



gradeup

Sahi Prep Hai Toh Life Set Hai

Ratio & Proportion

Part-2

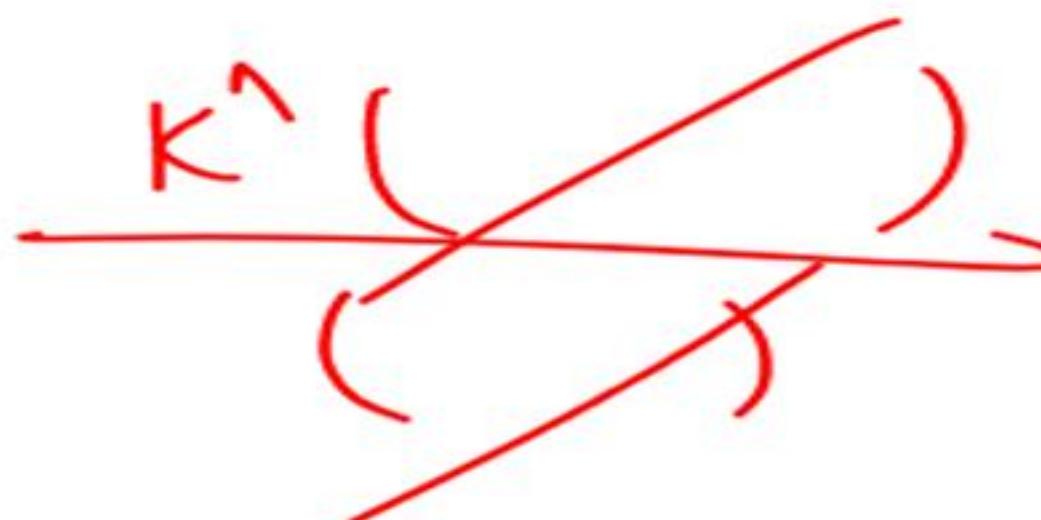
Agenda of Today's Session

- * Important Property of Ratio → 10min
- * Partnership
 - with solved examples → 25min
 - Partnership Quest → 20min
- * Income - Exp → 35min

Reason

$$A = BK, C = DK, E = FK$$

$$\frac{P(BK)^n + Q(DK)^n + R(FK)^n}{PB^n + QD^n + RF^n}$$



$$\text{If } \frac{A}{B} = \frac{C}{D} = \frac{E}{F} = K$$

$$\frac{PA^n + QC^n + RE^n}{PB^n + QD^n + RF^n} = K^n$$

Where P, Q, R
are constants

Eg1. If $\frac{A}{B} = \frac{C}{D} = \frac{E}{F} = 5$

Find the value of $\frac{3A^2 + 4C^2 + 5E^2}{3B^2 + 4D^2 + 5F^2}$

$$\rightarrow S^2 = \underline{\underline{25}} \checkmark$$

Eg2. If $\frac{A}{B} = \frac{C}{D} = \frac{E}{F} = 10$

Find the value of $\frac{5A^2 - 8C^2 + 11E^2}{5B^2 - 8D^2 + 11F^2}$

$$\rightarrow 10^2 = 100$$

eq

If $\frac{A}{B} = \frac{C}{D} = \frac{E}{F} = 4$

$$\frac{3A^4 + 7C^4 + 11E^4}{3B^4 + 7D^4 + 11F^4} \rightarrow 4^4 = 256$$

Eg3. If $\frac{A}{B} = \frac{C}{D} = \frac{E}{F} = \underline{8}$

Find the value of $\frac{9A^2 + 12C^2 + 15E^2}{12B^2 + 16D^2 + 20F^2}$

$$\frac{3(3A^2 + 4C^2 + 5E^2)}{4(3B^2 + 4D^2 + 5F^2)}$$

$$\frac{3}{4} \times 8^2 = \frac{3}{4} \cdot \cancel{64}^{16} \\ = 48$$

Eg4. If $\frac{A}{B} = \frac{C}{D} = \frac{E}{F} = 6$

Find the value of $\frac{9A^3 - 11C^3 - 17E^3}{9B^3 - 11D^3 - 17F^3}$

$$\rightarrow G^3 = \underline{\underline{216}} \quad \checkmark$$

PARTNERSHIP

<u>Investment</u>	A I ₁	B I ₂
<u>Time</u>	T ₁	T ₂

Ratio of Profits = I₁T₁ : I₂T₂

(Loss)

