SOLUTION BOOKLET- 4th SEMESTER

CHAPTER 1 – PERCENTAGES

Q1. Answer: B

Explanation: His saving in Percentage is 33 (1/3) % and it is equal to 1200

Therefore, x * (100/3%) = 1200

=> x/3 = 1200 => x = 3600

And expense = 3600 - 1200 = 2400

Q2. Answer: C

Explanation: 0.8 x A = 0.5 x B => A/B=5/8

Now, B=X% of A => B/A= X/100

=> X= (B/A)*100=(8/5)*100=160.

Q3. Answer: D

Explanation: Given That, x=80% of y =>x=(80/100)*y=(4/5)y

Now, (y/x)*100=(5/4)*100=125%.

Q4. Answer: C

Explanation: 50% of (x -y) = 30 of (x +y)

=>50 (x -y) = 30 (x +y) =>50x - 50y = 30x + 30y

=>20x = 80y =>y/x = 20/80

=> % of x is y = (20*100)/80 = 25%.

Q5. Answer: C

Explanation: A = 2B and B = 3C

=> A = 6C => 500% more

Q6. Answer: D

Explanation: Let x is the maximum marks of the examination

Marks that Arun got = 30 % of x = 30x/100

Given that Arun failed by 10 marks

⇒Minimum Pass Mark =(30x/100)+10.....(Equation 1)

Marks that Sujith got = 40 % of x = 40x/100

Given that Sujith got 15 marks more than the passing marks

⇒40x100=Minimum Pass Mark +15

⇒Minimum Pass Mark =(40x/100)−15.....(Equation 2)

From equations 1 and 2,we have

=>(30x/100)+10=(40x/100)−15

⇒10x/100=10+15=25 ⇒x/10=25 ⇒x=10×25=250

⇒Maximum marks of the examination = x = 250
Substituting the value of x in Equation 1, we have
Minimum Pass Mark = (30x/100)+10=(30×250/100)+10=75+10=85
Short Cut: Difference in % = Difference in marks
(40-30)%=+10-(-15) => 10%=25 =>100%=250.
Q7. Answer: A
Explanation: P = 6q. Difference between p and q = (p) - q = (6q) - q = 5q.
Now q is less than p by 5q.
=> [(5q)/(p)] x 100= [(5q)/(6q)]x100 = (5/6)x100 = 250/3 % = 83 1/3 %.

Q8. Answer: B
Explanation: Let us assume that Chandar's score = 100
Given that, Rafi's score is 10% less than that of Chandar.
Rafi's score = 90
Dipin's score is 15% more than that of Rafi.
Dipin's score = 115% of 90 = 115/100 x 90 = 103.5
Now, the difference between the scores of Dipin and Chandar = 103.5 - 100 = 3.5.
If the difference between the scores of Dipin and Chandar is 3.5 then Rafi's score = 90
If the difference is 14, then Rafi's score = 90/3.5 x 14 = 360
Hence, the required answer is 360.
Short Cut: (115/100)R – (100/90)R=14 =>R=360.

Q9. Answer: D
Explanation: Actual Number: 5/3 X
Wrong Number: 3/5 X
Error: 5/3 X – 3/5 X = 16/15 X
Error% = (Error/True Value) x 100 = (16/15 X) / (5/3 X) * 100 = 64%

Q10. Answer: C
Explanation: We are given that Ritesh & Co. generated revenue of Rs. 1,250 in 2006 and that this was 12.5% of the gross revenue. Hence, if 1250 is 12.5% of the revenue, then 100% (gross revenue) is:
(100/12.5)×1250=10,000
Hence, the total revenue by end of 2007 is Rs. 10,000. In 2006, revenue grew by Rs. 2500. This is a growth of:
(2500/10000)×100= 25%.

Q11. Answer: B
Explanation: 4% of a=8 => a=200
and 8% of b=4 =>b=50
=> c=b/a=50/200=1/4.

Q12. Answer: D
Explanation: 5A + 4B = (2/3)*(6A + 8B)

=> 15A + 12B= 12A + 16B => 3A=4B => A : B=4 : 3.

Q13. Answer: B

Explanation: let there are 100 candidates. Now, 5% are ineligible therefore 95 candidates are eligible .it is given in question that 85% are general then 15% are of other categories. So 15% of 95 of total is 4375

=>14.25=4375

=>100%=30000 which is answer.

Q14. Answer: B

Explanation: Scores made by boundaries and sixes = 3x4 + 8x6 = 60

Score made by running = 110 – 60 =50

Required % = (50/110) x 100 = 45.45% or 45 5/11%.

Q15. Answer: C

Explanation: Let marks of A = Marks of B + 9

Percentage marks of A = 56% of (Marks of A + Marks of B)

=> A = 0.56 x (A + B) => A = 0.56 x (A + A – 9)

=> 5.04 = 0.12 A => A = 42.

Q16. Answer: B

Explanation: Let the original value be x

Final value = 110% of (90% of x) = 0.99 x

Difference = x – 0.99 x = 0.01 x

Hence, the net effect on price is -1%.

Short Cut: Successive % change= [X+Y+(XY/100)]= 10-10-(10*10/100)=-1%.

Q17. Answer: B

Explanation: decrease in salary in single shot =38.8%

first decease =20% let the salary be 100 then it will become 80

2nd decrease is= 15%. 15% of 80 =12 then salary become 68

3rd decrease is of 10% . 10% of 68 =6.8.then salary become 61.2

so overall decrease=38.8%

Short Cut: Use the successive % change formula twice.

Q18. Answer: D

Explanation: 15-15-(15*15/100)=-2.25%.

Q19. Answer: D

Explanation: If with 20% increase, the salary reaches Rs. 6720 => Last year salary was Rs. 6000

With 20% increase, the salary would reach: 1.2 x 6000 = Rs. 7200.

Q20. Answer: B

Explanation: 50-50-(50*50/100)= -25%.

Q21. Answer: D

Explanation: Let the original money be Rs. X.

Money received by each daughter = 224

= 1/3rd of (X * 70/100) * 60/100

=> X = 1600

=> Money received by wife = 30% of 1600 = Rs. 480.

Q22. Answer: A

Explanation: Let number of males be X and number of females be (8000 – X).

Then, 110 % of X + 108% of (8000-X) = 109% of 8000

Alternate Way: By Alligation.

Ratio of Men to Women = (Overall change – Women Change) : (Men Change – Overall Change)

= 1:1

Hence, number of men be 4000.

Q23. Answer: C

Explanation: R*100/(100+R)= 20*100/120=16 2/3%.

Q24. Answer: D

Explanation: R*100/(100-R)=30*100/70=300/7%.

Q25. Answer: A

It is based on inverse proportion or product constancy concept. Reduction in price 20% amount of sugar will increase 25%.

It means,25% = 6 Kg. So,

Initially, total Sugar = 6*4 = 24Kg. Thus,

Original price of the sugar was,

240/24 = Rs. 10 per kg

Q26. Answer: B

Explanation: Here question mentions 2 kg for rupees 100...so 1 kg will cost Rs 50

Increased Price per kg **=** (55 x 10)/100 = Rs 5.5 /Kg

Original Price per kg =(5.5 x 100)/ 110 = Rs 5/kg

Q27. Answer: C

Explanation: Let price be 100 and consumption = 100

Total cost = 100 × 100 = 10000 ; Increased price = 125

Then consumption in 10000 = 10000/125 = 80

Reduction = 100 – 80 = 20

% reduction = 20/100 × 100 = 20%

Q28. Answer: B

Explanation: Let the number of apples be 100.

On the first day he sells 60% apples i.e., 60 apples. Remaining apples =40.

He throws 15% of the remaining i.e., 15% of 40 = 6.Now he has 40-6 = 34 apples

The next day he throws 50% of the remaining 34 apples i.e., 17.

Therefore in total he throws 6 + 17 = 23 apples.

Q29. Answer: C

Explanation: Let total number of men = 100

Then, 80 men are less than or equal to 50 years old

(Since 80% of the men are less than or equal to 50 years old)

=> 20 men are above 50 years old (Since we assumed total number of men as 100)

20% of the men above the age of 50 play football

⇒Number of men above the age of 50 who play football = 20 × 20/100 = 4

Number of men who play football = 20 (Since 20% of all men play football)

Percentage of men who play football above the age of 50 = (4/20) x 100 = 20%

=> Percentage of men who play football less than or equal to the age 50 = 100%−20%=80%

Q30. Answer: A

Explanation: Total money = $Rs.(600 \times \frac{25}{100} + 1200 \times \frac{50}{100})$ = Rs. 750.

25 paise coins removed = $Rs.(600 \times \frac{12}{100})$= 72.

50 paise coins removed = $Rs.(1200 \times \frac{24}{100})$= 288.

Money removed = $Rs.(72 \times \frac{25}{100} + 288 \times \frac{50}{100})$ = Rs.162.

Required percentage = $(\frac{162}{750} \times 100)$% = 21.6 %.

Q31. Answer: C

Explanation: Let the percentage of the total votes secured by Party D be x%

Then the percentage of total votes secured by Party R = (x - 12)%

As there are only two parties contesting in the election, the sum total of the votes secured by the two parties should total up to 100%

i.e., x + x - 12 = 100

2x - 12 = 100 or 2x = 112 or x = 56%.

If Party D got 56% of the votes, then Party got (56 - 12) = 44% of the total votes.

44% of the total votes = 132,000. i.e., 44/100*T = 132,000

=> T = 132000*100/44 = 300,000 votes.

The margin by which Party R lost the election = 12% of the total votes

= 12% of 300,000 = 36,000.

Q32. Answer: C

Explanation: Let the number of participants participated from team A = 100.

Percentage of participants qualified to the number of participants participated from team A is 60%. So, number of participants qualified from team A = 60.
And, the number of participants participated in team B is 40% more than the participants participated from team A.
Number of participants participated from team B = 40% more than 100 = 140.
Also, the number of participants qualified from team B is 40% more than the participants qualified from team A.
Number of participants qualified from team B = 40% more than 60 = 140% of 60
= 140 x 60 / 100 = 84.
Therefore, the percentage of participants qualified to the number of participants participated from team B =

Participants	Qualified
140	84
100	?

Required percentage = 84/140 x 100 = 60%.

Q33. Answer: A
Explanation: If after getting 178 marks fail by 22 marks, that means a barely-passing grade is 178 + 22 = 200 marks. We're told that the minimum passing score is 40%, so 200 is equal to 40% of the maximum marks.
In other words: 200 = 0.4x => 500 = x
So, the maximum score is 500.

Q34. Answer: D
Explanation: Let the total number of employees be p.
Number of men earning more than 25,000 = 0.4×0.75×p
Number of women earning more than 25,000 =0.45p−(0.4×0.75×p)
Number of women employed by company =0.6p
Number of women earning Rs.25,000 per year or less,=0.6p−(0.45p−0.4×0.75×p)=0.45p
Fraction of women earning Rs.25,000 or less =0.45p/0.6p=3/4

Q35. Answer: D
Explanation: Let total no of books be X
Then, 70% of (50% of (80% of X)) = 6300 => X = 22500

Q36. Answer: D
Explanation: Let there be x voters and k votes goes to loser then
=>0.8x - 120 = k + (k + 200) =>k+200 = 0.41x
=> k = 1440 and (k + 200) =1640. Therefore, (1440/3200) x 100 = 45%

Q37. Answer: B
Explanation: Let original consumption = 100 kg and new consumption = x kg,
So, 100 * 6 = x * 7.50 => x = 80kg. Reduction in consumption = 20%.

