SOLUTIONS

1. (b)

	A	:	B
Area →	4	:	3
Height →	6	:	5
Base →	$\frac{4}{6}$	:	$\frac{3}{5}$

Base = 10 : 9

2. (c)

	A	:	B
Radii →	4	:	5
Height →	5	:	2
$V=\pi r^2h$ →	80	:	50
	8	:	5

3. (c)

A : B

5 3

−2

ATQ,

Difference = 2 unit → 34

Smaller (3 unit) = 51

4. (d)

P W G

no. 2 3 5

+2

ATQ,

Difference = 2 unit → 144 = plastic boxes.

$25\% = \frac{1}{4} \xrightarrow{+} \frac{5}{4}$

Then, new no. of plastic boxes

$= \frac{5}{4} \times 144 = 180$

5. (c)

	A	:	B
Height →	7	:	5
Radius →	10	:	21
$V=\frac{1}{3}\pi r^2h$ →	700	:	2205
	20	:	63

6. (b)

	Cu	:	Tin	
A →	(1	:	2)	× 4
B →	(1	:	3)	× 3
A →	4	:	8	
B →	3	:	9	
C →	7	:	17	

7. (d)

	H	C		
R	12	5	⇒	2.4
S	18	9	⇒	2
P	4	8	⇒	0.5
V	10	7	⇒	1.4

∴ Ram has greatest ratio of hens to cows.

8. (a)

	Income	Exp.	Savings	
I	26500	22000	4500	↘ 2000
II	31800	25300	6500	↙

∴ increase in savings = $\frac{2000}{4500} \times$

$100 = 44\frac{4}{9}\%$

9. (c)

from options:-

$\frac{7}{10} = 0.7$

$\frac{1}{3} = 0.34$

$\frac{5}{6} = 0.83 \rightarrow$ greatest

$\frac{2}{5} = 0.4$

10. (c)

$\frac{x}{4y} = \frac{3}{4}$

$\Rightarrow \frac{x}{y} = \frac{3}{1}$

Now,

$\frac{2x+3y}{x-2y} = \frac{6+3}{3-2} = \frac{9}{1} = 9$

11. (a)

720

Boys Girls

270 450

+x +18

2 : 3

ATQ,

3 unit = 468

2 unit = 312

$\therefore 270 + x = 312$

$\Rightarrow x = 312 - 270 = 42$

12. (c)

Income : Exp.

7 3

3 unit = 5400

Income (7 unit) $= \frac{5400}{3} \times 7$

= 12,600

13. (a)

Let fourth term be x.

$\frac{42}{36} = \frac{35}{x}$

$\Rightarrow x = \frac{35 \times 36}{42}$

$\Rightarrow x = 30$

14. (c)

$a \propto b \propto \frac{1}{c} \propto \frac{1}{d}$

$\Rightarrow a \propto \frac{1}{d}$

15. (b)

Let, third proportional be x then,

$\frac{16}{20} = \frac{20}{x}$

$\Rightarrow x = \frac{400}{16}$

$\Rightarrow x = 25$

16. (d)

Let, third proportional be x.

then, $\frac{23}{31} = \frac{31}{x}$

$\Rightarrow x = \frac{31 \times 31}{23} = \frac{961}{23}$

17. (c)
Let, mean proportional be x.
$x = \sqrt{ab}$, where (a = 1st number)
(b = 2nd number)
then,
$x = \sqrt{32 \times 162} = \sqrt{8 \times 4 \times 2 \times 81}$
$= 72$

18. (d)
Let fourth proportional be x.
then, $\frac{0.3}{0.8} = \frac{0.108}{x}$
$\Rightarrow x = \frac{0.108 \times 0.8}{0.3}$
$= 0.288$

19. (b)
Let mean proportional be a
$\Rightarrow a = \sqrt{x^3 y . xy^3}$
$= x^2 \times y^2$

20. (b)
Let mean proportional be x
$\Rightarrow x = \sqrt{0.03 \times 0.0003}$
$= \sqrt{3 \times 3 \times \frac{1}{10^6}}$
$= \frac{3}{10^3} = 0.003$

