph. Find the speed of Chennai express train, if Kanyakumari express crosses the Chennai train in 6 hours?

A.10kmph

B.20kmph

C.30kmph

D.40kmph

E.None of these

40. Two trains having a length of 300m and 400 m are going in the same direction at the speed of 80 kmph and 116 kmph. Find the time taken by longer train crosses a shorter train?

A.40 seconds

B.50 seconds

C.60 seconds

D.48 seconds

E.None of these

41. Trains P and Q are running in opposite directions in the same speed. The length of each train is 180 meter. Find the speed of each train, if they cross each other in 18 seconds.

A.5m/s

B.10m/s

C.15m/s

D.20m/s

E.None of these

42. Train A leave place X by travelling at a speed of 140 km/hr. 5 hours later another train B leaves place X by travelling in the same direction as the train A. Speed of the train B is 80 km/hr and the train B will be 20 km ahead of the train A in  $t$  hours, then find how much distance will be covered by a car in  $(t + 3.5)$  hrs, if the speed of the car is 115% of the speed of the train B?

A.1535 km

B.1398 km

C.1426 km

D.1520 km

E.None of these

43. Train A crosses a man running at 30 kmph in opposite direction by 10 seconds. If train A and B crosses a pole in 15 seconds and 16 seconds respectively and the length of train B is 50 m less than the length of train A, then what is the time taken by train A crosses train B running same direction?

A.108 seconds

B.114 seconds

C.144.4 seconds

D.72.8 seconds

E.None of these

44. Length of train X is 100% more than train Y and their speeds are respectively 72 km/h and 108 km/h. Both train cross each other in 24 seconds in opposite direction. Find the length of platform when train X cross the platform in 180 seconds?

A.2800 meters

B.3500 meters

C.2100 meters

D.3600 meters

E.1200 meters



45. A 160 meters long train crosses a person walking at 12 km/h in opposite direction in 16 seconds. The same train crosses another person walking in same direction of first person in 20 seconds. Find the speed of second person?

- A.4.8 km/h
- B.9.6 km/h
- C.19.2 km /h
- D.40.8 km/h
- E.None of these

46. A train 300 m long crosses a platform 900m long in 1 min 12 sec. What is the speed of the train in kmph?

- A.45
- B.50
- C.54
- D.60
- E.65

47. The speed of two trains are in the ratio 6: 7. They are moving in opposite direction along the parallel track. If each takes 4 seconds to cross a pole, find the time taken by the train to cross each other completely.

- A.4 seconds

B.8 seconds

C.12 seconds

D.16 seconds

E.None of these

48. A train passes a station platform in 24 sec and a man standing on the platform in 15 sec. If the speed of the train is 36 km/hr. What is the length of the platform?

A.90m

B.75m

C.100m

D.120m

E.None of these

49. A train crosses 200 m long stationery train in 18 seconds and also the train crosses a man running in opposite direction at the speed of 15 kmph in 4.8 seconds. Find the speed of train?

A.40 kmph

B.50 kmph

C.60 kmph

D.80 kmph

E.70 kmph

50. The distance between two stations A and B is 246 km. A train starts from A move towards

**B at an average speed of 24 kmph. Another train starts from B, 10 minutes earlier than the train at A and moves towards A at an average of 36 kmph. How far from A will the two trains meet?(approx.)**

- A.96 km**
- B.80 km**
- C.120 km**
- D.190 km**
- E.210 km**

## **Train and Platform – Answer and Explanation**

### **1. Explanation**

**Answer: C**

Length of train = x

Speed of train = y

$$x + 300 = y * 5/18 * 18$$

$$x + 300 = 5y$$

$$x = (y + 10) * 5/18 * 12$$

$$3x = 10y + 100$$

$$3x - 100 = 2x + 600$$

$$x = 700$$

### **2. Explanation**

**Answer: C**

Length of train A = a

Length of train B = b

Speed of train A = c

$$a = c * 5/18 * 16$$

$$9a = 40c$$

$$a + b = (60 + c) * 5/18 * 14.4$$

$$a + b = 240 + 4c$$

$$a + 500 = c * 5/18 * 36$$

$$a + 500 = 10c$$

$$4a + 2000 = 9a$$

$$a = 400$$

$$c = 90$$

$$400 + b = 240 + 90 * 4$$

$$b = 200 \text{ m}$$

### **3. Explanation**

**Answer: C**

Speed of train M = 60 km/hr

Speed of train N = 80 km/hr

Both are running in same direction.

So, relative speed of both the trains is =  $80 - 60 = 20$  km/hr

Now, distance covered by train M from place P when train N is not start is,

$$= 60 \times 6 \Rightarrow 360 \text{ km}$$

Train N should cover from place P in X hours =  $360 + 50 = 410 \text{ km}$

So, the required time is =  $410/20 \Rightarrow 20.5 \text{ hours}$

Now, the speed of the car =  $80 \times 85/100 \Rightarrow 68 \text{ km/hr}$

So, distance covered by car in  $(X + 2.5)$  hours =  $(20.5 + 2.5) \times 68$   
 $= 23 \times 68 \Rightarrow 1564 \text{ km}$

#### 4. Explanation

**Answer: C**

Speed of train =  $3x$  and Speed of boy A =  $x$

Train length =  $400\text{m}$

Time taken by the train to cross boy B =  $40$  seconds

$$3x = 400/40$$

$$\Rightarrow x = 10/3 \text{ m/s}$$

Boy A can cross the  $200\text{m}$  bridge in  $200/(10/3) = 60$  seconds

#### 5. Explanation

**Answer: B**

Speed = Distance/time

$$24 * 5/18 = (x + 100)/36$$

$$\Rightarrow x = 240 - 100 = 140\text{m} = \text{Length of train}$$

Required ratio =  $140: 100 = 7: 5$

#### 6. Explanation

**Answer: E**

Speed of the train =  $180 * 5/18 = 50\text{m/s}$

Length of the train = Speed \* Distance

$$= (50 + 12) * 10$$

$$= 620\text{km}$$

#### 7. Explanation

**Answer: B**

Let  $x$  be the speed of the train.

Length of the train =  $300\text{m}$

Speed of the train relative to boy =  $300/20 = 15\text{m/s} = 54\text{kmph}$

Relative speed =  $x - 10$

$$\Rightarrow x - 10 = 54$$

$$\Rightarrow x = 64\text{kmph}$$

#### 8. Explanation

**Answer: B**

Let the length of the two trains be  $D \text{ m}$ .

The speed of the two trains =  $D/6 \text{ m/s}$  &  $D/8 \text{ m/s}$

Total distance =  $2D \text{ m}$

Relative speed in opposite direction =  $D/6 + D/8 = 14D/48$   
 $= 7D/24 \text{ m/s}$

Required time =  $(2D/7D) \times 24 = 48/7 = 6 \frac{6}{7}$  seconds

#### 9. Explanation

**Answer: C**

Length of train =  $x$

Speed of train =  $y$

$$x = y * 5/18 * 24$$

$$x = 20y/3$$

$$x + 520 = y * 5/18 * 50$$

$$x + 520 = 125y/9$$

$$20y/3 + 520 = 125y/9$$

$$y = 72 \text{ kmph}$$

#### 10. Explanation

**Answer: C**

Speed of train A =  $4x$

Speed of train B =  $5x$

Length of train B =  $5x \times \frac{5}{18} \times 28.8$

=  $40x$

$400 + 40x = (5x - 4x) \times \frac{5}{18} \times (4.4 \times 60)$

$400 + 40x = 220x / 3$

$x = 12$

Length of train B =  $40 \times 12 = 480$  m

### 11. Explanation

**Answer: D**

Let the speed of two trains be  $X$  m/s and  $Y$  m/s

When two trains crosses each other is opposite direction

Sum of lengths =  $(X + Y) \times 14$

When two trains crosses each other in same direction

Sum of lengths =  $(X - Y) \times 182$

So,  $(X + Y) \times 14 = (X - Y) \times 182$

$X + Y = 13X - 13Y$

$X/Y = 7/6$

Required % = 16.66%

### 12. Explanation

**Answer: A**

Let  $L$  be the length of train and  $S$  be the speed in m/s

$L = S \times 10$

Also

$L + 440 = S \times 32$

$10S + 440 = 32S$

$22S = 440$

$S = 20$  m/s

Length of train =  $10 \times 20 = 200$  m

Speed of car =  $27 \times \frac{5}{18} = 7.5$  m/s

Time taken by train to cross a car running in same direction as that of train =  $200 / (20 - 7.5)$

= 16 seconds

Hence answer is option A

### 13. Explanation

**Answer: D**

Relative speed =  $40 + 36 = 76$  m/s

Total distance covered =  $240 + 260 = 500$  m

Required time taken =  $500/76$

= 6.57 sec

### 14. Explanation

**Answer: B**

Length of train =  $x$

Speed of train =  $y$

$x + 280 = y \times \frac{5}{18} \times 23.2$

$9x + 2520 = 58y$

$x = y \times \frac{5}{18} \times 12$

$3x = 10y$

$9x + 2520 = 58 \times (3x/10)$

$90x + 25200 = 174x$

$x = 300$  m

### 15. Explanation

**Answer: B**

Length of train =  $20 \times 12 = 240$  m

Length of platform =  $x$  meters

$$(x + 240)/24 = 20$$

$$\Rightarrow x = 240\text{m}$$

### 16. Explanation

**Answer: D**

Length of train = x

Speed of train = y

$$x + 360 = y * 5/18 * 24$$

$$3x + 1080 = 20y$$

$$x = y * 5/18 * 9.6$$

$$18x = 48y$$

$$3x = 8y$$

$$8y + 1080 = 20y$$

$$y = 90$$

### 17. Explanation

**Answer: C**

Speed of train =  $250/10 = 25 * 18/5 = 90\text{kmph}$

Increased speed =  $1.20 * 90 = 108\text{kmph}$

Required time =  $540/108 = 5$  hours

### 18. Explanation

**Answer: D**

$$19x - 16x = 60$$

$$x = 20$$

Length of train A =  $20 * 16 = 320$  m

Length of train B =  $19 * 20 = 380$  m

Speed of train A = y

$$320 + 380 = (45 + y) * 5/18 * 21$$

$$y = 75 \text{ m/s}$$

### 19. Explanation

**Answer: C**

Length of train A = a

Length of train B = b

Speed of train A = c

$$a = c * 5/18 * 16$$

$$9a = 40c$$

$$a + b = (60 + c) * 5/18 * 14.4$$

$$a + b = 240 + 4c$$

$$a + 500 = c * 5/18 * 36$$

$$a + 500 = 10c$$

$$4a + 2000 = 9a$$

$$a = 400$$

$$c = 90$$

$$400 + b = 240 + 90 * 4$$

$$b = 200 \text{ m}$$

### 20. Explanation

**Answer: A**

Length of train = x

Speed of train = y

$$x + 360 = y * 5/18 * 30$$

$$3x + 1080 = 25y \text{ -----(1)}$$

$$x = y * 5/18 * 12$$

$$3x = 10y \text{ -----(2)}$$

$$10y + 1080 = 25y$$

$$y = 72$$

$$x = 720/3 = 240 \text{ m}$$

**21. Explanation****Answer: A**

Speed of Q = x kmph

$$(30 + x) * 5/18 = (100 + 120)/10$$

$$\Rightarrow x = 49.2 \text{ kmph}$$

**22. Explanation****Answer: D**

$$\text{Length of train B} + 450 = (108 - 54) * 5/18 * 75$$

$$\text{Length of train B} = 1125 - 450$$

$$= 675 \text{ m}$$

**23. Explanation****Answer: A**

Let the length of the second train = x

$$\Rightarrow (x + 160)/60 = 5$$

$$\Rightarrow x = 300 - 160 = 140$$

$$\text{Required answer} = (140 + 160)/40 = 300/40 = 7.5 \text{ sec}$$

**24. Explanation****Answer: C**

$$\text{Length of train A} = 5/7 \times 168 = 120 \text{ m}$$

$$\text{Speed of train B} = (168 + 93)/9 = 29 \text{ m/s}$$

$$\text{Speed of train A} = 100/145 \times 29 = 20 \text{ m/s}$$

$$\text{Time taken by Train A to cross Bridge} = (120 + 2/3 \times 93) / 20 = 9.1 \text{ seconds}$$

**25. Explanation****Answer: D**

Speed of train A = a

$$300 = (a + 12) * 5/18 * 18$$

$$a = 48 \text{ kmph}$$

$$\text{Length of train B} + 300 = (48 * 125/100 + 60) * 5/18 *$$

$$21.6$$

$$\text{Length of Train B} + 300 = 720$$

$$\text{Length of train B} = 420 \text{ m}$$

**26. Explanation****Answer: D**

$$\text{Length of train} + 720 = \text{speed of train} \times 48$$

$$\text{Length of train} + 1080 = \text{speed of train} \times 66$$

On equating both equation we get

$$11 \times \text{length of train} + 7920 = 8 \times \text{length of train} + 8640$$

$$\text{Length of train} = 720/3 = 240 \text{ m}$$

$$\text{Speed of train} = (240 + 720) / 48 = 20 \text{ m/s} \times 18/5 = 72 \text{ km/h}$$

**27. Explanation****Answer: D**

$$\text{Length of train} = x$$

$$2x = (60 - 45) * 5/18 * 144$$

$$x = 300 \text{ m}$$

**28. Explanation****Answer: B**

When crossing in opposite direction

$$\text{Length of train} = (\text{speed of train} + 5) \times 40$$

When crossing in same direction

$$\text{Length of train} = (\text{speed of train} - 5) \times 360/7$$

$$\text{So, } (\text{speed of train} + 5) \times 40 = (\text{speed of train} - 5) \times 360/7$$

$$2 \times \text{speed of train} = 35 + 45$$

$$\text{Speed of train} = 80/2 = 40 \text{ m/s}$$

$$\text{Length of train} = (40 + 5) \times 40 = 1800 \text{ m}$$

### 29. Explanation

**Answer: B**

Speed of car is 25% of train, let speed of train be '4a' and that of car be 'a' m/s.

$$450 = (4a + a) \times 27 \text{ seconds}$$

$$\text{So, } a = 10/3$$

$$\text{Speed of train} = 4 \times 10/3 \text{ m/s} = 40/3$$

$$\text{Length of platform} = 40/3 \times 150 - 450 = 1550 \text{ m}$$

### 30. Explanation

**Answer: C**

$$\text{Length of train A} = 20 \times 25 = 500 \text{ m}$$

$$\text{Length of train B} = 0.8 \times 500 = 400 \text{ m}$$

$$\text{Speed of train B} = 1.25 \times 20 = 25 \text{ m/s}$$

$$\text{Time taken by train B} = (300 + 400)/25 = 28 \text{ seconds}$$

### 31. Explanation

**Answer: D**

$$\text{Speed of train A} = x$$

$$240 = x \times 5/18 \times 14.4$$

$$x = 60 \text{ kmph}$$

$$240 + \text{Length of stationary train} = 60 \times (5/18) \times 36$$

$$\text{Length of stationery train} = 360 \text{ m}$$

### 32. Explanation

**Answer: B**

$$\text{Length of train A} = x$$

$$\text{Speed of train B} \times 5/18 = 280/11.2$$

$$\text{Speed of train B} = 90 \text{ kmph}$$

$$\text{Speed of train A} = 90 \times 100/150 = 60 \text{ kmph}$$

$$x + 280 = (90 + 60) \times 5/18 \times 14.4$$

$$x = 320 \text{ m}$$

### 33. Explanation

**Answer: C**

$$\text{Length of train A} = x$$

$$\text{Length of train B} = y$$

$$\text{Speed of train A} = z$$

$$x = z \times 5/18 \times 12$$

$$3x = 10z$$

$$x + 300 = z \times 5/18 \times 30$$

$$3x + 900 = 25z$$

$$10z + 900 = 25z$$

$$z = 60 \text{ kmph}$$

$$\text{Length of train A} = 10 \times 60/3 = 200 \text{ m}$$

$$200 + y = (60 - 40) \times 5/18 \times 63$$

$$y = 150 \text{ m}$$

### 34Explanation

**Answer: B**

$$\text{Let, speed of train B} = 2x$$

$$\text{Speed of train A} = 2x \times 150/100 = 3x$$

$$d/3x = t$$

$$d = t \times 3x$$

$$d/2x = t + 2.5$$

$$d = 2x \times (t + 2.5)$$

$$3tx = 2xt + 5x$$

$$t = 5 \text{ hours}$$

### 35. Explanation

**Answer: B**

$$\text{Length of train} = x$$

$$x + x = (45 + 75) * 5/18 * 14.4$$

$$2x = 480$$

$$x = 240 \text{ m}$$

### 36. Explanation

**Answer: A**

Distance covered = (Speed of the first train \* time taken to reach the meeting point ) + (Speed of the second train \* time taken to reach the meeting point )

Distance between two stations

$$= (5*56) + (2.5* 20 * [18/5])$$

$$= 280+180$$

$$= 460\text{km}$$

### 37. Explanation

**Answer: E**

Let the speed of train = a m/s

$$\text{Speed of first man} = 54/4 \times 5/18 = 15/4 \text{ m/s}$$

In both cases distance will be same as length of train

According to question,

$$(a + 15/4) \times 5 = (a - 5) \times 6.5$$

$$5a + 18.75 = 6.5a - 32.5$$

$$1.5a = 51.25$$

$$a = 205/6 \text{ m/s}$$

$$\text{Length of train} = (205/6 + 15/4) \times 5 = 189.5 \text{ meters}$$

### 38.Explanation

**Answer: A**

Let running time of the train = r

And stoppage time of the train = s

And the total distance travelled by the train = D

So, we have:

$$D/r = 60 \text{ and } D/(r + s) = 40$$

$$= (r + s)/r = 3/2$$

$$= s/r = 1/2$$

As D = 300 Kms.

$$\text{So, } 300/r = 60$$

$$= r = 5 \text{ hrs.}$$

$$\text{So, } s = 5/2 = 2.5 \text{ hr.}$$

### 39. Explanation

**Answer: B**

Speed of Chennai express train = x kmph

Distance travelled by Chennai express train in 9 hours =

Distance travelled by Kanyakumari express train in 6 hours

$$\Rightarrow 9x = 6 * 30$$

$$\Rightarrow x = 20\text{kmph}$$

### 40. Explanation

**Answer: E**

$$\text{Required time} = (300 + 400)/(116 - 80) * 5/18$$

$$= 70 \text{ seconds}$$



#### 41. Explanation

**Answer: B**

$$\text{Distance} = 180 + 180 = 360\text{m}$$

$$\text{Time} = 18\text{s}$$

$$\text{Relative speed} = s + s = 2s$$

$$\Rightarrow 2s = 360/18 \Rightarrow s = 10\text{m/s}$$

#### 42Explanation

**Answer: C**

$$\text{Speed of the train A is} = 140 \text{ km/hr}$$

$$\text{Speed of the train B is} = 80 \text{ km/hr}$$

$$\text{So, the relative speed of both the trains is} = (140 - 80) = 60 \text{ km/hr}$$

$$\begin{aligned} \text{Distance covered by train A from place X when train B} \\ \text{was not moving,} \\ = 140 \times 5 = 700 \text{ km} \end{aligned}$$

$$\text{Now, train B should covered} = (700 + 20) = 720 \text{ km from place X in } t \text{ hours.}$$

$$\text{So, the required time } t \text{ is} = 720/60 = 12 \text{ hours}$$

$$\text{Now, the speed of the car is} = 80 \times 115/100 = 92 \text{ km/hr}$$

$$\begin{aligned} \text{So, the distance covered by the car in } (t + 3.5) \text{ hours is,} \\ = (12 + 3.5) \times 92 \end{aligned}$$

$$= 15.5 \times 92 = 1426 \text{ km}$$

#### 43. Explanation

**Answer: A**

$$\text{Length of train A} = x$$

$$\text{Speed of train A} = y$$

$$\text{Speed of train B} = z$$

$$x = (y + 30) * 5/18 * 10$$

$$9x = (y + 30) * 25$$

$$x = y * 5/18 * 15$$

$$6x = 25y$$

$$9x = 6x + 30 * 25$$

$$x = 250 \text{ m}$$

$$y = 60 \text{ kmph}$$

$$\text{Length of train B} = 250 - 50 = 200 \text{ m}$$

$$200 = z * 5/18 * 16$$

$$z = 45 \text{ kmph}$$

$$\begin{aligned} \text{Required time} &= (200 + 250)/((60 - 45) * 5/18) = 108 \\ &\text{seconds} \end{aligned}$$

#### 44. Explanation

**Answer: A**

According to question

$$(2a + a) = (108 + 72) \times 5/18 \times 24$$

$$3a = 1200$$

$$a = 400$$

$$\text{Length of train X} = 2 \times 400 = 800 \text{ meters}$$

Also

$$800 + \text{length of platform} = 72 \times 5/18 \times 180$$

$$\text{Length of platform} = 3600 - 800 = 2800 \text{ meters}$$

#### 45. Explanation

**Answer: A**

Let speed of train be  $a$  km/h, and speed of second person be  $b$  km/h.

According to question

$$160 = (12 + a) \times 5/18 \times 16$$

$$180 = 60 + 5a$$

$$a = 120/5 = 24 \text{ km/h}$$

Also,

$$160 = (24 + b) \times 5/18 \times 20$$

$$18 \times 8 = 120 + 5b$$

$$24 = 5b$$

$$b = 4.8 \text{ km/h}$$

#### 46. Explanation

**Answer: D**

The length of the train = 300, platform's length = 900

$$\text{Time} = 1 \text{ min } 12 \text{ sec} = 60 + 12 = 72 \text{ sec}$$

Speed = (train + platform)'s length/time

$$= (300 + 900)/72$$

$$= (1200/72) \times (18/5)$$

$$= 60 \text{ kmph}$$

#### 47. Explanation

**Answer: A**

$$\text{Time taken} = (t_1 \times x + t_2 \times y)/(x + y)$$

$$= (4 \times 6 + 4 \times 7)/(6 + 7)$$

$$= 4 \text{ seconds}$$

#### 48. Explanation

**Answer: A**

Let us take the length of platform be  $x$  m

$$\text{Speed} = 36 \times 5/18 = 10 \text{ m/sec}$$

$$\text{Length of the train} = 15 \times 10 = 150 \text{ m}$$

$$(150 + x)/10 = 24$$

$$x = 90 \text{ m}$$

#### 49. Explanation

**Answer: C**

Length of train =  $x$

Speed of train =  $y$

$$x + 200 = y \times 5/18 \times 18$$

$$x + 200 = 5y$$

$$x = (y + 15) \times 5/18 \times 4.8$$

$$3x = 4y + 60$$

$$(4y + 60)/3 + 200 = 5y$$

$$4y + 60 + 600 = 15y$$

$$11y = 660$$

$$y = 60 \text{ kmph}$$

#### 50. Explanation

**Answer: A**

Let the trains meet at a distance of  $x$  km from A.

$$\text{After 10 mins, remaining distance} = 246 - (36 \times 1/6) =$$

$$240 \text{ km}$$

$$\text{At the time they meet} = 240/(24 + 36) = 4 \text{ hrs}$$

$$\text{Required distance} = 4 \times 24 = 96 \text{ km}$$

## Boat and Streams

1. A boat takes 15 hours to cover 435 km upstream and 140 km downstream in 4 hours. Find the time taken by boat to cover 1152 km in still water.