Profit $\underline{\text{Investment}} \times \underline{\text{Time}}$ P $\underline{\underline{I}} \times \underline{\underline{T}}$

$$T = \frac{P}{I}$$

Eqn

A

B

Invest

5 : 8

Time

4 : 9

$$\frac{\text{Profit}}{\text{Invest}} = \frac{5 \times 4}{8 \times 9} = \frac{20}{72} = \frac{5}{18}$$

$$\boxed{5 : 18}$$

Eq

Invest

$$P = I \cdot T$$

$$T = \frac{P}{I}$$

Profit

Time

A

B

C

$$2 : 3 : 4$$

$$6 : 1 : 8$$

$$3 : \frac{1}{3} : 2$$

↗

$$[9 : 1 : 6]$$



Eg1.

Investment

A

3 lakh

Time

4½ years

B

5 lakh

33 months

C

4 lakh

3 years

Profit = I_T

Find the ratio of their profits.

A

B

C

2. 54

5. 33¹¹4. 36¹²

54 :

55

48

54	:	55	:	48
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Ans. 54 : 55 : 48

Eg2.

Investment

A

3

B

6

C

5

Profit

2

1

3

Time

$$P = I \cdot T$$

$$T = \frac{P}{I}$$

$$\frac{2}{3} : \frac{1}{6} : \frac{3}{5}$$

$$\boxed{20 : 5 : 18}$$



Ans. 20 : 5 : 18

Eg3.

	A	B	C
1 st Jan, 2018	8 lakh	20 lakh	
1 st July, 2018	+4 lakh		
1 st Jan, 2019	+8 lakh	-8 lakh	24 lakh
1 st July, 2019	+12 lakh		

If the profit was divided at the end of the year 2019, find the ratio of profit of A, B and C.

A

$$8 \cdot \frac{1}{2} + 12 \cdot \frac{1}{2} + 20 \cdot \frac{1}{2} + 32 \cdot \frac{1}{2}$$

$$\frac{36}{9} : \frac{32}{8}$$

B

$$20 \cdot 1 + 12 \cdot 1$$

C

$$24 \cdot 1$$

$$\frac{32}{8} : \frac{24}{6}$$

Ans. 9 : 8 : 6



Eg4.

Investment

A

1 lakh

B

2 lakh

C

10 lakh

1 : 2 : 10

A & B are active partners and their salaries are Rs. 50,000 per month and Rs. 30,000 per month whereas C is a sleeping partner. If the total profit at the end of the year is Rs.14,80,000, find the share of A, B & C in that.

Note: First give their salaries after giving that whatever is left will be divided in the ratio of investment.

$$A \rightarrow 50000 \cdot 12 = \underline{\underline{6 \text{ lakk}}} \quad B = 30000 \cdot 12 = 3.6 \text{ lakk}$$

left $\rightarrow 14,80,000 - 9,60,000$

$$5,20,000$$

$\frac{1}{13} \times 5.2$ 0.4	$\frac{2}{13} \times 5.2$ 0.8	$\frac{10}{13} \times 5.2$ 4 lakk
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A → 6,40,000

B → 4,40,000

C → 4,00,000

Ans.

A = 6, 40,000

B = 4,40,000

C = 4,00,000

PRACTICE QUESTIONS



Q1. Three partners A, B and C start a business. Twice of A's capital is equal to three times of B's capital is equal to four times of C's capital. Out of total profit of Rs. 19,500 at the end of the year, B's share is ?