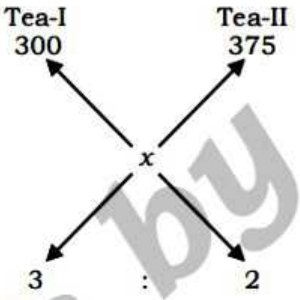
21. (d)
Let, fourth proportional be x.
then, $\frac{0.48}{0.84} = \frac{32}{x}$
$\Rightarrow x = \frac{32 \times 84}{48}$
$= 56$

22. (a)
Let, fourth proportional be x
$\Rightarrow \frac{22}{66} = \frac{11}{x}$
$\Rightarrow x = 33$

23. (b)
p : q = 4 : 5
q : r = 3 : 4
r : s = 2 : 5
p : q : r : s = 24 : 30 : 40 : 100
Hence, p : s = 6 : 25

24. (d)
Let, the four number be a, b, c & d.
Given that, a : b : c : d
= 1 : 2 : 3 : 5
According to question,
2(a + b + c + d) = 44
2(1 + 2 + 3 + 5) units = 44
1 units = 2
a = 2, b = 4, c =6, d = 10
Hence, The required ratio
= 5 : 61 : 213 : 997

25. (b)
Let the mixed price of the tea is Rs. x.



Now,
$\Rightarrow \frac{375 - x}{x - 300} = \frac{3}{2}$
$\Rightarrow 750 - 2x = 3x - 900$
$\Rightarrow 750 + 900 = 3x + 2x$
$\Rightarrow 1650 = 5x$
$\Rightarrow x = 330$

SMART APPROACH:-
Mixed price $= \frac{3 \times 300 + 2 \times 375}{3 + 2}$
$= \frac{900 + 750}{5} = \frac{1650}{5} = Rs.330$

26. (b)
Income : 4 : 5 → 8 : 10
Expense : 7 : 9 → 7 : 9
1 unit = Rs.50
Their monthly income be 400, 500

27. (a)
With the help of basic division.
$\frac{41}{92} = 0.44, \frac{33}{41} = 0.80, \frac{42}{49} = 0.85$
$\frac{35}{47} = 0.74$
Hence, Smallest fraction is 41 : 49.

SMART APPROACH:-
Higher the difference between antecedent and consequent, the smaller the ratio.
Hence, Answer (a)

28. (a)

	Ram		Shiv	Ram		Shiv
Income	1	:	2 →	2	:	4
Expense	1	:	3 →	1	:	3

1 unit = 4000
Income of Shiv = 4 unit = 4 × 4000
= Rs.16000

29. (c)
4 Unit = Rs. 380
Price of ball = $5 \times \frac{380}{4}$ = Rs. 475

30. (d)
Let age of father = $3x$
Age of son = $2x$
ATQ, product of their age = 486
$\Rightarrow 3x \times 2x = 486$
$\Rightarrow x^2 = 81$
$\Rightarrow x = 9$
Age of father after 5 year
$= 3 \times 9 + 5 = 32$
Age of son after 5 year
$= 2 \times 9 + 5 = 23$
Required ratio = 32 : 23

31. (a)
3 : 22 is the lowest ratio.

32. (b)
Second Sum = $35 \times \frac{8}{7} = 40$

33. (d)
A : B : C = $\frac{3}{2} : \frac{6}{5} : \frac{4}{3}$
= 45 : 36 : 40
Required % = $\frac{5}{40} \times 100\% = 12.5\%$

34. (d)
Mean Proportion of a and b = $\sqrt{ab}$
Mean proportion of 0.04 and 0.36
$= \sqrt{0.04 \times 0.36}$
$= \sqrt{0.2 \times 0.2 \times 0.6 \times 0.6}$
$= 0.2 \times 0.6 = 0.12$

35. (d)
$\frac{X}{Y} = \frac{Z}{W}$
$\Rightarrow \frac{3}{13} = \frac{Z}{39}$
$\Rightarrow Z = 9$

36. (a)

Let the third proportion to 16 and 40 is x.

$$\frac{16}{40}=\frac{40}{x}\Rightarrow x=\frac{40\times40}{16}=100$$

Again, Let mean proportional between 10 and 40 is y.

$$y=\sqrt{10\times40}=20$$

Hence, $x : y = 100 : 20 = 5 : 1$

37. (c)

Let the third proportional of 0.024 and 0.12 be x.