- A.30 hours
- B.42 hours
- C.32 hours
- D.36 hours
- E.None of these

2. Speed of the boat in downstream is 80% more than the speed of the boat in upstream. Find the speed of the stream, if the boat can travel 210 km in still water in 3 hours.

- A.10kmph
- B.15kmph
- C.20kmph
- D.25kmph
- E.None of these

3. A man can row at 10kmph in still water and the stream rate is 5kmph. Find the distance travelled by him after 10 minutes of travelling downstream.

- A.2.5km
- B.4km
- C.4.5km
- D.5.8km
- E.None of these

4. The ratio of the speed of the boat in downstream to upstream is 7: 4. A boy takes 4 hours to cover the total distance of 88km upstream. What is the speed of the boat in still water?

- A.30.25kmph
- B.35kmph
- C.20.15kmph
- D.15kmph
- E.None of these

5. A boy takes 5 hours to row a distance of 150km in upstream by his boat. The ratio of speed of stream to speed of boat in still water is 4: 7 respectively. Find the time taken by the boy to cover 220km in downstream.

- A.1 hours
- B.2 hours
- C.3 hours
- D.4 hours
- E.None of these

6. A man can row 16 km/hr in still water. If the speed of the current is 12 km/hr and it takes 4 hours to a man to row a place and come back, then how far is the place?

- A.24 Km
- B.14 Km
- C.20 Km

**D.32 Km**

**E.28 Km**

**7. A boat takes two hours more to travel upstream than travel the same distance in downstream. If the distance travelled by the boat is 120 km and the ratio of the speed of stream to boat in still water is 5: 1, then what is the speed of the boat in still water?**

**A.20 kmph**

**B.25 kmph**

**C.30 kmph**

**D.35 kmph**

**E.None of these**

**8. The ratio of downstream speed to upstream speed of a boat is 8: 5. Time taken by boat to cover 340km downstream and 120km upstream is 13.3 hours. Find the approximate time taken by the boat to cover 280km in still water.**

**A.8 hours**

**B.8.6 hours**

**C.9 hours**

**D.9.5 hours**

**E.10 hours**

**9. The speed of a boat in still water is 15 km/hr and the speed of the stream is 4 km/hr. A person rows to a place at a distance of 1254 km and return to the starting point. Find the total time taken by him in the whole journey?**

**A.98 hours**

**B.126 hours**

**C.114 hours**

**D.72 hours**

**E.None of these**

**10. A boat can travel 9.5 km upstream in 19 minutes. If the ratio of the speed of the stream to the speed of the boat in the still water is 4 : 9. Then find how much time will the boat take to cover 93.6 km downstream?**

**A.66 minutes**

**B.72 minutes**

**C.88 minutes**

**D.75 minutes**

**E.None of these**

**11. Boat P and Boat Q travel towards each other from two cities 440km apart. Speed of boat P and Q in still water are 12kmph and 10kmph respectively. If P travels downstream and Q upstream, after what time they will meet?**

**A.10 hours**

**B.14 hours**

**C.18 hours**

**D.20 hours**

**E.None of these**

**12. A man starts rowing downstream from point A in a boat, whose speed is 9.5 km/hr in still water. If the speed of the stream is 2.5 km/hr and the boat takes**

total 114 min in rowing from A to B and then coming back to A. Then find the distance between A and B.

- A.6.8 km
- B.8.4 km
- C.9.2 km
- D.9.8 km
- E.11.5 km

13. Nirmal can row downstream 45 km in 5 hours and upstream 15 km in 3.75 hours, then what is the ratio of speed of current to his rowing speed?

- A.2:3
- B.3:5
- C.4:7
- D.7:11
- E.None of these

14. A swimmer takes 60 minutes to go 15 km downstream and takes 45 minutes hours to go 3.75 km upstream in the same river. What is the speed of stream?

- A.8 kmph
- B.10 kmph
- C.2 kmph
- D.4 kmph
- E.5 kmph

15. The ratio of speed of stream and speed of boat in still water is 3: 5. If 336km is travelled downstream in

6 hours, then what is the difference between the speed of stream and speed of boat in still water?

- A.7kmph
- B.10kmph
- C.12kmph
- D.14kmph
- E.None of these

16. A man can row at 10kmph in still water and the stream rate is 5kmph. Find the distance travelled by him after 10 minutes of travelling downstream.

- A.2.5km
- B.4km
- C.4.5km
- D.5.8km
- E.None of these

17. If the speed of current is 25% less than the speed of boat in still water and the boat covers 315 km downstream in 9 hours, what is the time taken by the same boat covers 100 km upstream?

- A.10 hours
- B.12.5 hours
- C.20 hours
- D.25 hours
- E.None of these

18. The speed of the stream is 5 kmph. The boat A covers 96 km along with stream in 6 hours and the boat B covers 120 km along with stream in 8 hours.

**What is the total time taken by boat A and B covers 180 km against stream?**

- A.66 hours**
- B.68 hours**
- C.70 hours**
- D.64 hours**
- E.72 hours**

**19. A boat, going downstream in a river covered a distance of 40 km at an average speed of 50 km/hr. While returning to the same place, or upstream journey at an average speed of 30 km/hr to cover the same distance. Find the average speed of the boat during the whole journey?**

- A.42 km**
- B.37.5 km**
- C.32.75 km**
- D.28.50 km**
- E.None of these**

**20. Boat P and Boat Q travel towards each other from two cities 440km apart. Speed of boat P and Q in still water are 12kmph and 10kmph respectively. If P travels downstream and Q upstream, after what time they will meet?**

- A.10 hours**
- B.14 hours**
- C.18 hours**
- D.20 hours**

**E.None of these**

**21. Nirmal can row downstream 45 km in 5 hours and upstream 15 km in 3.75 hours, then what is the ratio of speed of current to his rowing speed?**

- A.2:3**
- B.3:5**
- C.4:7**
- D.7:11**

**E.None of these**

**22. A boat runs at 33 km per hour along the stream and 11 km per hour against the stream. Find the ratio of speed of the boat in still water to that of the speed of that stream?**

- A.1:2**
- B.3:2**
- C.5:3**
- D.2:1**
- E.3:1**

**23. Difference between the speed of stream and boat in still water is 14 kmph. If the boat covers 330 km along with stream in 11 hours, then what is the ratio of the speed of boat in still water to stream?**

- A.8:3**
- B.10:7**
- C.11:4**
- D.12:7**
- E.None of these**

24. Naren can row at a speed of 15kmph in still water to a certain upstream distance and back to the starting place in a river which flows at 5kmph. What is his average speed of the total trip?

- A.13.33kmph
- B.15kmph
- C.18.33kmph
- D.20kmph
- E.25.55kmph

25. A boat covers 520 km upstream in 20 hours and the same boat covers 238 km downstream in 7 hours. What is the ratio of the speed of current to boat in still water?

- A.2:15
- B.3:14
- C.4:13
- D.1:16
- E.1:6

26. If the speed of current is 25% less than the speed of boat in still water and the boat covers 315 km downstream in 9 hours, what is the time taken by the same boat covers 100 km upstream?

- A.10 hours
- B.12.5 hours
- C.20 hours
- D.25 hours
- E.None of these

27. A boat covers 192 km downstream in 8 hours and 156 km upstream in 13 hours. What is the time taken by the boat to cover 342 km in still water?

- A.20 hours
- B.17 hours
- C.21 hours
- D.18 hours
- E.19 hours

28. The downstream speed of boat is 15 km/h and speed of boat in still water is 400% of speed of stream. If the upstream distance is 50 % more than the downstream distance then find the total distance (upstream+ downstream) travelled by boat in 28 hours?

- A.270 km
- B.250 km
- C.260 km
- D.280 km
- E.None of these

29. The difference between the speed of a car increased by 25% and the usual speed of the car decreased by 30% is 44 kmph. Find the usual speed of the car?

- A.60 kmph
- B.80 kmph
- C.100 kmph
- D.70 kmph

E.90 kmph

30. A boat can cover 72 km in still water and same distance in downstream in 8 hours and 6 hours respectively. Find the total time taken by boat to travel 42 km upstream and 96 km downstream.

A.12 hours

B.15 hours

C.18 hours

D.21 hours

E.None of these

31. A boatman can cover 168 km upstream and 240 km downstream in total of 13 hours. Find the distance covered by the boatman in 8 hours by still water if speed of Boat in still water is 300% more than speed of stream.

A.128 km

B.140 km

C.164 km

D.160 km

E.None of these

32. A boatman can row his boat at 5kmph in still water. He takes 2.5 hours to row to a church and back, when the water is running at 3kmph. Find the distance travelled by him.

A.4km

B.8km

C.10km

D.12km

E.None of these

33. Ratio of speed of boats A to B is 3:4 and their sum is 42km/hr, if boat A can cover 105 km downstream in 5 hours, then find the ratio of upstream speeds of A and B.

A.7:5

B.6:5

C.5:6

D.5:7

E.5:8

34. The upstream speed of the boat is  $\frac{6}{17}$ th of downstream speed of the boat. Boat A can covers 72km upstream in 6hours, then find the time taken by boat to cover 238km downstream?

A.12 hours

B.13 hours

C.8 hours

D.6 hours

E.None of the above

35. A boy can row 6kmph in still water. If the river is flowing at 3kmph, he will take 5 hours more to travel upstream than to travel downstream. Find the distance.

A.10km

B.15.5km

C.22.5km



D.25km

E.None of these

36. The speed of two boats X and Y in the still water is in the ratio of 4 : 7. The speed of current is 5 km/hr. X start from the place A, 36 minutes earlier than Y in downstream direction. If Y catch boat X in one hour, then find how much time boat Y will take to cover the distance of 240 km each in upstream and in downstream.

A.18 hours

B.14 hours

C.10 hours

D.15 hours

E.None of these

37. A boat can cover 396 km downstream and 90 km upstream in 22 hours and 180 km upstream and 330 km downstream in 30 hours. Find the time taken by boat to cover 493.5 km with speed of boat in still water?

A.21 hours

B.24.5 hours

C.26.5 hours

D.21.5 hours

E.None of these

38. Boat travels total 320 km distance in which some part by upstream and rest as downstream. Boat travels 3 hours more in upstream as compared to

downstream. Find the traveling time of boat by covering upstream distance in minutes if speed of boat in still water is 18 km/h and speed of stream is 2 km/h

A.10.56 minutes

B.623.33 minutes

C.633.33 minutes

D.21.08 minutes

E.None of these

39. Time taken by Boat X to travel a distance in upstream from point P to Q is same as time taken by boat Y to cover the distance in downstream from Q to R. The distance between point P and Q is 50% of distance from Q and R. Speed of boat Y in still water is 4 km/h and speed of boat X in still water is 250% of speed of boat Y in Upstream. Find the speed of boat X in still water if distance between Q and R is 18 km.

A.10 km/h

B.2.5 km/h

C.7 km/h

D.5 km/h

E.None of these

40. A boat cover 48 km upstream in 4 hours on Monday and speed of boat in still water is 20% less than downstream speed of boat. If on Tuesday speed of stream is increased by 50% and speed of boat on still water is reduced by 25% hen find time taken by

**boat to cover 36 km upstream and 54 km downstream on Tuesday?**

- A.18 hours**
- B.27 hours**
- C.4.5 hours**
- D.9 hours**
- E.None of these**

**41. A speed of the boat in still water is 24 kmph and the river is flowing at 3 kmph. If the boat covers x km against stream in 8 hours, then what is the time taken by the boat covers (x – 33) km along with stream?**

- A.4 hours**
- B.5 hours**
- C.6 hours**
- D.7 hours**
- E.3 hours**

**42. Find the distance covered by the boat in downstream if it travels for 2 hours. Speed of the stream is 5km/h and speed of the boat is 35km/h.**

- A.70**
- B.80**
- C.60**
- D.90**
- E.73**

**43. Rajat can row a certain distance upstream in 28 hours and return the same distance in 20 hours. If the speed of the stream is 8 km/hr. Then Find the**

**upstream speed of Rajat is how much percentage of the downstream speed of Rajat?**

- A.25  $\frac{4}{5}$ %**
- B.16  $\frac{2}{3}$ %**
- C.71  $\frac{3}{7}$ %**
- D.66  $\frac{2}{3}$ %**
- E.None of these**

**44. Suman can row a certain distance downstream in 4 hours and return the same distance in 8 hours. If the stream flows at the rate of 7 km/hr, find the distance covered in downstream.**

- A.119km**
- B.112 km**
- C.118 km**
- D.120 km**
- E.None of these**

**45. Ratio of the speed of boat in still water and speed of stream is 3:1 and boat covers 720 km downstream in 30 hours. If the speed of boat is increased by 2 kmph and the new speed of the stream is  $\frac{5}{6}$  of the old speed of stream, then now what is the time taken by the boat covers the same distance upstream?**

- A.45 hours**
- B.48 hours**
- C.36 hours**
- D.39 hours**
- E.42 hours**

46. Speed of boat in still water is 4 km/h more than stream. If a boat covers a distance of 16 km and get back to the initial point, it takes total of 4.5 hours. Find ratio of speed of boat in still water and speed of stream respectively?

- A.9:7
- B.10:7
- C.7:5
- D.13:9
- E.None of these

47. The ratio of the speed of boat in still water and speed of stream is 3:1. If the difference between the speed of boat and stream is 80 kmph and the boat goes from A to B and comes back to A in 15 hours, find the distance between A and B?

- A.500 km
- B.600 km
- C.700 km
- D.800 km
- E.900 km

48. Rajesh can row his boat at 30 kmph in still water. If the speed of the stream is 15 kmph and he could row from Patna to Shimla and back to Patna in 60 minutes, then find the distance between Patna and Shimla?

- A.11.25 km
- B.10.8 km
- C.16.55 km
- D.14.75 km
- E.None of these

49. A boat goes downstream and covers a distance of 72 km in 2 hrs and the upstream speed is  $66\frac{2}{3}\%$  less than the downstream speed. Find the speed of the stream.

- A.9km/hr
- B.12 km/hr
- C.8.5 km/hr
- D.10 km/hr
- E.None of these

50. A boat covers 144 km along with stream in 6 hours and the same boat covers 216 km against stream in 18 hours. What is the distance travelled by the boat in 8 hours?

- A.120 km
- B.128 km
- C.136 km
- D.140 km
- E.144 km

## Boat and Streams – Answer and Explanation

### 1. Answer: D

$$\text{Upstream speed} = 435 / 15 = 29 \text{ km/h}$$

$$\text{Downstream speed of boat} = 140/4 = 35 \text{ km/h}$$

$$\text{Speed of boat in still water} = (35 + 29)/2 = 32 \text{ km/h}$$

$$\text{Required time} = 1152/32 = 36 \text{ hours}$$

### 2. Answer: C

$$\text{Speed in upstream} = x \text{ kmph}$$

$$\text{Speed in downstream} = 1.8x \text{ kmph}$$

$$\text{Speed of the boat in still water} = (x + 1.8x)/2 = 1.4x \text{ kmph}$$

$$\Rightarrow 1.4x = 210/3$$

$$\Rightarrow x = 50$$

$$\text{Speed of stream} = (1.8x - x)/2 = 20 \text{ kmph}$$

### 3. Answer: A

$$\text{Downstream speed} = 10 + 5 = 15 \text{ kmph}$$

$$\text{Distance travelled} = 15 * 10/60 = 2.5 \text{ km}$$

### 4. Answer: A

$$\text{Speed in upstream} = 88/4 = 22 \text{ kmph}$$

$$\text{Speed in downstream} = 7/4 * 22 = 38.5 \text{ kmph}$$

$$\text{Speed of the boat in still water} = (22 + 38.5)/2 = 30.25 \text{ kmph}$$

### 5. Answer: B

$$\text{Speed of stream} = 4x$$

$$\text{Speed in still water} = 7x$$

$$150/(7x - 4x) = 5$$

$$\Rightarrow x = 10$$

$$\text{Required time taken} = 220/(70 + 40) = 2 \text{ hours}$$

### 6. Answer: B

$$\text{The downstream speed} = 16 + 12 = 28 \text{ km/hr}$$

$$\text{and the upstream speed} = 16 - 12 = 4 \text{ km/hr}$$

Let the distance is 'x' km. We have

$$(x/28) + (x/4) = 4$$

$$\Rightarrow 8x/28 = 4$$

$$\Rightarrow x = (4 * 28) / 8 = 14 \text{ km}$$

### 7. Answer: B

$$\text{Distance} = \text{speed} * \text{time}$$

$$120/4x - 120/6x = 2$$

$$(30 - 20)/x = 2$$

$$10 = 2x$$

$$\Rightarrow x = 5$$

$$\text{Speed of the boat in still water} = 5 * 5 = 25 \text{ kmph}$$

### 8. Answer: B

$$\text{Downstream speed} = 8x \text{ and Upstream speed} = 5x$$

$$\text{Speed of the boat in still water} = (8x + 5x)/2 = 6.5x \text{ kmph}$$

$$340/8x + 120/5x = 13.3$$

$$\Rightarrow x = 5$$

Required time taken =  $280/6.5x = 280/32.5 = 8.6$   
hours

**9. Answer: E**

Downstream speed of boat is =  $(15 + 4) = 19$   
km/hr

Upstream speed of boat is =  $(15 - 4) = 11$  km/hr

So, the total time taken by him to complete whole journey,

$$= (1254/19) + (1254/11)$$

$$= 66 + 114$$

$$= 180 \text{ hours}$$

**10. Answer: B**

Let speed of still water is =  $9x$

And speed of the stream is =  $4x$

So, the downstream speed is =  $9x + 4x = 13x$

And the upstream speed is =  $9x - 4x = 5x$

Now, upstream speed =  $9.5 \times 60/19 \Rightarrow 30$  km/hr

$$\text{So } 5x = 30$$

$$= x = 6$$

So, speed of downstream =  $13 \times 6 = 78$  km/hr

Thus, time taken to cover 93.6 km downstream is,

$$= 93.6 \times 60/78 \Rightarrow 72 \text{ minutes}$$

Hence, the required answer is = **72 minutes.**

**11. Answer: D**

Speed of stream =  $x$  kmph

Both boats meet after  $n$  hours.

$$(12 + x)n + (10 - x)n = 440$$

$$\Rightarrow n = 20 \text{ hours}$$

**12. Answer: B**

Rate of downstream =  $(9.5 + 2.5) = 12$  km/hr

Rate of upstream =  $(9.5 - 2.5) = 7$  km/hr

Let distance between A & B be  $x$  km.

$$\text{So, } x/7 + x/12 = 114/60$$

**13. Answer: E**

Downstream speed =  $45/5 = 9$  kmph

Upstream speed =  $15/3.75 = 4$  kmph

Required ratio =  $(9 - 4)/2 : (9 + 4)/2$

$$= 5:13$$

**14. Answer: E**

Speed of downstream =  $15/1 = 15$  kmph

Speed of upstream =  $3.75/(45/60) = 5$  kmph

Speed of stream =  $(15 - 5)/2 = 5$  kmph

**15. Explanation**

**Answer: D**

Speed of stream =  $3x$  and Speed of boat in still water =  $5x$

$$336/6 = (3x + 5x)$$

$$\Rightarrow x = 7$$

$$\text{Required difference} = 5x - 3x = 2x = 14\text{kmph}$$

**16. Answer: A**

$$\text{Downstream speed} = 10 + 5 = 15\text{kmph}$$

$$\text{Distance travelled} = 15 * 10/60 = 2.5\text{km}$$

**17. Answer: C**

$$\text{Speed of boat} = 4x$$

$$\text{Speed of stream} = 4x * 75/100 = 3x$$

$$315/7x = 9$$

$$x = 5$$

$$\text{Required time} = 100/5 = 20 \text{ hours}$$

**18. Answer: A**

$$\text{Downstream speed of boat A} = 96/6 = 16 \text{ kmph}$$

$$\text{Downstream speed of boat B} = 120/8 = 15 \text{ kmph}$$

$$\text{Speed of boat A} = 16 - 5 = 11 \text{ kmph}$$

$$\text{Speed of boat B} = 15 - 5 = 10 \text{ kmph}$$

$$\begin{aligned}\text{Required time} &= 180/(11 - 5) + 180/(10 - 5) \\ &= 66 \text{ hours}\end{aligned}$$

**19. Answer: B**

$$\begin{aligned}\text{Time taken by the boat to cover downstream journey} &= 40/50 = 4/5 \text{ hours}\end{aligned}$$

Similarly, time taken by the boat to cover upstream journey =  $40/30 = 4/3$  hours

So, the average speed of the boat is,

$$= (2 \times 40)/(4/5 + 4/3)$$

$$= 80/[(12 + 20)/15]$$

$$= 80/[32/15]$$

$$= (80 \times 15)/32$$

$$= 37.5 \text{ km/hr}$$

**20. Answer: D**

$$\text{Speed of stream} = x \text{ kmph}$$

Both boats meet after  $n$  hours.

$$(12 + x)n + (10 - x)n = 440$$

$$\Rightarrow n = 20 \text{ hours}$$

**21. Answer: E**

$$\text{Downstream speed} = 45/5 = 9 \text{ kmph}$$

$$\text{Upstream speed} = 15/3.75 = 4 \text{ kmph}$$

$$\text{Required ratio} = (9 - 4)/2:(9 + 4)/2$$

$$= 5:13$$

**22. Answer: D**

$$\begin{aligned}\text{Speed along the stream} &= \text{speed downstream} = a = \\ &33 \text{ km/hr}\end{aligned}$$

$$\begin{aligned}\text{and speed against the stream} &= \text{speed upstream} = b \\ &= 11 \text{ km/hr.}\end{aligned}$$

$$\text{Now, the speed in still water} = (a + b) / 2 \text{ km/hr} =$$

$$(33 + 11) / 2 = 22 \text{ km/hr.}$$

$$\text{And the speed of stream} = (a - b) / 2 \text{ km/hr} = (33 - 11) / 2 = 11 \text{ km/hr.}$$

$$\text{Required ratio} = \text{speed in still water} : \text{speed of stream} = 22 : 11 = 2 : 1.$$

**23. Answer: C**

$$\text{Upstream speed} = 14 \text{ kmph}$$

$$\text{Downstream speed} = 330/11 = 30 \text{ kmph}$$

$$\begin{aligned}\text{Required ratio} &= (30 + 14)/2 : (30 - 14)/2 \\ &= 22 : 8 \\ &= 11 : 4\end{aligned}$$

**24. Answer: A**

$$\text{Speed in still water} = 15 \text{ kmph}$$

$$\text{Speed of stream} = 5 \text{ kmph}$$

$$\text{Distance travelled} = d \text{ km}$$

$$\text{Average speed} = 2d / (d/20 + d/10) = 13.33 \text{ kmph}$$

**25. Answer: A**

$$\text{Upstream speed} = 520/20 = 26 \text{ kmph}$$

$$\text{Downstream speed} = 238/7 = 34 \text{ kmph}$$

$$\begin{aligned}\text{Required ratio} &= (34 - 26)/2 : (34 + 26)/2 \\ &= 4 : 30 \\ &= 2 : 15\end{aligned}$$

**26. Answer: C**

$$\text{Speed of boat} = 4x$$

$$\text{Speed of stream} = 4x * 75/100 = 3x$$

$$315/7x = 9$$

$$x = 5$$

$$\text{Required time} = 100/5 = 20 \text{ hours}$$

**27. Answer: E**

$$\text{Downstream speed} = 192/8 = 24 \text{ kmph}$$

$$\text{Upstream speed} = 156/13 = 12 \text{ kmph}$$

$$\begin{aligned}\text{Speed of boat} &= (24 + 12)/2 = 36/2 \\ &= 18 \text{ kmph}\end{aligned}$$

$$\begin{aligned}\text{Required time} &= 342/18 \\ &= 19 \text{ hours}\end{aligned}$$

