

BANK EXAMS

QUANTITATIVE APTITUDE

RATIO – PROPORTION & PARTNERSHIP

RATIO

Ratio means comparison. The number of times one quantity contains another quantity of the same kind.

- ★ Thus the ratio between 5 kgs of sugar and 10 kgs of sugar can be possible, but not between 10 litres of oil and 20 mangoes.
- ★ The ratio between one quantity to another is denoted by $a : b$ or $\frac{a}{b}$.
e.g.: 2 : 5 or 11 : 8 etc.
- ★ The two quantities in the ratio are called its terms. The first term is called the antecedent and the second term is called consequent.
- ★ The terms of the ratio can be multiplied or divided by the same number.

PROPORTION

If two ratios are equal, then they make a proportion.

$$\text{Thus } \frac{4}{5} = \frac{12}{15} \text{ or } 4 : 5 = 12 : 15$$

- ★ Each term of the ratios $\frac{4}{5}$ and $\frac{12}{15}$ is called proportional.
- ★ The middle terms 5 and 12 are called means and the end terms 4 and 15 are called extremes.
Product of Means = Product of Extremes.

When working on any Ratio problems:

- ★ Change the quantities to the same units; then reduce the ratio to its simplest form.
- ★ Write the items in the ratio in fraction form.
- ★ Make sure that there are the same items in the numerator and denominator.

EXERCISE

1. $a : b = 3 : 2$; $b : c = 6 : 7$. Find $a : b : c$.
1) 6 : 7 : 9 2) 7 : 9 : 8 3) 7 : 8 : 6 4) 9 : 6 : 7
5) None of these
2. 36 percent of first number is 28 percent of the second number. What is the respective ratio of the first number to the second number?
1) 7 : 5 2) 7 : 9 3) 5 : 8 4) 6 : 7
5) None of these
3. Two numbers are in 4 : 7 ratio. The difference between them is 27. What is the bigger number?
1) 36 2) 78 3) 63 4) 72
5) None of these
4. If a sum of Rs.3,150 were distributed among A, B and C in the ratio of 12 : 9 : 14 respectively, then find the share of B.
1) Rs.1,080 2) Rs.1,260 3) Rs.810 4) Rs.1,620
5) None
5. The total number of students in a school is 2850. If the number of boys in the school is 1650, then what is the respective ratio of the total number of boys to the total number of girls in the school?
1) 33 : 25 2) 11 : 8 3) 34 : 23 4) 12 : 11
5) None of these

6. A sum of money is divided among A, B, C and D in the ratio of 5 : 6 : 12 : 15 respectively. If the share of C is Rs.4,092, then what is the total amount of money?
1) Rs.12,960 2) Rs.12,828 3) Rs.12,450 4) Rs.12,958
5) None of these
7. A sum of Rs.2820 has been distributed among A, B and C in the ratio $\frac{1}{3} : \frac{1}{4} : \frac{1}{5}$ respectively. What is the share of B?
1) Rs.900 2) Rs.1200 3) Rs.800 4) Rs.600
5) None of these
8. A, B and C divide an amount of Rs.6,300 amongst themselves in the ratio of 7 : 6 : 8 respectively. If an amount of Rs.300 is added to each of their shares, what will be the new respective ratio of their shares of amount?
1) 8 : 7 : 9 2) 7 : 9 : 8 3) 7 : 8 : 6 4) 8 : 9 : 7
5) None
9. The ratio of the ages of a man and his son is 7 : 3. The average of their ages is 30 years. What will be ratio of their ages after 4 years?
1) 28 : 17 2) 23 : 19 3) 17 : 18 4) 23 : 13
5) None of these
10. In a bowl there is 30 litre mixture of milk and water. The ratio of milk and water is 7 : 3. How much water must be added to it so that the ratio of milk to the water be 3 : 7?
1) 36 liters 2) 49 liters 3) 54 liters 4) 35 liters
5) None
11. A bag contains of one rupee, 50 paise and 25 paise coins. If these coins are in the ratio of 5 : 6 : 8, and the total amount of coins is Rs.210, find the number of 50 paise coins in the bag.
1) 126 2) 105 3) 168 4) 63
5) None of these
12. A, B and C enter into a partnership. A contributes Rs.24,000 for 6 months, B Rs.18,000 for 8 months and C Rs.32,000 for 4 months. If they receive a total of Rs.39000 as profit, find B's share of money in that.
1) Rs.12,000 2) Rs.13,500 3) Rs.18,500 4) Rs.16,800
5) None of these
13. A and B started a business by investing Rs.15,000 and Rs.21,000 respectively. After 3 months C joined them with Rs.24,000. At the end of the year if they receive Rs.37,800 as profit, find what will be C's share in that money.
1) Rs.14,700 2) Rs.10,500 3) Rs.18,500 4) Rs.12,600
5) None of these
14. A, B and C enter in partnership with Rs. 22,100, Rs.15,300 and Rs.18,700 respectively. After eight months C withdrew his money from the business. At the end of the year if they receive Rs.5,280 as profit, find the share of A in that amount.
1) Rs.1440 2) Rs.1380 3) Rs.2340 4) Rs.1620
5) None of these
15. A started a business by investing Rs.52,500. After four months B joined him with some investment. At the end of the year, the total profit was divided between them in the ratio 7 : 6. How much money was invested by B?
1) Rs.64,400 2) Rs.63,800 3) Rs.62,350 4) Rs.66,200
5) None of these

ANSWERS

1-4; 2-2; 3-3; 4-3; 5-2; 6-4; 7-1; 8-1; 9-5; 10-2; 11-1; 12-2; 13-4; 14-3; 15-5.