- (a) Rs. 7,000 (b) Rs. 6000
(c) Rs. 9,000 (d) Rs. 9700

$$2A = 3B = 4C = K$$

$$\begin{array}{ccc} A & : & B & : & C \\ \frac{K}{2} & : & \frac{K}{3} & : & \frac{K}{4} \\ 6 & : & 4 & : & 3 \end{array}$$

$$\frac{4}{13} \times 19500 = \underline{\underline{6000 \text{ Rs}}}$$



Q2. Alok started a business investing Rs. 9000. After 5 month Santosh joins with a capital of Rs. 8000. If at the end of the year, they earn a profit of Rs. 6970, then what will be the share of Santosh in the profit?

- (a) Rs. 2730
- (b) ~~Rs. 2380~~
- (c) Rs. 3840
- (d) Rs. 3596

Profit

Alok	Santosh
$9000 \times \frac{3}{12} :$	$\frac{2}{8000} \times 7$
$27 :$	$.14$
$\frac{14}{44} \times \frac{170}{6970} = \underline{\underline{2380}}$	

gradeup Q3. A and B are partners in a business. They invest in the ratio 5 : 6, at the end of 8 months A withdraws. If they receive profits in the ratio of 5 : 9, find how long B's investment was used?

- (a) 12 months
- (b) 10 months
- (c) 15 months
- (d) 14 months

$$\frac{5 \cdot 8}{6 \cdot x} = \frac{5}{9}$$

Invest
Time

A B

$$\left. \begin{matrix} 5 \\ 8 \end{matrix} \right\} : \left. \begin{matrix} c \\ x \end{matrix} \right\} = 5 : 9$$

$$6x = 72$$

Profit

$$x = 12$$

B → 12 months



gradeup Q4. A, B and C start a business each investing Rs. 25,000. After 5 months A withdrew Rs. 6,000, B withdrew Rs. 7000, and C invested Rs. 8000 more. At the end of the year, there is a profit of Rs. 86,500. Find the difference between the share of A and B.

$$\begin{array}{ccc}
 A & B & C \\
 \cancel{25000} \times 5 & \cancel{25000} \times 5 & \cancel{25000} \times 5 \\
 + \cancel{19000} \times 7 & + \cancel{18000} \times 7 & + \cancel{33000} \times 7 \\
 \text{Profit} & 258 : 251 & 356 \\
 & \frac{7}{865} \times \cancel{865}^{100} & = 700
 \end{array}$$

~~This is wrong~~

* S

$$\begin{array}{rcl} A & : & \\ 8 & : & 3 \\ \hline y+2 & : & 1 \end{array}$$

$$\begin{array}{rcl} B & : & \\ 10 & : & 5 \\ \hline y+6 & : & 3 \end{array}$$

$$\begin{array}{rcl} C & : & \\ 12 & : & 5 \\ \hline y+8 & : & 4 \end{array}$$



gradeup Q5. Four milkmen rented a pasture. A grazed 24 cows for 3 months, B-10 for 5 months, C-35 cows for 4 months and D-21 cows for 3 months. If A's share of rent is Rs. 720, find the total rent of the field ?

(a) Rs. 1,400

(b) Rs. 1,900

(c) Rs. 3,250

(d) Rs. 3,000

	No. of cows	Time	Rent
A	24×3		<u>72 units</u> \rightarrow 720
B	10×5		50 units
C	35×4		140 units
D	21×3		<u>63 units</u>
			<u>325 units</u> 3250/-

gradeup Q6. A, B and C entered into a partnership. A invested Rs. 2560 and B Rs. 2000. At the end of the year, they gained Rs. 1105, out of which A got Rs. 320. C's capital was -

- (a) Rs. 4280 (b) Rs. 2840
(c) Rs. 4820 (d) Rs. 4028

A	B	C	Total
Invest <u>Profit</u> 2560 320	2000 250	?? 4280 535	1105

$$\begin{aligned}\text{Profit of C} &= 1105 - 320 - 250 \\ &= 535\end{aligned}$$

Q7. Two partners invest Rs. 17000 and Rs. 13000 respectively in a business and agree that 75% of the profit should be divided equally between them and the remaining profit is to be treated as interest on capital. If one partner gets Rs. 532 more than the other, find the total profit made in the business.