**28. Answer: E**

$$\text{Let speed of stream} = a \text{ km/h}$$

$$\text{Speed of boat in still water} = 400\% \text{ of } a = 4a$$

$$\begin{aligned}\text{Downstream speed} &= (4a + a) = 15 \\ a &= 3\end{aligned}$$

$$\text{Speed of stream} = 3 \text{ km/h}$$

$$\text{Speed of boat in still water} = 4 \times 3 = 12 \text{ km/h}$$

$$\text{Upstream speed} = 12 - 3 = 9 \text{ km/h}$$

$$\text{Let the downstream distance} = Y \text{ km}$$

According to question

$$Y/15 + 150\% (Y/9) = 28$$

$$Y/15 + Y/6 = 28$$

$$(2Y + 5Y) = 28 \times 30$$

$$7Y = 28 \times 30$$

$$Y = 120 \text{ km}$$

$$\text{Total distance} = 120 + 1.5 \times 120 = 300 \text{ km}$$

**29. Answer: B**

$$\text{Usual speed of the car} = x$$

$$x \times 125/100 - x \times 70/100 = 44$$

$$55x = 4400$$

$$x = 80 \text{ kmph}$$

**30. Answer: B**

$$\text{Speed of boat in still water} = 72/8 = 9 \text{ km/h}$$

$$\text{Downstream speed} = 72/6 = 12 \text{ km/h}$$

$$\text{Speed of stream} = 12 - 9 = 3 \text{ km/h}$$

$$\text{Required time} = 42 / (9 - 3) + 96 / (12) = 15 \text{ hours}$$

**31. Answer: E**

$$\text{Let speed of stream} = a \text{ km/h}$$

$$\text{Speed of boat} = 4 \times a = 4a \text{ km/h}$$

According to question,

$$168 / (4a - a) + 240 / (4a + a) = 13$$

$$56/a + 48/a = 13$$

$$a = 104/13$$

$$a = 8 \text{ km/h}$$

$$\text{Speed of boat in still water} = 8 \times 4 = 32 \text{ km/h}$$

$$\text{Required distance} = 32 \times 8 = 256 \text{ km}$$

**32. Answer: B**

$$\text{Speed in still water} = 5 \text{ kmph}$$

$$\text{Stream speed} = 3 \text{ kmph}$$

$$\text{Downstream speed} = 5 + 3 = 8 \text{ kmph}$$

$$\text{Upstream speed} = 5 - 3 = 2 \text{ kmph}$$

$$x/8 + x/2 = 2.5$$

$$\Rightarrow x = 4 \text{ km}$$

$$\text{Total distance} = 4 \times 2 = 8 \text{ km}$$

**33. Answer: D**

$$\text{Sum of the speeds of boat A and B} = 42 \text{ km/hr}$$

$$3x + 4x = 42$$

$$7x = 42$$

$$x = 6$$

$$\text{Speed of boat A} = 3x = 18 \text{ km/hr}$$

$$\text{Boat A covers 105 km downstream in 5 hours}$$

$$(105/5) = (18 + \text{speed of stream})$$

$$\text{Speed of stream} = 3 \text{ km/hr}$$

$$\text{Upstream speed of A} = 18 - 3 = 15 \text{ km/hr}$$

$$\text{Upstream speed of B} = 24 - 3 = 21 \text{ km/hr}$$

$$\text{Required ratio} = 15:21 = 5:7$$

**34. Answer: E**

It is given that,

$$(\text{upstream speed}) / (\text{downstream speed}) = 6/17$$

$$\text{Speed of the boat in upstream} = 72/6$$

$$6x = 12$$



$$x=2$$

Therefore speed of the boat in downstream =  $17x$   
 $= 34 \text{ km/hr}$

Time taken =  $238/34 = 7 \text{ hours}$

**35. Answer: C**

Distance =  $d \text{ km}$

$$d/(6 - 3) - d/(6 + 3) = 5$$

$$\Rightarrow d = 22.5 \text{ km}$$

**36. Answer: B**

Let the speed of the boat X is =  $4x \text{ km/hr}$

And the speed of the boat Y is =  $7x \text{ km/hr}$

Now,

Downstream speed for boat X is =  $(4x + 5) \text{ km/hr}$

Downstream speed for boat Y is =  $(7x + 5) \text{ km/hr}$

So, the relative speed of boat X and Y is,

$$= (7x + 5) - (4x + 5)$$

$$= 3x$$

Then, according to the question,

$$(4x + 5)/3x \times 36/60 = 1$$

$$(4x + 5)/3x \times 3/5 = 1$$

$$4x + 5 = 5x$$

$$x = 5 \text{ km/hr}$$

So, the speed of the boat Y is =  $(7 \times 5) = 35 \text{ km/hr}$

Thus, the required time is =  $240/(35 - 5) + 240/(35 + 5)$

$$= 240/30 + 240/40$$

$$= 8 + 6 = 14 \text{ hours}$$

**37. Answer: E**

Let speed of boat in still water =  $a \text{ km/h}$

Speed of stream =  $b \text{ km/h}$

According to question

$$396 / (a + b) + 90 / (a - b) = 22 \dots\dots\dots$$

(1)

$$330 / (a + b) + 180 / (a - b) = 30 \dots\dots\dots$$

(2)

On solving we get,  $a = 21 \text{ km/h}$  and  $b \text{ km/h} = 12$

Required time =  $493.5/21 = 23.5 \text{ hours}$

**38. Answer: C**

Let upstream time =  $a + 3 \text{ hours}$

Downstream time =  $a \text{ hours}$

According to question,

$$(18 + 2) \times a + (18 - 2) \times (a + 3) = 320$$

$$20a + 16a + 48 = 320$$

$$a = 272/36$$

Upstream time =  $(3 + 272/36) \times 60 = 633.333$   
 minutes

**39. Answer: D**

Distance between P and Q =  $\frac{1}{2} \times 18 = 9$  km

Speed of boat X in still water =  $\frac{5}{2} \times (4 - k)$  k  
= speed of stream

According to question

$$9 / (10 - 2.5k - k) = 18 / (4 + k)$$

$$4 + k = 20 - 7k$$

$$8k = 16$$

$$k = 2$$

So speed of boat X in still water =  $\frac{5}{2} \times (4 - 2) = 5$   
km/h

**40. Answer: D**

Upstream speed of boat =  $48/4 = 12$  km/h

According to question

$$B = 0.8 \times (B + S)$$

$$0.2B = 0.8S$$

$$B/S = 4/1$$

So,  $(4 - 1)$  units = 12

$$1 \text{ unit} = 4$$

Speed of boat in still water on Monday =  $4 \times 4 =$   
16 km/h

Speed of stream Monday = 4 km/h

Speed of boat in still water on Tuesday = 75% of  
16 = 12 km/h

Speed of stream on Tuesday =  $1.5 \times 4 = 6$  km/h

Required time =  $36 / (12 - 6) + 54 / (12 + 6) = 9$   
hours

**41. Answer: B**

Speed of the boat = 24 kmph

Speed of stream = 3 kmph

$$x / (24 - 3) = 8$$

$$x = 168 \text{ km}$$

Required time =  $168 - 33 / (24 + 3) = 5$  hours

**42. Answer: B**

Downstream speed = speed of the boat + speed of  
the stream

$$= 35 + 5$$

$$= 40 \text{ km/h}$$

so the distance =  $40 \times 2$

$$= 80 \text{ km}$$

**43. Answer: C**

Let the Speed of Rajat in still water is =  $x$  km/hr

So, upstream speed of Rajat is =  $(x - 8)$  km/hr

And downstream speed of Rajat is =  $(x + 8)$  km/hr

So, according to the question,

$$= 28 \times (x - 8) = 20 \times (x + 8)$$

$$= 28x - 224 = 20x + 160$$

$$= 28x - 20x = 224 + 160$$

$$= 8x = 384$$

$$= x = 48 \text{ km/hr}$$

So, the upstream speed of Rajat =  $(48 - 8) = 40$  km/hr

And the downstream speed of Rajat =  $(48 + 8) = 56$  km/hr

Thus, the required percentage is  $= 40/56 \times 100 = 71 \frac{3}{7}\%$

**44. Answer: B**

Speed of the boat = a

Speed of the stream = b = 7 km/hr

Downstream Speed =  $a + b = D/4$

Or,  $D = 4(a + b)$ .....(i)

Upstream Speed =  $a - b = D/8$

Or,  $D = 8(a - b)$ .....(ii)

Solving the eq. (i) and (ii) we get,

$$4(a + b) = 8(a - b)$$

$$a + b = 2a - 2b$$

$$a = 3b = 3 \times 7 = 21 \text{ km/hr}$$

$$\begin{aligned} \text{Distance covered downstream (D)} &= 4(21 + 7) = 4 \\ &\times 28 = 112 \text{ km} \end{aligned}$$

**45. Answer: B**

$$720/(3x + x) = 30$$

$$4x = 24$$

$$x = 6 \text{ kmph}$$

$$\text{Speed of boat} = 3 \times 6 = 18 \text{ kmph}$$

$$\text{Speed of stream} = 6 \text{ kmph}$$

$$\begin{aligned} \text{After increased the speed by boat} &= 18 + 2 = 20 \\ &\text{kmph} \end{aligned}$$

$$\begin{aligned} \text{After decreased the speed by stream} &= 5/6 \times 6 = 5 \\ &\text{kmph} \end{aligned}$$

$$\text{Required time} = 720/(20 - 5) = 48 \text{ hours}$$

**46. Answer: A**

Let speed of stream = a km/h

Speed of boat = a + 4

According to question,

$$[16/(a + 4 + a)] + [16/(a + 4 - a)] = 4.5 \text{ hours}$$

$$16/(2a + 4) = 4.5 - 4$$

$$32 = 2a + 4$$

$$\text{So, } a = 14$$

Speed of stream = 14 km/h

Speed of Boat =  $14 + 4 = 18$  km/h

$$\text{Required ratio} = 18:14 = 9:7$$

**47. Answer: D**

$$\text{Speed of boat} = 3/2 \times 80 = 120 \text{ kmph}$$

$$\text{Speed of stream} = 1/2 \times 80 = 40 \text{ kmph}$$

$$d/(120 + 40) + d/(120 - 40) = 15$$

$$3d/160 = 15$$

$$d = 800 \text{ km}$$

48. **Answer: A**

$$x/(30 + 15) + x/(30 - 15) = 60/60$$

$$x + 3x = 45$$

$$x = 11.25 \text{ km}$$

49. **Answer: B**

Speed of the boat = a

Speed of the stream = b

$$\text{Downstream Speed} = a + b = 72/2 = 36$$

km/hr .....(i)

$$\text{Upstream Speed} = a - b = (1 - 200/300) \times 36 = 12$$

km/hr .....(ii)

Solving the eq. (i) and (ii) we get,

$$2a = 48$$

$$a = 24 \text{ km/hr and } b = 12 \text{ km/hr.}$$

50. **Answer: E**

Speed of the boat = x

Speed of the stream = y

$$144/x + y = 6$$

$$x + y = 24 \text{ -----(1)}$$

$$216/x - y = 18$$

$$x - y = 12 \text{ -----(2)}$$

$$2x = 36$$

$$x = 18 \text{ kmph}$$

$$y = 6 \text{ kmph}$$

$$\text{Distance} = 18 * 8 = 144 \text{ km}$$

## Pipes and Cisterns

1. Pipe A and B together can fill the tank in 24 hours, pipe B and C together can fill the tank in  $34\frac{2}{7}$  hours and Pipe A and C together can fill the tank in  $26\frac{2}{3}$  hours. In how many hours pipe A alone can fill the tank?

A.30 hours

B.36 hours

C.40 hours

D.48 hours

E.None of these

2. A larger pump can fill a tank in 6 hours. Three smaller pumps are two-third much efficient as larger pump. Find the ratio of time taken by all pumps together to fill a tank to time taken by larger pump to fill the tank alone

A.3:2

B.3:1

C.1:3

D.1:4

E.None of these

3. Pipe A alone fill a black color tank in 4 hours, pipe C alone fill a black tanks in 5 hours and pipe B alone fill 3 black tanks in 20 hours. The total capacity of a black tank is 200 liters. If pipe A, B and C are opened in a white tank alternatively, one hour each starting from A, then B and then C, white tank is filled after 120 hours, then find the capacity of white tank?

- A.3600 liters
- B.4200 liters
- C.4500 liters
- D.4800 liters
- E.3000 liters

4. Pipe M and N can fill the tank in 15 hours and 20 hours respectively while pipe O can empty the full tank in 40 hours. All the three pipes are opened together, after 10 hours, pipe O closed. Find the total time taken by all the pipes to fill the tank?

- A.
- B.
- C.
- D.
- E.None of these

5. Pipe A fill the tank in 20 hours and pipe B can empty the tank in 30 hours. If pipe A and B are opened simultaneously, then in how many required filled the tank?

- A.50 hours

- B.40 hours
- C.70 hours
- D.60 hours
- E.90 hours

6. Pipe A and Pipe B together can fill a tank in 6 hours. Due to leakage both pipes together filed the tank in 20 hours. If the ratio of efficiency of Pipe A and Pipe B be 3:2, then in how many hours, leakage pipe empty the full tank?

- A.60/7 hr
- B.45/7 hr
- C.74/7 hr
- D.36/7 hr
- E.64/7 hr

7. There are 15 pipes some are inlets and some are outlets. An inlet pipe can fill the tank in 16 hours and an outlet pipe can empty the tank in 20 hours. If all pipes opened simultaneously, tank is filled in 26 hours 40 minutes. Find the number of outlet pipes.

- A.8
- B.7
- C.10
- D.6
- E.None of these

8. Pipe A, B and C together can fill the tank in 24 hours and Pipe C is 20% more efficient than B. If pipe A and B together can fill the tank in 40 hours,

**then in how many hours Pipe A alone can fill the tank?**

- A.90 hours**
- B.100 hours**
- C.120 hours**
- D.80 hours**
- E.95 hours**

**9. Two pipes X and Y can fill a cistern in 15 hours and 20 hours respectively. Another pipe Z can empty the full cistern in 25 hours. All the three pipes were open for 3 hours then pipe Z should be closed. Find the time taken to filled the remaining cistern by X and Y together?**

- A.4 hours 48 minutes**
- B.7 hours 25 minutes**
- C.5 hours 55 minutes**
- D.6 hours 36 minutes**
- E.None of these**

**10. Pipe A and B alone fill the tank in 15 hours and 20 hours respectively. If both pipes are opened simultaneously, after x hours pipe A is closed so that the tank take extra 2 hours and 30 minutes for fulfill the tank. Find the value of x?**

- A.8 hours**
- B.10 hours**
- C.6 hours**
- D.12 hours**

**E.None of these**

**11.Pipe A and B are inlet pipes and C is outlet pipe and pipe A, B and C together can fill the tank in 16 hours. Ratio of the efficiency of pipe B to C is 2:1 and the efficiency of B is 50% less than the efficiency of pipe A. Find the time taken by pipe B and C together can fill the tank?**

- A.50 hours**
- B.60 hours**
- C.80 hours**
- D.90 hours**
- E.100 hours**

**12. Pipe A, B and C together can fill the tank in 24 hours and Pipe C is 20% more efficient than B. If pipe A and B together can fill the tank in 40 hours, then in how many hours Pipe A alone can fill the tank?**

- A.90 hours**
- B.100 hours**
- C.120 hours**
- D.80 hours**
- E.95 hours**

**13. Pipe A and B alone fill the tank in 15 hours and 20 hours respectively. If both pipes are opened simultaneously, after x hours pipe A is closed so that the tank take extra 2 hours and 30 minutes for fulfill the tank. Find the value of x?**

- A.8 hours
- B.10 hours
- C.6 hours
- D.12 hours
- E.None of these

14. There are 50 taps requires to fill a tank and each tap fills 2500 liters of water in an hour. It has a tank measuring 25 m \* 40 m \* 50 m. In how many hours the tank is filled completely?

- A.400 hours
- B.450 hours
- C.480 hours
- D.520 hours
- E.360 hours

15. Pipe A and B together can fill the tank in 12 hours. If the efficiency of pipe A is 37.5% of the efficiency of B, then in how many hours pipe B alone fill the tank?

- A.15 hours
- B.15.5 hours
- C.16 hours
- D.16.5 hours
- E.None of these

16. Pipe A and B are inlet pipes and C is outlet pipe and pipe A, B and C together can fill the tank in 16 hours. Ratio of the efficiency of pipe B to C is 2:1 and the efficiency of B is 50% less than the efficiency of

pipe A. Find the time taken by pipe B and C together can fill the tank?

- A.50 hours
- B.60 hours
- C.80 hours
- D.90 hours
- E.100 hours

17. Pipe P can fill a cistern in 4 hours. After half of the cistern is filled, two more same sized pipes are opened. Find the total time taken to fill the cistern fully.

- A.2  $\frac{1}{3}$  hours
- B.2  $\frac{2}{3}$  hours
- C.1  $\frac{1}{2}$  hours
- D.1  $\frac{1}{3}$  hours
- E.None of these

18. Pipe P and Pipe Q can fill a cistern in  $(8n + 2)$  hours and  $(5n + 3)$  hours respectively. Pipe Q is 25% more efficient than Pipe P. Find the value of n.

- A.1
- B.2
- C.3
- D.4
- E.None of these

19. Pipe A and B can fill tank in 18 hours and 24 hours respectively while Pipe C can empty the tank in

**30 hours. All the pipes are opened together, and then find the time taken by all the pipes to fill the tank?**

- A.15 (15/23) hours
- B.14 (4/11) hours
- C.13 (12/17) hours
- D.16 (3/8) hours
- E.None of these

**20. The ratio of time taken to fill the tank by A and B is 7: 5 and B and C is 9: 7. If all of them can fill the tank in 15 h, find the time taken by C alone to fill the tank.**

- A.63 h
- B.70 h
- C.65 h
- D.84 h
- E.35 h

**21. Pipe A and pipe B together can fill a tank in 15 minutes. With pipe C, they can fill the tank in  $120/7$  minutes. Pipe C and pipe D together can fill the tank in 60 minutes. Pipe B and pipe D together can fill the tank in 24 minutes. Pipe A is opened for 4 minutes and closed. Find the time taken by pipe D to fill the remaining part of the tank.**

- A.40 minutes
- B.44 minutes
- C.32 minutes
- D.60 minutes

E.None of these

**22. If  $5/8$ th of a cistern is filled in 1 minute, how much more time will be required to fill the rest of it.**

- A.60 sec
- B.45 sec
- C.25 sec
- D.36 sec
- E.None of these

**23. A, B and C can fill the tank in 20h. If A and B can fill the tank in 15 h and 40 h respectively, then find the time taken by C to empty the tank?**

- A.12 h
- B.15 h
- C.36 h
- D.24 h
- E.48 h

**24. One pipe can fill a tank three times as fast as another pipe. If two pipes together can fill the tank in 51 minutes, then the faster pipe alone will be able to fill the tank in**

- A.1 hour
- B.1 hour 10 minutes
- C.1 hour 15 minutes
- D.1 hour 8 minutes
- E.1 hour 12 minutes

$$x = 24/5$$

$$x = 24/5 - 3 = 9/5 \text{ hours}$$



**28. Pipe P and Q can fill the tank alone in 16 min and 20 min respectively. Both the pipes opened together but P left 8 min before filling the tank. Find the total time taken by both of them to fill the tank?**

- A.13 min 20 secs**
- B.12 min 24 secs**
- C.14 min 36 secs**
- D.11 min 42 secs**
- E.None of these**

**29. Two inlet pipes can fill a tank in 10 and 12 minutes respectively and an outlet pipe can empty 2 gallons per minute. All the three pipes working together can fill the tank in 6 minutes. What is the capacity of the tank?**

- A.60 gallons**
- B.120 gallons**
- C.180 gallons**
- D.240 gallons**
- E.None of these**

**30. A Cistern is filled in 3 hours by three pipes A, B and C. The pipe C is twice as fast as B and B is thrice as fast as A. How much time will pipe A alone take to fill the tank?**

- A.30 hours**
- B.35 hours**
- C.40 hours**

**D.45 hours**

**E. None of these**

**31. Two pipes A and B can fill 40% of a tank in 4 hrs and 10 hrs respectively. If both the pipes are opened simultaneously, how much time will be taken to fill 75% of the tank?**

- A.5 (5/14) hours**
- B.4 (5/14) hours**
- C.4 (11/14) hours**
- D.6 (5/14) hours**
- E.5 (9/14) hours**

**32. Pipe A and B can fill a tank in 20 hours and 30 hours respectively while pipe C can empty the full tank in 40 hours. All are opened together, after 12 hours, pipe C closed. Find the time taken to fill the whole tank?**

- A.16 hours 24 mins**
- B.14 hours 48 mins**
- C.15 hours 36 mins**
- D.13 hours 40 mins**
- E.None of these**

**33. Pipe A and pipe B together can fill a cistern in  $45/4$  minutes. Pipe B, pipe C and pipe D together can fill the tank in  $180/13$  minutes. Pipe C and pipe D together can fill the tank in 20 minutes. Efficiency of pipe A is four times the efficiency of pipe D. Find the**

**time taken by pipe A, pipe B and pipe C to fill the tank together.**

- A.100/11 minutes**
- B.8 minutes**
- C.90/11 minutes**
- D.10 minutes**
- E.None of these**

**34. There is a water tank of capacity 2400 liters. Two pipes P and Q connected with it, they can fill the tank in 120 hours and 100 hours respectively. The rate at which Q fills the tank is what percentage more/less than that of P?**

- A.20 %**
- B.25 %**
- C.15 %**
- D.30 %**
- E.None of these**

**35. In a cistern, there is a pipe which can be used for filling the cistern as well as for emptying it. The capacity of the cistern is 800 m<sup>3</sup>. The emptying of the tank is 10 m<sup>3</sup> per minute higher than its filling capacity and the pipe needs 4 minutes lesser to empty the tank than it needs to fill it. What is the filling capacity of the pipe?**

- A.40 m<sup>3</sup> per minute**
- B.20 m<sup>3</sup> per minute**
- C.10 m<sup>3</sup> per minute**

- D.15 m<sup>3</sup> per minute**
- E.None of these**

**36. Pipe A and B together can fill the tank in 12 hours. If the efficiency of pipe A is 37.5% of the efficiency of B, then in how many hours pipe B alone fill the tank?**

- A.15 hours**
- B.15.5 hours**
- C.16 hours**
- D.16.5 hours**
- E.None of these**

**37. Pipe A fill the tank in 18 hours and pipe B fill the tank in 27 hours and pipe C emptied the tank in 30 hours. If pipe A, B and C opened simultaneously, in how many hours required fill the tank completely?**

- A.16(7/8) hours**
- B.15(7/8) hours**
- C.12(7/8) hours**
- D.18(7/8) hours**
- E.None of these**

**38. There are three pipes P,Q and R. P and Q are inlets pipes and R is an outlet pipe. P and Q can fill the tank in 20 hrs and 15 hrs respectively. R can empty the tank in 12 hrs. Inlet and outlet pipes are opened alternatively, as Pipe (P & Q) are opened for 1st hr and pipe R is opened for 2<sup>nd</sup> hour. Then in how**

**much time the tank will be filled, if Pipe Q & R are working at  $3/5^{\text{th}}$  and  $3/4^{\text{th}}$  of their efficiency?**

- A.40 hours
- B.42 hours
- C.44 hours
- D.41 hours
- E.None of these

**39. Pipe A, B and C fill the tank in 12 hours, 15 hours and 10 hours respectively. If all the pipes opened simultaneously, after 2 hours pipe A is closed, then Pipe B and C filled the remaining tank, in how many hours required to fill the tank?**

- A.3 hours
- B.4 hours
- C.5 hours
- D.6 hours
- E.None of these

**40. A cistern can be filled by two pipes in 30 min. and 40 min. respectively. Both the pipes were turned on at the same moment, but after some time the first was turned off and the cistern were filled in 10 min. more. How long after the first one was turned off?**

- A.15  $1/2$  min.
- B.10  $2/5$  min.
- C.12  $6/7$  min.
- D.10 min.
- E.None of these

**41. A can is full of paint out of which 5 L is removed and it is substituted by a thinning liquid. The process is repeated once more. Now the ratio of volume of paint to the volume of thinner is 49: 15. What is the capacity of the can?**

- A.50 L
- B.20L
- C.60 L
- D.40L
- E.None of these

**42. Three pipes A, B and C can fill a cistern in 6 hrs. After working together for 3 hrs, C is closed and A and B fill the cistern in 9 hrs. Then, find the time in which the cistern can be filled by pipe C.**

- A. $54/7$  hrs
- B. $51/7$  hrs
- C. $42/9$  hrs
- D. $29/8$  hrs
- E.None of these

**43. A tank can be filled by two pipes P and Q in 10 min and 20 min respectively. When the tank was empty the two pipes were opened. After sometime, the first pipe was stopped and the tank was filled in 8 min. After how much time of the start was the first pipe stopped?**

- A.3 min
- B.6 min

- C.2 min
- D.4 min
- E.None of these

44. Pipe A can fill a tank in 40 hours and the ratio of the efficiency of A to B is 3: 2. If Pipe B and pipe C together can fill the tank in 40 hours, in how many hours pipe A and pipe C together can fill the tank completely?

