

Solutions:

S1. Ans.(c)

$$\text{Sol. } \frac{61-x}{50-x} = \frac{91-x}{74-x}$$

Required proportion:

$$\frac{61-x}{50-x} = \frac{91-x}{74-x} \quad \text{eq.(1)}$$

By hit and trial, we can find that $x = 6$ satisfies the eq. (1)

Mean proportion of $(3x - 2)$ and $(x + 3)$ i.e. 16 and 9 is $= \sqrt{9 \times 16} = 12$

S2. Ans.(a)

Sol.

Ratio of amount received = 15: 2: 3

Ratio of note's worth = 500: 200: 100

$$= 5: 2: 1$$

Number of notes = $\frac{\text{Total amount}}{\text{Note's worth}}$

$$\begin{aligned} \text{Ratio of number of notes} &= \frac{15}{5} : \frac{2}{2} : \frac{3}{1} \\ &= 3: 1: 3 \end{aligned}$$

S3. Ans.(b)

$$\text{Sol. } \frac{1}{5} : \frac{7}{4} : \frac{4}{3}$$

Ratio $\rightarrow 12 : 105 : 80$

Given $\rightarrow 12 + 80 \Rightarrow 644$

$\Rightarrow 1 \text{ unit} = 7$

Greatest number = $105 \times 7 = 735$

S4. Ans.(a)

$$\frac{a}{b} = \frac{4}{3}, \quad \frac{c}{d} = \frac{3a}{2b} = \frac{12}{6} = \frac{2}{1}$$

$$\frac{ac}{bd} = \frac{a}{b} \times \frac{c}{d} = \frac{4}{3} \times \frac{2}{1} = \frac{8}{3}$$

$$ac : bd = 8 : 3$$

S5. Ans.(b)

Sol.

$$P : Q : R$$

$$19 : 25$$

$$\underline{4 : 5}$$

$$76 : 100 : 125$$

$$\text{Total amount} = (76 + 100 + 125) = 1505 \Rightarrow 1 \text{ unit} = 5$$

$$\text{Share of P} = 76 \times 5, \text{ Share of Q} = 100 \times 5$$

$$\text{Required ratio} = 76 : 100 = 19 : 25$$

S6. Ans.(a)

Sol.

$$\frac{77-x}{137-x} = \frac{107-x}{192-x}$$

By option(a)

$$\Rightarrow \frac{77-5}{137-5} = \frac{107-5}{192-5}$$

$$\Rightarrow \frac{72}{132} = \frac{102}{187}$$

$$\Rightarrow \frac{6}{11} = \frac{6}{11}$$

S7. Ans.(a)

Sol.

$$\frac{132-x}{200-x} = \frac{146-x}{222-x}$$

By Option (a)

$$\frac{132-13}{200-13} = \frac{146-13}{222-13}$$

$$\frac{119}{187} = \frac{133}{209}$$

$$\frac{7}{11} = \frac{7}{11}$$

S8. Ans.(a)

Sol.

$$\Rightarrow \frac{3}{2} : \frac{4}{5} : \frac{7}{10}$$

$$\Rightarrow 15 : 8 : 7$$

$$\Rightarrow 15 - 7 = 8 \rightarrow 64$$

$$1 \rightarrow 8$$

$$\text{Greatest Number} = 15 \times 8$$

$$= 120$$

S9. Ans.(a)

Sol. Assuming numbers to be $5x$ and $4x$

$$\frac{5x+8}{4x+7} = \frac{4}{3}$$

$$15x + 24 = 16x + 28$$

$$\boxed{-4 = x}$$

So, Number are

-20 and -16

$$\frac{-20+6}{-16+6} = \frac{-14}{-10} = \frac{7}{5}$$

The ratio of the number will be $7 : 5$.

S10. Ans.(a)

Sol. A.T.Q

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

$$\Rightarrow 12x + 8 = 3x + 9$$

$$\Rightarrow 9x = 1$$

$$\Rightarrow x = \frac{1}{9}$$

S11. Ans.(b)

Sol.

$$\begin{array}{ccc} \text{S} & \text{A} & \text{V} \\ \downarrow -3 & \downarrow -10 & \downarrow -8 \\ 5 & : 4 & : 2 \end{array}$$

Remaining Amount $15542 - 21$

= Rs. 15521

$5 + 4 + 2 \rightarrow 15521$

$11 \rightarrow 15521$

$1 \rightarrow 1411$

$5 \times 1411 + 20 : 4 \times 1411 + 30 : 2 \times 1411 + 40$

$7075 : 5674 : 2862$

S12. Ans.(a)

Sol.