Q38. Answer: C

Explanation: The fruit content in both the fresh fruit and dry fruit is the same.
Given, fresh fruit has 68% water. So, remaining 32% is fruit content.
Weight of fresh fruits is 100kg.
Dry fruit has 20% water. So, remaining 80% is fruit content. Let weight if dry fruit be y kg.
Fruit % in fresh fruit = Fruit % in dry fruit. Therefore, (32/100) x 100 = (80/100)x y. We get, y = 40 kg.

Q39. Answer: A

Explanation: Rebate = 6% of Rs. 6650 = Rs. (6/100) x 6650 = Rs. 399.
Sales tax = 10% of Rs. (6650 - 399) = Rs. (10/100) x 6251 = Rs. 625.10
Final amount = Rs. (6251 + 625.10) = Rs. 6876.10

Q40. Answer: A

Explanation: Original cost = 30000
for 1st year 12,000 depreciates means 52500-10000 = 18000
and then after depreciates 3% every year so 11 * (3/100) * 30000 = 9900
after 8 years it amounts to 18000-9900 = 8100.

Q41. Answer: D

Explanation: Ratio of maximum marks = 1 : 2 : 2
Ratio of marks obtained = (0.5 x 1) : (0.6 x 2) : (0.65 x 2) = 0.5 : 1.2 : 1.3
Overall percentage=[(0.5+1.2+1.3)/(1+2+2)]*100=60%.

Q42. Answer: D

Explanation:

Sol. Required ratio $= 4V_A d_A : 7V_B d_B$

$$= \frac{4V_A d_A}{d_B} : 7V_B$$

Where d is density of the substance
Given $117d_A = 151d_B$

$$\therefore \frac{d_A}{d_B} = \frac{151}{117}$$

Now with $7V_B$ of substance B, $4V_A$ of substance A is used in place of $4V_A \times \frac{151}{117}$

$\Rightarrow$ % error $\frac{34}{117} \times \frac{117}{151} \times 100 \approx 22\%$

Q43. Answer: A

Explanation:

Sol. Suppose Tito's salary = x
Tom's salary = y and Tina's salary = z
$\therefore y = 125\%$ of $z = \frac{5z}{4}$
$x = 80\%$ of $z = \frac{4}{5}z \Rightarrow z = \frac{5}{4}x$

$$\therefore y = \frac{5z}{4} = \frac{5}{4} \times \frac{5}{4}x = \frac{25}{16}x$$

Also $x + y + z = 61000$

$$x + \frac{25}{16}x + \frac{5}{4}x = 61000$$

$X = 16000$

Q44. Answer: C

Explanation:

Sol. Number of pens removed
= 12% of 600 + 25% of 1200
= 72 + 300 = 372
∴ Percentage of total pens removed

$$= \frac{372}{1800} \times 100 = 20.67 = 22$$

Q45. Answer: A
Explanation:

Sol. Let his monthly salary be Rs. x
He spends Rs. 0.4x on educational expenses, Rs. 0.24x on purchasing books and Rs. 0.8x on purchasing stationary items.
Remaining amount = 0.4x - (0.24x + 0.08x)
= Rs. 0.08x
Also, $\frac{1}{4} \times 0.08x = 160$
$\therefore x = \frac{160 \times 4}{0.08} =$ Rs. 8000

CHAPTER 2 –RATIO,PROPORTION AND PARTNERSHIP

Q1. Answer: C
Explanation: Let their current salaries be 20, 30 and 50 respectively. After increments they are 23, 33 and 60.

Q2. Answer: A
Explanation:

Total No. of Students in a class is 125.

Students who can dance (20% of 125) is = 25

Students who can sing(2/5th of 125) is = 50

Students who are good at sports {2/5th of (125-75)} is =20

Dance : Sports = 25:20 =5: 4

Q3. Answer: B
Explanation: Z will get 5/ (3+2+5)*500 = 250

Q4. Answer: B
Explanation: Ratio of tax=4:5 =>Ratio of Income=5:4
New Income= (10000*4)/5 =8000

Q5. Answer: C

Explanation:

Share of 1 grand child = 1/10 * 1.25 lakhs = 0.125 lakhs

Share of 1 son = 8 * 0.125 lakhs = 1 lakh ==> Share of 3 sons = 3 * 1 lakhs = 3 lakhs

Share of 2 daughters = 2 * 1.25 lakhs = 2.5 lakhs

Total share of two sons and daughters = (3 + 2.5 lakhs) = 5.5 lakhs

Share of wife = 4/10 * 5.5 lakhs = 2.2 lakhs

Q6. Answer: A

Explanation:

Let B gets Rs.x. Then we can say A gets Rs.(x + 20) and C gets Rs.(x + 35)

x + 20 + x + x + 35 = 385 => 3x + 55 = 385 => 3x = 330 => x = 110.

C's share = Rs.(110 + 35) = Rs.145.

Q7. Answer: B

Explanation: A: B: C=2:3:5 =>5x-3x=6000 =>x=3000

A receives 3000*2=6000,B receives 3000*3=9000

Then, the total amount received by A+B=6000+9000=15000

Q8. Answer: A

Explanation: A: (B+C) = 2:3 And B: (A+C) = 3:7

So, A = $\frac{15,600}{5}$ x 2 = Rs. 6240 and B = $\frac{15,600}{10}$ x 3 = Rs. 4680

Thus, C = Rs. 15,600 – (6240 + 4680) = Rs. 4680

Q9. Answer: B

Explanation: Total number of coins = 180

Let x be number of 10p coins and y be number of 25p coins

x+y=180-----(i)

Step (ii) Given 10p coins and 25p coins make the sum = Rs. 36.90

10x/100+25y/100=36.90

10x+25y=3690-----(ii)

Solving (i) and (ii),

10x+10y=1800

10x+25y=3690

=> y=126 and x=54

Q10. Answer: C

Explanation: The easiest way is to check the options first. There is only 1 option which facilitates proper ratio of coins as mentioned, that is 60.

Other Way :

First convert the ratio in 1 Re form

$$\begin{array}{ccccc} 4 & : & 6 & : & 9 \\ \downarrow & & \downarrow & & \downarrow \\ 4x & & 6x & & 9x \\ \times 5 \downarrow & & \times 2 \downarrow & & \times 1 \downarrow \\ 20x & & 12x & & 9x \end{array}$$

Now, total Rs. = 410

$[20x + 12x + 9x] = 410$

$x = 10$

$\therefore$ Value of Rs. 2 coin $= 12 \times 10$

$= 120$

$\therefore$ No. of Rs. 2 coin $= \frac{120}{2} = 60$

Q11. Answer: C

Explanation: let ratio be x.

Hence no. of coins be 5x ,9x , 4x respectively

Now given total amount = Rs.206

=> (.50)(5x) + (.25)(9x) + (.10)(4x) = 206

we get x = 40

=> No. of 50p coins = 200

=> No. of 25p coins = 360

=> No. of 10p coins = 160

Q12. Answer: B

Explanation: Let number of 50, 20 and 10 paisa coins be 4k, 2k and k respectively.

Total value = Rs.12.50 = 1250 paisa

4k×50 + 2k×20 + k×10 = 1250 =>200k + 40k + 10k = 1250

=>250k = 1250 =>k=5

Number of 10 paisa coins = k = 5

OR

50×4x+20×2x+10×1x=250x

1250 / 250 = 5

so x=5 which is the no. of 10 paise coins.

Q13. Answer: C

Explanation: Let the number of 25 p, 10 p and 5 p coins be x, 2x, 3x respectively.

Then, sum of their values = Rs. $\left(\frac{25x}{100} + \frac{10 \times 2x}{100} + \frac{5 \times 3x}{100}\right)$ = Rs. $\frac{60x}{100}$

$\therefore$ $\frac{60x}{} = 30 \Leftrightarrow x = \frac{30 \times 100}{} = 50.$

100 60

Hence, the number of 5 p coins = (3 x 50) = 150.

Q14. Answer: C

Explanation: Amount received by Mahinder = (Related Ratio/Sum Ratio)*Total Amount

= (6*4200)/12 = 2100

Q15. Answer: C

Explanation: Let the incomes of the four persons A, B, C and D be 5x, 3x, 9x, 4x respectively.

Sum of the incomes of A and C is 84000

14x = 84000

=>x = 6000

Therefore, the difference of the incomes of B and D will be (4x-3x) = x = 6000

Q16. Answer: B

Explanation: Let the incomes of A & B be 3x and 4x and their expenditures be 2y and 3y respectively.

Thus, 3x – 2y = 4x – 3y = 200

Solving this, we get x = 200

So incomes of A & B are 600 and 800.

Q17. Answer: B

Explanation: Ratio their salary is 4:5

Let the original salary of Ramu and Raju be 4k and 5k respectively.

After increasing Rs.6000, the ratio becomes 48:55

That is, (4k+6000)/(5k+6000) = 48/55

55(4k+6000) = 48(5k+6000)

=>220k+330000 = 240k+288000 =>20k= 42000

We have to find the original salary of Raju; that is, 5k.

If 20k = 42000 then 5k = 10500.

Hence the required answer is Rs.10500

Q18. Answer: B

Explanation:

$4x/(9x + 32) = 4/17 \Rightarrow 68x = 36x + 128 \Rightarrow x = 4.$

So the number of boys in the school is (4 x 4) = 16.

Q19. Answer: B

Explanation: Ratio of Pass: Fail=25:4=25x: 4x

New Ratio=(25x+7):(4x-2)=22:3

No. of students passed increased by 7 because 5 more appeared and 2 less failed.
75 x+21=88x-44
=>13x=65 => x=5
Therefore, no. of students appeared initially =25x+4x=125+20=145

Q20. Answer: C
Explanation:

Let the students in the three classes be 2x, 3x and 5x respectively.

Then, 2x+20+3x+20+5x+20 = 4x+5x+7x

10x + 60 = 16x => 6x = 60 => x= 10.

Therefore, total number of students in the three classes before the increase will be 2x+3x+5x=10x=100.

Q21. Answer: D
Explanation:

Let the number of male participants and the number of female participants be 3x and 1x respectively.

Now, 3x + x – 16 + 6 = 2x + x => x = 10; (since 16 participants left and 6 participants registered).

Therefore, the total number of participants at the start of the seminar will be (3x +x = 4x) 40.

Q22. Answer: B
Explanation:

Let the numerator and denominator of a fraction be 2x, 3x respectively.

$2x-6/3x = 2/3 \times 2x/3x \Rightarrow 6x - 18 = 4x \Rightarrow x = 9.$

Thus, numerator = 2x = 18.
Q23. Answer: A
Explanation: Ratio of fares=3:1
Ratio of Passenger=1:50
Ratio of Money=3:50
Required Amount=(50*1325)/53 =1250

Q24. Answer: A
Explanation:

Let C Subscribe = x, then B = (x + 5000) and A = (x + 5000) + 4000

Total = x + (x +5000) + (x + 5000) + 4000 = 50000

=> 3x + 14000 = 50,000 => 3x = 36,000 => x = 12000

=> Ratio of shares of A: B: C = 21000: 17000: 12000 = 21: 17: 12

Therefore, A's share = 21/ 50 * 35000 = Rs. 14700

Q25. Answer: B
Explanation:

Since periods for which the two amounts are invested, are same.