- A.30 hours
- B.40 hours
- C.20 hours
- D.25 hours
- E.None of these

45. Pipe A can fill a tank in 10 minutes and pipe B can fill it in 15 minutes, while pipe C can empty the full tank in 30 minutes. If all the pipes be turned on at the same time, in how much time will the tank be full?

- A.2 minutes
- B.3.5 minutes
- C.5 minutes
- D.7.5 minutes
- E.None of these

46. Pipe A and B together can fill the tank in 12 hours. If the efficiency of pipe A is 37.5% of the efficiency of B, then in how many hours pipe B alone fill the tank?

- A.15 hours
- B.15.5 hours
- C.16 hours
- D.16.5 hours
- E.None of these

47. Pipe A alone can fill the tank in 15 hours and pipe A, B and C together can fill the tank in  $4\frac{32}{37}$  hours. If the efficiency of pipe A is 20% more than the efficiency of pipe B, in how many hours pipe C alone can fill the tank?

- A.10 hours
- B.14 hours
- C.12 hours
- D.16 hours
- E.18 hours

48. There are three pipes P,Q and R. P and Q are inlets pipes and R is an outlet pipe. P and Q can fill the tank in 20 hrs and 15 hrs respectively. R can empty the tank in 12 hrs. Inlet and outlet pipes are opened alternatively, as Pipe (P & Q) are opened for 1st hr and pipe R is opened for 2<sup>nd</sup> hour. Then in how much time the tank will be filled, if Pipe Q & R are working at  $\frac{3}{5}$ <sup>th</sup> and  $\frac{3}{4}$ <sup>th</sup> of their efficiency?

- A.40 hours
- B.42 hours
- C.44 hours
- D.41 hours

E.None of these

49. There is a leak in the bottom of the tank. This leak can empty a full tank in 8 h. When the tank is full, a tap is opened into the tank which intakes water at rate of 6 L/h and the tank is now emptied in 12 h.

What is the capacity of the tank?

A.144 litres

B.128 litres

C.152 litres

D.136 litres

E.None of these

50. Three pipes A, B and C together can fill the half of the tank in 8 hours and pipe A and C together can fill the half of the tank in 12 hours. IF the efficiency of C is half of B, in how many hours A alone fill the tank completely?

A.30 hours

B.32 hours

C.34 hours

D.36 hours

E.None of these

## Pipes and Cisterns – Answer and Explanation

1. **Answer: C**

$$A + B = 1/24$$

$$B + C = 7/240$$

$$C + A = 3/80$$

$$2 * (A + B + C) = 1/24 + 7/240 + 3/80$$

$$= (10 + 7 + 9)/240$$

$$A + B + C = 13/240$$

$$A = 13/240 - 7/240 = 1/40$$

2. **Answer: C**

Efficiency of each smaller pump is  $2/3$  of larger pump, so time of each smaller pump is  $3/2$  of larger pump.

Time taken by smaller pump alone =  $3/2 \times 6 = 9$  hours

Ratio of time of larger pump and each smaller pump =

$$6:9 = 2:3$$

Efficiency of larger pump = 3 units

Efficiency of each smaller pump = 2 units

Efficiency of all pumps = 9 units

Efficiency of larger pump = 3 units

Ratio of time of all pumps: larger pump =  $3:9 = 1:3$  (inverse of efficiency)

3. **Answer: D**

The three pipes are opened 120 hours, each pipe open for 40 hours.

Pipe A can fill a black tank in 4 hours

Pipe A can fill 10 black tanks in 40 hours.

Pipe B can fill 3 black tanks in 20 hours

Pipe B can fill 6 black tanks in 40 hours

Pipe C can fill a black tank in 5 hours

Pipe C can fill 8 black tanks in 40 hours

Total capacity of white tank = 10 black tanks + 6 black tanks + 8 black tanks  
= 24 black tanks

Required answer =  $24 \times 200 = 4800$  liters

**4. Answer: D**

Pipe (M + N)'s 1 hour work =  $(1/15) + (1/20) = 35 / (15 \times 20) = 7/60$

Pipe (M + N - O)'s 1 hour work =  $(7/60) - (1/40)$   
=>  $(280 - 60) / (40 \times 60) = 220/2400 = 11/120$

Pipe (M + N - O)'s 10 hours work =  $(11/120) \times 10 = 11/12$

Remaining work =  $1 - 11/12 = 1/12$

Remaining work will be done by pipe M and N,

=>  $(1/12) \times (60/7) = 5/7$  hours

The total time taken by all the pipes to fill the tank

=>  $10 + 5/7 = 10 \frac{5}{7}$  hours

**5. Answer: D**

$1/A - 1/B = 1/20 - 1/30 = 1/60$

Required time = 60 hours

6. 1 hr work of pipe A and B =  $3 + 2 = 5$

Total capacity =  $5 \times 6 = 30$

Let leakage pipe be C

One hour work of all three pipes together =  $A + B - C = 30/20 = 1.5$

Efficiency of leakage =  $5 - 1.5 = 3.5$

Time taken by leakage pipe to empty the tank =  $30/3.5 = 60/7$  hr

**7. Answer: A**

Let the number of inlet pipes = a

Number of outlet pipes =  $15 - a$

Let the total capacity of tank = 80 litres

Efficiency of an inlet Pipe =  $80/16 = 5$  litres/h

Efficiency of an outlet pipe =  $80/20 = 4$  litres/h

According to question

$80/3 \times [5 \times a - 4 \times (15 - a)] = 80$

$5a - 60 + 4a = 3$

$9a = 63$

$a = 7$

Number of outlet pipes =  $15 - 7 = 8$

**8. Answer: A**

C alone fill the tank =  $1/24 - 1/40$

=  $1/60$

B alone fill the tank =  $120/100 \times 60 = 72$

A alone fill the tank =  $1/40 - 1/72$

=  $1/90$

**9. Answer: D**

Total number of work is = 300 units (LCM of 15, 20 and 25)

Work done by pipe X in one day =  $300/15 = 20$  units

Work done by pipe Y in one day =  $300/20 = 15$  units

Work done by pipe Z in one day =  $300/25 = 12$  units

So, work done by X, Y and Z in one day together is,  
=  $(20 + 15 - 12) = 23$  units

In 3 days pipe X, Y and Z will fill the cistern =  $23 \times 3 = 69$  units

So, the remaining cistern is =  $300 - 69 = 231$  units

Thus, the required time is =  $231/35 = 6.6$  hours or 6 hours 36 minutes.

**10. Answer: E**

$$x/15 + (x + 2.5)/20 = 1$$

$$4x + 3x + 7.5 = 60$$

$$x = 7.5 \text{ hours}$$

**11. Answer: C**

Time ratio of pipe B and C = 1:2

Efficiency of A and B = 100:50 = 2:1

Time ratio of A and B = 1:2

Time ratio of A, B and C = 1:2:4

$$1/x + 1/2x - 1/4x = 1/16$$

$$4 + 2 - 1/4x = 1/16$$

$$x = 20$$

Pipe B and C together can fill the tank =  $1/40 - 1/80$   
=  $1/80$

**12. Answer: A**

C alone fill the tank =  $1/24 - 1/40$   
=  $1/60$

B alone fill the tank =  $120/100 * 60 = 72$

A alone fill the tank =  $1/40 - 1/72$   
=  $1/90$

**13. Answer: E**

$$x/15 + (x + 2.5)/20 = 1$$

$$4x + 3x + 7.5 = 60$$

$$x = 7.5 \text{ hours}$$

**14. Answer: A**

Required time =  $(25 * 40 * 50) * 1000 / (50 * 2500)$   
= 400 hours

**15. Answer: D**

$$A + B = 1/12$$

Efficiency of pipe A =  $37.5/100$  \* Efficiency of pipe B

Ratio of efficiency of A to B = 3:8

Time ratio of A and B = 8:3

$$1/8x + 1/3x = 1/12$$

$$11/24x = 1/12$$

$$x = 11/2$$

Pipe B alone fill the tank =  $3 * 11/2 = 16.5$  hours

**16. Answer: C**

Time ratio of pipe B and C = 1:2

Efficiency of A and B = 100:50 = 2:1

Time ratio of A and B = 1:2

Time ratio of A, B and C = 1:2:4

$$1/x + 1/2x - 1/4x = 1/16$$

$$4 + 2 - 1/4x = 1/16$$

$$x = 20$$

Pipe B and C together can fill the tank =  $1/40 - 1/80$   
=  $1/80$

**17. Answer: B**

Time taken by one pipe to fill part of the cistern =  $4/2 = 2$  hours

Part of the cistern filled by three pipes in 1 hour =  $3 \times \frac{1}{4}$   
=  $\frac{3}{4}$

Remaining part =  $1 - \frac{1}{2} = \frac{1}{2}$

$\frac{3}{4} : \frac{1}{2} :: 1 : x$

$\Rightarrow x = \frac{2}{3}$

Total time taken =  $2 + \frac{2}{3} = 2 \frac{2}{3}$  hours

**18. Answer: A**

$(8n + 2) = (5n + 3) \times \frac{125}{100}$

$\Rightarrow n = 1$

**19. Answer: A**

Total work = LCM of 18, 24 and 30 = 360 units

A's 1 hour work = 20 units

B's 1 hour work = 15 units

C's 1 hour work = 12 units

(A + B - C)'s 1 hour work

$\Rightarrow 20 + 15 - 12 = 23$  units

(A + B - C)'s 15 hour work =  $23 \times 15 = 345$  units

Remaining work =  $360 - 345 = 15$  units

Remaining work can be done in =  $\frac{15}{23}$  hr

The time taken by all the pipes to fill the tank

$\Rightarrow 15 + \frac{15}{23}$  hr =  $15 \frac{15}{23}$  hours

**20. Answer: E**

The ratio of time taken by,

A: B: C = 63: 45: 35 ( $63x$ ,  $45x$ ,  $35x$ )

$\frac{1}{63x} + \frac{1}{45x} + \frac{1}{35x} = \frac{1}{15}$

$(5 + 7 + 9)/315x = \frac{1}{15}$

$x = 1$

C alone can complete the work in  $35 \times 1 = 35$  h

**21. Answer: C**

$\frac{1}{A} + \frac{1}{B} = \frac{1}{15}$  ----- (i)

$\frac{1}{A} + \frac{1}{B} + \frac{1}{C} = \frac{7}{120}$  ----- (ii)

From (i) and (ii)

$\frac{1}{15} + \frac{1}{C} = \frac{7}{120}$

$\Rightarrow \frac{1}{C} = \frac{7}{120} - \frac{1}{15}$

$\Rightarrow \frac{1}{C} = \frac{(7 - 8)}{120}$

$\Rightarrow \frac{1}{C} = -\frac{1}{120}$

$\frac{1}{C} + \frac{1}{D} = \frac{1}{60}$

$\Rightarrow -\frac{1}{120} + \frac{1}{D} = \frac{1}{60}$

$\Rightarrow \frac{1}{D} = \frac{1}{60} + \frac{1}{120}$

$\Rightarrow \frac{1}{D} = \frac{(2 + 1)}{120}$

$\Rightarrow \frac{1}{D} = \frac{3}{120}$

$\Rightarrow \frac{1}{D} = \frac{1}{40}$

$\frac{1}{B} + \frac{1}{D} = \frac{1}{24}$

$\Rightarrow \frac{1}{B} + \frac{1}{40} = \frac{1}{24}$

$\Rightarrow \frac{1}{B} = \frac{1}{24} - \frac{1}{40}$

$\Rightarrow \frac{1}{B} = \frac{(5 - 3)}{120}$

$\Rightarrow \frac{1}{B} = \frac{2}{120}$

$\Rightarrow \frac{1}{B} = \frac{1}{60}$

From (i)

$\frac{1}{A} + \frac{1}{60} = \frac{1}{15}$

$\Rightarrow \frac{1}{A} = \frac{1}{15} - \frac{1}{60}$

$\Rightarrow \frac{1}{A} = \frac{(4 - 1)}{60}$

$\Rightarrow \frac{1}{A} = \frac{3}{60}$



$$\Rightarrow 1/A = 1/20$$

Let, required time taken = t minutes

$$4/20 + t/40 = 1$$

$$\Rightarrow 1/5 + t/40 = 1$$

$$\Rightarrow t/40 = 1 - 1/5$$

$$\Rightarrow t = 40 \times (5 - 1)/5$$

$$\Rightarrow t = 40 \times 4/5$$

$$\Rightarrow t = 32 \text{ minutes}$$

**22. Answer: D**

5/8 part filled in 1 minute

Full filled in 8/5 minute

So remaining 3/8 will filled in  $(8/5) \times (3/8) = 3/5$  minute = 36 seconds.

**23. Answer: D**

One hour work by,

$$A = 1/15$$

$$B = 1/40$$

$$A + B - C = 1/20$$

$$C = 1/20 - 1/15 - 1/40 = -1/24$$

C can empty the tank in 24 h

**24. Answer: D**

Ratio of efficiency = 3: 1

Time Taken = 1: 3

$$1/x + 1/3x = 1/51$$

$$3x / 4 = 51$$

$$x = 68 \text{ minutes}$$

$$x = 1 \text{ hour } 8 \text{ minutes}$$

**25. Answer: B**

Let the total time taken by both of them to fill the tank be x,

$$(x - 8)/24 + x/36 = 1$$

$$(3x - 24 + 2x)/72 = 1$$

$$5x - 24 = 72$$

$$5x = 96$$

$$x = 96/5 = 19 (1/5) \text{ min} = 19 \text{ min } 12 \text{ secs}$$

**26. Answer: D**

One hour work by,

$$A = 1/15$$

$$B = 1/40$$

$$A + B - C = 1/20$$

$$C = 1/20 - 1/15 - 1/40 = 1/24$$

C can empty the tank in 24 h

**27. Answer: C**

$$(3 + x)/6 + 3/15 = 1$$

$$(3 + x)/6 = 4/5$$

$$3 + x = 24/5$$

$$x = 24/5 - 3 = 9/5 \text{ hours}$$

**28. Answer: A**

Let the total time taken by both of them to fill the tank be x,

$$(x - 8)/16 + x/20 = 1$$

$$(5x - 40 + 4x) / 80 = 1$$

$$9x - 40 = 80$$

$$9x = 120$$

$$x = 120 / 9 = 40/3 = 13 \frac{1}{3} \text{ min} = 13 \text{ min } 20 \text{ secs}$$

**29. Answer: B**

Work done by outlet pipe in 1 hour =  $\frac{1}{6} - (\frac{1}{10} + \frac{1}{12})$   
 =  $-\frac{1}{60}$  (negative represents Outlet)

Volume of  $\frac{1}{60}$  part = 2 gallons

Capacity of full tank =  $2 * 60 = 120$  gallons

**30. Answer: A**

Let pipe A takes x hours to fill the cistern. Then B =  $\frac{x}{3}$ ,  
 C =  $\frac{x}{6}$  hours to fill the cistern.

$$\text{So, } \frac{1}{x} + \frac{3}{x} + \frac{6}{x} = \frac{1}{3}$$

$$\Rightarrow \frac{10}{x} = \frac{1}{3}$$

$$\Rightarrow x = 30 \text{ hours}$$

**31. Answer: A**

Pipe A can fill 40% of the tank in 4hrs

Pipe A can fill 100% of the tank in  $4 * (\frac{100}{40}) = 10$  hours

Pipe B can fill 40% of the tank in 10 hrs

Pipe B can fill 100% of the tank in  $10 * (\frac{100}{40}) = 25$  hrs

Tank filled by pipe A and pipe B together in one hour =

$$\frac{1}{10} + \frac{1}{25} = \frac{5}{50} + \frac{2}{50} = \frac{7}{50}$$

Let the time taken to fill 75% (means  $\frac{3}{4}$ <sup>th</sup>) of the tank is

x

$$x * (\frac{7}{50}) = \frac{3}{4}$$

$$x = \frac{75}{14} \text{ hours} = 5 \frac{5}{14} \text{ hours}$$

**32. Answer: C**

Total units = LCM (20, 30 and 40) = 120 units

Pipe A can fill = 6 units/hr

Pipe B can fill = 4 units/hr

Pipe C can empty = 3 units/hr

1 hour work =  $6 + 4 - 3 = 7$  units/hr

12 hour work =  $7 * 12 = 84$  units/hr

Remaining work =  $120 - 84 = 36$  units

Remaining tank can be filled by pipe A and B in,

$$\Rightarrow 36 / (6 + 4) = 3 \frac{3}{5} \text{ hour}$$

Total time taken by fill the tank

$$\Rightarrow 12 + 3 \frac{3}{5} = 15 \frac{3}{5} \text{ hour (or)} = 15 \text{ hours } 36 \text{ mins}$$

**33. Answer: C**

$$\frac{1}{A} + \frac{1}{B} = \frac{4}{45} \text{ ----- (i)}$$

$$\frac{1}{B} + \frac{1}{C} + \frac{1}{D} = \frac{13}{180} \text{ ----- (ii)}$$

$$\frac{1}{C} + \frac{1}{D} = \frac{1}{20} \text{ ----- (iii)}$$

From (ii) and (iii)

$$\frac{1}{B} + \frac{1}{20} = \frac{13}{180}$$

$$\Rightarrow \frac{1}{B} = \frac{13}{180} - \frac{1}{20}$$

$$\Rightarrow \frac{1}{B} = \frac{(13 - 9)}{180}$$

$$\Rightarrow \frac{1}{B} = \frac{4}{180}$$

$$\Rightarrow \frac{1}{B} = \frac{1}{45}$$

From (i)

$$\frac{1}{A} + \frac{1}{45} = \frac{4}{45}$$

$$\Rightarrow \frac{1}{A} = \frac{4}{45} - \frac{1}{45}$$

$$\Rightarrow \frac{1}{A} = \frac{3}{45}$$

$$\Rightarrow \frac{1}{A} = \frac{1}{15}$$

Now

$$\frac{4}{D} = \frac{1}{A}$$

$$\Rightarrow \frac{1}{D} = \frac{1}{4} \times \frac{1}{15}$$

$$\Rightarrow 1/D = 1/60$$

From (iii)

$$1/C + 1/60 = 1/20$$

$$\Rightarrow 1/C = 1/20 - 1/60$$

$$\Rightarrow 1/C = (3 - 1)/60$$

$$\Rightarrow 1/C = 2/60$$

$$\Rightarrow 1/C = 1/30$$

Let, required time taken = t minutes

$$t \times (1/15 + 1/45 + 1/30) = 1$$

$$\Rightarrow t \times (6 + 2 + 3)/90 = 1$$

$$\Rightarrow t = 90/11 \text{ minutes}$$

**34. Answer: A**

Total capacity of the tank = 2400 litres

$$P = 2400/120 = 20 \text{ litres per hour}$$

$$Q = 2400/100 = 24 \text{ litres per hour}$$

$$\text{Required \%} = [(24 - 20) / 20] \times 100 = 20 \%$$

**35. Answer: A**

Let x be the filling capacity of the pipe.

$$800/x - 800/(x + 10) = 4$$

$$\Rightarrow 200/x - 200/(x + 10) = 1$$

$$\Rightarrow x^2 + 10x - 2000 = 0$$

$$\Rightarrow x = 40 \text{ m}^3 \text{ per minute}$$

**36. Answer: D**

$$A + B = 1/12$$

Efficiency of pipe A =  $37.5/100$  \* Efficiency of pipe B

Ratio of efficiency of A to B = 3:8

Time ratio of A and B = 8:3

$$1/8x + 1/3x = 1/12$$

$$11/24x = 1/12$$

$$x = 11/2$$

**37. Answer: A**

$$A + B - C = 1/18 + 1/27 - 1/30$$

$$= (15 + 10 - 9)/270$$

$$= 8/135$$

$$\text{Required time} = 135/8 = 16(7/8) \text{ hours}$$

**38. Answer: A**

P can complete the work in, 20 hours

Q can complete  $3/5^{\text{th}}$  of the work in,  $15 * 3/5 = 9$  hours

R can complete  $3/4^{\text{th}}$  of the work in,  $12 * 3/4 = 9$  hours

Total work = LCM of (20, 9, 9) = 180 units

P can complete 9 units /hour

Q can complete 20 units /hour

Q can complete 20 units /hour

First 2 hours work =  $(9 + 20) - 20 = 9$  units

40 hours work =  $9 * 20 = 180$  units

Total time taken to fill the tank, = 40 hours

**39. Answer: C**

$$2/12 + x/15 + x/10 = 1$$

$$25x/150 = 5/6$$

$$x = 5$$

**40. Answer: C**

Let the volume of the tank be = 120 L. (LCM of 30 and 40).

So, pipe 1 fills at = 4 L/min.

And the pipe 2 at = 3L/min.

Now, after pipe 1 turned off pipe 2 was fill in 30 L of water in 10 min.

So, together they must have filled 90 L i.e. in =  $90/7 = 12 \frac{6}{7}$  min.

Hence, the required answer is = **12  $\frac{6}{7}$  min.**

**41. Answer: D**

Let volume of can be = V litres.

So, according to the question,

Amount of Paint left/Amount of Paint originally =  
(Volume of can - Volume of replaced/Volume of can)<sup>2</sup>

$$= [(49/64) \times V]/V = [(V - 5)/V]^2$$

$$= 49/64 = [(V - 5)/V]^2$$

$$= 7/8 = (V - 5)/V$$

Solving we get, V = 40 litres.