- (a) Rs. 16960
- (b) Rs. 14960
- (c) Rs. 16950
- (d) Rs. 15960



Q8. A, B and C are partners in a business. A whose money has been used for 4 months claims $\frac{1}{8}$ of profit, B whose money has been used for 6 months, claims $\frac{1}{3}$ of the profit. C had invested Rs. 1560 for 8 months. What is the difference between investment of A and B.

- (a) Rs. 720
- (b) Rs. 560
- (c) Rs. 420
- (d) Rs. 500



Q9. A puts Rs. 375 more in a business than B, but B has invested his capital for 4 months while A has invested his capital for 8 months. If the share of A is Rs. 75 more than that of B out of the total profit of Rs. 125, find the capital contributed by B ?

- (a) Rs. 750
- (b) Rs. 375
- (c) Rs. 735
- (d) Rs. 573

Q10. A, B and C have respectively invested Rs. 20, Rs. 18 and Rs. 12 (all in thousands) jointly in a business. A and B receive respectively, 12% and 8% of the annual profit for services, and remaining profit being divided among A, B and C in proportion to their capitals. If at the end of the year A receives altogether Rs. 648 more than that of B then C's share is :

Q11. A and B enter into partnership. A supplies whole of the capital amounting to Rs. 45000 with the condition that the profit should be divided equally and that B pays A interest on half of the capital at 10% per annum, but receives, Rs. 120 per month for carrying on the concern. When B's income is half of A's income then their total yearly profit is :

- (a) Rs. 9180
- (b) Rs. 7150
- (c) Rs. 3060
- (d) Rs. 6300

Q12. A, B and C are partners. A receives $\frac{5}{8}$ of the profit, B and C share the remaining profit equally. A's income is increased by Rs. 450 when the profit rises from 4% to 9%. Find the capital invested by B.

- (a) Rs. 3366
- (b) Rs. 1687.5
- (c) Rs. 3475
- (d) Rs. 2700

Question Based on INCOME = EXPENDITURE + SAVINGS

eg

Income → 18000 Rs

Expenditure → 11000 Rs

Savings → 7000 Rs

eg
A saving
 $\rightarrow 1250$

If

$$A's \text{ Income} = 4000$$

$$B's \text{ Expenditure} = 2250$$

Find

$$A's \text{ saving} = ??$$

$$\begin{aligned} 5x &= 4000 \\ x &= 800 \end{aligned}$$

$$\begin{aligned} 9y &= 2250 \\ y &= 250 \end{aligned}$$



Eg.

Income

Expenditure

A	:	B	:	C
$5x$:	$8y$:	$6z$
$8y$:	$10y$:	$17y$

$$8y = 2000$$

$$y = 250$$

$$8x = 7200$$

$$x = 900$$

A's expenditure = Rs.2000
B's Income = Rs.7200
Find C's savings = ???

$$\text{C's saving } 6 \cdot 900 - 17 \cdot 250$$

$$5400 - 4250$$

$$= 1150$$

1150

Ans. Rs. 1150

Q1. The incomes of A, B and C are in the ratio 3:7:4 and their expenses in the ratio 4:3:5. If A saves Rs. 300 out of an income of Rs. 2,400, the savings of B and C are:

- ~~(a)~~ Rs. 4025 & Rs. 575
- (b) Rs. 1575 & Rs. 2,625
- (c) Rs. 2750 & Rs. 1,025
- (d) Rs. 3725 & Rs. 1,525

A B C

Income $3x$: $7x$: $4x$

A saves $\underline{\underline{-300}}$

Exp $4y$: $3y$: $5y$

A Income $\underline{\underline{= 2400}}$

$3x = 2400$

Savings of B

$x = 800$

$7 \cdot 800 - 3525$

B savings ??