$$\Rightarrow\frac{0.024}{0.12}=\frac{0.12}{x}$$

$$\Rightarrow x=\frac{0.12\times0.12}{0.024}=0.6$$

38. (a)

$$\text{Mean Proportion}=\sqrt{0.03\times0.27}$$

$$=0.09$$

39. (a)

7 years ago, A : B = 4 : 5

After 8 years, A : B = 9 : 10

5 unit → 7 + 8 = 15 year

1 unit → 3 year

Sum of present age of A and B

= (9 + 10) × 3 – (8 × 2) = 41 Years

40. (d)

Let the share of B = x

A : B : C = (n + 500): x : (x + 800)

ATQ, $x + 500 + x + x + 800 = 8200$

$3x + 1300 = 8200$

$3x = 6900$

$x = 2300$

A's Share = x + 500 = Rs.2800

41. (d)

Let the share of B = x

A : B : C = (x + 500) : x : (x + 800)

ATQ, $x + 500 + x + x + 800 = 8200$

$3x + 1300 = 8200$

$3x = 6900$

$x = 2300$

C's share = x + 800 = Rs.3100

42. (c)

12 years ago, A : B = 2 : 3

At present, A : B = 3 : 4

1 unit = 12 years

At present, sum of age of A & B

= (3 + 4) × 12 = 84 year

By option–

Option is division by 7

Option (c) 84 is right

43. (c)

7 years ago, A : B = 4 : 5

After 8 year, A : B = 9 : 10

5 unit → 7 + 8 = 15 year

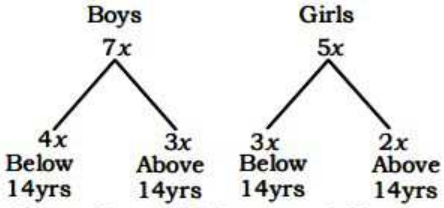
1 unit = 3 year

Difference at present = 3 years

44. (d)

Let,

Total student = $12x$



Given, $7x = 1120 \Rightarrow x = 160$

Total student = $12x$

= 160 × 12 = 1920

45. (a)

Let the no. be $3x$ and $5x$.

ATQ,

$$\frac{3x+8}{5x+7}=\frac{2}{3}$$

$$\Rightarrow 9x + 24 = 10x + 14$$

$$\Rightarrow x = 10$$

When 6 is added,

Required ratio = (3x + 6) : (5x + 6)

=36 : 56 = 9 : 14

46. (d)

	A	:	B
Income	$3x$	:	$5x$
Exp	$4y$	:	$7y$

Saving = Income - Expense

$3x - 4y = 16000$ --------(1)× 5

$5x - 7y = 26000$ --------(2)× 3

$15x - 20y = 80,000$

$15x - 21y = 78,000$

$y = 2000$

Difference b/w their expenditure

= (7y – 4y) = 3y =3×2000 = Rs. 6000

47. (c)

Method-1

Using concept of alligation,

	A	:	B
Student	42	:	30
Avg.	$5x$	:	$6x$
Overall	52		

$42 \times 5x + 30 \times 6x = 52 \times 72$

$210x + 180x = 52 \times 72$

$390x = 52 \times 72$

$$x=\frac{52\times72}{390}=9.6$$

Avg. of students in section B = $6x$

= 6 × 9.6 = 57.6 kg

Method-2

Total student in section A and B = 72

Ratio of student, A : B = 7 : 5

$$\text{Student in B}=\frac{72}{12}\times5=30$$

Ratio of weight of A : B = $5x$: $6x$

ATQ, $42 \times 5x + 30 \times 6x = 52 \times 72$

$\Rightarrow 210x + 180x = 3744$

$\Rightarrow 390x = 3744$

$\Rightarrow x = 9.6$

Avg. weight of students in section B = 9.6 × 6 = 57.6 kg

48. (a)

Seven year ago, A : B = 4 : 5

Seven year hence, A : B = 5 : 6

1 unit = 14 year

Seven years ago,

Age of A = 4 × 14 = 56

After 5 Years,

Age of A = 56 + 12 = 68

Seven Years Ago,

Age of B = 5 × 14 = 70

Seven year hence,

Age of B = 70 + 12 = 82

Required ratio= 68 : 82 = 34 : 41

49. (d)