Hence, the required answer is = **40 litres.**

**42. Answer: E**

After 3 h quantity of tank =  $3/6 = 1/2$

Time taken by A and B to fill the tank =  $9/1 * 2 = 18$  h

Time taken by C to fill the tank =  $1 \div (1/6 - 1/18) = 9$  h

**43. Answer: B**

Let the first pipe be closed after x min.

Work done by first pipe in x min =  $x/10$

$$x/10 + 8/20 = 1$$

$$\Rightarrow x = 6 \text{ min}$$

**44. Answer: A**

$$A = 1/40$$

$$B = 3/2 * 40 = 60 \text{ hours}$$

$$C = 1/40 - 1/60 = 1/120$$

$$A + C = 1/40 + 1/120$$

$$= 1/30$$

**45. Answer: D**

Filled part in 1 min, when A, B and C be turned on at same time

$$= 1/10 + 1/15 - 1/30 = 2/15$$

$$\text{Time taken} = 15/2 = 7.5 \text{ minutes}$$

**46. Answer: D**

$$A + B = 1/12$$

Efficiency of pipe A =  $37.5/100$  \* Efficiency of pipe B

Ratio of efficiency of A to B = 3:8

Time ratio of A and B = 8:3

$$1/8x + 1/3x = 1/12$$

$$11/24x = 1/12$$

$$x = 11/2$$

Pipe B alone fill the tank =  $3 * 11/2 = 16.5$  hours

**47. Answer: C**

$$A = 1/15$$

$$A + B + C = 37/180$$

Efficiency of A and B = 120:100

Time ratio of A and B = 5:6

B alone complete the work =  $6/5 * 15 = 18$  hours

$$C = 37/180 - 1/15 - 1/18 = (37 - 12 - 10)/180 = 1/12$$

48. **Answer: A**

P can complete the work in, 20 hours

Q can complete  $\frac{3}{5}$ <sup>th</sup> of the work in,  $15 * \frac{3}{5} = 9$  hours

R can complete  $\frac{3}{4}$ <sup>th</sup> of the work in,  $12 * \frac{3}{4} = 9$  hours

Total work = LCM of (20, 9, 9) = 180 units

P can complete 9 units /hour

Q can complete 20 units /hour

Q can complete 20 units /hour

First 2 hours work =  $(9 + 20) - 20 = 9$  units

40 hours work =  $9 * 20 = 180$  units

Total time taken to fill the tank, = 40 hours

49. **Answer: A**

Let the capacity of the tank be = x litres.

In one hour tanks empties =  $\frac{1}{8}$  of  $x = \frac{x}{8}$  litre.

In one hour, tap intakes 6 litres.

Now, after opening tap tank is emptied in 12 hours.

So, in one hour tank empties =  $\frac{1}{12}$  of  $x = \frac{x}{12}$  litres.

So, according to the question,

$$6 - \frac{x}{8} = -\frac{x}{12}$$

$$\frac{x}{8} - \frac{x}{12} = 6$$

$$4x/96 = 6$$

$$x/24 = 6$$

$$x = 144 \text{ litres}$$

Hence, the required answer is = **144 litres.**

50. **Answer: B**

A + B + C together can fill the whole tank in =  $\frac{1}{16}$

A + C together can fill the whole tank in =  $\frac{1}{24}$

$$B = \frac{1}{16} - \frac{1}{24}$$

$$B = 3 - \frac{2}{48} = \frac{1}{48}$$

$$C = \frac{1}{96}$$

$$A = \frac{1}{24} - \frac{1}{96}$$

$$A = (4 - 1)/96 = \frac{1}{32}$$

## Probability

1. A bag contains  $(x + 2)$  red balls and x yellow balls. If the probability of drawing a yellow ball is  $\frac{3}{7}$ , then find the total number of balls in the bag?

A.12

B.14

C.7

D.21

E.28

2. Bag A contains 2 green balls and 3 red balls and bag B contains 3 green balls and 2 red balls. If one ball is drawn from each bag, then find the probability that both are red ball?

A. $\frac{1}{5}$

B. $\frac{3}{25}$

C. $\frac{6}{25}$

**D.3/5**

**E.7/25**

**3. A box contains 18 balls marked 1 to 18. If two balls are drawn at random, then what is the probability that is marked with prime number?**

**A.1/17**

**B.7/51**

**C.4/51**

**D.5/51**

**E.None of these**

**4. A box contains 5 Apple, x Orange and 3 Banana. If two fruits are drawn randomly from the box, then the probability of that fruits are Apple is  $\frac{2}{21}$ . Find the total number of fruits in the box?**

**A.12**

**B.15**

**C.18**

**D.10**

**E.20**

**5. A bag has 4 red pens, 5 black pens and 6 blue pens. If 2 pens are selected at random, what is the probability that none of them are red pens?**

**A.11/21**

**B.12/17**

**C.14/17**

**D.18/19**

**E.None of these**

**6. One card is drawn at random, what is the probability if the card is neither a club nor a jack?**

**A.11/13**

**B.10/13**

**C.9/13**

**D.8/13**

**E.12/13**

**7. A bag contains 4 mobiles, 3 chargers and 2 laptops. If 2 items are picked up at random. What is the probability that both are laptops?**

**A.1/26**

**B.1/36**

**C.1/35**

**D.2/9**

**E.4/9**

**8. The balls are numbered from 1 to 25. If two balls are drawn at random, then what is the probability of that ball is prime number?**

**A.3/25**

**B.2/25**

**C.1/25**

**D.4/25**

**E.1/5**

**9. A box contains x red balls and 6 yellow balls.**

**If one ball selected from random, then the probability of that will be a yellow is  $\frac{3}{5}$ . If two balls are drawn at random, then what is the probability of that balls are red?**

**A.1/15**

**B.2/15**

**C.1/5**

**D.4/15**

**E.1/3**

**10. A group of 6 teachers is to be selected from 10 male and 8 female teachers in the school.**

**What is the probability of that group has at least 4 female teachers?**

**A.89/442**

**B.23/442**

**C.19/442**

**D.17/442**

**E.None of these**

**11. What is the probability of selecting 3 red balls from a bag contains 8 red balls and 7 blue balls?**

**A.1/65**

**B.1/13**

**C.6/65**

**D.8/65**

**E.7/65**

**12. A teacher chooses a student at random from a class of 35 students. What is the probability that the student is a boy, if the ratio of boys and girls in that class is 2:5?**

**A.2/7**

**B.3/7**

**C.2/5**

**D.5/7**

**E.None of these**

**13. There are four types of coloured pencils in a bag: yellow, blue, black and green. Total number of yellow and green pencil is 27. Probability of picking a blue ball from the bag is  $\frac{3}{14}$  and that of picking a black ball is  $\frac{1}{7}$ . Find the probability of picking two green**

colour ball from the bag if yellow balls are 100% more than green balls.

- A.  $9/287$
- B.  $11/287$
- C.  $12/287$
- D.  $19/287$
- E. None of these

14. A box contains 3 red balls, 4 green balls and 8 black balls. If 3 balls are drawn at random, then what is the probability of that balls are black?

- A.  $7/65$
- B.  $6/65$
- C.  $1/13$
- D.  $8/65$
- E.  $4/65$

15. A card is drawn from a pack of 52 cards. The probability of getting a queen of club or a king of heart is?

- A.  $1/26$
- B.  $2/25$
- C.  $3/26$
- D.  $4/25$
- E.  $7/26$

16. One card is drawn at random, what is the probability if the card is neither a club nor a jack?

- A.  $11/13$
- B.  $10/13$
- C.  $9/13$
- D.  $8/13$
- E.  $12/13$

17. Three swimmers A, B and C are swimming for a race with their respective probabilities of reaching the target being  $1/5$ ,  $1/4$  and  $1/3$  respectively. Find what is the probability of at least one of them reaching the target?

- A.  $3/5$
- B.  $2/5$
- C.  $4/5$
- D.  $3/4$
- E. None of these

18. There are 5 black pencils, 3 white pencils and 2 red pencils. If 2 pencils are selected at random, what is the probability that none of them are black pencils?

- A.  $2/3$
- B.  $4/3$



C.2/5

D.2/9

E.None of these

19. There are total 20 balls of white, yellow and black balls in a bag respectively. The ratio of white balls to yellow balls is 4: 3 respectively and probability of choosing a black ball is  $\frac{3}{10}$ .

If two balls are picked at random, then what is the probability that one ball is yellow and one is black?

A. $\frac{18}{95}$

B. $\frac{5}{7}$

C. $\frac{12}{17}$

D. $\frac{3}{5}$

E.None of these

20. box contains 4 yellow, 5 green and 6 blue balls. If two balls are drawn at random from the box, then what is the probability that at least one of them is blue?

A. $\frac{23}{35}$

B. $\frac{22}{35}$

C. $\frac{24}{35}$

D. $\frac{5}{7}$

E. $\frac{26}{35}$

21. In how many ways can select 5 red and 2 blue balls out of a total of 6 red and 3 blue balls?

A.12

B.15

C.18

D.21

E.24

22. A bag has 4 red pens, 5 black pens and 6 blue pens. If 2 pens are selected at random, what is the probability that none of them are red pens?

A. $\frac{11}{21}$

B. $\frac{12}{17}$

C. $\frac{14}{17}$

D. $\frac{18}{19}$

E.None of these

23. The bag contains blue, red and yellow balls. The number of yellow balls in the bag is 20% more than the number of blue balls and number of red balls in the bag is 4. The probability of picking a blue ball from a bag is  $\frac{1}{3}$ . Find the number of balls in the bag.

A.12

- B.15
- C.18
- D.20
- E.None of these

24. Bag A contains 2 green balls and 3 red balls and bag B contains 3 green balls and 2 red balls. If one ball is drawn from each bag, then find the probability that both are red ball?

- A.1/5
- B.3/25
- C.6/25
- D.3/5
- E.7/25

25. A box contains 5 Apple, x Orange and 3 Banana. If two fruits are drawn randomly from the box, then the probability of that fruits are Apple is  $\frac{2}{21}$ . Find the total number of fruits in the box?

- A.12
- B.15
- C.18
- D.10
- E.20

26. In how many ways word "GIVING" be arranged in that all vowels and consonants come together?

- A.24
- B.48
- C.36
- D.12
- E.18

27. A bag contains x apples, 4 Orange and 3 Bananas. If two fruits are drawn at random, the probability of that ball is orange is  $\frac{1}{11}$ , then find the value of x?

- A.4
- B.6
- C.5
- D.2
- E.3

28. A box contains 6 red, 4 white and 2 green balls. If three balls are picked up random, what is the probability that at least one is white?

- A.55/41
- B.41/55
- C.34/99
- D.99/34

E.None of these

29. In how many ways word "ENERGY" be arranged in that all vowels and consonants come together?

A.48

B.36

C.24

D.18

E.12

30. The probability that Abhi will get selected in SBI clerk is  $\frac{3}{4}$  and Babu will get selected is  $\frac{2}{5}$ . Find the probability that either of them will not get selected.

A. $\frac{3}{20}$

B. $\frac{17}{20}$

C. $\frac{3}{10}$

D. $\frac{23}{20}$

E.None of these

31. A bag contains 60 balls marked 1 to 60. If one ball is drawn at random, then what is the probability that is marked with a number divisible by 7?

A. $\frac{1}{15}$

B. $\frac{2}{15}$

C. $\frac{1}{5}$

D. $\frac{4}{15}$

E.None of these

32. If two dice tossed, then what is the probability of getting sum divisible by 5 exactly?

A. $\frac{1}{6}$

B. $\frac{7}{36}$

C. $\frac{5}{36}$

D. $\frac{1}{9}$

E. $\frac{1}{18}$

33. If two cards are drawn from the pack at random, then what is the probability of that cards are king?

A. $\frac{1}{221}$

B. $\frac{2}{221}$

C. $\frac{3}{221}$

D. $\frac{4}{221}$

E.None of these

34. 3 male and 2 female are working in a company and they are sitting in conference hall and facing north. In such a way that 2 female employees are always sit together, in how many ways can that be arranged?

- A.36
- B.45
- C.48
- D.56
- E.None of these

35. If two dice tossed, then what is the probability of getting sum divisible by 4 exactly?

- A. $\frac{2}{3}$
- B. $\frac{1}{4}$
- C. $\frac{1}{2}$
- D. $\frac{3}{8}$
- E.None of these

36. In how many ways 5 Japanese and 5 Indians can be seated along a circular table, so that they are seated in alternative positions?

- A.2846
- B.2560
- C.2946
- D.2880
- E.None of these

37. A basket contains x apple, 4 orange and 3 banana. One fruit is taken out randomly and

the probability of getting an orange is  $\frac{2}{5}$ , and find the value of x?

- A.2
- B.3
- C.1
- D.4
- E.None of these

38. Aurn contains 6 red balls, 8 blue balls and 4 green balls. If 3 balls are picked randomly then what is the probability that two are red and one is green?

- A. $\frac{1}{65}$
- B. $\frac{4}{45}$
- C. $\frac{6}{58}$
- D. $\frac{5}{68}$
- E. $\frac{5}{54}$

39. From a group of 10 men and 8 women, a committee of 5 people has to be made. Find the different number of ways for selection.

- A.6658
- B.7568
- C.7854
- D.8568
- E.8454

40. In a survey, probability of a person who like Quant is  $\frac{17}{20}$  and probability of a person who like reasoning is  $\frac{9}{20}$  and probability of a person who like both quant and reasoning is  $\frac{2}{5}$ , then find the probability of a person who does not like any of them?

- A.  $\frac{1}{9}$
- B.  $\frac{2}{11}$
- C.  $\frac{1}{12}$
- D.  $\frac{1}{10}$
- E. None of these

41. A box contains balls with numbers written 1 to 100 on them. Find the probability of picking a ball that contains a number which is two digit number and a multiple of 3 but not 15?

- A.  $\frac{8}{25}$
- B.  $\frac{4}{15}$
- C.  $\frac{7}{15}$
- D.  $\frac{6}{25}$
- E. None of these

42. If two dice tossed, then what is the probability of getting the sum divisible by 6 exactly?

- A.  $\frac{1}{3}$

B.  $\frac{1}{4}$

C.  $\frac{1}{6}$

D.  $\frac{1}{9}$

E.  $\frac{7}{18}$

43. Two dice are thrown simultaneously. Find the probability of getting a sum less than 10.

A.  $\frac{1}{6}$

B.  $\frac{4}{5}$

C.  $\frac{1}{2}$

D.  $\frac{5}{6}$

E. None of these

44. A bag contains  $x + 3$  black, 4 pink and 6 violet colour balls. If two balls are taken random and the probability of getting both are pink colour balls is  $\frac{2}{51}$ , then find the difference between the number of black colour balls and violet colour balls?

A. 3 balls

B. 4 balls

C. 1 ball

D. 2 balls

E. None of these

45. A company has to recruit a certain number of candidates for the post of Manager. 25

**vacancies are to be filled through this recruitment process, these out of 10 are reserved for the candidate who have done MBA course. A total of 50 candidates have applied for the post, out of which 15 have done MBA course. In how many ways can the recruitment process be carried out?**

- A.  ${}^{35}C_{15} \times {}^{15}C_{10}$**
- B.  ${}^{35}C_{15} \times {}^{15}C_{15}$**
- C.  ${}^{15}C_{10} \times {}^{15}C_{10}$**
- D.  ${}^{35}C_{10} \times {}^{15}C_{10}$**
- E. None of these**

**46. bag contains 5 red balls and 3 yellow balls. If four balls are drawn at random, then what is the probability that balls are red color?**

- A.  $1/7$**
- B.  $1/16$**
- C.  $1/14$**
- D.  $1/8$**
- E. None of these**

**47. Balls numbered 1 to 20 are mixed up in a bucket and a ball is picked up at random. What is the probability that the ball taken out has a number which is a multiple of 2 or 3?**

- A.  $11/20$**
- B.  $12/20$**
- C.  $13/20$**
- D.  $14/20$**
- E. None of these**
- E**

**48. A wooden box has 4 white balls and 7 red balls. One ball is drawn at random. What is the probability that the ball drawn from the wooden box is red?**

- A.  $7/11$**
- B.  $3/11$**
- C.  $11/7$**
- D.  $11/3$**
- E. None of these**

**49. In a lucky draw competition, there are 15 prizes and 20 blanks. A card is drawn at random. What is the probability of getting a prize?**

- A.  $1/7$**
- B.  $2/7$**
- C.  $3/7$**
- D.  $4/7$**
- E. None of these**

50. In the English alphabets, three letters are taken out by random. Find the probability that the letters are vowels.

A.1/260

B.3/260

C.1/130

D.1/54

E.None of these

## Probability - Answer and Explanation

1. Answer: B

$${}_xC_1/({}_x + 2 + {}_xC_1) = 3/7$$

$$6x + 6 = 7x$$

$$x = 6$$

$$\text{Required total} = 8 + 6 = 14$$

2. Answer: C

$$\text{Required probability} = {}^3C_1/{}^5C_1 * {}^2C_1/{}^5C_1$$

$$= 3/5 * 2/5$$

$$= 6/25$$

3. Answer: B

Number of marked balls in prime number = 2, 3,

5, 7, 11, 13, 17

$$\text{Required probability} = {}^7C_2/{}^{18}C_2$$

$$= (7 * 6)/(18 * 17)$$

$$= 7/51$$

4. Answer: B

$${}_5C_2/({}_8 + {}_xC_2) = 2/21$$

$$5 * 4/({}_8 + x) * (x + 7) = 2/21$$

$$210 = 8x + 56 + x^2 + 7x$$

$$x^2 + 15x - 154 = 0$$

$$x^2 + 22x - 7x - 154 = 0$$

$$x(x + 22) - 7(x + 22) = 0$$

$$(x - 7)(x + 22) = 0$$

$$x = 7$$

$$\text{Total number of fruits} = 8 + 7 = 15$$

5. Answer: A

$$\text{Total ways} = {}^{15}C_2$$

$$\text{Probability of none of them are red pens} = ({}^{15} -$$

$${}^4C_2)/{}^{15}C_2$$

$$= {}^{11}C_2/{}^{15}C_2$$

$$= 11/21$$

6. Answer: C

$$\text{Total cards} = 52$$

$$\text{Total club} = 13$$

$$\text{Total jack} = 4$$

$$\text{Required probability} = 1 - (13/52 + 3/52)$$

$$= 9/13$$

7. **Answer:** B

Total number of items in the bag =  $4+3+2 = 9$

Number of Laptops = 2

so the required probability =  $\frac{2C_2}{9C_2} = \frac{1}{36}$

8. **Answer: A**

Prime number = 2, 3, 5, 7, 11, 13, 17, 19, 23

Required probability =  $\frac{9C_2}{25C_2}$

=  $\frac{3}{25}$

9. **Answer: B**

$\frac{3}{5} = \frac{6C_1}{(6+x)C_1}$

$18 + 3x = 30$

$x = 4$

Required probability =  $\frac{4C_2}{10C_2} = \frac{(4 * 3)}{(10 * 9)}$

=  $\frac{2}{15}$

10. **Answer: A**

Required probability =  $\frac{((8C_4 * 10C_2) + (8C_5 * 10C_1) + 8C_6)}{(18C_6)}$

=  $\frac{((70 * 45) + (56 * 10) + 28)}{(18 * 6 * 14 * 13)}$

=  $\frac{89}{442}$

11. **Answer: D**

Required probability =  $\frac{8C_3}{15C_3}$

=  $\frac{8}{65}$

12. **Answer: A**

The no. of boys =  $35 * \frac{2}{7} = 10$

Required answer =  $\frac{10C_1}{35C_1} = \frac{10}{35} = \frac{2}{7}$

13. **Answer: C**

Probability of picking a blue ball =  $\frac{3}{14}$

Probability of picking black ball =  $\frac{1}{7} = \frac{2}{14}$

Let total balls = 14a

Black balls = 2a

Blue balls = 3a

Yellow + Green =  $14a - (3a + 2a) = 9a$

$9a = 27$

So total balls in bag =  $14a = 14 * 3 = 42$

Green balls =  $\frac{1}{3} * 27 = 9$  balls

Required probability =  $\frac{{}^9C_2}{{}^{42}C_2} = \frac{9 * 8}{42 * 41}$

=  $\frac{12}{287}$

14. **Answer: D**

Required probability =  $\frac{8C_3}{15C_3}$

=  $\frac{(8 * 7 * 6)}{(15 * 14 * 13)}$

=  $\frac{8}{65}$

15. **Answer: A**

Here,  $n(S) = 52$

Let E = event of getting a queen of club or a king of heart.

Then,  $n(E) = 2$

$P(E) = \frac{n(E)}{n(S)} = \frac{2}{52} = \frac{1}{26}$

16. **Answer: C**



Total cards = 52

Total club = 13

Total jack = 4

Required probability =  $1 - (13/52 + 3/52)$

= 9/13

**17. Answer: A**

In this question, to find 'at least one of them reaches the target'.

We have to find the probability of no body reaching the target,

=  $4/5 \times 3/4 \times 2/3$

= 2/5

Thus, the probability of at least one of them reaches the target is,

=  $1 - 2/5$

= 3/5

**18. Answer: D**

Total ways =  $^{10}C_2$

Probability that none of them are black pencils

=  $^{(10-5)}C_2 / ^{10}C_2$

=  $10/45 = 2/9$

**19. Answer: A**

Let the number of black balls be x

Prob. of selecting a black ball =  $x/20$

=>  $3/10 = x/20$  =>  $x = 6$

Number of remaining balls =  $20 - 6 = 14$

Number of yellow balls =  $3/7 * 14 = 6$

Required probability =  $({}^6C_1 * {}^6C_1) / ({}^{20}C_2)$

= 18/95

**20. Answer: A**

Required probability =  $(6C_1 * 9C_1) + 6C_2 / 15C_2$

= 69/105

= 23/35

**21. Answer: C**

Required ways =  $6C_5 * 3C_2$

=  $6 * 3$

= 18

**22. Answer: A**

Total ways =  $^{15}C_2$

Probability of none of them are red pens =  $^{(15 -$

$4)}C_2 / ^{15}C_2$

=  $^{11}C_2 / ^{15}C_2$

= 11/21

**23. Answer: B**

Blue balls = 5x

Yellow balls =  $5x * 120/100 = 6x$

Red balls = 4

$1/3 = 5xC_1 / (11x + 4)C_1$

$$5x/11x + 4 = 1/3$$

$$15x = 11x + 4$$

$$x = 1$$

$$\text{Required total} = 11 * 1 + 4 = 15$$

**24. Answer: C**

$$\text{Required probability} = 3C_1/5C_1 * 2C_1/5C_1$$

$$= 3/5 * 2/5$$

$$= 6/25$$

**25. Answer: B**

$$5C_2/(8 + x)C_2 = 2/21$$

$$5 * 4/(8 + x) * (x + 7) = 2/21$$

$$210 = 8x + 56 + x^2 + 7x$$

$$X^2 + 15x - 154 = 0$$

$$X^2 + 22x - 7x - 154 = 0$$

$$X(x + 22) - 7(x + 22) = 0$$

$$(x - 7)(x + 22) = 0$$

$$x = 7$$

$$\text{Total number of fruits} = 8 + 7 = 15$$

**26. Answer: A**

$$\text{Number of vowels} = I, I = 2$$

$$\text{Number of consonants} = G, V, N, G = 4$$

$$\text{Number of ways} = 2!/2! * 4!/2! * 2!$$

$$= 24$$

**27. Answer: C**

$$1/11 = 4C_2/(x + 7)C_2$$

$$1/11 = 4 * 3/((x + 7) * (x + 6))$$

$$12 * 11 = x^2 + 6x + 7x + 42$$

$$X^2 + 13x - 90 = 0$$

$$X^2 + 18x - 5x - 90 = 0$$

$$X(X + 18) - 5(X + 18) = 0$$

$$X = 5, -18$$

**28. Answer: B**

$$\text{Probability that none is white} = {}^8C_3/{}^{12}C_3$$

$$= (8 * 7 * 6)/(12 * 11 * 10)$$

$$= 14/55$$

$$\text{Required probability} = 1 - 14/55 = 41/55$$

**29. Answer: A**

$$\text{Number of vowels} = E, E = 2$$

$$\text{Number of consonants} = N, R, G, Y = 4$$

$$\text{Number of ways} = 2!/2! * 4! * 2!$$

$$= 48$$

**30. Answer: B**

$$\text{Probability that Abhi will not get selected} = (1 - 3/4) = 1/4$$

$$\text{Probability that Babu will not get selected} = (1 - 2/5) = 3/5$$

$$\text{Probability that either A or B will not get selected} = 1/4 + 3/5$$

$$= (5 + 12)/20 = 17/20$$

**31. Answer: B**

Number of marked balls divisible by 7 = 7, 14, 21, 28, 35, 42, 49, 56

$$\text{Required probability} = 8/60 = 2/15$$

**32. Answer: B**

Number of events = (1, 4), (2, 3), (3, 2), (4,1), (4, 6), (5, 5), (6, 4)

$$\text{Required probability} = 7/36$$

**33. Answer: A**

$$\text{Required probability} = 4C_2/52C_2$$

$$= 4 * 3/52 * 51$$

$$= 1/221$$

**34. Answer: C**

$$\text{Required ways} = 4! * 2!$$

$$= 48$$

**35. Answer: B**

$$\text{Total Events} = 36$$

Possible event = ((1,3), (2,2), (2,6), (3,1), (3,5), (4,4), (5, 3), (6, 2), (6,6))

$$\text{Required probability} = 9/36=1/4$$

**36. Answer: D**

First Indians can be seated along the circular table in = 4! ways = 24 ways

And now Japanese can be seated in = 5! Ways = 120 ways

$$\text{So, the total number of ways} = 120 \times 24 = 2880$$

Hence, the required answer is = **2880**.