$= 4025$

C savings ??

$4y = 2100$

Saving of C

$y = 525$

$5 \cdot 800 - 5525$
 $= 595$

Q2. The income of A and B are in the ratio 5:3. The expenses of A, B and C are in the ratio 8:5:2. If C spends Rs. 2000 and B saves Rs. 700, then A saves.

- (a) Rs. 1500
- (b) Rs. 1000
- (c) Rs. 500
- (d) Rs. 250

$$\begin{array}{ccc}
 & A & \\
 \text{Income} & \cancel{\frac{9500}{5x}} & : \quad B \quad C \\
 & 3x & \\
 \\
 \text{Exp} & \cancel{\frac{8100}{8y}} & : \quad \frac{5y}{\cancel{500}} ; \quad 2y \\
 & & \\
 & 2y = 2000 & \\
 & y = 1000 & \\
 \\
 & \text{Income} = \text{Exp} + \text{savings} & \\
 & = 5000 - 1700 & \\
 & 5700 &
 \end{array}$$

$3x = 5700$

$x = 1900$



Q3. The ratio of incomes of two persons is 5:3 and that of their expenditures is 9:5. If they save Rs. 2600 and Rs. 1800 respectively, their incomes are:

- ~~(a)~~ Rs. 8,000 & Rs. 4,800
 (b) Rs. 6,000 & Rs. 6,000
 (c) Rs. 10,000 & Rs. 6,000
 (d) Rs. 9,000 & Rs. 5,400

Income

A

B

5x

3x

$$5x - 9y = 2600$$

Exp

$$9y : 5y$$

$$3x - 5y = 1800$$

Savings

2600 is

1800 is

$$\underline{x = 1600} \quad \underline{y = 600}$$

$$A \rightarrow 8000$$

$$B \rightarrow 3 \cdot 1600 \\ = 4800$$

gradeup Q4. The incomes of A, B and C are in the ratio 7:9:12 and their spending are in the ratio 8:9:15. If A saves 1/4th of his income, then the savings of A, B and C are in the ratio of:

~~(a)~~ 56 : 99 : 69

(b) 69 : 56 : 99

(c) 99 : 56 : 69

(d) 99 : 69 : 56

A saves = $\frac{1}{4}$ th A Income

Savings ??

$$7x - 8y = \frac{1}{4} \cdot 7x$$

$$28x - 32y = 7x$$

$$\boxed{\frac{x}{y} = \frac{32}{21}}$$

A	B	C
Income $7x$	$9x$	$12x$
168	189	315
Exp $8y$	$9y$	$15y$
$\checkmark \boxed{56 : 99 : 69}$		

IInd App →

without

using

variables

Income

$$\begin{array}{r} A \\ \hline 224 \\ - 7 \times 8 \cancel{4} \\ \hline 168 \end{array}$$

Exp

$$\begin{array}{r} B \\ \hline 288 \\ - 9 \\ \hline 189 \end{array}$$

(A)

$$\text{Saving} = \frac{1}{4} \text{ of } \underline{\text{A Income}}$$

$$\begin{aligned} \text{Income} &= 491 \\ \text{Exp} &= 315 \\ \text{Sav} &= 1 \end{aligned}$$

J. A. B. Q5. Three person A, B, C whose income together amount to Rs. 72000 spend 80, 85 and 75 percent of their income respectively. If their savings are in the ratio 8:9:20, then A's income is

