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Exam for : SSC / Banking

Sub : Arithmetic

Ratio & Proportion

- If $A:B=3:4$ and $B:C=8:9$, then $C:A$ is
1. 1 : 3 2. 3 : 2 3. 2 : 3 4. 1 : 2
- If $A : B = 8 : 15$, $B : C = 5 : 8$ and $C : D = 4 : 5$, then $A : D =$ ____
1. 2 : 7 2. 4 : 15 3. 8 : 15 4. 15 : 4
- If $A : B : C = 2 : 3 : 4$ then $\frac{A}{B} : \frac{B}{C} : \frac{C}{A}$ is equal to
1. 4 : 9 : 16 2. 8 : 9 : 12
3. 8 : 9 : 16 4. 8 : 9 : 24
- If $A : B =$ _____, $B : C =$ _____ and $C : D =$ _____, then $A : B : C : D =$ ____
1. 4 : 6 : 8 : 10 2. 6 : 4 : 8 : 10
3. 6 : 8 : 9 : 10 4. 8 : 6 : 10 : 9
- If $2A = 3B = 4C$ then $A : B : C$ is...
1. 2 : 3 : 4 2. 4 : 3 : 2
3. 6 : 4 : 3 4. 20 : 15 : 2
- If _____ then $A : B : C$ is ____
1. 4 : 3 : 5 2. 5 : 4 : 3
3. 3 : 4 : 5 4. 20 : 15 : 2
- If $2A = 3B$ and $4B = 5C$ then $A : C$ is ____
1. 4 : 3 2. 8 : 15
3. 15 : 8 4. 3 : 4
- If _____ then the value of x is ____
1. 1.5 2. 2 3. 25 4. 3.5
- If $x : y = 5 : 2$ then $(8x+9y) : (8x+2y)$ is ____
1. 22 : 29 2. 26 : 61
3. 29 : 22 4. 61 : 26
- If $x = 2y$ then $(x^2 - y^2) : (x^2 + y^2)$ is ____
1. 3 : 5 2. 5 : 3 3. 1 : 3 4. 3 : 1
- If $(4x^2 - 3y^2) : (2x^2 + 5y^2) = 12 : 19$ then $x : y$ is ____
1. 2 : 3 2. 1 : 2 3. 3 : 2 4. 2 : 1
- If $x^2 + 4y^2 = 4xy$ then $x : y$ is ____
1. 2 : 1 2. 1 : 2 3. 1 : 1 4. 1 : 4
- If $5x^2 - 13xy + 6y^2 = 0$; then $x : y$ is ____
1. (2:1) only 2. (3:5) only
3. (5:3) or (1:2) 4. (3:5) or (2:1)
- If $\frac{x}{5} = \frac{y}{8}$ then, $(x+5) : (y+8)$ is ____
1. 3 : 5 2. 13 : 8 3. 8 : 5 4. 5 : 8
- If _____ then _____ is equal to ____
1. _____ 2. _____ 3. 7 4. _____
- If $(a+b) : (b+c) : (c+a) = 6 : 7 : 8$ and $a+b+c=7$, then the value of c is ____
1. 6 2. _____ 3. 3 4. 4
- A and B together have Rs.1210. If _____ of A's amount is equal to _____ of B's amount, how much amount does B have?
1. Rs.460 2. Rs.484
3. Rs.550 4. Rs. 664
- A sum of money is to be distributed among A, B, C, D in the proportion of 5 : 2 : 4 : 3. If C gets Rs.1000 more than D. What is B's share?
1. Rs.500 2. Rs.1500
3. Rs.2000 4. Rs.None of these
- A bag contains 50 paise, 25 paise and 10 paise coins in the ratio 5:9:4, amounting to Rs.206. Find the no. of 10 paise coins.
1. 160 2. 16 3. 360 4. 200
- In what ratio must 25% alcohol be mixed with 50% alcohol to get a mixture of 40% alcohol?
1. 1 : 1 2. 2 : 3 3. 3 : 2 4. 15 : 10
- The students in three classes are in the ratio 2 : 3 : 5. If 20 students are increased in each class, the ratio changes to 4 : 5 : 7. The total number of students before the increase was ____
1. 10 2. 1000 3. 100 4. 150
- A sum of money is to be divided among P, Q and R in the ratio 8 : 3 : 7. If the share of P and Q together is Rs.300 more than that of R, What is R's share.
1. Rs.75 2. Rs.420 3. Rs.600 4. 525
- If 0.4 of number is equal to 0.06 of another number, the ratio of the numbers is : ____
1. 2 : 3 2. 3 : 4 3. 3 : 20 4. 20 : 3
- The ratio of the incomes of A and B is 5 : 4 and the ratio of their expenditures is 3 : 2. If at the end of the year, each saves Rs.1600, then the income of A is ____
1. Rs.3400 2. Rs.3600
3. Rs.4000 4. Rs. 4400
- A farmer had some cows and hens. No. of their heads were 40 and No.of their legs were 120. No.of cows were ____
1. 30 2. 40 3. 10 4. 20