**37. Answer: B**

$${}^4C_1/({}^{7+x}C_1) = 2/5$$

$$20 = 14 + 2x$$

$$2x = 6$$

$$x = 3$$

**38. Answer: D**

$$\text{Probability} = ({}^6C_2 \times {}^4C_1)/({}^{18}C_3) = 5/68$$

**39. Answer: D**

$$\text{No. of ways} = {}^{18}C_5 = (18 \times 17 \times 16 \times 15 \times 14)/(5 \times 4 \times 3 \times 2) = 8568$$

**40. Answer: D**

$$\text{Probability of a person either like quant or reasoning} = 17/20 + 9/20 - 2/5 = 9/10$$

$$\text{Probability of a person who don't like any of them} = 1 - 9/10 = 1/10$$

**41. Answer: D**

$$\text{Multiples of 3 from 1 to 100} = 33$$

$$2 \text{ digit number which are multiple of } 3 = 30 \text{ (exclude 3, 6 and 9)}$$

$$\text{Multiples of 15 from 1 to 100} = 6$$

So multiples of 3 but not 15 =  $30 - 6 = 24$

Required probability =  $24 / 100 = 6/25$

**42. Answer: C**

Total number of events = 36

Possible events = ((1,5), (2,4), (3,3), (4,2), (5, 1), (6,6)) = 6

Required probability =  $6/36$

=  $1/6$

**43. Answer: D**

Total outcomes =  $6^2 = 36$

Sample space for getting a sum greater or equal to 10

10 = (4, 6), (6, 4), (5, 5)

11 = (5, 6), (6, 5)

12 = (6, 6)

Required probability =  $1 - 6/36 = 5/6$

**44. Answer: D**

$4C_2 / (x + 13)C_2 = 2/51$

$[(4 * 3) / (1 * 2)] / [(x + 13)(x + 12) / (1 * 2)] = 2/51$

$(12 * 51) / 2 = x^2 + 13x + 12x + 156$

$306 = x^2 + 25x + 156$

$x^2 + 25x - 150 = 0$

$(x - 5)(x + 30) = 0$

$x = 5, -30$  (negative value will be eliminated)

Required difference =  $(5 + 3) - 6 = 2$  balls

**45. Answer: A**

Vacancies for MBA candidates = 10

So, they can be chosen in  ${}^{15}C_{10}$  ways.

Remaining candidates =  $50 - 15 = 35$

So, they can be chosen in  ${}^{35}C_{15}$  ways.

Required number of ways =  ${}^{35}C_{15} \times {}^{15}C_{10}$

**46. Answer: C**

Required probability =  $5C_4 / 8C_4$

=  $(5 * 4 * 3 * 2) / (8 * 7 * 6 * 5)$

=  $1/14$

**47. Answer: C**

Sample space,  $S = \{1, 2, 3, 4, \dots, 20\}$

Event of getting a multiple of 2 or 3 =  $E = \{2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 3, 9, 15\}$

Hence,  $P(E) = n(E)/n(S) = 13/20$

**48. Answer: A**

Total balls =  $4 + 7 = 11$

No. of red balls = 7

Required probability =  $7/11$

**49. Answer: C**

Probability of getting a prize =  $15/(15 + 20) = 15/35 = 3/7$

50. Answer: A

Required probability =  ${}^5C_3/{}^{26}C_3$

$$= (5 * 4 * 3)/(26 * 25 * 24)$$

$$= 1/260$$

## Venn diagram-based DI

**Directions (1-5):** 3200 guests are present in Film fare awards which comprises of Directors, Producers and Actors. 750 guests are Director only, 450 guests are Producer only, whereas 1050 guests are Actor only. 138 guests are both Director and Producer, 228 guests are both Producer and Actor, whereas 98 guests are both Actor and Director. 38 guests are Director, Producer as well as Actor.

**1. How many no. of guests are Directors who are not Actors.**

- a) 768
- b) 810
- c) 800
- d) 850
- e) 888

**2. What is the ratio of no. of guests who are in only 1 category to no. of guests who are in only 2 categories?**

- a) 55:7
- b) 45:7
- c) 100:9
- d) 45:7
- e) None of these

**3. How many guests are Actors or Producers?**

- a) 1888
- b) 1858
- c) 1868
- d) 1690
- e) 1750

**4. How many no. of guests are in at least one category.**

- a) 2600

- b) 2250
- c) 350
- d) 2638
- e) None of these

**5. The guests who are Producers only are what % more than or less than total no. of guests who are Directors and Actors but not Producers.**

- a) 650% less
- b) 250% more
- c) 650% more
- d) 250% less
- e) 350% more

**Directions (6-10): Among 400 Kabaddi players, 45% played in League 1 and 6.25% played only in League 1. Again, 57.5% played in League 2 and 11.25% played only in League 2. Again 72.5% played in League 3 and 27.5% played only in League 3 and 20% players played in all 3 leagues.**

**6. How many players are there who played in League 1 and League 2 but not in League 3?**

- a) 40
- b) 35
- c) 65
- d) 75
- e) 60

**7. How many players played in two leagues only?**

- a) 164
- b) 160
- c) 140
- d) 144
- e) 174

**8. What is the ratio of total no. of players played in two Leagues only to total no. of players played in all three leagues?**

- a)  $\frac{7}{3}$
- b)  $\frac{7}{4}$
- c)  $\frac{3}{7}$
- d)  $\frac{4}{7}$
- e) None of these

**9. Total no. of players who played in League 3 is what % more or less than total no. of players who played in League 1.**

- a) 61.11% less
- b) 51.11 % more
- c) 51.11% less
- d) 61.11% more
- e) 66.11% more

**10. What is the ratio of total no. of players who played in League 1 and League 2 but not in League 3 to total no. of players who played in League 1 and League 3 but not in League 2?**

- a)  $\frac{8}{7}$
- b)  $\frac{6}{7}$
- c)  $\frac{5}{6}$
- d)  $\frac{7}{8}$
- e)  $\frac{4}{5}$

**Directions (11-15): 120 students appeared in an exam which consists of 3 papers - History, Geography and Polity. 15 students passed in only History, 18 students passed in only Geography and 12 students passed in only Polity. 16 students passed in both History and Geography, 26 students passed in both Geography and Polity, whereas 36 students passed in both History and Polity. 6 students passed in all three subjects.**

**11. What is the ratio of total no. of students who passed in History and Polity but not in Geography to total no. of students who passed in History and Geography but not in Polity to total no. of students who passed in Geography and Polity but not in History?**

- a) 1:2:3
- b) 3:1:2
- c) 1:3:2
- d) 2:3:1
- e) None of these

**12. How many students failed in History?**

- a) 46
- b) 15
- c) 20
- d) 59
- e) 36

**13. What is the difference between no. of students passed in at least 1 subject and no. of students failed in at least 1 subject?**

- a) 3
- b) 4
- c) 9
- d) 6
- e) 15

**14. Total no. of students failed in only two subjects is what % more than or less than total no. of students passed in only two subjects.**

- a) 95 % less
- b) 5% less
- c) 25% less
- d) 5 % more



e) 10% more

**15. How many students failed in History and Polity?**

a) 21

b) 18

c) 36

d) 24

e) 27

**Directions (16-20):** There are 140000 citizens in a town who read 3 different types of newspaper – TH (The Hindu), TOI (Times of India) and HT (Hindustan Times). 21000 citizens read only The Hindu, 18000 citizens read only TOI, whereas 12500 citizens read only Hindustan Times. 10000 citizens read all the three newspapers. 25000 citizens read The Hindu and Hindustan Times both, 35000 citizens read Hindustan Times and TOI both and 45000 citizens read The Hindu and TOI both.

**16. How many citizens of the town do not read any of the three newspapers?**

a) 2500

b) 3500

c) 4500

d) 3000

e) 5000

**17. How many citizens read at least one newspaper?**

a) 135500

b) 136500

c) 137500

d) 135000

e) 136000

**18. What is the average of no. of citizens who read only two newspapers?**

- a) 25000
- b) 35000
- c) 37500
- d) 30000
- e) 20000

**19. What is the difference between total no. of citizens who read only 1 newspaper to total no. of citizens who read TOI and The Hindu but not Hindustan Times.**

- a) 25500
- b) 15500
- c) 16500
- d) 17500
- e) 20500

**20. Total no. of people who read The Hindu or Hindustan Times.**

- a) 48500
- b) 58500
- c) 128500
- d) 118500
- e) 33500

**Directions (21-25):** Given below data gives information of people of Revenue colony who subscribed one or more of three news channels i.e. Zee news, NDTV and ABP news. Read the data carefully and answer the questions. In Revenue colony there are 800 people some of them have subscribed 3 different news channels. 175 people subscribed only Zee news, 145 people subscribed only NDTV and 165 people subscribed only ABP news. 132 people subscribed both Zee news and NDTV, 122 people subscribed both NDTV and ABP news, while 92 people subscribed both Zee news and ABP news. 60 people subscribed all three channels.

**21. What is the total no. of people who have subscribed ABP news?**

- a) 219
- b) 389
- c) 319
- d) 289
- e) None of these

**22. What is the ratio of total no. of people who have subscribed Zee news and NDTV but not ABP news to total no. of people who have subscribed NDTV and ABP news but not Zee news to total no. of people who have subscribed Zee news and ABP news but not NDTV.**

- a) 36:31:26
- b) 31:16:36
- c) 36:31:16
- d) 16:31:36
- e) 16:31:26

**23. What is the difference between total no. of people who have subscribed Zee news and total no. of people who have subscribed to NDTV?**

- a) 40
- b) 10
- c) 20
- d) 30
- e) 0

**24. How many people who have not subscribed to any of these three channels**

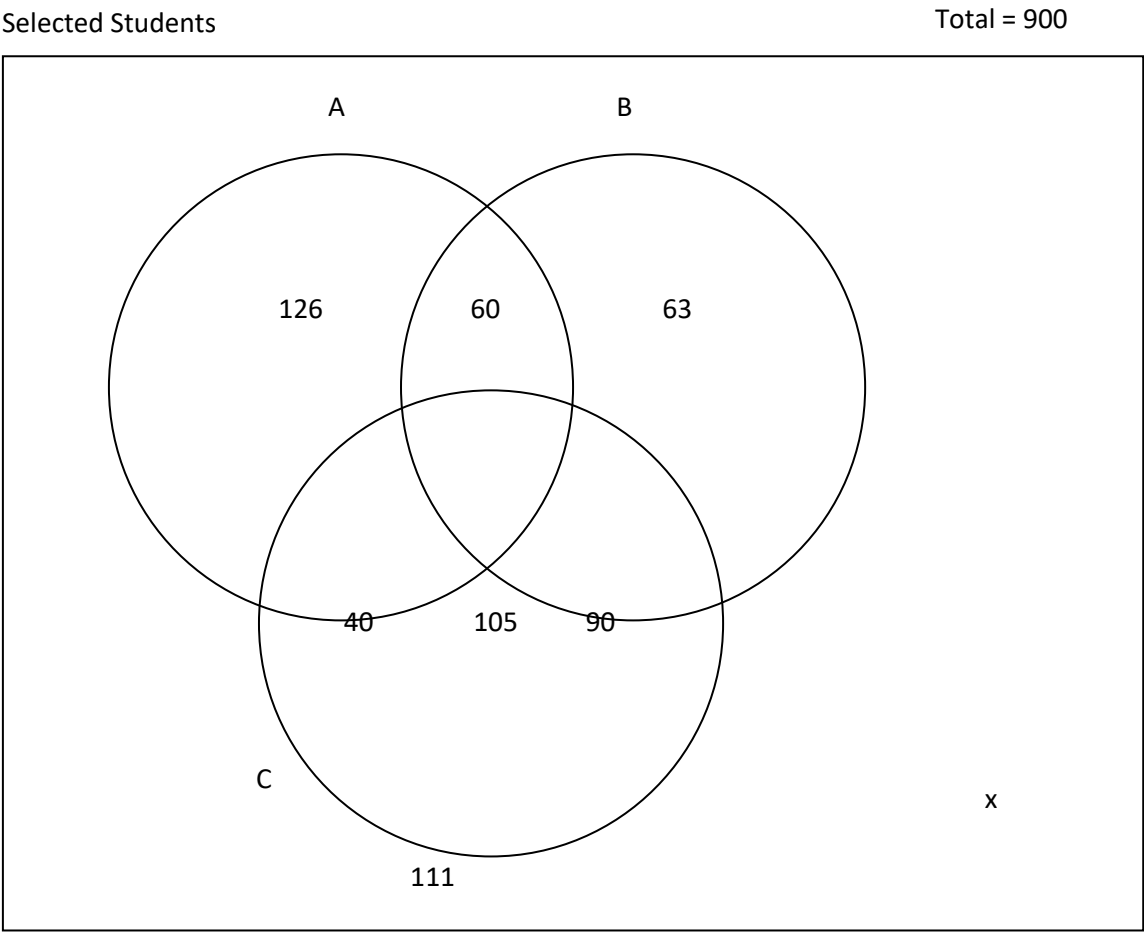
- a) 59
- b) 69
- c) 84
- d) 89
- e) 74

**25. How many people have subscribed to at least 2 news channels?**

- a) 220
- b) 226
- c) 245
- d) 235
- e) None of these

**Directions (26-30):** Study the Venn diagram and answer the questions given below.

**Venn diagram shows the data of 900 students who interviewed and selected by 3 different companies -A, B and C.**



**26. How many students rejected by at least one company.**

- a) 186
- b) 105
- c) 190
- d) 795
- e) 305

**27. How many students rejected by company A and B but not by company C.**

- a) 105
- b) 111
- c) 165
- d) 416
- e) None of these

**28. Total no. of students selected in all three companies are what % more than or less than total no. of students rejected by only company C.**

- a) 45% more
- b) 75% less
- c) 60% more
- d) 75% more
- e) 60 % less

**29. What is the difference between total no. of students rejected by at least two companies to total no. students selected by at least 2 companies?**

- a) 270
- b) 310
- c) 630
- d) 150
- e) 850

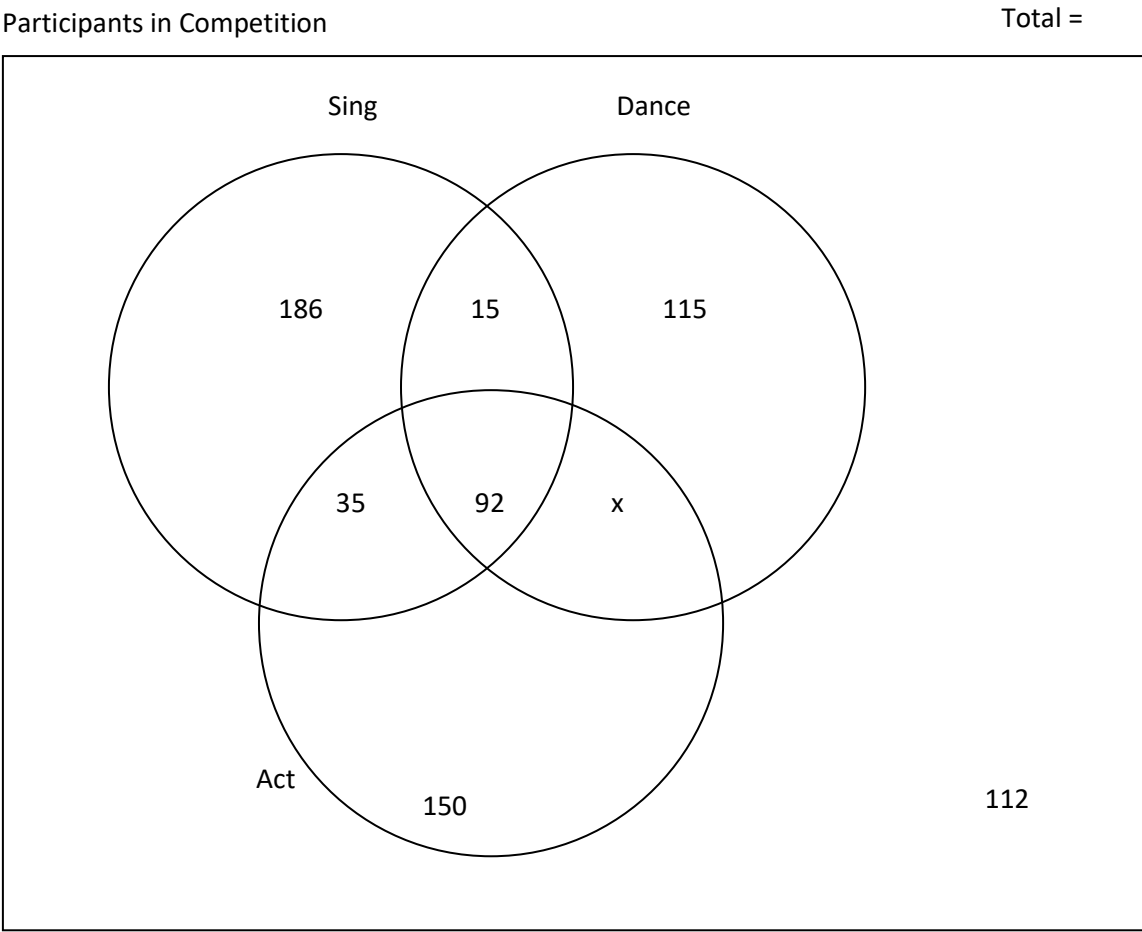
**30. Total no. of students rejected by only two companies is what % of total no. of students.**

- a) 160/3%

- b) 50/3%
- c) 100/3%
- d) 250/3%
- e) 200/3%

**Directions (31-35):** Study the Venn diagram and answer the questions given below.

**Venn diagram shows the data of 750 students who take part in three different activities - Singing, Dancing and Acting.**



**31. How many students do not Sing but Dance and Act.**

- a) 60

- b) 35
- c) 45
- d) 185
- e) 107

**32. What is the difference between total no. of students who participate in only 1 activity and total no. students who participate in all three activities?**

- a) 436
- b) 406
- c) 359
- d) 451
- e) 416

**33. How many students participate in Singing and Dancing?**

- a) 107
- b) 301
- c) 316
- d) 398
- e) None of these

**34. The total no. of students who do not Sing and Dance but Act is what % of total no. of students.**

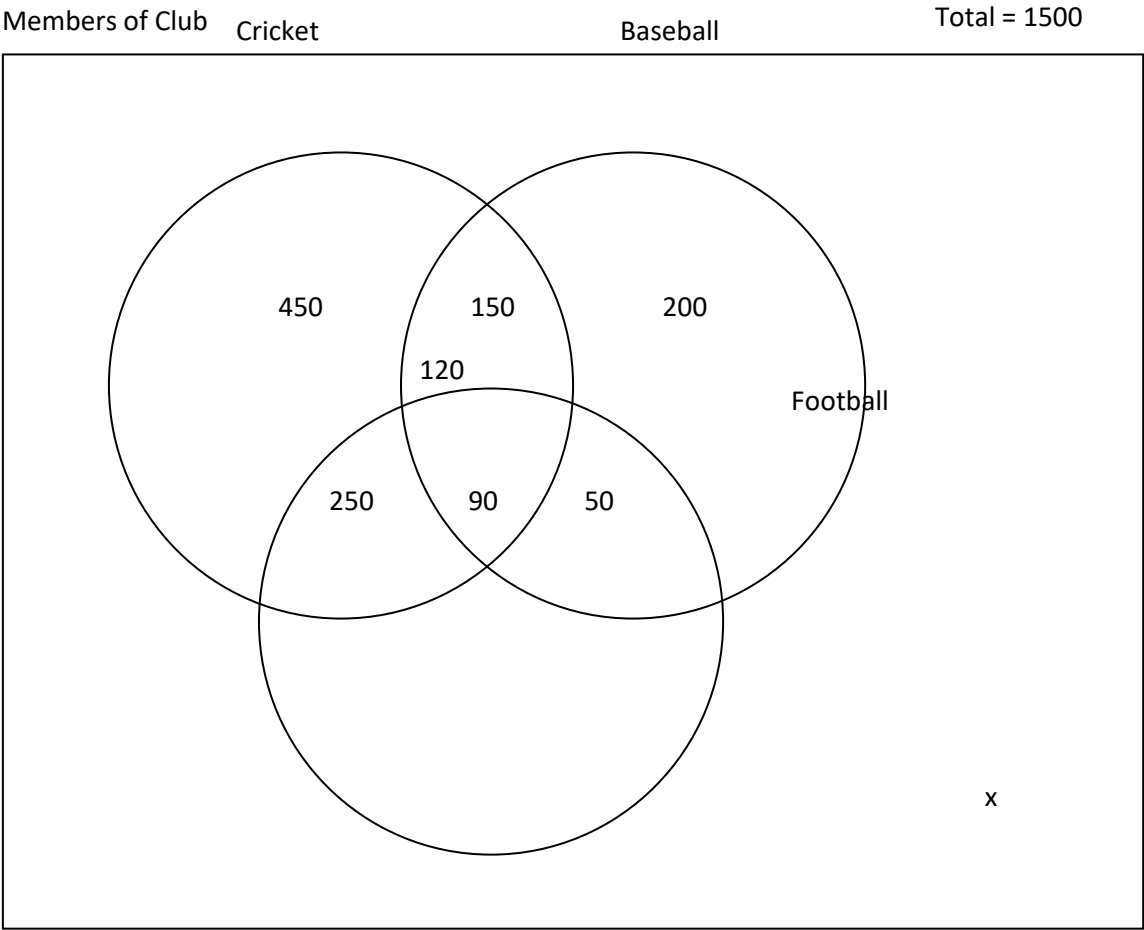
- a) 15%
- b) 20%
- c) 30%
- d) 40%
- e) 45%