- (a) 20,000
- (b) 16,000
- (c) 22,000
- (d) 18,000

$$A + B + C = \underline{72000}$$

$$20\% \text{ of } A = 8x$$

$$A = 40x$$

$$15\% \text{ of } B = 9x$$

$$B = 60x$$

$$25\% \text{ of } C = 20x$$

$$C = 80x$$

$$A : B : C \\ 240x : 160x : 80x$$

$$\frac{2}{9} : \frac{1}{4} : \frac{1}{16} = 80^{\circ} : 160^{\circ} : 40^{\circ}$$

Q6. One year ago the ratio between Laxman's and Gopal's salary was 3 : 4. The individual ratios between their last year's and this year's salaries are 4 : 5 and 2 : 3 respectively. At present the total of their salary is Rs. 4160. The salary of Laxman now, is

- (a) Rs. 1600
(c) Rs. 1040

- (b) Rs. 2560
(d) Rs. 3120

Given

$$\frac{\text{LAX last}}{\text{GOP last}} = \frac{3x}{4x}$$

$$\frac{\text{LAX last}}{\text{LAX Present}} = \frac{4}{5}$$

$$\frac{\text{GOP last}}{\text{GOP Present}} = \frac{2}{3}$$

I st

$$\frac{3x}{\text{LAX Present}} = \frac{4}{5}$$

$$\text{LAX Present} = \frac{15x}{4}$$

$$\frac{4x}{\text{GOP Present}} = \frac{2}{3}$$

$$\text{GOP Present} = \frac{6x}{5}$$

$$\text{LAX Present} + \text{GOP Present} = 4160$$

$$\frac{15x}{4} + \frac{6x}{5} = 4160$$

$$\frac{75x + 24x}{20} = 4160$$

$$99x = 4160 \times 20$$

$$x = \frac{4160 \times 20}{99}$$

$$x = 86.66666666666667$$

$$\begin{array}{r} \cancel{15x} \\ \hline 4 \\ : \end{array} \quad \begin{array}{r} \cancel{6x} \\ \hline 2 \\ : \end{array}$$

Present salary

$$\begin{array}{r} \text{LAX} \\ \cancel{5} : 81 \\ \hline \end{array}$$

$$\text{Total} = \underline{\underline{4160\text{Rs}}}$$

$$\begin{array}{r} 320 \\ 5. \quad \cancel{x 4160} \\ \cancel{12.} \\ = \underline{\underline{1600\text{Rs}}} \end{array}$$

IInd App →

Without variables

Given

$$\frac{\text{LAX last}}{\text{GOF last}} = \frac{3}{4}$$

$$\frac{\text{LAX last}}{\text{LAX present}} = \frac{4 \times 1 \times 3}{5 \times 3}$$

$$\frac{\text{GOF last}}{\text{GOF present}} = \frac{2 \times 2 \times 4}{3 \times 8}$$

LAX Pres GOF Present

$$5 \times 2 \quad 3 \times 8$$

$$(5) : 8$$

$$\begin{array}{r} 3 \overline{) 20} \\ 5 \times 4 \overline{) 60} \\ 13 \dots \\ = 160 \end{array}$$

If

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

$$\frac{B}{C} = \frac{4}{5}$$

$$\frac{C}{D} = \frac{6}{7}$$

$$\frac{A}{D} = ?$$

$$\begin{aligned}
 & \frac{A}{B} \times \frac{B}{C} \times \frac{C}{D} \\
 & \cancel{A} \cancel{B} \cancel{C} \quad D \\
 & \frac{2}{3} \times \frac{4}{5} \times \frac{6}{7} \\
 & = \frac{16}{35} \quad \checkmark
 \end{aligned}$$