	Raju	Peter	Raju	Peter	
Initial	$3_{\times2}$	: $5_{\times2}$	6	: 10	+5 Unit
Final	11	: 15	11	: 15	

5 Unit = 2500

1 Unit = 500

Salary of Peter= 10 × 500 = Rs.5000

Method-2

Raju		Peter
$3x$	:	$5x$

$$\Rightarrow\frac{3x+2500}{5x+2500}=\frac{11}{15}$$

$\Rightarrow x = 1000$

$\Rightarrow$ Peter salary = 5 × 1000 = Rs.5000

50. (a)

$$2A = 5B \Rightarrow \frac{A}{B}=\frac{5}{2}$$

$$4B = 2C \Rightarrow \frac{B}{C}=\frac{2}{4}=\frac{1}{2}$$

A : B : C = 5 : 2 : 4

$$\text{Salary of A}=\frac{1600}{4}\times5$$

= Rs. 2000

51. (c)

A : B : C : D

16 : 18 : 27 : 39

Difference b/w the shares of B and

$$D = \frac{12000}{100} \times (39 - 18)$$

$$= \frac{12000}{100} \times 21 = \text{Rs. } 2520$$

52. (a) **Method -1**

$$\frac{20-x}{37-x} = \frac{54-x}{105-x}$$

$x = 3$, satisfied the equation.

Mean proportional between $(7x-5)$ and $(x+1) = \sqrt{(7x-5)(x+1)}$

$$= \sqrt{(7\times3-5)(3+1)} = \sqrt{16\times4} = 8$$

Method -2

$$\underbrace{20 : 37}_{17} :: \underbrace{54 : 105}_{51}$$

$$20 :: 54$$

$$1 :: 3$$

2 unit = $20 \times 3 - 54 \times 1$

2 unit = 6

Then, 1 unit = $x = 3$

Mean proportional between $(7x-5)$ and $(x+1) = \sqrt{(7x-5)(x+1)}$

$$= \sqrt{(7\times3-5)(3+1)} = \sqrt{16\times4} = 8$$

53. (d)

7 year ago, H+W+C = $42 \times 3 = 126$ At present, H+W+C = $126 + 3 \times 7 = 147$

9 year ago, W+C = $36 \times 2 = 72$

At present, W + C = $72 + 2 \times 9 = 90$

At present, H = $(147 - 90) = 57$

54. (b)

Two liquid A and B = 5 : 3 or 10 : 6

A : B

10 : 6) +5

10 : 11)

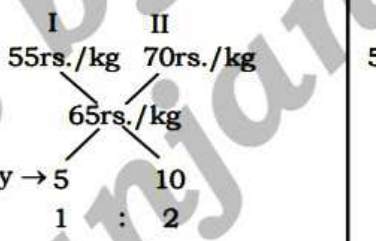
5 unit – 10 litres

1 unit – 2 litres

Solution in the vesel = 21 unit

= 21×2 litres = 42 litres

55. (c)



Rice must be mixed in the ratio 1 : 2

56. (a)

Let x ltr of milk is added

ATQ,

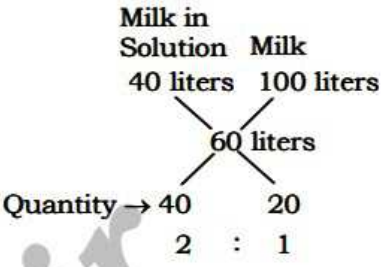
Amount of water will same.

$$\frac{60}{100} \times 60 = \frac{40}{100} \times (60 + x)$$

$$3600 = 2400 + 40x$$

$$\Rightarrow x = \frac{1200}{40} = 30 \text{ ltr.}$$

Alternate Method:-



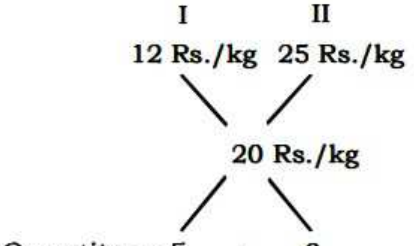
ATQ,

2 unit → 60 ltr.

1 unit → 30 ltr.

Hence, 30 ltr. of milk should be added.

57. (a)



Hence, required ratio is 5 : 8

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