$$B:C = 8:9$$

$$A:B:C = 24:32:36$$

$$A:B:C = 12:16:18$$

$$C:A = \frac{18}{3} : \frac{12}{2}$$

$$\therefore A = 3:2$$

$$3B = 4C \Rightarrow \frac{B}{C} = \frac{4}{3}$$

$$A:B = 3:2$$

$$B:C = 4:3$$

$$A:B:C = \frac{12}{6} : \frac{8}{4} : \frac{4}{3}$$

Ratio & proportion Explanation

(1) $A:B = 3:4$

(3) $A:B:C = 2:3:7$

$$\frac{A}{C} : \frac{B}{C} : \frac{C}{C} = \frac{2}{3} : \frac{3}{4} : \frac{4}{2}$$

$$\frac{2 \times 3 \times 4}{3 \times 2 \times 1}$$

Ans: (2)

(4) $A:B = \frac{1}{2} : \frac{2}{8} = 2:1$

$$A:B = 4:3$$

$$B:C = \frac{1}{3} : \frac{5}{9} = \frac{1}{3} \times \frac{3}{5} = \frac{1}{5}$$

$$B:C = 3:5$$

$$B : \dots 5 \cdot 3 = \frac{5}{4} \times \frac{4}{3} = \frac{10}{9}$$

$$= \frac{2}{3} \times \frac{4}{2} : \frac{3}{4} \times \frac{3}{4} : \frac{4}{2} \times \frac{6}{2} \quad \text{L.C.M} = 12$$

$$= 8:9:24$$

Ans: (4)

$$A:B = 4:3 \quad \frac{1}{2} \times \frac{8}{4} = \frac{4}{2}$$

$$B:C = \frac{3}{5} \quad \frac{3}{4} \times \frac{4}{3} = 1$$

$$C:D = \frac{10}{9} \quad \frac{4}{3} \times \frac{3}{4} = 1$$

$$C:D = 10:9$$

$$A:B:C:D = \dots$$

(2) $\frac{A}{B} \times \frac{B}{C} \times \frac{C}{D} = \frac{8}{15} \times \frac{5}{8} \times \frac{9}{9}$

$$A:D = 4:15$$

Ans: (2)

$$C:D = 10:9$$

$$A:B:C:D = (4 \times 3 \times 10) : (3 \times 3 \times 10) : (3 \times 5 \times 10) : (3 \times 5 \times 9)$$

$$= 120 : 90 : 150 : 135$$

$$\frac{120}{8} : \frac{90}{6} : \frac{150}{10} : \frac{135}{9}$$

$$= 15 : 15 : 15 : 15 \quad \text{Ans: (4)}$$

(5) $2A = 3B \Rightarrow \frac{A}{B} = \frac{3}{2}$

(6) $\frac{A}{3} = \frac{B}{4} = \frac{C}{5}$

... method
 $A:B:C = 6:4:3$...

$$4B = 3C$$

$$A:B = 3:2$$

$$B:C = 5:4$$

$$A:B:C = 15:10:8$$

$$A:C = 15:8$$

In this method Numerator's ratio is answer

$$A:B:C = 3:4:5$$

Ans: (3)

(7) $2A = 3B \Rightarrow \frac{A}{B} = \frac{3}{2}$

$$\frac{1}{2} = \frac{1}{125} = \frac{1}{x} \times \frac{125}{1} = \frac{125}{x}$$

$$\frac{1}{2} = \frac{1}{125} = \frac{1}{x} \times \frac{125}{1} = \frac{125}{x}$$

Ans: (5)

(8) $\frac{1}{x} : \frac{1}{x} = \frac{1}{5} \times \frac{x}{1} = \frac{x}{5}$

$$8x + 9y = 8x + 2y = (8 \times 5) + (9 \times 5) = (40 + 45)$$

$$= 58 = \frac{44}{22}$$

$$= 29 : 22$$

Ans: (3)

$$\frac{1}{5} : \frac{1}{x} = \frac{1}{2} : \frac{1}{125}$$

$$\frac{3}{5} A = \frac{125}{x} \Rightarrow x = 625$$

$$\frac{3}{5} A = \frac{125}{x} \Rightarrow x = 25$$

Ans: (3)