**35. What is the ratio of total no. of students who Sing or Dance to total no. of students who Act or Dance.**

- a) 113/144
- b) 113/122
- c) 123/113

- d) 122/113
- e) 125/113

**Directions (36-40):** Study the Venn diagram and answer the questions given below.  
**Venn diagram shows members of sports club playing three different games.**



**36. How many members play at least one game?**

- a) 1250
- b) 1310
- c) 770
- d) 860



e) 450

**37. No. Of members who play at least two games are what % more than or less than no. of members who play all three games.**

a) 300% less

b) 500% less

c) 200% more

d) 300% more

e) 500% more

**38. Find the ratio of no. of members who play Cricket and Baseball but not Football to no. of members who play Cricket and Football but not Baseball.**

a)  $\frac{5}{2}$

b)  $\frac{5}{3}$

c)  $\frac{3}{5}$

d)  $\frac{2}{5}$

e)  $\frac{4}{5}$

**39. What is the difference between total no. of members who play Baseball or Cricket to total no. of members who do not play any game?**

a) 860

b) 1190

c) 1310

d) 1000

e) 1110

**40. What is average no. of players who play Cricket and Football?**

a) 170

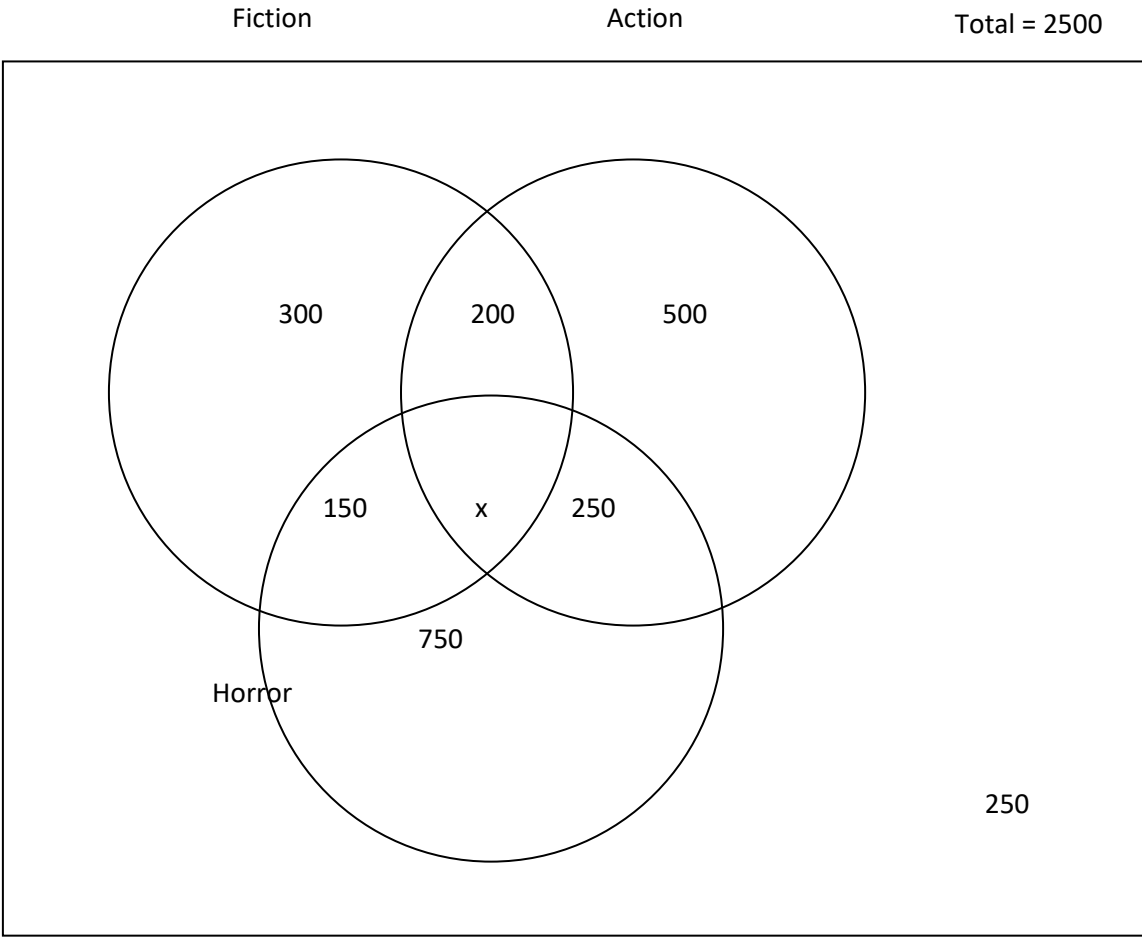
b) 180

c) 160

d) 165

e) 175

**Directions (41-45):** Venn diagram shows the data of 2500 people and their choices of watching movies.  
**Study the Venn diagram and answer the questions given below.**



**41. How many people watch all the three types of movies?**

- a) 150
- b) 100
- c) 250
- d) 300

e) 200

**42. How many people watch Horror or Action movies?**

a) 2250

b) 2200

c) 1850

d) 1950

e) None of these

**43. What is the ratio of total no. of people who watch Fiction and Action movies but not Horror movies to total no. of people who watch Action and Horror movies but not Fiction movies?**

a)  $\frac{4}{5}$

b)  $\frac{3}{5}$

c)  $\frac{5}{3}$

d)  $\frac{2}{5}$

e)  $\frac{5}{3}$

**44. How many people watch only two types of movies?**

a) 300

b) 500

c) 400

d) 600

e) 200

**45. The total no. of people who watch Fiction and Horror movies but not Action movies is what % more or less than total no. of people who do not watch any of the three types of movies.**

a) 20% less

b) 20% more

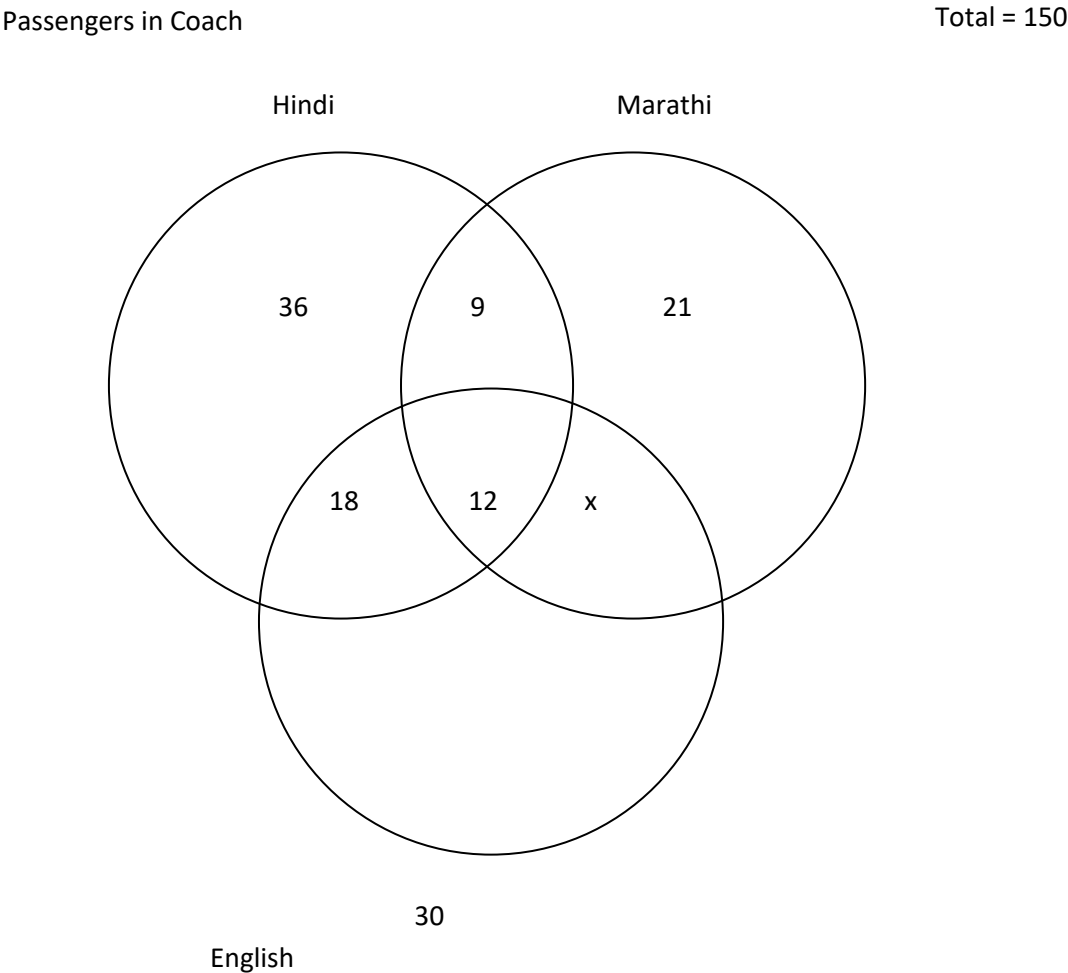
c) 40% less

d) 30 % less

e) 40% more

**Directions (46-50):** Venn diagram shows the data of 150 passengers in one coach of Railway who can speak three different languages - Hindi, English and Marathi.

**Study the Venn diagram and answer the questions given below.**



**46. How many passengers can speak Marathi and English but not Hindi?**

- a) 42
- b) 24
- c) 18

d) 36

e) 21

**47. The total no. of passengers who can speak Hindi or Marathi is what % of total passengers in the coach.**

a) 80%

b) 85%

c) 75%

d) 65%

e) 70%

**48. What is the difference between total no. of passengers who can speak Hindi and no. of passengers who can speak Marathi?**

a) 12

b) 18

c) 15

d) 27

e) 9

**49. The total no. of passengers who can speak Hindi and English but not Marathi is what % more than or less than total no. of passengers who can speak Hindi and Marathi but not English.**

a) 200 % less

b) 200% more

c) 100% more

d) 150% more

e) 100% less

**50. Find the ratio of total no. of passengers who can speak only 1 language to total no. of passengers who speak all three languages**

a)  $29/5$

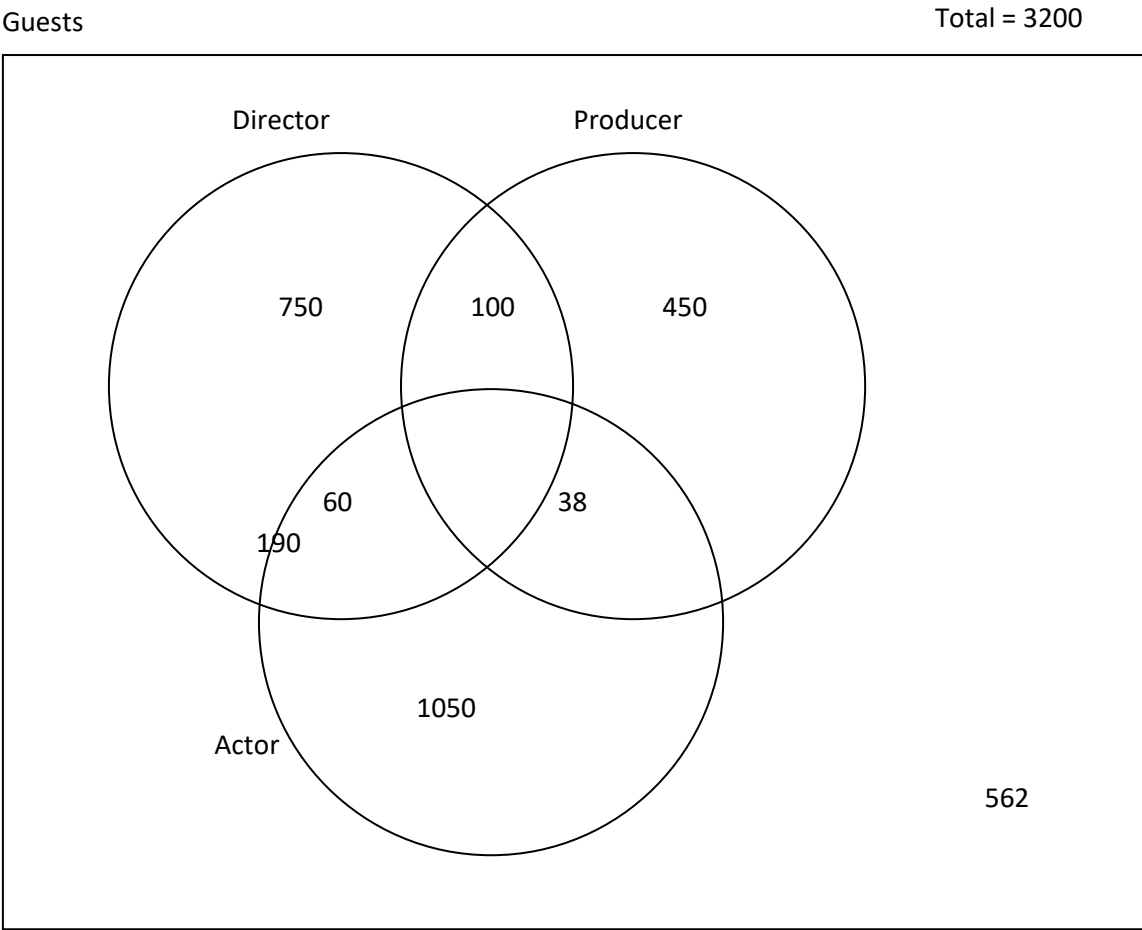
b)  $27/5$

c)  $4/27$

- d) 29/4
- e) None of these

Venn diagram - Answer and Explanation

Solutions (1-5):



- 138 guests are both Director and Producer
- 228 guests are both Producer and Actor
- 98 guests are both Actor and Director.
- 38 guests are Director, Producer as well as Actor.

No. of guests who are both Director and Producer but not Actors =  $138 - 38 = 100$

No. of guests who are both Producer and Actors but not Directors =  $228 - 38 = 190$

No. of guests who are both Actor and Director but not Actors =  $98 - 38 = 60$

No. of guests who do not fall in any of the category =  $3200 - (750 + 450 + 1050 + 100 + 60 + 190 + 38) = 562$

**1. Answer: D**

Required =  $750 + 100 = 850$

**2. Answer: B**

Required =  $(750 + 450 + 1050) / (100 + 60 + 190) = 2250 / 350 = 45/7$

**3. Answer: A**

OR = Union

Required =  $(1050 + 450 + 100 + 190 + 60 + 38) = 1888$

**4. Answer: D**

At least in one category means they can be in 2 categories or 3 categories also.

Required = Total – Those guests who do not fall in any of the three categories.  
 $= 3200 - 562 = 2638$

**5. Answer: C**

The guests who are Producers only = 450

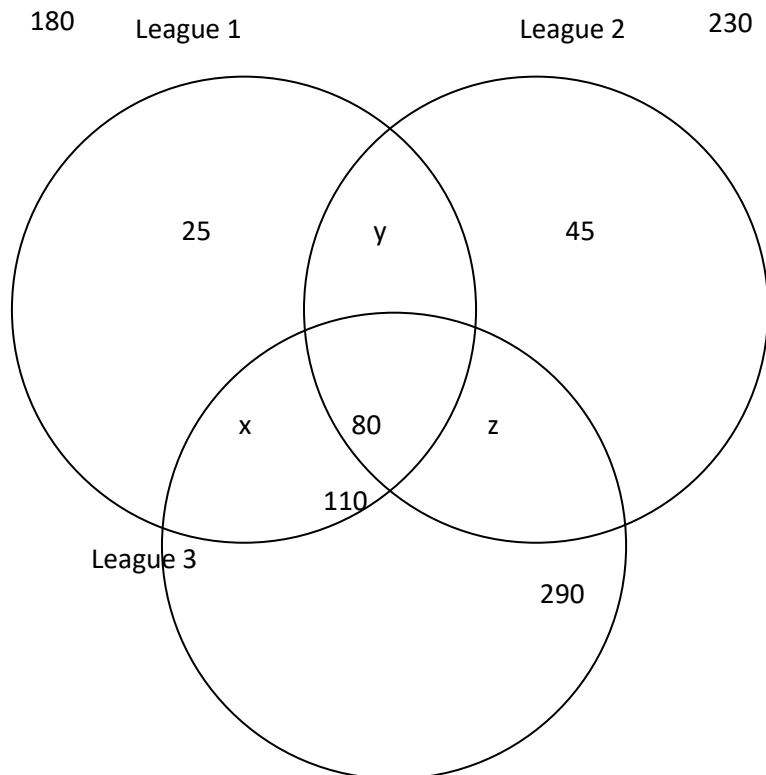
Total no. of guests who are Directors and Actors but not Producers = 60

Required % =  $(450 - 60) / 60 * 100 = 650\%$  more

**Solutions (6-10):**

Kabaddi players

Total =



20% players played in all 3 leagues = 20% of 400 = 80

45% played in League 1 = 45% of 400 = 180

$$x + 25 + y + 80 = 180$$

$$x + y = 75$$

57.5% played in League 2 = 57.5% of 400 = 230

$$y + 80 + z + 45 = 230$$

$$y + z = 105$$

72.5% played in League 3 = 72.5% of 400 = 290



$$x+80+z+110 = 290$$

$$x+z = 100$$

$$2(x+y+z) = 280$$

$$x+y+z = 140$$

We can find

$$x = 35$$

$$y = 40$$

$$z = 65$$

**6. Answer: A**

$$\text{Required} = y = 40$$

**7. Answer: C**

$$\text{Required} = x+y+z = 140$$

**8. Answer: B**

$$\text{Required} = (35+40+65)/80 = 140/80 = 7/4$$

**9. Answer: D**

$$\text{Total no. of players who played in League 3} = 290$$

$$\text{Total no. of players who played in League 1} = 180$$

$$\text{Required} = (290-180)/180 \times 100 = 550/9 = 61.11\% \text{ more}$$

**10. Answer: A**

$$\text{Total no. of players who played in League 1 and League 2 but not in League 3} = 40$$

$$\text{Total no. of players who played in League 1 and League 3 but not in League 2} = 35$$

$$\text{Required} = 40/35 = 8/7$$

**Solutions (11-15):**

In directions, we have given data of passed students.

15 students passed in only History.

18 students passed in only Geography.

12 students passed in only Polity.

6 students passed in all three subjects.

16 students passed in both History and Geography.

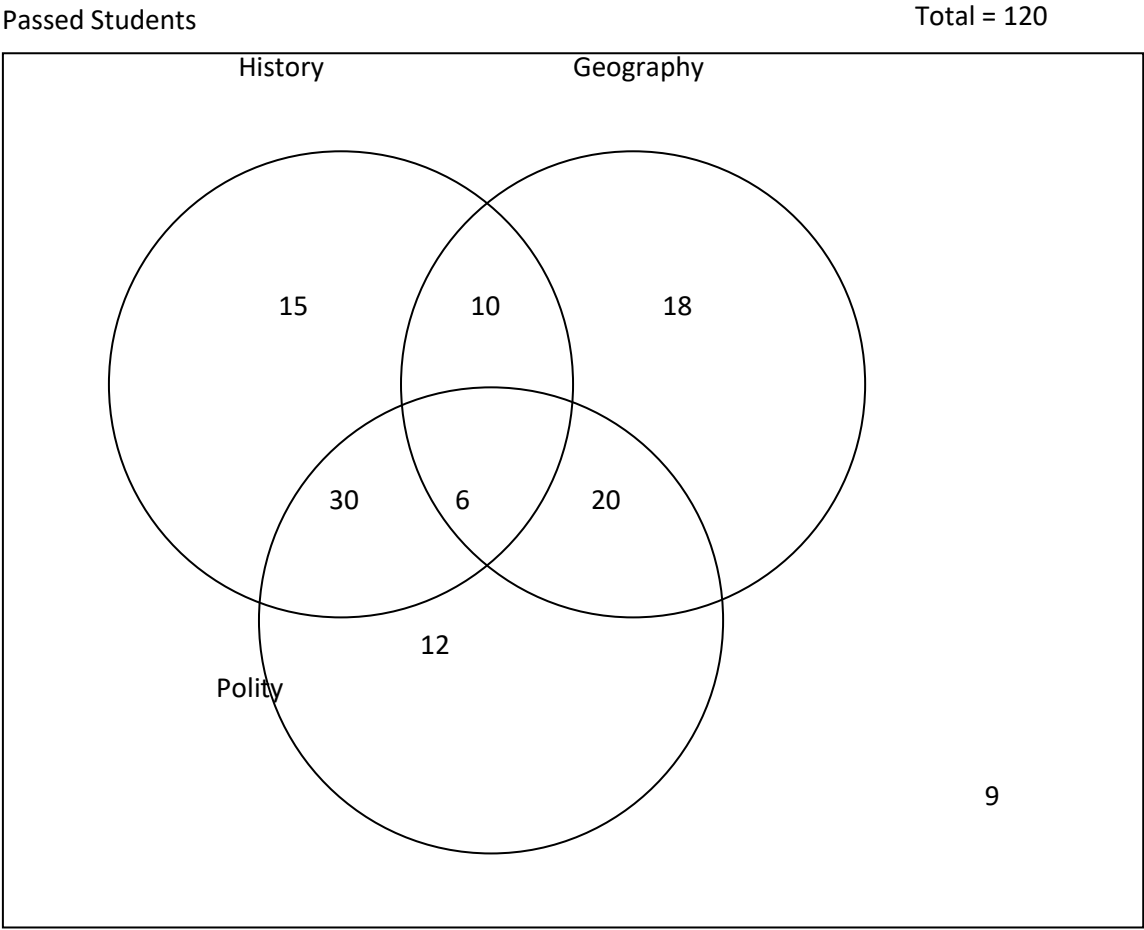
i.e. no. of students passed in History and Geography but not in Polity =  $16 - 6 = 10$

26 students passed in both Geography and Polity.

i.e. no. of students passed in Geography and Polity but not in History =  $26 - 6 = 20$

36 students passed in both History and Polity.

i.e. no. of students passed in History and Polity but not in Geography =  $36 - 6 = 30$

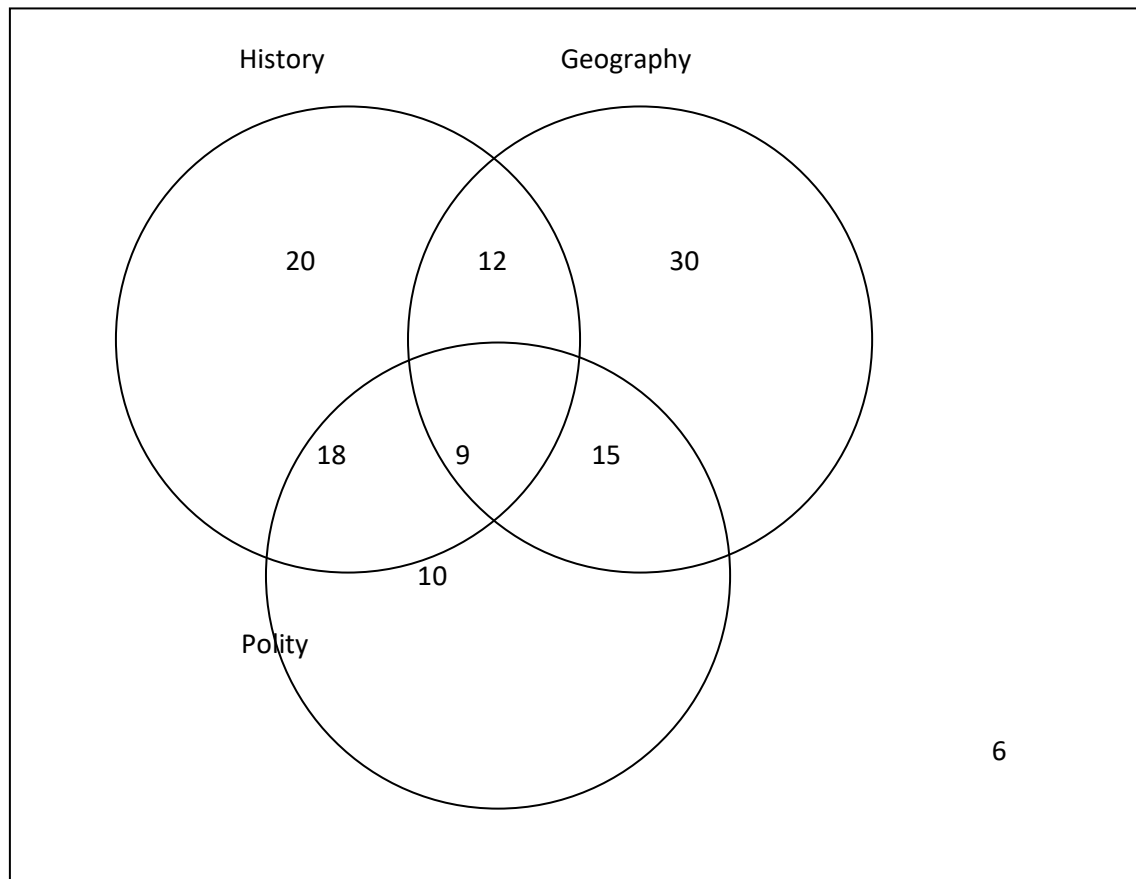


We can convert the Venn diagram for passed students into Venn diagram of failed students.

