Ratio and Proportion

Ratio and proportion

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Placement for All.. All for Placement

This Video Completely covers Ratio and Proportion which is more than sufficient for all kind of placement Exams eg: TCS/WIPRO/AMCAT/ELITMUS/CoCubes and all other placement Exams.

Ratio and proportion

by : Pratik Shrivastava(10 years of industry experience and awarded as best Aptitude trainer)

Ratio and Proportion

Q1. If A:B = 5:7, B:C = 6:11 then A:B:C is ?

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

Solution:

A : B : 5 : 7] ×6
B : C : 6 : 11] ×7

A:B:C

A:B: 30 : 42
B:C: 42 : 77

A:B:C = 30 : 42 : 77 ✓

Ratio and Proportion

Q2. If A:B =3:4 and B:C = 8:9, then A:C is ?

A.6:8
B.6:9 : 2:3
C. 9:6
D. 3:8
e. None

Solution:

A:B = 3:4
B:C = 8:9

A:C ✓

2:3 ✓
4:6 ✓
6:9 ✓

1:2
2×1 : 2×2
2:4

$\frac{A}{B} : \frac{3}{4}$ $\frac{B}{C} : \frac{8}{9}$

$\frac{A}{B} \times \frac{B}{C} = \frac{3}{4} \times \frac{8}{9} \; 3$

: 2:3 ✓

Ratio and Proportion

Q3. If A:B = 8:15 , B:C = 5:8 and C:D =4:5, then A:D is equal to ?

A. 8:30 4:5 C. 8:24

B. 8:15 D. 4:5

Solution:

A:D

A:B: 8:15, B:C: 5:8, C:D: 4:5

$\frac{A}{B} \times \frac{B}{C} \times \frac{C}{D} : \frac{8}{15} \times \frac{5}{8} \times \frac{4}{5}$

$\frac{A}{D} = \frac{4}{15}$

$: \frac{8}{30}$ 8:30

Ratio and Proportion

Q4. If 2A=3B=4C , then A:B:C is ?

V.V.I

A. 2:4:6 C. 6:4:3

B. 2:3:4 D. 4:3:2

Solution:

A:B:C: 2:3:4 ×

2A: 3B: 4C , A:B:C

$\frac{2A}{12} : \frac{3B}{12} : \frac{4C}{12}$

2 | 2, 3, 4 = 12

1, 3, 2

2×3×2:

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

6:4:3

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

2A : 3B

A:B = 2:3 ×

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

A:B: 3:2 ✓

Ratio and Proportion

Q5. If (A/3) = (B/4) = (C/5) then A:B:C is ?

A.5:4:3 C. 4:3:5

B.3:4:5 D. None of these

Solution:

Format → $\frac{A}{3} : \frac{B}{4} : \frac{C}{5}$ ⇒ A:B:C

3:4:5 ✓

Ratio and Proportion

Q6. Find the fourth proportional to 4, 9 and 12?

A) 18 B) 21 C) 24 D) 27

Answer: Let the fourth proportional to the numbers 4, 9, and 12 be x. Then from the definition of the fourth proportional, we must have:

4, 9, 12, x

M M M W

4 : 9 :: 12 : x

$\Rightarrow 4 \times x = 9 \times 12$

$x = 27$

Ratio and Proportion

Q8. Two numbers are respectively 20% and 50% more than a third number. the ratio of the two numbers is:

110% & 160%

A) 3: 4 B) 4: 5 C) 5: 6 D) 6: 7

Solution:

3rd : 100

1st : 2nd

210 : 260

third no : x

Calculation lengthy

2-min

Trick

third = 100

1st : 120 , 2nd : 150

120 : 150

4 : 5

Ratio and Proportion

Q9 Salaries of Ravi and Sumit are in the ratio 2:3. If the salary of each is increased by Rs. 4000, the new ratio becomes 40:57. What is Sumit's salary?