Therefore, Ratio in which profit is to distributed between A and B is 30000: 50000 = 3: 5

Therefore, A's share in profit = (3/8) * 4000 = Rs. 1500

Q26. Answer: A
Explanation:

(7000*12) / (x*7) = 2/3 => x = 7000*3*12 / (7*2) = 18000

Q27. Answer: C
Explanation: Let the total profit be Rs. x. Then, B = 2x/7 and A = (x - 2x /7) = 5x / 7.
So, A : B = 5x/7 : 2x/7 = 5 : 2.
Let B s capital be Rs. y. Then, (16000 * 8) / (y * 4) = 5/2 <=> (16000 * 8 * 2) / (5 * 4) = 12800..

Q28. Answer: A
Explanation:

Capitals of A, B and C are invested for 12, 8 and 4 months respectively.

Profit sharing ratio = (50000*12) : (60000*8) : (90000*4) = 5: 4: 3

A's share in profit = 5/12 * 36000 = Rs. 15000

Q29. Answer: B
Explanation:

Investment for the 1st year= 5: 6: 8

A's capital for second year = 5 + 60% of 5 = 5+ 3 = 8

C's capital for second year = 8 – 50% of 8 = 8 – 4 = 4

Therefore, Required ratio = (5+8): (6+6): (8+4) = 13: 12: 12

Q30. Answer: A
Explanation:

Ratio of capitals = 45000: 54000 = 5: 6 => Ratio of profits = 2: 1

Therefore, Ratio of periods = Ratio of profits/ Ratio of capitals = 2/5 : 1/6 = 12: 5 => B joined after 7 months.

Q31. Answer: B

Explanation: Ratio of the initial capital of A and B=4:5

Ratio in which profit will be divided

= (4x * 3) + 3/4 * 4x * 7: (5x * 3) + 4/5 * 5x * 7

= (12 + 21) : (15 + 28) = 33: 43

Type 6 - Partnership with Ratio

Q32. Answer: C

Explanation:

Simply multiply profit sharing ratio with investment ratio to get investment amount ratio.

Let X is the total investment

⇒14 x = 5; 8 x = 7; 7x = 8

⇒ Final investment ratio = 20: 49: 64

Q33. Answer: D

Explanation: Let the total profit be Rs. 100.

After paying to charity, A's share = (95*3/5) = Rs. 57.

If A's share is Rs. 57, total profit = Rs. 100.

If A's share is Rs. 855, total profit = (100/57*855) = 1500.

Q34. Answer: A

Explanation: Assume, investment of C=x

Investment of A=2x

Investment of B=4x/3

A:B:C=2:4/3:1 =>6:4:3

B's share =157300× 4/(6+4+3) =157300 × 4/13 = 12100 × 4 = 48400

Q35. Answer: C

Explanation: Let the total profit be Rs. z. Then,

B's share = Rs. 2z/3, A's share = Rs. (z - 2z/3) = Rs. z/3.

A : B = z/3 : 2z/3 = 1:2

Let the total capital be Rs, X and suppose B's money was used for x months. Then.

(1(x) / 4 * 15) / (3x) / 4 * y) = 1/2 <=> y = (15 * 2 / 3) = 10 .

Thus, B's money was used for 10 months.

Q36. Answer: A

Explanation: Ratio of capitals=5:6:8

Ratio of share in profit=5:3:12

Therefore, Ratio of periods = Ratio of profits / Ratio of capitals = 5/5: 3/6: 12/8 = 1: 1/2: 3/2 = 2: 1: 3

Q37. Answer: B

Explanation: Ratio in which profit would be divided = A:B:C

= (4000 x 2) : (3000 x 2) : (4000 x 1.5) = 4:3:3

Share of B = 3/10 x 5000 = 1500

Q38. Answer: A

Explanation:

Ratio in which profit is to distributed between A and B = 100000 * 3: 200000 * 2 = 3: 4

Therefore, Difference in their share in profit = (4-3) / (3+4) * 84000 = Rs. 12000

Q39. Answer: C

Explanation:

P: Q: R = 120000:135000:150000 =120:135:150=24:27:30=8:9:10

Share of P = 56700 × 8/27 = 2100 × 8 = 16800

Share of Q = 56700 × 9/27 = 2100 × 9 = 18900

Share of R = 56700 × 10/27 = 2100 × 10 = 21000

Q40. Answer: A

Explanation: Try to solve it with the help of options.

Q41. Answer: C

Explanation:

Suppose there are all the pigeons then total no of heads are 340 and total no of legs are 680.

Now, since 380 (1060-680) legs are extra, it means there will be 190 (380/2) rabbits. As we know a rabbit has two extra legs than that of a pigeon.

Therefore, number of rabbits =190 and number of pigeons = 340- 190 = 150

Q42. Answer: A

Explanation: Let the two angles be 5x and 9x.

Therefore,110+5x+9x=180 => x=5

The difference of the other two angles will be (9x-5x) = 4x = 20 Degree

Q43. Answer: A

Explanation: Days of working = 30:50:40
Each day salary = 4:3:2
Total Income = 120:150:80 =12:15:8
12 units=144
1 unit = 12
Income of B =12*15=180

Q44. Answer: C
Explanation: The ratio of expenditures is 4:6:8. If we add these up it comes down to 18 which when multiplied by 40 leads to our number 720. So the expenditure on train is 40*4 = 160.

Q45. Answer: D
Explanation: Suppose Ramesh invested Rs. x. Then,
Manoj : Ramesh = 20000 * 6 : x * 12.
120000/12x : 6000/3000
=> x = 120000/24 = 5000

Q46. Answer: D
Explanation: Just take care of the months of investment, rest all will be simple.
Yogesh:Pranab:Atul = 45000*12:60000*9:90000*3 = 2:2:1
Atul's share = Rs. 20000 * (1/5) = Rs. 4000

Q47. Answer: D
Explanation: A:B = 3:2 = 6:4
=> A:C = 2:1 = 6:3 => A:B:C = 6:4:3
B share = (4/13)*157300= 48400

Q48. Answer: B
Explanation: Let the ages of raju and Biju is 3x and x years respectively.
Then, (3x +15)/ (x+15) = 2/1; -> 2x + 30 = 3x + 15 -> x = 15
So, Raju's age = 3*15 = 45 and Biju's age = 15 years

Q49. Answer: A
Explanation: Ratio of time taken: 1/6:1/5: 1/4 = 10: 12 : 15

Q50. Answer: B
Explanation: 10% of MS = 1/4th of FS -> 10MS/100 = 1/4FS => MS = 5/2 FS
:. MS/FS = 5/2 = MS: FS = 5: 2
Q51. Answer: B
Explanation: Let the fixed amount be Rs. X and the cost of each unit be Rs. Y.
On subtracting (i) from (ii), we get 80y = 240 -> y = 3
Putting y = 3 in (i) we get:

540 * 3 + x = 1800 x = (1800-1620) = 180
Fixed charges = Rs.180, Charge per unit = Rs.3.
Total charges for consuming 500 units = 180 +(500*3) = Rs.1680

Q52. Answer: C
Explanation: Let the income of P1 and P2 be Rs. 5x and Rs.4x respectively and let their expenditure be Rs.3y and 2y respectively.
Then, 5x – 3y = 1600 …(i) and 4x – 2y = 1600 ……..(ii)
On multiplying (i) by 2, (ii) by 3 and subtracting, we get : 2x = 1600 -> x = 800
P1's income = Rs 5*800 = Rs.4000

Q53. Answer: A
Explanation: Originally, let the number of seats for Computer science, electronics and civil are 5x : 7x : 8x respectively. Number of increased seats are (140% of 5x), (150% of 7x) and
(175% of 8x)
7x : 21x/2 : 14x = 14x : 21x : 28x = 2 : 3 : 4.

Q54. Answer: C
Explanation:
Ratio of investment = 1/2:1/3:1/6 = 3:2:1
Let investment of Ram, Sham and Suresh be 3x, 2x and x respectively.
Ratio of time period = 8:6:12
Let time period of Ram, Sham and Suresh be 8y, 6y and 12y respectively.
Profit = Investment x Time Period
Ratio of Profit of Ram, Sham and Suresh = 3x x 8y:2x x 6y:x x 12y = 2:1:1
Profit of Ram = 18000 x 2/4 = 9000

Q55. Answer: C
Explanation:
Originally, let the number of boys and girls in the college be $7x$ and $8x$ respectively.

Their increased number is (120% of $7x$) and (110% of $8x$).

$\Rightarrow \left(\frac{120}{100} \times 7x\right)$ and $\left(\frac{110}{100} \times 8x\right)$

$\Rightarrow \frac{42x}{5}$ and $\frac{44x}{5}$

$\therefore$ The required ratio = $\left(\frac{42x}{5} : \frac{44x}{5}\right)$ = 21 : 22.

Q56. Answer: B
Explanation:

$\frac{4}{15}A = \frac{2}{5}B$

$\Rightarrow A = \left(\frac{2}{5} \times \frac{15}{4}\right)B$

$\Rightarrow A = \frac{3}{2}B$

$\Rightarrow \frac{A}{B} = \frac{3}{2}$

$\Rightarrow A : B = 3 : 2.$

$\therefore$ B's share = Rs. $\left(1210 \times \frac{2}{5}\right)$ = Rs. 484.

Q57. Answer: D

Explanation: CP of A and B is 4x and 5x and SP is 5:6.

Given that, Profit of A(Pa)=1/2(4x)=2x and Profit of B=Pb.

We know that , SP=CP + Profit.

=> (4x+2x)/(5x+Pb)=5/6

=>6x*6=25x+5Pb =>Pb= (11/5)x

So, the ratio of Pa/Pb=10/11.

Q58.Answer: C

Explanation: Let the shares of A, B, C and D be Rs. 5x, Rs. 2x, Rs. 4x and Rs. 3x respectively.

Then, 4x - 3x = 1000

$\Rightarrow$ x = 1000.

$\therefore$ B's share = Rs. 2x = Rs. (2 x 1000) = Rs. 2000.

CHAPTER 3 - PROFIT AND LOSS

Q1. Answer: D

Explanation: S. P. = 100 and C. P = 96

So, Profit = 4 Rs

% Profit= 4X100/96= 4.166 %

Q2. Answer: A

Explanation: Let the S.P. of pressure cooker = Rs. X .

So, C.P of pressure cooker = Rs. 9x/10.

Receipt=108% of Rs. X = Rs 27x/25

Gain=Rs (27x/25*9x/10) = Rs (108x-90x/100) = Rs18x/100

Gain %=(18x/100*10/9x*100) %=20%

Q3. Answer: C

Explanation:

Suppose, number of oranges bought = LCM of 6 and 4=12
CP=Rs. [(10/6)*12] =Rs.20
SP= Rs [(6/4)*12] =Rs.18
Loss %=[(2/20)*100] %=10%

Q4. Answer: B

Explanation: C.P. of 6 toffees = Re. 1

S.P. of 6 toffees = 120% of Re. 1 = Rs. $\frac{6}{5}$

For Rs. $\frac{6}{5}$, toffees sold = 6.

For Re. 1, toffees sold = $\left(6 \times \frac{5}{6}\right)$ = 5.