A B C

10 9

 10 11

$100 : 90 : 99$

$B = \frac{90}{289} \times 43350$

B = Rs. 13,500

S13. Ans.(d)

Sol. $\frac{22+x}{12+x} = \frac{32+x}{18+x}$

$396 + 18x + 22x + x^2 = 384 + 32x + 12x + x^2$

$12 = 4x$

$x = 3$

Required expression

$\sqrt{(x-1)(x+15)}$

$\sqrt{2 \times 18} = \sqrt{36} = 6$

S14. Ans.(a)

Sol. A.T.Q

$$3 + 5 + 5 \rightarrow 2613$$

$$1 \rightarrow \frac{2613}{13}$$

$$5 \rightarrow \frac{2613}{13} \times 5$$

$$5 \rightarrow 201 \times 5$$

$$5 \rightarrow 1005$$

S15. Ans.(a)

Sol.

Assuming,

$$I_A = 2x \text{ (Income of A)}$$

$$I_B = 3x$$

$$S_A = 5y$$

$$S_B = 6y$$

A.T.Q

$$\frac{2x-5y}{3x-6y} = \frac{E_A}{E_B} \quad [E_A = \text{Expenditure of A}]$$
$$[E_B = \text{Expenditure of B}]$$

$$I_B = 4(S_A)$$

$$3x = 4(5y)$$

$$3x = 20y$$

$$\frac{x}{y} = \frac{20}{3}$$

$$\frac{E_A}{E_B} = \frac{I_A - S_A}{I_B - S_B} = \frac{2x-5y}{3x-6y}$$

$$= \frac{2 \times 20 - 5 \times 3}{3 \times 20 - 6 \times 3}$$

$$= \frac{40-15}{60-18}$$

$$= \frac{25}{42}$$

The ratio of the expenditure of the A and B would be 25 : 42.

S16. Ans.(b)

Sol.

Ist IInd IIRd

7 : 9

 1 : 2

7 : 9 : 18

Now, $(7 + 9 + 18) \rightarrow 170$

$1 \rightarrow 5$

Ist number = $7 \times 5 = 35$

IInd number = $9 \times 5 = 45$

IIRd number = $18 \times 5 = 90$

The Sum of square of all numbers = $(35)^2 + (45)^2 + (90)^2$
= 11350

S17. Ans.(c)

Sol. Mean proportion = $\sqrt{ab} = \sqrt{7.2 \times 0.8} = 2.4$

Third proportion = $\frac{b^2}{a} = \frac{6 \times 6}{5} = \frac{36}{5}$

Ratio $\rightarrow \frac{24}{10} : \frac{36}{5} = 1 : 3$

S18. Ans.(b)

Sol.

A : B = 5 : 12 $\Big| \times 2$

B : C = 8 : 7 $\Big| \times 3$

A : B : C

10 : 24 : 21 = 55

$(21 - 10) = 1650$ (Given)

$$11 = 1650 \Rightarrow 1 \text{ unit} = 150$$

$$\Rightarrow 55 \times 150 = \text{Rs. } 8250$$

S19. Ans.(d)

Sol. Assuming numbers of males and females be x.

$$\frac{140+x}{200+x} = \frac{3}{4}$$

$$560 + 4x = 600 + 3x$$

$$\boxed{x = 40}$$

After

Recruitment, final numbers of employees

$$\Rightarrow 140 + 200 + 2x$$

$$\Rightarrow 340 + 2(40)$$

$$\Rightarrow 420$$

S20. Ans.(d)

Sol. Let the three numbers by a, b and c.

$$b : c = 7 : 9$$

$$\text{and } a : c = 5 : 3$$

$$\text{Now, } a : b : c = 15 : 7 : 9$$

$$\text{Third Number } c = \frac{9}{15+7+9} \times 341$$

$$= 11 \times 9 = 99$$