A) 38000 B) 46800 C) 36700 D) 50000

TCS

* data - given in terms of ratio

A : B = 2 : 3

A = 2x

B = 3x

Solution:

R : S = 2 : 3

R = 2x, S = 3x

$\Rightarrow \frac{2x + 4000}{3x + 4000} = \frac{40}{57}$

$\Rightarrow 114x + 57 \times 4000 = 120x + 40 \times 4000$

$\Rightarrow 6x = 57 \times 4000 - 40 \times 4000$

$\Rightarrow \Rightarrow 6x = 4000(57 - 40)$

$\Rightarrow 6x = 4000 \times 17$

$\frac{6x}{2} = \frac{4000 \times 17}{2}$

$3x = 2000 \times 17$

$3x = 34000$

3x + 4000

34000 + 4000

38000

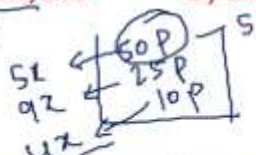
Ratio and Proportion

Q10. A bag contains 50 P, 25 P and 10 P coins in the ratio 5: 9: 4, amounting to Rs. 206. Find the number of coins of each type respectively.

A) 360, 160, 200 B) 160, 360, 200

C) 200, 360,160 D) 200,160,300

Solution:



5:9:4

50×5x + 25p ×9x + 10p × 4x = 206rs

5x40=200 ✓

9x40=360

4x40=160

$\frac{1}{2}\times 5x + \frac{125}{100}\times 9x + \frac{10}{100}\times 4x = 206$

$\frac{5x}{2} + \frac{9x}{4} + \frac{2x}{5} = 206 \Rightarrow \frac{50x+45x+8x}{20} = 206$

103x = 206 × 20

x = 40

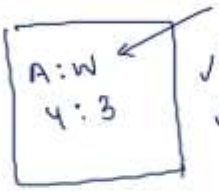
Ratio and Proportion

Q11. A mixture contains alcohol and water in the ratio 4 : 3. If 5 liters of water is added to the mixture, the ratio becomes 4: 5. Find the quantity of alcohol in the given mixture.

A) 10 B) 12

C) 15 D) 18

Solution:



A = 4x lit

W = 3x lit

= 4x

4x 20 lit

8x

$\Rightarrow \frac{4x}{3x+5} = \frac{4}{5}$

$\Rightarrow 20x = 12x + 20$

$8x = 20$

$x = \frac{20}{8}$

Ratio and Proportion

Q12. If Rs. 782 be divided into three parts, proportional to ½ : 2/3: 3/4, then the first part is?

A) Rs. 182 B) Rs. 190

C) Rs. 192 D) Rs. 204

Solution:

6x + 8x + 9x = 782

23x = 782

$x = \frac{782}{23}$

= 34 ✓

6x

6 × 34 = 204

$\Rightarrow \frac{1}{2} : \frac{2}{3} : \frac{3}{4}$

2, 3, 4

12

$= 12\times\frac{1}{2} : 12\times\frac{2}{3} : 12\times\frac{3}{4}$

6 : 8 : 9 ✓

A B C

A : B

2 : 3 → 80 120

2x + 3x = 200

5x = 200

x = 40

Ratio and Proportion

Q13. Seats for Mathematics, Physics and Biology in a school are in the ratio 5:7:8. There is a proposal to increase these seats by 40%, 50% and 75% respectively. What will be the ratio of increased seats ?

A) 1:2:3 B) 2:3:4

C) 3:4:5 D) 4:5:6

Solution:

M : 5x
P : 7x
B : 8x

$\Rightarrow 5x \times \frac{140}{100} : 7x \times \frac{150}{100} : 8x \times \frac{175}{100}$

$\Rightarrow 7 : \frac{21}{2} : 14$

$\Rightarrow 2\times 7 : 2 \times \frac{21}{2} : 14 \times 2$

$2 : 3 : 4$ $14 : 21 : 28$

Q A = 120
B is 40% more than A
B: $120 \times \frac{(100+40)}{100}$
$= \frac{120 \times 140}{100}$
$= 168$ ✓

Ratio and Proportion

Q14. The salaries of A, B, and C are in the ratio of 1 : 2 : 3. The salary of B and C together is Rs. 6000. By what percent is the salary of C more than that of A?