Q5. Answer: A

Explanation:

Solution: Given: cost price = Rs. 15, selling price = Rs. 40

Profit = selling price – cost price = Rs. 40 – 15 = Rs. 25

the profit as a percentage of the cost price:

$$\text{Profit \%} = \frac{\text{profit}}{\text{cost price}} \times 100\%$$

$$= \frac{25 \times 100}{15}\% = 166.7\%$$

Q6. Answer: B

Explanation: Apply the basic loss percentage formula.

Q7. Answer: C

Explanation: CP=SP+LOSS=100+10=110
LOSS %= (10/110) x 100=100/11.

Q8. Answer: D

Explanation: Let C.P. be Rs. x and S.P. be Rs. y.
Then, 3(y - x) = (2y - x) $\Rightarrow$ y = 2x.
Profit = Rs. (y - x) = Rs. (2x - x) = Rs. x.
$\therefore$ Profit % = $\left(\frac{x}{x} \times 100\right)$% = 100%

Q9. Answer: B

Explanation: Selling price = 125% of 319.60 = (125/100) * 319.60
= 399.50= 400 Rs

Q10. Answer: B
Explanation: C.P. of 56 kg rice = Rs. (26 x 20 + 30 x 36) = Rs. (520 + 1080) = Rs. 1600.
S.P. of 56 kg rice = Rs. (56 x 30) = Rs. 1680.
Gain =(80/1600*100) % = 5%

Q11. Answer: B
Explanation: Let S.P. of 45 lemons be Rs. X
Then, 80 : 40 = 120 : x
Thus x = 60
For Rs. 60, lemons sold = 45
For Rs. 24, lemons sold = $\frac{45}{60} \times 24 = 18$

Q12. Answer: A
Explanation: Let C.P of each article be Re. 1.
Then C.P of 18 articles = Rs. 18,
S.P of 18 articles = Rs. 21.
Gain % = (3/18 * 100) % = 50/3

Q13. Answer: A
Explanation: 320 SP=400CP => SP/CP=400/320=5/4
Profit %= 1/4 x 100=25%.

Q14. Answer: B
Explanation: 30CP=20SP
=> CP/SP=20/30=2/3
Profit %= ½ *100=50%

Q15. Answer: A
Explanation:

$$\text{Gain\%} = \left(\frac{\text{Error}}{\text{True value}-\text{Error}} \times 100\right)\%$$

Gain%= (100/900) x100 = 11.11%

Q16. Answer: A
Explanation: Here the cost price of the sugar is Rs 25/kg and the selling price is Rs 23/kg. So the loss is Rs 2/kg and the loss percentage = 2/25 x 100 = 8%
The profit due to wrong weight = 200/800 x 100 = 25%
Hence the overall profit and loss is given by {P + Q + (PQ/100)}
But as he is making loss of 8% in the first case so we put -8 in the above expression. If the final value is positive then he is making profit otherwise loss. So the net profit and loss =
{25 – 8 + {25 x (-8)}/100} = 25 – 8 – 2 = 15%
As the final value is positive so he is making a profit of 15%.

Q17. Answer: B

Explanation: Let us assume his CP/1000 gm = Rs 100
So, his SP/kg (800 gm) = Rs 126. His CP/800 gm = Rs 80 => profit = Rs 46
So, profit percentage = 46/80 x 100 = 57.5%

Q18. Answer:
Explanation: Using the formula,

$$\text{Gain \%} = \left[\frac{100 \times \text{excess}}{(\text{original value} - \text{excess})}\right]$$

$$\Rightarrow \frac{100}{8} = \left[\frac{100 \times \text{excess}}{(1 - \text{excess})}\right]$$

From here, Excess = 0.111.. Kg, which is 111.11 grams

Weight used by shopkeeper = 1000 – 111.11 = 888.89 grams

Q19. Answer: D
Explanation: In this case there will be always loss. The selling price is immaterial Hence, loss % = (common loss and gain %) 2 /10 = (162/10) % = (64/25) % = 2.56%

Q20. Answer: B
Explanation: TRY BY YOURSELF.SAME AS Q19.

Q21. Answer: A
Explanation: CP(100+P% OR L%)=MP(100-D%) => CP= [80 X (100-10)]/(100+20)=80x90/120=60.

Q22. Answer: A
Explanation: MP=100*SP/(100-D%). So, MP=100y/(100-x)

Q23. Answer: C
Explanation:

Solution: (c) Let C.P. = Rs. 100, then S.P. = Rs. 120

Also, Let marked price be Rs. x. Then, 90% of x = 120

$$\Rightarrow x = \frac{120 \times 100}{90} = 133\frac{1}{3}$$

∴ M.P. should be Rs. $133\frac{1}{3}$

or M.P. = $33\frac{1}{3}\%$ above C.P.

Q24. Answer: B
Explanation:

Solution: let the first discount be x%.
Then, 87.5% of(100-x)% of 300 =210.
87.5/100 * (100-x)/100 of 300 =210 ==> 100-x = 210*100*100/(300*87.5) = 80 ==> x = (100-80) = 20.
∴ First discount = 20%.

Q25. Answer: A

Explanation: SUCCESIVE DISCOUNT= D1 +D2- (D1*D2/100) = 40+20-(40*20/100) = 52%.

Q26. Answer: B
Explanation:

Solution: (2): Price of the article after first discount = 65 – 6.5 = Rs. 58.5

Therefore, the second discount

$$= \frac{58.5 - 56.16}{58.5} \times 100 = 4\%$$

Q27. Answer: A
Explanation: Cost Price = Rs. $\frac{100}{125}$ x 8750 = Rs. 7000.
Let the labeled price be Rs. X
Then, $\frac{70}{100}$ × X = 7000
X = Rs. 10,000

Q28. Answer: A
Explanation: Raj got 35% discount.
If there was no discount, Raj would pay Rs. 224.
This means giving 35% discount = Rs. 224 off.
Thus, 35% of marked price = Rs. 224
Marked Price = Rs. 640
Raj Paid = 640-224 = Rs. 416

Q29. Answer: B
Explanation:

Here there is no need to consider the amount.
Simply find maximum discount in % and we get the answer.

Tip:
Single equivalent of 2 discounts = **ADD** – $\frac{\textbf{MULTIPLY}}{100}$

Option 1 – 5% and 5%
Single Equivalent = (5+5) – $\frac{5x5}{100}$ = **9.75%**
Option 2 – **10%** ⟶ **MAXIMUM DISCOUNT**
Option 3 – 8% and 2%
Single Equivalent = (8+2) - $\frac{8x2}{100}$ = **9.84%**

Q30. Answer: B
Explanation:

30% discount on 200 = 30% of 2000 = **Rs. 600**
25% discount on 2000 = 25% of 2000 = **Rs. 500**
Remaining amount = 2000-500 = Rs. 1500
Second discount of 5% = 5% of 1500 = **Rs. 75**
Total discount = 500+75 = **Rs. 575**
So difference in discounts = Rs. 600 - Rs. 575 = **Rs. 25**

Q31. Answer: B
Explanation:
Let the initial price be Rs. 100
They increased price by 40%
So, **New price** = 100+40% = 140% of Rs. 100 = **Rs. 140**
Now to have no profit no loss situation, Chandrika must give Rs. 40 off.
How much percent is Rs. 40 of Rs. 140?
Chandrika must give $\frac{40}{140} \times 100 \cong$ **28.5% discount**

Q32. Answer: A
Explanation:
Let the original price be Rs. 100. Then, C.P. = Rs. 80
S.P. = 140% of Rs. 80 = Rs. $\left(\frac{140}{100} \times 80\right)$ = Rs. 112
$\therefore$ Required percentage = (112 - 100)% = 12%

Q33. Answer: C
Explanation: Let original Cost price is x
Its Selling price = (105/100) * x = 21x/20
New Cost price = (95/100) * x = 19x/20
New Selling price = (110/100)* (19x/20)= 209x/200
[(21x/20) - (209x/200)] = 1 => x = 200

Q34. Answer: C
Explanation: 103.33 CP- 0.95 CP = 65
CP = Rs. 780
profit (%) = (936 - 780)/780 x 100 = 20%

Q35. Answer: C
Explanation: Let the new S.P be x, then
(100 - loss%) : (1st S.P.) = (100 + gain%) : (2nd S.P.) ⇒(951140=105x)

$\Rightarrow \frac{95}{1140} = \frac{105}{x}$ => x = 1260

Q36. Answer: C
Explanation:

Initially	CP	profit	SP	MP
	100	x	(100+x)	133.33
After Change	100	2x	(100+x)	

Now, Since (100+x) - 100 = 2x

$\frac{7}{6}$ x= 20%

	CP	Profit	SP	MP
	100	20	120	133.33
So,	300	60	360	400
Again	300	120	420	

So the increased selling price = Rs. 420

Q37. Answer: A
Explanation: Total investment = Rs. (120 * 80 + 280 + (40/100) * 120 + 72).
= Rs. (9600 + 280+48 + 72) = Rs, 10000.
Sell price of 120 reams = 108% of Rs. 10000 = Rs. 10800.
Sell Price per ream = Rs. [10800/120] = Rs. 90.

Q38. Answer: B
Explanation: Let the cost of Production = Rs. P
Then, as per the question
$\left(\frac{125}{100} \times \frac{115}{100} \times \frac{110}{100} \times P\right)$ = 1265
Thus, P = 800

Q39. Answer: C
Explanation: The servant worked for 9 months instead of 12 months, he should receive 9/12 of his annual payment
Let the price of 1 shirt be Rs.S .i.e., $\frac{3}{4}$ (200 + S)
However, the question states that the servant receive Rs. 120 + S where S is the price of the shirt.
By equating the two equations we get $\frac{3}{4}$ (200 + S) = 120 + S.
Therefore Price of the shirt S = Rs. 120.

Q40. Answer: A
Explanation: Let C1 be the cost price of the first article and C2 be the cost price of the second article.
Let the first article be sold at a profit of 22%, while the second one be sold at a loss of 8%.
We know, C1 + C2 = 600.
The first article was sold at a profit of 22%. Therefore, the selling price of the first article = C1 + (22/100)C1 = 1.22C1

The second article was sold at a loss of 8%. Therefore, the selling price of the second article = C2 - (8/100)C2 = 0.92C2.
The total selling price of the first and second article = 1.22C1 + 0.92C2.
As the merchant did not make any profit or loss in the entire transaction, his combined selling price of article 1 and 2 is the same as the cost price of article 1 and 2.
Therefore, 1.22C1 + 0.92C2 = C1+C2 = 600
As C1 + C2 = 600, C2 = 600 - C1. Substituting this in 1.22C1 + 0.92C2 = 600, we get
1.22C1 + 0.92(600 - C1) = 600
or 1.22C1 - 0.92C1 = 600 - 0.92*600
or 0.3C1 = 0.08*600 = 48
or C1 = 48/(0.3) = 160.
If C1 = 160, then C2 = 600 - 160 = 440.
The item that is sold at loss is article 2. The selling price of article 2 = 0.92*C2 = 0.92*440 = 404.80.
Note: When you actually solve this problem in CAT, you should be using the following steps only
1.22C1 + 0.92C2 = C1+C2 = 600
1.22C1 + 0.92(600 - C1) = 600
C1 = 48/(0.3) = 160. And C2 = 600 - 160 = 440.
And the final step of the answer which is 0.92*440 which you should not actually compute. As two of the answer choices (2) and (3) are either 440 or more, they cannot be the answers. The last one is way too low to be 92% of 440, therefore, the answer should be choice (1)

Short Cut:- Use the rule of alligation

-8 22

0

22 8

The ratio of first to second = 22:8=11:4
SP of article at 8% loss = (11/15) * 600= Rs. 440

Q41. Answer: B
Explanation:
cost of 15 books is 100 rupee
so cost of 3 books is 20 rupee
and cost of 25 pencils is 100 rupee
so cost of 1 pencil is 4 rupee
traveling expenses = 15 % = 15 rupee
cost of 5 pencils = 5*4 = 20 rupee
remaining amount = 100 - 35 = 65 rupee
cost of 9 books is 20*3 = 60 rupee
so total 9 books can be purchased and 5 rupee will remained.