(9) $2:4 = 5:2 \Rightarrow x=5, y=2$

$$= 3:5$$

Ans: (1)

$$(11) \frac{4x^2 - 3y^2}{2x^2 + 5y^2} = \frac{12}{19} \Rightarrow 76x^2 - 57y^2 = 24x^2 + 60y^2 \quad (15)$$

$$\Rightarrow 76x^2 - 24x^2 = 60y^2 + 57y^2$$

$$52x^2 = 117y^2$$

$$(13) x = 2y \Rightarrow x:y = 2:1$$

$$x = 2, y = 1$$

$$x^2 - y^2 : x^2 + y^2 = (2^2 - 1^2) : (2^2 + 1^2)$$

$$= (4 - 1) : (4 + 1)$$

$$x:y = 3:2$$

$$\frac{x^2}{y^2} = \frac{9}{4}$$

$$x = 2y$$

$$x = 2y$$

$$\frac{x}{y} = \frac{2}{1}$$

$$x:y = 2:1$$

Ans: (1)

$$(12) x^2 + 4y^2 = 4xy$$

$$x^2 - 4xy + 4y^2 = 0$$

$$(x - 2y)^2 = 0$$

$$5x(x - 24) - 3y(x - 24) = 0$$

$$(3) 5x^2 - 132y + 6y^2 = 0$$

$$5x^2 - 132y + 6y^2 = 0$$

$$x:y = 2:1$$

Ans: (4)

$$\begin{array}{l|l} (x - 24) & \dots \\ x - 24 > 0 & 5x - 3y = 0 \\ x = 24 & 5x = 3y \\ \frac{x}{y} = \frac{2}{1} & \frac{5}{3} = \frac{3}{2} \\ x:y = 2:1 & x:y = 3:5 \end{array}$$

Ans: (4)

$$\frac{a}{3} = \frac{b}{4} = \frac{c}{7} \Rightarrow a=2, b=4, c=7$$

$$\frac{a+b+c}{b} = \frac{2+4+7}{4} = \frac{13}{4} = 1:2$$

$$(14) \frac{x}{5} = \frac{y}{8} \Rightarrow x=5, y=8$$

$$(x+5):(y+8) = (5+5):(8+8) = 10:16 = 5:8$$

$$a+b = 6x, b+c = 7x, c+a = 8x$$

$$2(a+b+c) = 6x + 7x + 8x$$

Ans: (1)

$$(16) (a+b):(b+c):(c+a) = 6:7:8$$

$$= 7 - 6x$$

$$= 2 - \frac{6x}{3}$$

$$= 2 - 2x$$

$$c = 3$$

Ans: (3)

17.

$$2(a+b+c) = 212$$

$$2x \cdot \frac{7}{3} = \frac{212}{3}$$

$$x = 24$$

$$c = (a+b+c) - (a+b)$$

$$A:B = 3:2$$

$$5x + 7y = 1210, 3x + 2y = 5 \rightarrow 1210$$

$$\frac{1}{15} A = \frac{5}{3} B$$

$$\frac{A}{2} = \frac{1}{3} + \frac{15}{8}$$

$$B = 2 \rightarrow ?$$

$$B = \frac{2}{7} \times 10$$

$$B = 2 \rightarrow ?$$

$$B = \frac{2}{5} \times 10$$

$$B = 484$$

Ans: (2)

D = 2000 Rs.

Ans: (3)

(17) $50p = \frac{1}{2}Rs, 25p = \frac{1}{4}Rs, 10p = \frac{1}{10}Rs$

$\frac{1}{2} : \frac{1}{4} : \frac{1}{10}$

(18) A:B:C:D = 5:2:4:3.

$4-3 = 1 \rightarrow 1000$

B = 2 \rightarrow ?

B = $\frac{2}{5} \times 1000$

$\frac{5}{2} + \frac{9}{4} + \frac{1}{5}$

$\frac{5}{5} = \frac{45}{5} + \frac{9}{5} = \frac{54}{5}$

$\frac{54}{5} \times \frac{2}{54} = \frac{2}{5}$

No of 10p coins for 16 Rs = $16 \times 10 = 160$

Ans: (1)

(20)

$\frac{A}{20} = \frac{B}{20}$

$\frac{103}{20} \rightarrow 206 Rs.$

$\frac{2}{5} \rightarrow ?$

$\frac{4}{20} \times 206 = 164.8$

$\frac{10}{2} = 5$

$\frac{25}{50} = 50\%$

$2+3+5 = 10$

after increased Rates Total $4+5+7 = 16$

$16 - 10 = 6 \rightarrow 60$

$\frac{10}{6} \times 60 = 100$ Ans: (3)

A:B = 2:3

Ans: (2)

(21) Total No of increased students

$= 20 + 20 + 20 = 60$

before increase = ...

$R = \frac{1}{4} \times 300$

R = 75

Ans: (4)

(23) $0.4x = 0.06 \times y$

(22) P:Q:R = 8:3:7

$(P+Q) - R = 300$

$(8+3) - 7 = 4 \rightarrow 300$

R = 7 \rightarrow ?

$\frac{7}{4} = \frac{300}{4}$

$2:4 = 0.06$

$\frac{7}{4} = \frac{0.06}{8.4}$

$4 \rightarrow 3200$

A = 5 \rightarrow ?

$A = \frac{5}{4} \times 3200$

A = 4000

Ans: (3)

(24)

| | A | B | Total | Savings |
|-------------|---|---|-------|---------|
| Income | 5 | 4 | 9 | 1600 |
| Expenditure | 3 | 2 | 5 | 1600 |

$40 \times 2 = 80$

$40 \times 4 = 160$

(25)

C H

\leq No. of cows = 20