A) 100 % B) 200%

C) 300% D) 600%

Solution:

A : B : C = 1 : 2 : 3

A = x
B = 2x
C = 3x

B + C : 6000
2x + 3x = 6000
5x = 6000
$x = \frac{6000}{5}$
x = 1200

A = 1200, C = 3600
3600 − 1200 : 2400
$\Rightarrow \frac{2400}{1200} \times 100$
$\Rightarrow 200$

3 × 1200
3600

Ratio and Proportion

Q15. A sum of Rs. 427 is to be divided among A, B and C such that 3 times A's share, 4 times B's share and 7 times C's share are all equal. The share of C is :

A) 84 B) 140

C) 196 D) 240

Solution:

427
A B C

3, 4, 7 84

3A = 4B = 7C

$\frac{3A}{84} = \frac{4B}{84} = \frac{7C}{84}$

28 21 12

A : B : C :
28 : 21 : 12

2A = 3B = 4C

$\Rightarrow 28x + 21x + 12x = 427$

$61x = 427$

$x = \frac{427}{61} = 7$

12 × 7
84

Ratio and Proportion

Q16. The incomes of two persons A and B are in the ratio 3 : 4. If each saves Rs.100 per month, the ratio of their expenditures is Rs. 1 : 2. Find their incomes.

A) Rs. 100 and Rs.150 B) Rs. 150 and Rs.200

C) Rs.200 and Rs.250 D) Rs.250 and Rs.300

Solution:

I E S

100 - 20 = 80

100 - 80 = 20

Income $A:B = 3:4$

$I_A = 3x$ → $3 \times 50 = 150$

$I_B = 4x$ → $4 \times 50 = 200$

Saving = 100 Rs

$E_A = 3x - 100$

$E_B = 4x - 100$ $\times \frac{1}{2}$

$\Rightarrow 6x - 200 = 4x - 100$

$2x = -100 + 200$

$2x = 100 \Rightarrow x = 50$

Ratio and Proportion (Ages) ✓

Q17. Ratio of Arun's age to Vinod's age is 4:3. Vinod will be 20 years old after 5 years. what was Arun Age before 3 years?

a) 20years b)21years c)17years d)15years

Solution:

$A:V = 4:3$

$4 \times 5 = 20$ = $A = 4x$, $V = 3x$ ✓

after 5 years.

$3x + 5 = 20$ ✓

$3x = 15$

$x = 5$ ✓

$20 - 3 = 17$

Ratio and Proportion

Q18. A sum of Rs.312 was divided among 100 boys and girls in such a way that the boy gets Rs.3.60 and each girl Rs. 2.40 the number of girls is

A) 35 B) 40 C) 45 D) 50

Solution:

Boys = b

girls = g

$b + g = 100$ — (1) $\times 3.6$

$3.6b + 2.4g = 312$ — (2)

$3.6b + 3.6g = 360$

$3.6b + 2.4g = 312$

$1.2g = 48$

$g = \frac{48}{1.2} = \frac{480}{12} = 40$

100 × 3.6

360

Ratio and Proportion

Q19. The ratio of male and female in a city is 7 : 8 respectively and percentage of children among male and female is 25 and 20 respectively. If number of adult females is 156800, what is the total population of the city?

A) 4,12,480 B) 3,67,500 C) 5,44,700 D) 2,98,948

M : F : 7 : 8

M = 7x

F = 8x

Total pop = 15x

Children	
M	F
25%	20%

Adults	
M	F
75%	80%

$\Rightarrow 8x \times \frac{80}{100} = 156800$

$8x = 39200 \times 5$

$x = \frac{39200 \times 5}{8}$

$15x = \frac{4900 \times 5 \times 15}{8}$

$= 4900 \times 75$

$= 367500$