Q42. Answer: C
Explanation: Total discount for Mon-Fri=0.5x5=2.5
He paid=16-2.5=13.5

Q43. Answer: A
Explanation: Let the CP of each pen be Rs. 1.
CP of 99 pens = Rs. 99
Profit = Cost of 33 pens = Rs. 33 =>Profit% = 33/99 * 100 = 33 1/3%

Q44. Answer: C
Explanation: The gain percentage is 17.65 approx .Gain percentage is always calculated based on cost price . Hence, the cost Price is 100-15=Rs.85 .The gain percentage =(Gain/C.P)*100 i,e (15/85)*100=17.647=17 11/17.

Q45. Answer: A
Explanation: 110% of S.P. = Rs. 616
S.P. = (616 x 100)/110 = Rs. 560
C.P = (110 x 560)/112 = Rs. 500
Q46. Answer: B
Explanation:

Let the labelled price be Rs. x.

$$\text{Then, } 120\% \text{ of } x = 2880 \implies x = \left(\frac{2880 \times 100}{12}\right) = 2400$$

$$\therefore \text{C.P.} = 85\% \text{ of Rs. } 2400 = \text{Rs.}\left(\frac{85}{100} \times 2400\right) = \text{Rs. } 2040$$

Q47. Answer: C
Explanation: If the merchant offers a discount of 40% on the marked price, then the goods are sold at 60% of the marked price. The question further states that when the discount offered is 40%, the merchant sells at cost price.
Therefore, selling @ 40% discount = 60% of marked price (M) = cost price (C)

ie., $\frac{60}{100}M = C$ or $M = \frac{100}{60}C$ or $M = 1.6666C$ i.e., a mark up 66.66%

Q48. Answer: A
Explanation: P = 10 - 7 = 3
SP = (102/3) = Rs. 34 per kg

Q49. Answer: A
Explanation:

S.P. of 1 article = Rs. 45.
Let marked price of each article be Rs. x.

$$\text{Then, } \frac{90}{100}x = 45 \implies x = \text{Rs.}\left(\frac{45 \times 100}{90}\right) = \text{Rs. } 50$$

$$\text{C.P.} = \text{Rs.}\left(\frac{100}{150} \times 45\right) = \text{Rs. } 30$$

Now, C.P. = Rs. 30, S.P. = Rs. 50

$$\therefore \text{ Required profit\%} = \left(\frac{20}{30} \times 100\right)\% = 66\frac{2}{3}\%$$

Q50. Answer: B
Explanation: 100% = 100/120 X25 = 5/6 X 25 = 125/6 = 20.83
Profit if sold for 22.50 is = 1.67 Rs
Profit % = 1.67 / 20.83 X 100 = 167 / 20.83 = 8.02 %

Q51. Answer: D
Explanation:

CP of 12 chocolate = Rs. 9
CP of 1 chocolate = $\frac{9}{12}$ = Rs. 0.75
Now SP = Re. 1, profit = Rs. 0.25
Profit % = $\frac{0.25}{0.75} \times 100 = 33\frac{1}{3}\%$

Q52. Answer: C
Explanation: Let C.P. of each article be Re. 1 C.P. of x articles = Rs. x.
S.P. of x articles = Rs. 20.
Profit = Rs. (20 - x).
$\therefore \left(\frac{20 - x}{X} \times 100 = 25 \right)$
$\Rightarrow$ 2000 - 100x = 25x => 125x = 2000 => x = 16.

Q53. Answer: B
Explanation: (C.P. of 17 balls) - (S.P. of 17 balls) = (C.P. of 5 balls)

$\Rightarrow$ C.P. of 12 balls = S.P. of 17 balls = Rs.720.

$\Rightarrow$ C.P. of 1 ball = Rs. $\left(\frac{720}{12} \right)$ = Rs. 60.

Q54. Answer: B
Explanation: 85 : 18700 = 115 : x
$\Rightarrow$ x = $\left(\frac{18700 \times 115}{85} \right)$ = 25300.

Hence, S.P. = Rs. 25,300.

Q55. Answer: B
Explanation: Let the original price be Rs. xx. Then;
95% of 88% of xx = 209 $\Rightarrow$ x=(209×100×10095×88)$\Rightarrow$ x=(209×100×10095×88) = 250

Q56. Answer: B
Explanation: Let the Cost price be k.
For a profit of 10%, Selling price = k + 10% of k = 11k /10
For a loss of 10%, (k - 10% of k) = (11k /10) – 40
=> 9k/10 = (11k/10) – 40 => k = 200

Q57. Answer: A
Explanation: Let the cost of Production = Rs. P
Then, as per question,
$\Rightarrow$ $(\frac{125}{100} \times \frac{115}{100} \times \frac{110}{100} \times P)$ = 1265 => P = 800

Q58. Answer: B
Explanation: Let C.P. = X and S.P. = Y
=> 7 % of Y = 8% of X and 9% of Y =10% of X + 1
=> 7Y = 8X and 9Y = 10X + 100
=> 9 x (8X / 7) = 10 X + 100 => X = Rs. 350

Q59. Answer: D
Explanation: SP of first at 20% profit=6000
SP of second at 20% loss=4000
Total SP=10000 and Total CP=10000
So, no profit no loss.

Q60. Answer: B
Explanation: (X+Y)/2 . [Take positive value of x or y for profit and negative for loss]
(30-10)/2=10% profit.

Q61. Answer: A
Explanation: When SP are same and also percentage of profit and loss same, we always have loss.
Loss%= -x2/100= (40x40)/100=16 % loss.

Q62. Answer: A
Explanation: CP of first at profit= 720 x (100/120)
CP of second at loss=720 x(100/90)
Total SP=1440
Total CP=720[100/120 + 100/90]=72000[1/120 + 1/90]=1400
Profit %=[(SP-CP)/CP]*100=(40/1400)*100=20/7%=2 6/7%

Q63. Answer: B
Explanation: The trader professes to sell his goods at a loss of 8%.
Therefore, Selling Price = (100 - 8)% of Cost Price or SP = 0.92CP
But, when he uses weights that measure only 900 grams while he claims to measure 1 kg.
Hence, CP of 900gms = 0.90 * Original CP
So, he is selling goods worth 0.90CP at 0.92CP
Therefore, he makes a profit of 0.02 CP on his cost of 0.9 CP

Profit % = $\frac{SP - CP}{CP} \times 100$

i.e., $\frac{0.92 - 0.90}{0.90} \times 100 = \frac{0.02}{0.90} \times 100 = 2\frac{2}{9}\%$ or 2.22%

Chapter 4- TIME & WORK

Q1.ANS-C
A's 1 day's work =1/24 B's 1 day's work =1/6 C's 1 day's work = ½
(A+B+C)'s 1 day's work =(1/24 +1/6+1/12)=7/24
∴ The work will be completed by them in i.e. 3 3/7 days.

Q2.ANS-C
Ghansyam's 1 day work= 1/8 – 1/12= 1/24
Q3.ANS-A

2(A + B + C)'s 1 day's work = $\left(\frac{1}{30} + \frac{1}{24} + \frac{1}{20}\right) = \frac{15}{120} = \frac{1}{8}$.

Therefore, (A + B + C)'s 1 day's work = $\frac{1}{\quad} = \frac{1}{\quad}$.

Work done by A, B, C in 10 days = $\frac{10}{16} = \frac{2 \times 8}{16} = \frac{5}{8}$.

Remaining work = $\left(1 - \frac{5}{8}\right) = \frac{3}{8}$.

A's 1 day's work = $\left(\frac{1}{16} - \frac{1}{24}\right) = \frac{1}{48}$.

Now, $\frac{1}{48}$ work is done by A in 1 day.

So, $\frac{3}{8}$ work will be done by A in $\left(48 \times \frac{3}{8}\right)$ = 18 days.

Q4.ANS-A

(A + B + C)'s 1 day's work = $\frac{1}{6}$;

(A + B)'s 1 day's work = $\frac{1}{8}$;

(B + C)'s 1 day's work = $\frac{1}{12}$.

$\therefore$ (A + C)'s 1 day's work = $\left(2 \times \frac{1}{6}\right) - \left(\frac{1}{8} + \frac{1}{12}\right)$

=(1/3 – 5/24)=3/24=1/8. So, A and C together will do the work in 8 days.

Q5.ANS-C

(A + B)'s 1 day's work = $\left(\frac{1}{15} + \frac{1}{10}\right) = \frac{1}{6}$.

Work done by A and B in 2 days = $\left(\frac{1}{6} \times 2\right) = \frac{1}{3}$.

Remaining work = $\left(1 - \frac{1}{3}\right) = \frac{2}{3}$.

Now, $\frac{1}{15}$ work is done by A in 1 day.

$\therefore$ $\frac{2}{3}$ work will be done by a in $\left(15 \times \frac{2}{3}\right)$ = 10 days.

Hence, the total time taken = (10 + 2) = 12 days.

Q6.ANS-C

(B + C)'s 1 day's work = $\left(\frac{1}{9} + \frac{1}{12}\right) = \frac{7}{36}$.

Work done by B and C in 3 days = $\left(\frac{7}{36} \times 3\right) = \frac{7}{12}$.

Remaining work = $\left(1 - \frac{7}{12}\right) = \frac{5}{12}$.

Now, $\frac{1}{24}$ work is done by A in 1 day.

So, 5/12 work is done by A= 24* 5/12= 10 days.

Q7.ANS-D

(P + Q + R)'s 1 hour's work = $\left(\frac{1}{8} + \frac{1}{10} + \frac{1}{12}\right) = \frac{37}{120}$.

Work done by P, Q and R in 2 hours = $\left(\frac{37}{120} \text{ x } 2\right) = \frac{37}{60}$.

Remaining work = $\left(1 - \frac{37}{60}\right) = \frac{23}{60}$.

(Q + R)'s 1 hour's work = $\left(\frac{1}{10} + \frac{1}{12}\right) = \frac{11}{60}$.

Now, $\frac{11}{60}$ work is done by Q and R in 1 hour.

So, $\frac{23}{60}$ work will be done by Q and R in $\left(\frac{60}{11} \text{ x } \frac{23}{60}\right) = \frac{23}{11}$ hours $\approx$ 2 hours.

So, the work will be finished approximately 2 hours after 11 A.M., i.e., around 1 P.M.

Q8.ANS-A

1/60*X +1/90*(X-15)=1

So, x=42 days

Q9.ANS-A

2 days work= 1/12 + 1/18 =5/36

In 14 days work done= 35/36

Remaining work = 1/36

Next turn is of A.A will take = 12* 1/36= 1/3 day

So, total number of days= 14 1/3 days.