IIIrd Approach

$$\frac{L_L}{G_C} = \frac{3}{4}$$

$$\frac{C_{L_L}}{C_{L_P}} = \frac{4}{5}$$

$$\frac{G_C}{G_P} = \frac{2}{3}$$

$$\frac{L_P}{G_P} = ??$$

$$\frac{4}{4} \times \cancel{\frac{K}{K}} \times \cancel{\frac{G}{G}}$$

$$\frac{5}{4} \times \cancel{\frac{\beta}{\beta}} \times \cancel{\frac{x}{x}}$$

$\frac{5}{8}$

PRACTICE QUESTIONS

Q1. In an examination, the number of those who passed and the number of those who failed were in the ratio 25:4. If five more had appeared and the number of failures was 2 less than earlier, the ratio of passers to failures would have been 22:3. The number who appeared at the examination, is:

Q2. The smallest integer, which subtracted from both the terms of 6:7 gives a ratio less than 16:21, is:

Q3. If there is a reduction in the number of workers in a factory in the ratio 15:11 and an increment in their wages in the ratio 22:25, then the ratio by which the total wages of the workers should be decreased is



Q4. The ratio of the number of boys and girls in a school was 5:3. Some new boys and girls were admitted to the school, in the ratio 5:7. At this, the total number of students in the school became 1200, and the ratio of boys to girls changed to 7:5. The number of students in the school before new admission was

- | | |
|---------|---------|
| (a) 700 | (b) 720 |
| (c) 900 | (d) 960 |



Q5. If $(x^3 - y^3):(x^2 + xy + y^2) = 5$ and $(x^2 - y^2) : (x - y) = 7 : 1$, then the ratio of $2x : 3y$ is equals to :

- (a) 3 : 2
- (b) 2 : 3
- (c) 4 : 3
- (d) 4 : 1

Q6. Tom is chasing jerry. In the same interval of time Tom jumps 8 times while Jerry jumps 6 times. But the distance covered by Tom in 7 jumps is equal to the distance covered by Jerry in 5 jumps. The ratio of speed to Tom and Jerry is

Q7. A person distributes his pens among

four friends A, B, C and D in the ratio

$\frac{1}{3} : \frac{1}{4} : \frac{1}{5} : \frac{1}{6}$. What is the minimum number

of pens that the person should have?

- (a) 57
- (b) 65
- (c) 75
- (d) 45



Q8. If $a:b = c:d = e:f = 1:2$,

then $(pa + qc + re):(pb + qd + rf)$ is equal to:

- (a) $p:(q + r)$
- (b) $(p + q):r$
- (c) $2:3$
- (d) $1:2$

Q9. If $a:b = c:d$ then $\frac{ma+nc}{mb+nd}$ is not equal to:

(a) $\frac{a}{b}$

(b) $\frac{c}{d}$

(c) $\frac{a+c}{b+d}$

(d) $\frac{c-a}{b-d}$

Q10. The numerator and denominator of a fraction are in the ratio of 2:3. If 6 is subtracted from the numerator, The result is a fraction that has a value $\frac{2}{3}$ of the original fraction. The numerator of the original fraction is:

Q11. The smallest integer, which subtracted from both the terms of 6:7 gives a ratio less than 16 : 21, is:

Ans. (c)

Q12. If $a+b : \sqrt{ab} = 4 : 1$, where $a > b > 0$, then $a : b$ is

- a $2+\sqrt{3} : 2-\sqrt{3}$
- b $2-\sqrt{3} : 2+\sqrt{3}$
- c $3+\sqrt{2} : 3-\sqrt{2}$
- d $3-\sqrt{2} : 3+\sqrt{2}$

Q13. If $a - b : b - c : c - d = 1 : 2 : 3$, then what is the ratio of $(a + d) : c$?

- (a) 1 : 2
- (b) 2 : 1
- (c) 3 : 1
- (d) None of these

Q14. If $\frac{a}{b} = \frac{2}{3}$, $\frac{b}{c} = \frac{3}{5}$ and $\frac{c}{d} = \frac{5}{6}$ then,

what is the value of $\frac{3a + 2b + 4c + d}{3d + 4c}$?