EXPLANATIONS

1. a b c
 3 2
 6 7

$$a : b : c = 3 \times 6 : 6 \times 2 : 2 \times 7 = 9 : 6 : 7$$

2. Let the numbers be 'x' and 'y'.

$$36\% \text{ of } x = 28\% \text{ of } y$$

$$\frac{x}{y} = \frac{28}{36} = \frac{7}{9}$$

$$\therefore x : y = 7 : 9$$

3. Let the numbers be $4x$ and $7x$.

$$7x - 4x = 27$$

$$\Rightarrow 3x = 27 \Rightarrow x = 9$$

$$\therefore \text{Bigger number is } 7x = 7 \times 9 = 63$$

Shortcut:

The difference of the terms of the ratio = $7 - 4 = 3$

But the actual difference between the numbers is 27

\therefore 3 parts is equal to 27

$$7 \text{ parts (Bigger number)} = \frac{7}{3} \times 27 = 63$$

4. B's Share = $\frac{9}{35} \times 3150 = \text{Rs.}810$

5. Total number of students = 2850

Number of boys = 1650

$$\therefore \text{Number of girls} = 2850 - 1650 = 1200$$

$$\text{Ratio between boys and girls} = 1650 : 1200 \\ = 11 : 8$$

6. Let the shares of A, B, C and D be Rs.5x, 6x,12x and15x respectively.

C's share is Rs.4092

$$\Rightarrow 11x = 4092 \Rightarrow x = \frac{4092}{12} = 341$$

$$\therefore \text{Total money} = 38x = 38 \times 341 = \text{Rs.}12958$$

7. LCM of 3, 4 and 5 is 60

$$\therefore \text{Ratio} = \frac{60}{3} : \frac{60}{4} : \frac{60}{5} = 20 : 15 : 12$$

$$\text{B's share} = \frac{15}{20+15+12} \times 2820$$

$$\frac{15}{47} \times 2820 = \text{Rs.}900$$

8. Total shares = $7 + 6 + 8 = 21$

$$\therefore 21 = 6300$$

$$\text{each part} = \frac{6300}{21} = 300$$

\therefore Their shares are 7×300 , 6×300 and

$$8 \times 300 \Rightarrow 2100, 1800 \text{ and } 2400$$

If 300 is added to each of them then their shares are 2400, 2100 and 2700.

∴ Their ratio = 2400 : 2100 : 2700 = 8 : 7 : 9

9. Average age = 30 years

Total age = $2 \times 30 = 60$ years

Let their present ages be $7x$ and $3x$ years

$$7x + 3x = 60 \Rightarrow x = \frac{60}{10} = 6$$

∴ Their present ages are 7×6 and $3 \times 6 = 42$ and 18

∴ Their ages after 4 years = $42 + 4$ and $18 + 4 = 46$ and 22 years

∴ Ratio = $46 : 22 = 23 : 11$

10. Milk quantity in the mixture = $\frac{7}{10} \times 30$
= 21 litres

∴ Water = $30 - 21 = 9$ litres

New ratio = 3 : 7

∴ 3 parts milk is 21 litres (There is no difference in the milk quantity of new mixture)

∴ Water quantity in the new mixture

$$= \frac{7}{3} \times 21 = 49 \text{ litres}$$

∴ $49 - 9 = 40$ litres water is to be added in the new mixture

11. Let the number of one rupee, 50 paise and 25 paise coins be 5, 6 and 8 respectively.

The value of One rupee coins = $\text{Rs.}1 \times 5$
= $\text{Rs.}5$

The value of Fifty paise coins = $\text{Rs.}0.50 \times 6 = \text{Rs.}3$

The value of Twenty Five paise coins = $\text{Rs.}0.25 \times 8 = \text{Rs.}2$

Total value = $5 + 3 + 2 = \text{Rs.}10$

If the total value is $\text{Rs.}10$, there are 6 coins of 50 paise

If the total value is $\text{Rs.}210$, then the number of 50 coins = $\frac{210}{10} \times 6 = 126$

12. Profits ratio = $24000 \times 6 : 18000 \times 8 : 32000 \times 4 = 9 : 9 : 8$

B's share of money = $\frac{9}{26} \times 39000 = \text{Rs.}13500$

13. Profits ratio = $15000 \times 12 : 21000 \times 12 : 24000 \times 9 = 5 : 7 : 6$

∴ C's share of money = $\frac{6}{18} \times 37800$
= $\text{Rs.}12600$

14. Profits ratio = $22100 \times 12 : 15300 \times 12 : 18700 \times 8$
= $39 : 27 : 22$

∴ A's share = $\frac{39}{88} \times 5280 = \text{Rs.}2340$

15. Let the money invested by 'B' be $\text{Rs.}x$.

$$\therefore \frac{52500 \times 12}{x \times 8} = \frac{7}{6} \Rightarrow x = \text{Rs.}67500$$

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