Q10.ANS-C

3 days work= 1/18 + 1/24 + 1/36 = 1/8

So, in 24 days the whole work completed.

Q11.ANS-B

Wages is inversely proportional to days.

Ratio of wages= 1/12 : 1/16 : 1/24 = 4:3:2

Wages of B= 3/9 *2700 = Rs. 900

Q12.ANS-B

∵ In 5 days , (4 men + 6 women) get ₹ 1600.

∴ In 1 day, (4 men + 6 women) get ₹ 1600/5 = ₹ 320 ....(i)

In 1 day number of person to get ₹ 1 = 320 / 4 men + 6 women ....(ii)

Similarly, in second condition,

In 1 day, number of person to get ₹ 1 = (1740 / 6) x (3 men + 7 women)

= 290 / (3 men + 7 women) ....(iii)
From Eqs. (ii) and (iii), we get
320 / (4 men + 6 women) = 290 / (3 men + 7 women)
96 men + 224 women = 116 men + 174 women
⇒ 20 men = 50 women
⇒ Man / Women = 5/2
∴ 1 women = 2/5 man
From Eq. (i), 1 day,
(4 men + 6 women) = (4 men + 6 x 2/5 men) = 32/5 men get ₹ 320
∴ In 1 day, 1 man get = 320 x 5 /32 = ₹ 50
∴ In 1 day, 1 woman get = 50 x 2/5 = ₹ 20
∴ In 1 day, (7 men + 6 women) get
7 x 50 + 6 x 20 = ₹ 470
∴ Required number of days = 3760 / 470 = 8 days

Q13.ANS-D
1 man's 1 day's work = 1/8 × 12 = 1/96
10 men's 1 day's work = 1 × 10/96 = 5/48
1 woman's 1 day's work = 1/192
4 women's 1 day's work = 1/192 × 4 = 1/48
1 child's 1 day's work = 1/240
10 children's 1 day's work = 1/24
Therefore, (10 men + 4 women + 10 children)'s 1 day's work = 5/48 + 1/48 + 1/24 = 8/48 =1/6
The required No. of days = 6 days

Q14.ANS-D
1 work done = 9 × 7 × 15
9 × 7 × 15 = 6 × 9 × X days
X = 9 × 7 × 15/6 × 9 = 35/2 = 17 ½ days.

Q15.ANS-A
M1*D1*T1/W1 = M2*D2*T2/W2
=> (16*18*20)/(36*4*24)= (X*12*16)/(64*6*18) =>X=60 .
Q16.ANS-B
Since, 50 men can do a job in 50 days.
So, work done by 1 man in a day = 1/(50 x 50)
Also, 80 women can do the job in 50 days.
So, work done by 1 women in 1 day = 1/(50 x 80)
Now, work done by 40 men and 48 women in first 10 days
= (40 x 10)/(50 x 50) + (48 x 10)/(50 x 80) = 4/25 + 3/25 = 7/25
Now, 5 men and 8 women are removed after 10 days,
So work done by 35 men and 40 women in 10 days = (35 x 10)/(50 x 50) + (40 x 10)/(50 x 80)
= 7/50 + 1/10 = (7 + 5)/50 = 6/25
Again, 5 men and 8 women are removed after 10 days,
So work done by 30 men and 32 women in 10 days =
(30 x 10)/(50x50) + (32 x 10)/(50 x 80) = 5/25
Now, after every 10 days as the number of men and
women decrease, work done also decreased by 1/25th past.

So, work done after every 10 days upto 50 days = 7/25 + 6/25 + 5/25 + 4/25 + 3/25 = 25/25 = 1
So, it will take 50 days for them to complete the work.

Q17.ANS-C
1 man do 1/88 job per day
2 woman do 1/88 job per day
3 children do 1/88 job per day
So ,1man , 1 woman , 1 child..
1/88+11768+1/264 job per day
so ,11/528 = 1/t where t is the time taken..
now 264/11 = 48 = t

Q18.ANS-C
1 woman's 1 day's work = 1/70
1 Child's 1 day's work = 1/140
5 Women and 10 children 1 day work =
(570+10140)=17(570+10140)=17
So, 5 women and 10 children will finish the work in 7 days.

Q19.ANS-B
(20*20)/(1/3)= X*25/(2/3)
=> X=32. SO, we need 12 more men.

Q20.ANS-D
1000*20= 2000*x =>x=10 days

Q21.ANS-A
In this type of questions we first get the filling in 1 minute for both pipes then we will add them to get the result, as
Part filled by A in 1 min = 1/20
Part filled by B in 1 min = 1/30
Part filled by (A+B) in 1 min = 1/20 + 1/30= 1/12
So, both pipes can fill the tank in 12 mins.

Q22.ANS-C
Net part filled in 1 hour $\left(\frac{1}{5} + \frac{1}{6} - \frac{1}{12}\right) = \frac{17}{60}$.
$\therefore$ The tank will be full in $\frac{60}{17}$ hours *i.e.,* $3\frac{9}{17}$ hours.

Q23.ANS-C
1/8 – 1/5 = -3/40
3/40 part emptied in 1 hr.
So, it will emptied in 40/3 hr.
1/2 emptied in 40/3 *1/2= 20/3 hr= 6 hr and 40 minutes.

Q24.ANS-B
Let the capacity is 12 units.
A filled 3 units, B filled 4 units and C emptied 12 units in one hour.
3pm to 5pm A filled 6 and B filled 4. Till 5pm total unit filled is 11.

If all of them working together 5 unit is emptied. Till 6pm we have=11-5=6 unit
Again in next hour 5 unit emptied.Till 7 pm we are left with 1 unit filled.
So, 1 unit is emptied in next 12 minutes.So, time is 7:12 pm.

Q25.ANS-D
1/60 part filled by B in=1min
1/3 part will be filled in=(1/3)/(1/60)=60/3=20.

Q26.ANS-D
Part filled in 4 minutes =4(1/15+1/20) = 7/15
Remaining part =(1-7/15) = 8/15
Part filled by B in 1 minute =1/20 : 8/15 :: 1:x
x = (8/15*1*20) = 1023min = 10min 40sec1023min = 10min 40sec
The tank will be full in (4 min. + 10 min. + 40 sec.) = 14 min. 40 sec

Q27.ANS-C
Let the slower pipe alone fill the tank in *x* min.
Then, faster pipe will fill it in *x/3* min.
=> 1/x+3/x=1/36=> 4/x=1/36 =>*x* = 144 min.

Q28.ANS-B
Part filled by (A + B + C) in 3 minutes = $3\left(\frac{1}{30}+\frac{1}{20}+\frac{1}{10}\right)=\left(3\times\frac{11}{60}\right)=\frac{11}{20}$.

Part filled by C in 3 minutes = $\frac{3}{10}$.

$\therefore$ Required ratio = $\left(\frac{3}{10}\times\frac{20}{11}\right)=\frac{6}{11}$.

Q29.ANS-C
Work done by the waste pipe in 1 minute = $\frac{1}{15}-\left(\frac{1}{20}+\frac{1}{24}\right)$

$=\left(\frac{1}{15}-\frac{11}{120}\right)$

$=-\frac{1}{40}$. [-ve sign means emptying]

$\therefore$ Volume of $\frac{1}{40}$ part = 3 gallons.

Volume of whole = (3 x 40) gallons = 120 gallons.

Q30.Ans-D
Same as Q29.

Q31.ANS-C
Half filled in 25 mins. So one fourth fill in 20 mins.

Q32.ANS-C
If diameter is doubled area becomes four times. So, it is filled in 10 mins.

Q33.ANS-B

Pipe A alone can fill the cistern in 37.5=75/2 minutes. Since it was open for 30 minutes, part of the cistern filled by pipe A=(2/75)×30=4/5

So the remaining 1515 part is filled by pipe B.

Pipe B can fill the cistern in 45 minutes. So, time required to fill 1/5 part=45/5=9 minutes.

i.e., pipe B is turned off after 9 minutes.

Q34.ANS-C

Suppose, first pipe alone takes x hours to fill the tank .

Then, second and third pipes will take (x -5) and (x - 9) hours respectively to fill the tank.

$\therefore \quad \frac{1}{x} + \frac{1}{(x-5)} = \frac{1}{(x-9)}$

$\Rightarrow \quad \frac{x-5+x}{x(x-5)} = \frac{1}{(x-9)}$

$\Rightarrow (2x-5)(x-9) = x(x-5)$

$\Rightarrow x^2 - 18x + 45 = 0$

$(x-15)(x-3) = 0$

$\Rightarrow x = 15.$ [neglecting $x = 3$]

Q35.ANS-C

Suppose pipe A alone takes x hours to fill the tank.

Then, pipes B and C will take $\frac{x}{2}$ and $\frac{x}{4}$ hours respectively to fill the tank.

$\therefore \quad \frac{1}{x} + \frac{2}{x} + \frac{4}{x} = \frac{1}{5}$

$\Rightarrow \quad \frac{7}{x} = \frac{1}{5}$

$\Rightarrow x = 35$ hrs.

Q36.ANS-D

Part filled by (A + B) in 1 minute = $\left(\frac{1}{60} + \frac{1}{40}\right) = \frac{1}{24}.$

Suppose the tank is filled in x minutes.

Then, $\frac{x}{2}\left(\frac{1}{24} + \frac{1}{40}\right) = 1$

$\Rightarrow \quad \frac{x}{2} \times \frac{1}{15} = 1$

$\Rightarrow x = 30$ min.

Q37.ANS-B

Time taken by one tap to fill half of the tank = 3 hrs.

Part filled by the four taps in 1 hour = $\left(4 \times \frac{1}{6}\right) = \frac{2}{3}.$

Remaining part = $\left(1 - \frac{1}{2}\right) = \frac{1}{2}.$

$\therefore \quad \frac{2}{3} : \frac{1}{2} :: 1 : x$

$\Rightarrow x = \left(\frac{1}{2} \text{ x } 1 \text{ x } \frac{3}{2} \right) = \frac{3}{4}$ hours *i.e.,* 45 mins.

So, total time taken = 3 hrs. 45 mins.

Q38.ANS-D

Time taken to records broadcast both side = 30 min. =1/2 hr
For 16 full record Time need = 15 * 1/2 = 15/2 hr
=> 15/2 hour for 15 full record
To translate 15 full record = 15/2 *3 = 45/2 =22.5 hr

Q39.ANS-A

Last month ratio C1 : C2 : C3 = 400 : 330 : 260 = 40 : 33 : 26
This month total calls = 1200
40X+33X+26X= 1200
x= 1200/99 = 400/33
C1 ratio = 40*400/33 = 484.84 => 485 approximately
C2 ratio = 33* 400/33 = 400
C3 ratio = 26 * 400/33 = 315.15
Calls first CSR ll take more than last month = 485 - 400 = 85

Q40.ANS-A

In 9 minutes first printer prints =684 pages
We can use relative speed formula.
Time taken= 684/(88-76)=57 minutes
So, from 10:32 + 57 mins= 11:29 AM.