- (a) 19
- (b) 38
- (c) 1
- (d) 2

Q15. Monthly incomes of X and Y are in the ratio 1:3 and their expenses are in the ratio 19:40. X saves Rs.18,860 less than that Y and in total they save Rs.36,020. Income of X and Y respectively are:

- (a) Rs. 10,480 and Rs. 31,440
- (b) Rs. 40,000 and Rs. 25,420
- (c) Rs. 42,500 and Rs. 36,200
- (d) Rs. 12,000 and Rs. 29,400



Q16. A sum of Rs.15525 is divided among Sunil, Anil and Jamil such that if Rs.22, Rs.35 and Rs.48 be diminished from their shares respectively, their remaining sums shall be in the ratio 7:10:13. What would have been the ratio of their sums if Rs.16, Rs.77 and Rs.37 respectively were added to their original shares?

- (a) 9:13:17
- (b) 18:26:35
- (c) 36:52:67
- (d) None of these

Q17. A bag contains Rs.600 in the form of one rupee, 50 paisa and 25 paisa coins in the ratio of 3:4:12. Find the total value (in Rs.) of the 25 paisa coins present in the bag.

- (a) 210
- (b) 215
- (c) 225
- (d) 230

Ans. (c)

Q18. The present ages of a father and his son are in the ratio 9:4. The ratio of the father's age after 8 years from now to the age of the son 2 years ago is 8:3. Find the present age (in years) of the son.

- (a) 28
- (b) 32
- (c) 36
- (d) 24

Q19. Ratio of land and water on earth is 1:2 and ratio of land and water in northern hemisphere is 2:3. Find the ratio of land and water in southern hemisphere.



Q20. The sum of Rs.600 is divided in A, B and C such that Rs.40 is more than $\frac{2}{5}$ of A's, Rs.20 is more than $\frac{2}{7}$ of B's and Rs.10 is more than $\frac{9}{17}$ of C's share, they are equal. Then what is the share of A,B,C respectively?

- (a) 140, 240, 190
- (b) 170, 260, 170
- (c) 150, 280, 170
- (d) 100, 330, 170



Q21. Three friends A, B and C went on a picnic. A brought 5 apples and B brought 3 apples and C had Rs.80. They divided the apples equally among themselves and C gave all his money to A and B for their contributions. What are the respectively shares of A and B from that money?

- (a) Rs.50, Rs.30
- (b) Rs.70, Rs.10
- (c) Rs.40, Rs.40
- (d) Rs.33.33, Rs.66.66

Q22. Total expenses of a boarding house are partly fixed and partly varying linearly with the number of boarders. The average expense per boarder is Rs.700 when there are 25 boarders and Rs.600 when there are 50 boarders. What is the average expense per boarder when there are 100 boarders?

- (a) 550
- (b) 580
- (c) 540
- (d) 570



Q23. My grandfather was 8 times older than me 16 years ago. He would be 3 times of my age, 8 years from now. 8 years ago, what was the ratio of my age to that of my grandfather?

- (a) 3:8
- (b) 1:5
- (c) 1:2
- (d) None of these

Q24. Ratio of the fares of First, Second and Third class category of a train between two stations is $10 : 7 : 2$ and the ratio of passenger travelling in these category is $4 : 9 : 17$ respectively. If the fare is increased by $\frac{1}{4}$ in First class, $\frac{1}{8}$ in Second class and decreased by 10% in Third class so that the ratio of number of passenger in the category remains same. If the new collection is received of Rs. 60590, then find the total amount received from third class category.

Ans. (c)

Q25. Rs. 180 are to be divided among 66 persons (men and women). The ratio of total amount of money received by men and women is 5:4. But the ratio of the money received by each man and women is 3:2. Then number of men are :

Ans. (c)

Q26. A man ordered 4 pairs of black socks and some pairs of brown socks. The price of a pair of black socks is double than that of a brown pair. While preparing the bill the clerk interchanged the number black and brown pairs by mistake which increased the bill by 50%. The ratio of the number of black and brown pairs of socks in the original order was:



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