No. of students passed in only History = No. of students failed only in Geography and Polity and viceversa  
 No. of students passed in only Geography = No. of students failed only in History and Polity and viceversa  
 No. of students passed in only Polity = No. of students failed only in Geography and History and viceversa  
 No. of students did not pass in any subject = No. of students failed in all subject.

Failed Students

Total = 120



### 11. Answer: B

Total no. of students who passed in History and Polity but not in Geography = 30

Total no. of students who passed in History and Geography but not in Polity = 10

Total no. of students who passed in Geography and Polity but not in History = 20

Required ratio = 3:1:2

**12. Answer: D**

Required =  $(20+12+9+18) = 59$

**13. Answer: A**

No. of students passed in at least 1 subject = Total – No. of students failed in all subjects =  $120-9 = 111$

No. of students failed in at least 1 subject = Total - No. of students passed in all subjects =  $120-6 = 114$

Required =  $114-111 = 3$

**14. Answer: C**

Total no. of students failed in only two subjects =  $12+18+15 = 45$

Total no. of students passed in only two subjects =  $10+20+30 = 60$

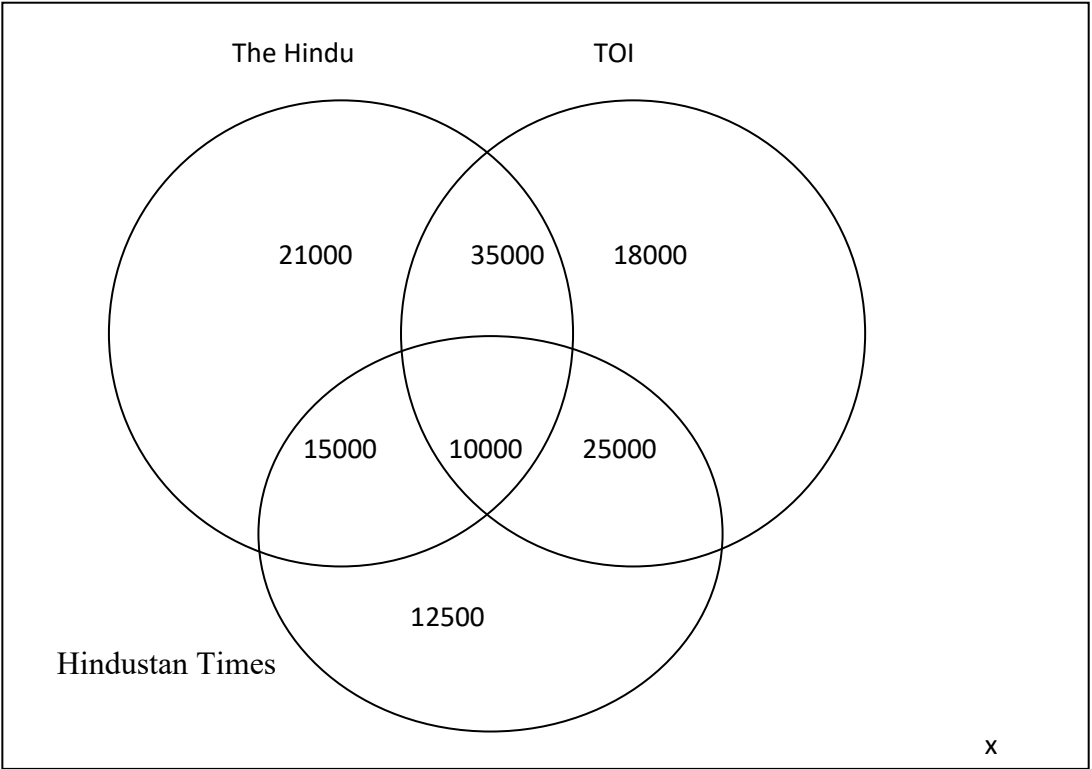
Required =  $(45-60)/60*100 = -25\%$

**15. Answer: E**

Required =  $18+9 = 27$

**Solutions (16-20):**

Citizens in town Total = 140000



**16. Answer: B**

$$\text{Required} = x = 140000 - (21000 + 18000 + 12500 + 35000 + 15000 + 25000 + 10000) = 140000 - 136500 = 3500$$

**17. Answer: B**

$$\begin{aligned}\text{Required} &= \text{Total} - \text{People who do not read any newspaper} \\ &= 140000 - 3500 = 136500\end{aligned}$$

**18. Answer: A**

$$\text{Required} = (35000 + 15000 + 25000) / 3 = 25000$$

**19. Answer: C**

$$\text{Total no. of citizens who read only 1 newspaper} = 21000 + 18000 + 12500 = 51500$$

$$\text{Total no. of citizens who read TOI and The Hindu but not Hindustan Times} = 35000$$

$$\text{Required difference} = 51500 - 35000 = 16500$$

**20. Answer: D**

Or = union

$$\text{Required} = 21000 + 12500 + 35000 + 15000 + 25000 + 10000 = 118500$$

**Solutions (21-25):**

In directions,

175 people subscribed only Zee news.

145 people subscribed only NDTV.

165 people subscribed only ABP news.

60 people subscribed all three channels.

132 people subscribed both Zee news and NDTV.

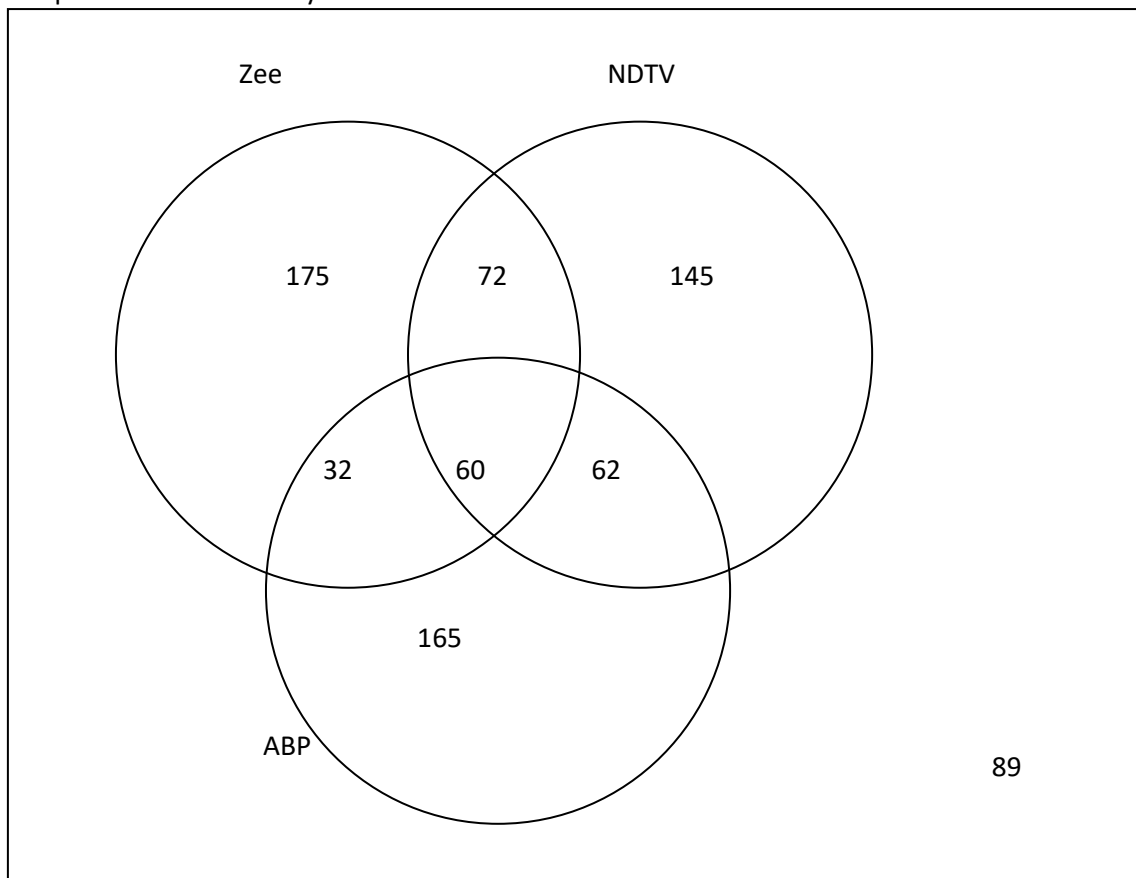
i.e. no. of people who have subscribed to both Zee news and NDTV but not ABP news =  $132 - 60 = 72$

122 people subscribed both NDTV and ABP news.

i.e. no. of people who have subscribed to both NDTV and ABP news but not Zee news =  $122 - 60 = 62$

92 people subscribed both Zee news and ABP news.

i.e. no. of people who have subscribed to both Zee news and ABP news but not NDTV =  $92 - 60 = 32$



**21. Answer: C**

Total no. of people who have subscribed ABP news =  $165 + 32 + 62 + 60 = 319$

**22. Answer: C**

Total no. of people who have subscribed Zee news and NDTV but not ABP news = 72

Total no. of people who have subscribed NDTV and ABP news but not Zee news = 62

Total no. of people who have subscribed Zee news and ABP news but not NDTV = 32

Required ratio =  $72:62:32 = 36:31:16$

**23. Answer: E**

Total no. of people who have subscribed Zee news =  $175 + 72 + 32 + 60 = 339$

Total no. of people who have subscribed to NDTV =  $145+72+60+62 = 339$

Required difference =  $339-339 = 0$

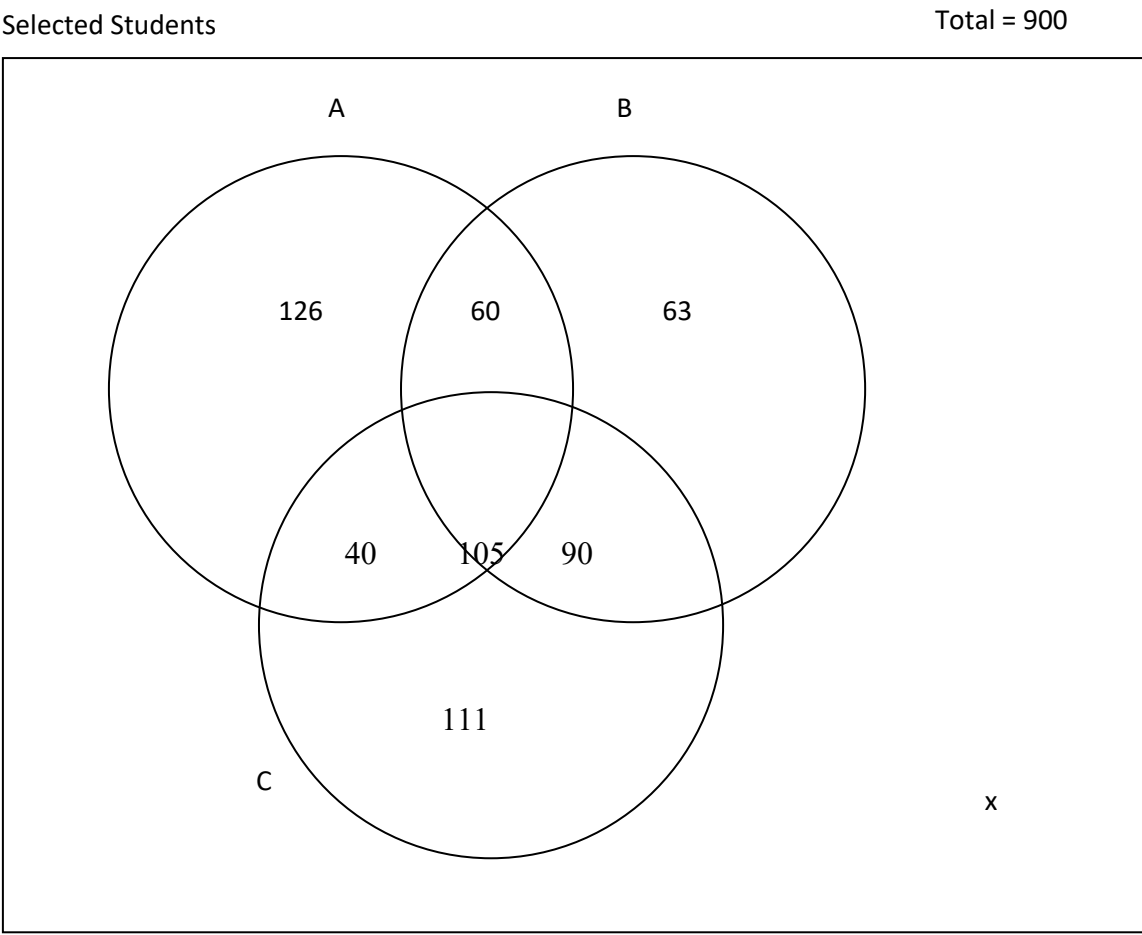
**24. Answer: D**

People who have not subscribed to any of these three channels =  $800-(175+165+145+72+32+62+60) = 89$

**25. Answer: B**

People have subscribed to at least 2 news channels =  $72+32+62+60 = 226$

**Solutions (26-30):**



No. of students who are not selected any of the three companies =  $x = 900-(126+111+63+60+40+90+105) = 305$

We can convert Venn diagram of selected students to Venn diagram of rejected students.

No. of students selected in only A = No. of students rejected by only company B and C and viceversa

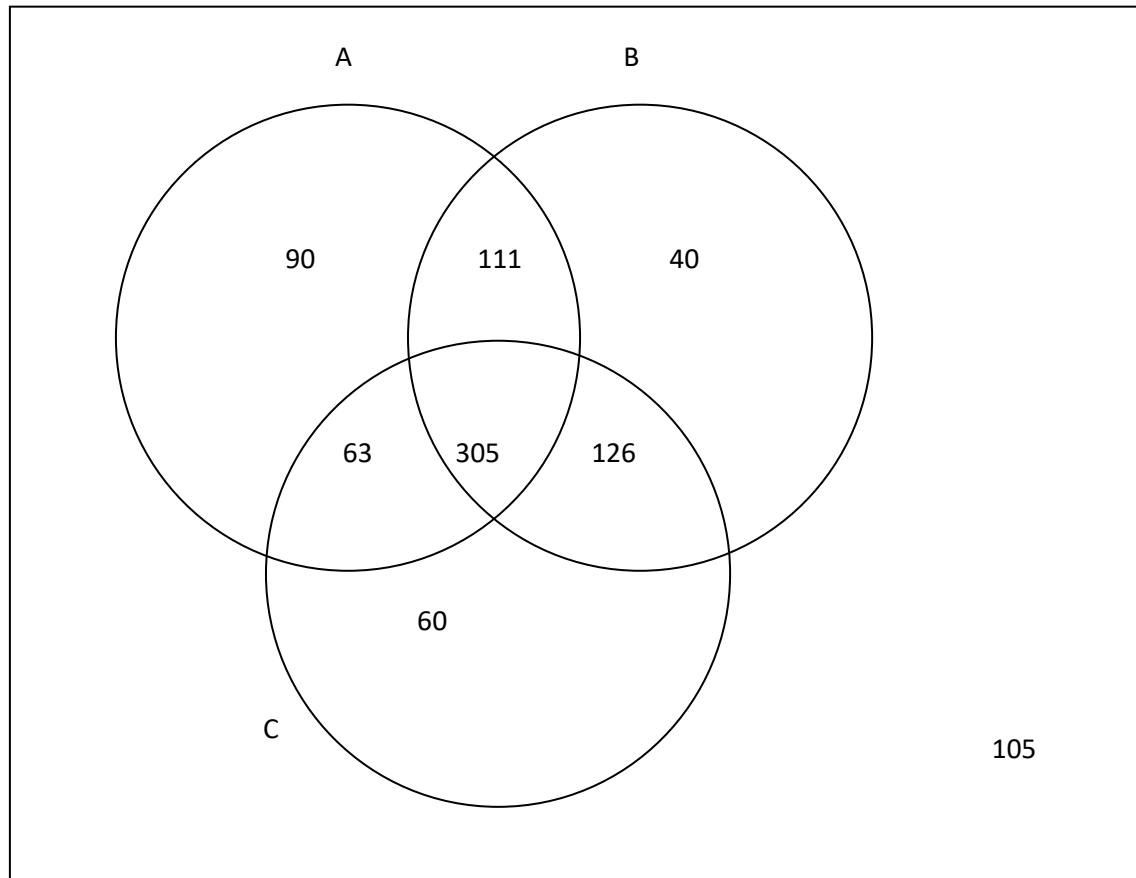
No. of students selected in only B = No. of students rejected by only company A and C and viceversa

No. of students selected in only C = No. of students rejected by only company A and B and viceversa

No. of students selected in all company = No. of students who are not rejected by any of the three company in all subject.

Rejected Students

Total = 900



**26. Answer: D**

Total no. of students rejected by at least one company = Total students – No. of students who are not rejected by any of the three companies

$$= 900 - 105 = 795$$



**27. Answer: B**

Students rejected by company A and B but not by company C = 111

**28. Answer: D**

Total no. of students selected in all three companies = 105

Total no. of students rejected by only company C = 60

Required % =  $(105-60)/60 \times 100 = 75\%$  more

**29. Answer: B**

Total no. of students rejected by at least two companies =  $111+63+126+305 = 605$

Total no. students selected by at least 2 companies =  $60+40+90+105 = 295$

Required difference =  $605-295 = 310$

**30. Answer: C**

No. of students rejected by only two companies =  $111+63+126 = 300$

Total no. of students = 900

Required % =  $300/900 \times 100 = 33.33\% = 100/3\%$

**Solutions (31-35):****31. Answer: C**

Total no. of students = Total no. of students participate in at least one subject + Total no. of students who do not participate in any of the three activities

$750 = (186+150+115+15+35+x+92) + 112$

Required =  $x = 750 - (186+150+115+35+15+92+112) = 45$

**32. Answer: C**

Total no. of students who participate in only 1 activity =  $186+150+115 = 451$

Total no. students who participate in all three activities = 92

Required difference =  $451-92 = 359$

**33. Answer: A**

And = Intersection

Required =  $15+92 = 107$

**34. Answer: B**

Total no. of students who do not Sing and Dance but Act = 150

Total no. of students = 750

Required =  $150/750 \times 100 = 20\%$

**35. Answer: D**

Total no. of students who Sing or Dance =  $186+115+15+35+45+92 = 488$

Total no. of students who Act or Dance =  $150+115+35+45+15+92 = 452$

Required ratio =  $488/452 = 122/113$

**Solutions (36-40):****36. Answer: B**

Required =  $450+120+200+150+250+50+90 = 1310$

**37. Answer: E**

No. of members who play at least two games =  $150+250+50+90 = 540$

No. of members who play all three games = 90

Required % =  $(540-90)/90 \times 100 = 500\%$  more

**38. Answer: C**

No. of members who play Cricket and Baseball but not Football = 150

No. of members who play Cricket and Football but not Baseball = 250

Required ratio =  $150/250 = 3/5$

**39. Answer: D**

No. of members who play Baseball or Cricket =  $450+200+150+250+50+90 = 1190$

Total no. of members who do not play any game = Total – No. of members who play at least one game  
 $= 1500-1310 = 190$

Required difference =  $1190-190 = 1000$

**40. Answer: A**

And = Intersection

Required =  $(250+90)/2 = 170$

**Solutions (41-45):****41. Answer: B**

Total people = Total no. of people who watch at least one type of movies + Total no. of people who do not watch any of the three types of movies

$$2500 = (300+750+500+200+150+250+x) + 250$$

$$\text{Required} = x = 2500 - (300+750+500+200+150+250+250) = 100$$

**42. Answer: D**

Or= union

$$\text{Required} = 750+500+200+150+250+100 = 1950$$

**43. Answer: A**

Total no. of people who watch Fiction and Action movies but not Horror movies = 200

Total no. of people who watch Action and Horror movies but not Fiction movies = 250

$$\text{Required ratio} = 200/250 = 4/5$$

**44. Answer: D**

$$\text{Required} = 200+250+150 = 600$$

**45. Answer: C**

Total no. of people who watch Fiction and Horror movies but not Action movies = 150

Total no. of people who do not watch any of the three types of movies = 250

$$\text{Required \%} = (150-250)/250 \times 100 = -40\% \text{ i.e. } 40\% \text{ less}$$

**Solutions (46-50):****46. Answer: B**

$$\text{Required} = x = 150 - (36+30+21+9+18+12) = 24$$

**47. Answer: A**

Total no. of passengers who can speak Hindi or Marathi =  $36+21+18+24+9+12 = 120$

Total passengers in the coach = 150

$$\text{Required \%} = 120/150 \times 100 = 80\%$$

**48. Answer: E**

Total no. of passengers who can speak Hindi =  $36+18+12+9 = 75$

Total no. of passengers who can speak Marathi = 66

Required difference =  $75-66 = 9$

**49. Answer: C**

Total no. of passengers who can speak Hindi and English but not Marathi = 18

Total no. of passengers who can speak Hindi and Marathi but not English = 9

Required =  $(18-9)/9 \times 100 = 100\%$  more

**50. Answer: D**

Total no. of passengers who can speak only 1 language =  $36+21+30 = 87$

Total no. of passengers who speak all three languages = 12

Required ratio =  $87/12 = 29/4$

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