Q41.ANS-A

For solving this Q, lets see how many helper-hour are required..
20/2+700/35=10+20=30
so 30 helper-hour in 3hours, so # of helpers = 30/3=10

Q42.ANS-C

10 men can complete a piece of work in 15 days
=>Work done by 10 men in 1 day = 1/15
15 women can complete a piece of work in 12 days
=>Work done by 15 women in 1 day = 1/12
Work done by 10 men and 15 women in 1 day = 1/15+1/12=9/60=3/20
10 men and 15 women can complete the work in 20/3=6 2/3 days

Q43.ANS-B

A+B= 1/14 ,B+C=1/8 AND C+A=1/7
2(A+B+C)= 1/14+1/8+1/7= (4+7+8)/56=19/56
A+B+C=19/112
A= 19/112-1/8=5/112=>112/5 DAYS

B=19/112-1/7=3/112=>112/3 DAYS
C=19/112-1/14=11/112=>112/11 DAYS.
B is the least efficient.

Q44.ANS-C
two identical tap fill 2/5 of a tank in 20 mins, which means,
one tap fill 1/5 of a tank in 20 mins
and there is still 3/5 of a tank waiting to be filled,
So, it takes three times 20 mins to fill the remaining tank.

Q45.ANS-B
A's 5 days work = 50% .B's 5 days work = 33.33% .C's 2 days work = 16.66% [100- (50+33.33)]
Ratio of contribution of work of A, B and C = 50 : 3313 : 162350 : 3313 : 1623 = 3 : 2 : 1
A's total share = Rs. 1500 B's total share = Rs. 1000 C's total share = Rs. 500
A's one day's earning = Rs.300 B's one day's earning = Rs.200 C's one day's earning = Rs.250

Q46.ANS-C
Efficiency - A:B = 2:1
Days - A:B=1:2
So, 2x-x=30 =>x=30
A takes 30 days and B takes 60 days.
Working together= 1/30 + 1/60= 3/60 =1/20
So, work is done in 20 days.

Q47.ANS-B
Let he initially employed x workers which works for D days and he estimated 100 days for the whole work and then he doubled the worker for (100-D) days.
D * x +(100- D) * 2x= 175x => D= 25 days.
Now , the work done in 25 days = 25x Total work = 175x. Therefore, work done before increasing the no of workers = (25x/175x)×100 % = 14 2/7%

Q48.ANS-B
3/4×(x-2)x=(x+7)(x-10)
$\Rightarrow x^2-6x-280=0$
=> x= 20 and x=-14
so, the acceptable values is x=20
Therefore, Total work =(x-2)x = 18 x 20 =360 unit
Now, 360 = 30 * k => k=12 days

Q49.ANS-B
Case 1-Both A and B can fill the tank in 1 hr= 1/4 +1/6=5/12
It means in 12/5 hr tank is filled. So, 1/2 part filled in 6/5 hr=1 hr 12 mins.
Now all three pipes open together, in 1 hr they fill=1/4+1/6-1/4=1/6.
In 6 hr they filled the tank. So, half tank is filled in 3 hrs.
Total time taken is 4 hrs 12mins.
Case 2- 3/4th part is filled by A and B in =(3/4)* 12/5=9/5 hr
1/4 tank filled by A,B and C in= (1/4)*6=3/2 hr
Total time taken is 9/5+3/2 = 3 hrs 18 mins.
So, the time difference is =4 hr 12 mins-3 hr 18 mins=54 mins.

Q50.ANS-D
Let the number of workers be x.
Now, Using work equivalence method,
X + (X-1) + (X-2)+ . . . . + 1 = X *55% of X
=> [X * (X+1)] / 2 = X * (55X/100) [Series is in AP. Sum of AP = {No. of terms (first term+ last term)/2}]
Therefore, X = 10

Q51.ANS-A
Combined efficiency of all the three boats = 60 passenger/trip
Now, consider option(a)
15 trips and 150 passengers means efficiency of B1 = 10 passenger/trip
which means in carrying 50 passengers B1 must has taken 5 trips. So the rest trips equal to 5 (10-5 = 5) in which B2 and B3 together carried remaining 250 (300 - 50 = 250) Passengers.
Therefore the efficiency of B2 and B3 = 250/5 = 50 passenger/trip Since, the combined efficiency of B1, B2 and B3 is 60. Which is same as given in the first statement hence option(a) is correct.

Q52.ANS-B
Let x liter be the per day filling and v litr be the capacity of the reservoir, then
90x + v = 40000 * 90 -----(1)
60x + v= 32000 * 60 ------(2)
solving eq.(1) and (2) , we get x = 56000
Hence , 56000 liters per day can be used without the failure of supply.

Q53.ANS-C
Machine I:Number of nuts produced in one minute = 100
To produce 1000 nuts time required =10 min
Cleaning time for nuts =5 min
Over all time to produce 1000 nuts =15 min.
Over all time to produce 9000=138 min −5 min =133 min -----(1)
Machine II:To produce 75 bolts time required =1min
To produce 1500 bolts time required =20 min
Cleaning time for bolts =10 min.
Effective time to produce 1500 bolts =30 min
Effective time to produce 9000 bolts =30×6−10=170 min ------ (2)
From (1) and (2)
Minimum time = 170 minutes

Q54.ANS-B
Quarter of Kg means 250 gm
Less weight, less price (Direct Proportion)
So, 250:200::60:x=>x=200∗60/250=>x=48
So, 200 gm will cost 48 paise.

Q55.ANS-C
Total volume of water displaced = (4 x 50) m^3 = 200 m^3.
$\therefore$ Rise in water level = $\left(\frac{200}{40 \times 20}\right)$ m 0.25 m = 25 cm.

Q56.ANS-C
Let's assume the speed of one copier = x
Speed of other copier = 125% of x = 125x/100
So, Ratio of speed = x:125x/100 = 4:5
Copies made on faster copier = 5/9 *1800 = 1000

CHAPTER 5 – ALLIGATIONS AND MIXTURES

Q1. Answer: B
Explanation: Rice 1: Rice 2 = (56-51) : (51-43) = 5:8

Q2. Answer: A
Explanation: SP of mixture = Rs. 18/kg; Profit = 20% => CP of mixture = Rs. 15/kg
CP of Rice 1=Rs. 20/kg; CP of Rice 2 = Rs. 12/kg
Rice 1: Rice 2 = (15-12) : (10-15) = 3:5

Q3. Answer: C
Explanation: Same as question 2. Do it yourself.

Q4. Answer: A
Explanation: Rice 1: Rice 2 = (18-14) : (14-8) = 4:6 = 2:3
Quantity of rice 1 = $2/5^{th}$ of 50 kg = 20 kg

Q5. Answer: A
Explanation: Apply the alligation formula.
Ratio of rice sold at 5% loss : Ratio of rice sold at 10% profit = 1 : 4
Thus, the quantity of rice sold at 10 % profit = 20 kgs.

Q6. Answer: B
Explanation: Apply the alligation formula.
Ratio of sugar sold at 6% loss : Ratio of sugar sold at 14% profit = 9 : 1
Thus, the quantity of sugar sold at 6% loss = 900 gms.

Q7. Answer: B
Explanation: CP(Water) = 0; CP(pure Milk) = Rs. 108/ltr; CP(Mixture) = 90
Hence, Water : Pure Milk = (108-90) : (90-0) = 18:90 = 1:5
Therefore, for 16 lits of water, milk required = 80 litres

Q8. Answer: C
Explanation: Quantity of Milk for Rs. 2 = $\frac{1}{6}$ litres
Thus 5/6 of the mixture is water which is 25litres.
Thus, 5/6 x (total mixture) = 25 litres

Total mixture = 30 litres
Quantity of pure milk = 5 litres

Q9. Answer: A
Explanation: Similar to question 8

Q10. Answer: C
Explanation: Final Amount = 100 (90/100)(90/100)(90/100) = 72.9

Q11. Answer: C
Explanation: Final amount of pure milk left = $100\times\frac{90}{100}\times\frac{91}{100}\times\frac{92}{100}$ = 75.34litres

Q12. Answer: C
Explanation: 55% of 80 = 44litres
Now try by options. Only option C satisfies the given conditions.

Q13. Answer: C
Explanation: X/Y=7/5 - RATIO OF A to B

5X-7Y=0.....(1)
9 litres would have : 7/12*9=5.25 of A and 9-5.25=3.75 of B
New ratio: (X-5.25)/(Y-3.75+9)=7/9
9X-7Y=16*5.25 ..... (2)
Solve eq 1 and 2 : answer is 21 for x

Q14. Answer: D
Explanation: Let quantity of A & B be 4x and x.
According to the question,

$$\frac{4x-10\times\frac{4}{5}}{x-10\times\frac{1}{5}+10}=\frac{2}{3}$$
$$\Rightarrow\frac{4x-8}{x+8}=\frac{2}{3}$$
$$\Rightarrow 12x-24=2x+16$$
$$\Rightarrow 10x=40$$
$$x=4$$
$$\therefore \text{Required answer} = 4x = 4\times 4 = 16 \text{ litres}$$

Q15. Answer: B
Explanation: Quantity of milk in glass 1 = 3/5th
Quantity of milk in glass 2 = 4/5th

Q16. Answer: A
Explanation: Milk : Water = (9x + 7x + 6x) : (2x + 4x + 5x) = 2:1

Q17. Answer: A
Explanation: Similar to question 16. Do it yourself.

Q18. Answer: A

Explanation: Quantity of milk in vessel 1 = $4/7^{th}$

Quantity of milk in vessel 2 = $2/5^{th}$

Quantity of milk in final mixture = 50% = 1/2

Vessel 1 : Vessel 2 = (1/2 – 2/5) : (4/7 – 1/2)

= 7:5

Please note that may use of quantity of water in place of milk & proceed the same way.

Q19. Answer: B

Explanation: Apply the alligation formula. Start by either considering the zinc or copper.

Q20. Answer: A

Explanation: (3x – 12)/ (2x – 8+ 12) = ¼

X= 6 therefore , 18 and 12.

Q21. Answer: A

Explanation: Let total capacity of container = 10

So, Milk from first liquid = $6 \times \frac{25}{100} = 1.5$

So, Milk from second liquid = $4 \times \frac{30}{100} = 1.2$

Total Milk = 1.5 + 1.2 = 2.7

Required Answer = $\frac{2.7}{10}$ x 100 = 27%

Q22. Answer:

Explanation: Alcohol in 1 litre of first = $1\times \frac{2}{10} = \frac{1}{5}$

Alcohol in 2 litres of second = 2 x 0 = 0

Required answer = $\frac{1}{5\ x\ 3} = \frac{1}{15}$

Q23. Answer: D

Explanation: CP of milk = SP of mixture (milk + water)

Let CP of milk = Rs. 100 => SP of mixture = Rs. 100; Gain% = 20%

Therefore, CP of mixture = Rs. 83.33

CP of water = 0

Milk : Water = (83.33 – 0):(100-83.33) = 5:1

Q24. Answer: A

Explanation: When the profit is 25%, it means 25% of the milk is water. Thus the ratio of milk and water is 4:1.

Q25. Answer: A

Explanation: Similar to question 24. Do it yourself.

Q26. Answer: C
Explanation: Similar to question 24. Do it yourself.

Q27. Answer: B
Explanation: Total Cost price of 12 pens = 150 x12 = Rs. 1800
Overall Profit = 15% => Overall Selling Price = 1800 x 1.15 = Rs. 1725
First Half: 50 pens; 10% profit
Total CP = Rs. 50 x 12 = Rs. 600
Total SP = 1.1 x 600 = Rs. 660
Second Half: 100 pens
SP = 2070 – 660 = Rs. 1415
CP = 100 x 12 = Rs. 1200
Profit = 1415-1200 = 215
Profit % = (215/1200) x 100 = 17.5%

Q28. Answer: C
Explanation: Similar to question 27. Attempt it yourself.

Q29. Answer: A
Explanation: Boys Money + Girls Money = Rs. 39
Let # Boys = A and # Girls = 65 - A
⇨ 0.8 x A + 0.3 x (65-A) = 39
⇨ A = 39
⇨ # Girls = 26

Q30. Answer: D
Explanation: Attempt it with the help of the options.

Q31. Answer: A
Explanation: let gold quantity be a and copper be b
Then S= $(aS_g + bS_c)/(a+b)$
15=19a+9b/a+b
Divide numerator and denominator by b and take a/b=x
15=(19x+9)/(x+1)
19x+9=15x+15
4x=6 => x=3/2
Therefore, Gold/Copper = 3/2

Q32. Answer: A
Explanation: Apply the Alligation formula. Answer A = 6000.

Q33. Answer: B

Explanation:

Sol. S.P. = 8

Profit = 37.5%

$\therefore$ C.P. $= \frac{8 \times 100}{137.5} = \frac{64}{11}$

By allegation,

Milk Water

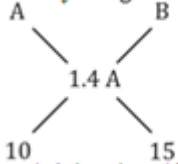
10 : 1

Water: milk $\Rightarrow$ 1 : 10

Q34. Answer: B

Explanation:

Sol. By allegation rule,



$\Rightarrow \frac{1.4A - A}{B - 1.4A} = \frac{15}{10} = \frac{3}{2}$

$\Rightarrow 2.8A - 2A = 3B - 4.2A$

$\Rightarrow 4.2A + 0.8A = 3B$

$\Rightarrow \frac{A}{B} = \frac{3}{5}$

$\Rightarrow$ A : B = 3 : 5

Q35. Answer: D

Explanation:

Sol. Let quantity of A & B be 4x & x.

According to the question,

$$\frac{4x - 10 \times \frac{4}{5}}{x - 10 \times \frac{1}{5} + 10} = \frac{2}{3}$$

$\Rightarrow \frac{4x - 8}{x + 8} = \frac{2}{3}$

$\Rightarrow 12x - 24 = 2x + 16$

$\Rightarrow 10x = 40$

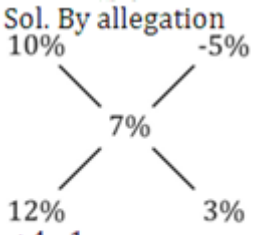
$x = 4$

$\therefore$ Required answer = $4x = 4 \times 4 = 16$ litres

Q36. Answer: D

Explanation:

Sol. By allegation



⇒4 : 1

Required answer = 40 kg, 10 kg

Q37. Answer: D

Explanation:

Sol. Total wheat = 150 kg

High quality = 135 kg

Low quality = 15 kg

Now,

$$\frac{135 + x}{15} = \frac{19}{1}$$

⇒ x = 150 kg

Q38. Answer: A

Explanation:

Sol. Let total capacity of container = 10

So, milk from first liquid = $6 \times \frac{25}{100} = 1.5$

So, milk from 2nd liquid = $4 \times \frac{30}{100} = 1.2$

Total milk = 1.5 + 1.2 = 2.7

Required answer = $\frac{2.7}{10} \times 100 = 27\%$

Q39. Answer: A

Explanation:

Sol. Alcohol in 1 litre of first = $1 \times \frac{2}{10} = \frac{1}{5}$

Alcohol in 2 litre of second = $2 \times 0 = 0$

Required answer = $\frac{1}{5 \times 3} = \frac{1}{15}$

Q40. Answer: C

Explanation:

Sol. Remaining dettol = $1\left(1 - \frac{1}{3}\right)^4 = \frac{16}{81}$ part

So, required answer = 16 : 65

Q41. Answer: A

Explanation:

Sol. Gold in alloy = 50 × 80% = 40 gm

Silver in alloy = 50 × 20% = 10 gm

Now,

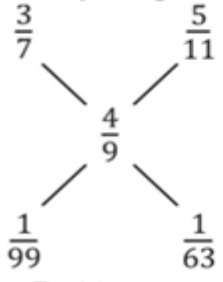
$$\frac{40+x}{10}=\frac{90}{10}$$

⇒ x = 50 gm

Q42. Answer: B

Explanation:

Sol. By allegation rule,



⇒7 : 11

Required answer = $18 \times \frac{7}{18}$ = 7 litres

Q43. Answer: A

Explanation:

Sol. 1st alloy zinc = $\frac{2}{5} \times 15 = 6$

Copper = $\frac{3}{5} \times 15 = 9$

Let copper to be removed = x

Then,

$$\frac{6+10}{9-x}=\frac{4}{1}$$

⇒ 16 = 36 – 4x

⇒ x = 5 gm

Q44. Answer: C

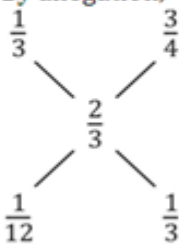
Explanation:

Sol. Copper in 1st alloy $= \frac{1}{3}$

Copper in 2nd alloy $= \frac{3}{4}$

Copper in required alloy $= \frac{2}{3}$

By allegation,



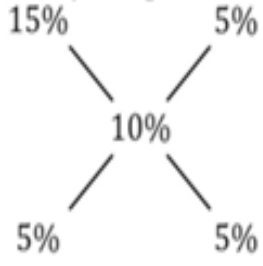
$\Rightarrow 1 : 4$

$\therefore$ Required answer = 4 times.

Q45. Answer: D

Explanation:

Sol.By allegation,



$\Rightarrow 1 : 1$

So, required answer = 20 litres.

Chapter 6- CODING & DECODING

1. B
2. A
3. D
4. C
5. D
6. C
7. A
8. B
9. B
10. D
11. B
12. A
13. C
14. D
15. B
16. B
17. D

18. D
19. D
20. D
21. C
22. D
23. C
24. D

Chapter 7- NUMBER RANKING AND TIME SEQUENCE

1. Answer: B . 9
Justification: Clearly, number of trees in the row = (4 + 1 + 4) = 9.
2. Answer: C . 18th
Justification: Number of persons between Amrita and Mukul = 50 - (10 + 25) = 15. Since Mamta lies in middle of these 15 persons, so Mamta`s position is 8th from Amrita i.e. 18th from the front.
3. Answer: A . 64
Justification: Clearly, number of students in the class = (15 + 1 + 48) = 64
4. Answer: D. 34
Justification: Clearly, number of students in the class = (6 + 1 + 27) = 34.
5. Answer: B. 13
Justification: Clearly, number of boys in the line = (11 + 1 + 3) = 15. .'. Number of boys to be added = 28 - 15 = 13.
6. Answer: C . 35
Justification
Number of students behind Aruna in rank = (46 - 12) = 34. So, Arun is 35th from the last.
7. Answer: C . 16th
Justification: Sumit is 17th from the last and Ravi is 7 ranks ahead of Sumit. So, Ravi is 24th from the last.
Number of students ahead of Ravi in rank = (39 - 24) = 15. So, Ravi is 16th from the start
8. Answer: B . 21st may
Justification: According to Kailash, Deepak`s birthday falls on onev of the day among 21st, 22nd, 23rd, 24th, 25th, 26th, and 27th May. According to Geeta, Deepak`s birthday falls on one of the days among
13th, 14th, 15th, 16th, 17th, 18th, 19th, 20th, and 21st May. The day common to both the groups is 21st May. .'. Deepak`s birthday falls in 21st May.
9. Answer: C . 13 km
Justification: Clearly, according to Sunita, the distance was more than 12 kms but less than 14 kms, which is 13kms.
10. Answer: B . 7.20 a.m.
Justification: Ashish leaves his house at 6.40 a.m. He reaches Kunal`s in 25 minutes i.e. 7.05 a.m. Both leave for office 15 minutes after 7.05 a.m. i.e. at 7.20 a.m.
11. Answer: B . 8.05 hrs
Justification: Anuj reached the place at 0815 hours. clearly, the man who was 40 minutes late would reach the place at 8.45 a.m. So, the scheduled time of meeting was at 08.05 hours.
12. Answer: B . 7.05 a.m.
Justification: Clearly, the last bell rung 45 minutes before 7.45 a.m. i.e. at 7.00 a.m. But it happened five minutes before gave the information to the devotee. So, the information was given at 7.05 a.m.
13. Answer: B . 4
Justification:
There are 27 numbers in the given sequence. So, middle number = 14th number = 9. Clearly, the third number to the left of this 9 is 4.

14.
Answer: B . Two
Justification:
9 3 6 6 3 9 5 9 3 7 8 9 1 6 3 9 6 3 9
15. Answer: A . 2
Justification:
5 7 2 6 5 7 3 8 3 7 3 2 5 7 2 7 3 4 8 2 6 7 8
16. Answer: C. Four
Justification:
4 2 1 2 1 4 2 1 1 2 4 4 4 1 2 2 1 2 1 4 4 2 1 4 2 1 2 1 2 4 1 4 2 1 2 4 1 4 6
17. Answer: E. More than 4
Justification:
5 1 4 7 3 9 8 5 7 2 6 3 1 5 8 6 3 8 5 2 2 4 3 4 9 6
18. Answer: C. Two
Justification:
12, 19, 21, 3, 25, 18, 35, 20, 22, 21, 45, 46, 47, 48, 9, 50, 52, 54, 55, 56
19. Answer: D. They will not call out the same number
Justification:
Nitin : 32 31 30 29 28 27 26 25 24 23 22 21 20. Sumit : 1 3 5 7 9 11 13 15 17 19 21 23 25.... Clearly, both will never call out the same number.
20. Answer: C . 7
Justification:
The new sequence becomes 1 4 6 7 5 8 9 0 3 2. From the right end, the seventh number is 7.
21. Answer: A . 7
Justification:
The numbers from 1 to 100 which are exactly divisible by 4 are 4, 8, 12, 16, 20, 24, 28, 32, 36, 40, 44, 48, 52, 56, 60, 64, 68, 72, 76, 80, 84, 88, 92, 96, 100. But each number should have 4 as its digit. .'. The required numbers are 4, 24, 40, 44, 48, 64, 84. Clearly, there are 7 .

22. Answer: C. 28

Justification:
Three persons A, B, C can be arranged in a queue in six different ways i.e., ABC, CBA, BAC, CAB, BCA, ACB. But since there are only 3 persons ahead of C, so C should be in front of the queue. Thus, there are only two possible arrangements i.e., CBA and CAB. We may consider the two cases as under:

3 8 5 21
Case I : ← C ↔ B ↔ A →
clearly, number of persons in the queue = (3 + 1 + 8 + 1 + 5 + 1 + 21) = 40.

3 5
Case II : ← C A ↔ B

Number of persons between A and C = (8 - 6) = 2.
Clearly, number of persons in the queue = (3 + 1 + 2 + 1 + 21) = 28.
Now, 28 < 40. So, 28 is the minimum number of person in the queue.
23. Answer: B. Saturday
Justification:
Clearly, Nine days ago, it was Thursday.
.'. Today is Saturday.

Chapter 8- ARITHMETIC REASONING

1. C
2. D
3. D
4. B
5. C
6. A
7. B
8. A
9. B
10. D
11. A
12. C
13. B

Inequalities

1. A

2. B

3. E

4. D

5. E

6. E

7. E

8. D

9. A

10. D