Ratio and Proportion

Model 1: Basic Ratio and Proportion

1. A company 'A' sells 53 cm model TV at the price of ₹ 7,000 whereas another company 'S' sells the same model at the price of ₹ 16,800. What is the ratio of their respective selling prices?

   1) 12:5   2) 5:12   3) 1:2   4) 2:1   5) None of these

2. There are 2304 workers in company A and 2816 in company B. What is the ratio of workers in company A to that of B?

   1) 7:13   2) 13:7   3) 9:11   4) 11:9   5) None of these

3. In entrance test, the ratio of applicants to successful students was 21:11. If 1176 students appeared in the test, how many got through it?

   1) 715   2) 616   3) 605   4) 563   5) None of these

4. 207 students appeared in an examination out of 276 registered students. Find out the ratio between registered to the appeared students.

   1) 12:23   2) 23:12   3) 9:23   4) 23:9   5) None of these

5. The ratio of boys and girls studying in a school is 17:18. If the number of boys is 150 less than the number of girls, then what is the total number of girls?

   1) 2700   2) 2800   3) 2900   4) 2100   5) None of these

6. The ratio of boys to girls in a school is 6:5. The number of boys is more than the number of girls by 200. What is the total number of girls in the school?

1) 800　　　　　2) 1000　　　　3) 1200　　　　4) 2200　　　　5) None of these

7. The cost of 3 digital cameras and 5 cell phones is ₹ 35,290. What is the cost of 9 digital camera and 15 cell phones?

1) ₹ 1,05,870　　　　　　　　2) ₹ 6,46,960　　　　　　　　3) ₹ 1,76,450

4) Cannot be determined　　　　5) None of these

8. Twice the square of a number is six times the other number. What is the ratio of the first number to the second?

1) 1:4　　　　　　　　　　2) 2:5　　　　　　　　　　3) 1:3

4) cannot be determined　　　5) None of these

Model 2: Distribution of Amount among the given Persons

9. A profit of ₹ 8000 is to be distributed among A, B and C in the proportions of 5:2:3 respectively. What is the difference between the shares of A and B?

1) ₹ 1800　　　　2) ₹ 2400　　　　3) ₹ 3600　　　　4) ₹ 900　　　　5) None of these

10. A certain amount is to be distributed among Samiksha, Purva and Neha in the proportion of 5:3:4. If the difference between Purva's and Samiksha's share is ₹ 1200. How much did Neha get?

1) ₹ 2400　　　　　　　　2) ₹ 1600　　　　　　　　3) ₹ 2200

4) Cannot be determined　　　5) None of these

Model 3: Calculation of Total Amount Based on the given Ratio and Difference

11. A sum of money is divided among A, B, C and D ratio 3:5:8:9 respectively. If the share of D is ₹ 1872 more than the share of A, then what is the total amount of money of B & C together?

    1) ₹ 4156   2) ₹ 4165   3) ₹ 4056   4) ₹ 4065   5) None of these

12. A sum of money is divided among A, B, C and D in the ratio 5:8:9:11. If the share of B is ₹ 2475 more than the share of A then what is the total amount of money of A & C together?

    1) ₹ 9900   2) ₹ 11550   3) ₹ 10725   4) ₹ 9075   5) None of these

Model 4: New Ratio When There Is Absolute Change in the Values

13. Amit, Sumit and Vinit divide an amount of ₹ 2800 amongst themselves in the ratio of 5:6:3 respectively. If an amount of ₹ 200 is added to each of their shares, what will be the new ratio of their shares of the amount?

    1) 8:9:6   2) 6:7:4   3) 7:8:5   4) 4:5:2   5) None of these

14. A, B and C divide an amount of ₹ 4000 amongst themselves in the ratio of 2:5:1 respectively. If an amount of ₹ 800 is added to each of their shares, what will be the new ratio of their shares of the amount?

    1) 18:33:13   2) 6:7:4   3) 7:8:9   4) 3:6:2   5) None of these

Model 5: New Ratio When There Is a Percentage Change in the Values

15. The ratio of the number of students studying in a school A, B and C is 5:6:8. If the number of students studying in each of the schools is increased by 30%, 25% and 25% respectively, what will be the new ratio?

    1) 14:15:20   2) 13:15:20   3) 13:14:15   4) 15:17:19   5) None of these

16. The ratio of length and breadth of a rectangle is 3:2. If the breadth is increased by 20% and the length is increased by 10%, then what will be the new ratio of breadth and length?

    1) 8:11   2) 11:8   3) 7:10   4) 22:33   5) None of these

Model 6: Combined Ratio

17. Sita and Gita's ages are in the ratio of 3:4, Gita and Lata's ages are in the ratio of 4:7 and Lata and Ram's ages are in the ratio of 7:9. What is the ratio of Sita's and Ram's ages?

    1) 3:5   2) 3:7   3) 1:3   4) 4:9   5) None of these

18. The ratio of income of A and B is 3:5 respectively and C and B is 9:7 respectively. If the difference between the income of A and C is ₹ 4800, what is C's income?

    1) ₹ 2700   2) ₹ 9000   3) ₹ 11000

    4) Cannot be determined   5) None of these

19. The ages of A and B are in the ratio of 3:5 and ages of C and D are in the ratio of 7:9. If the age difference between A and C is 24 years, what is the age of A?

    1) 20 years   2) 35 years   3) 17 years   4) 24 years   5) None of these

20. A sum of ₹ 817 is divided among A, B and C such that A receives 25% more than B and B receives 25% less than C. What is A's share in the amount?

    1) ₹ 228   2) ₹ 247   3) ₹ 285   4) ₹ 304   5) None of these

21. If $\frac{1}{4}$th area of a rectangular plot is 2700 sq m and the width of that plot is 90 m, what is the ratio between the width and the length of the plot?

    1) 3:4   2) 4:3   3) 3:1   4) 1:3   5) None of these

22. The ratio of length and breadth of a rectangular plot is 5:3. If the perimeter of the plot is 96 m, what is its area?

    1) 450 sq m   2) 360 sq m   3) 540 sq m

    4) Data inadequate   5) None of these

Answers

1 - 2	2 - 3	3 - 2	4 - 5	5 - 1	6 - 2	7 - 1	8 - 4	9 - 2	10 - 1
11 - 3	12 - 2	13 - 2	14 - 1	15 - 2	16 - 1	17 - 3	18 - 2	19 - 5	20 - 3
21 - 1	22 - 3								

Additional Examples (English Only)

1. An employer reduces the number of employees in the ratio 8:5 and increases their wages in the ratio 7:9. As a result, the overall wages bill is_

   a) Increased in the ratio 56:69   b) Decreased in the ratio 56:45

   c) Increased in the ratio 13:17   d) Decreased in the ratio 17:13

2. The ratio of $25^{2.5} : 5^3$ is same as –

   a) 5:3   b) 5:6   c) 1:25   d) 25:1

3. If x:y = 5:6, then $(3x^2 - 2y^2) : (y^2 - x^2)$ is

   a) 7:6   b) 11:3   c) 3:11   d) 6:7

4. If 78 is divided into three parts which are in the ratio $1 : \frac{1}{3} : \frac{1}{6}$, the middle part is

   a) $9\frac{1}{3}$ b) 13   c) $17\frac{1}{3}$ d) $18\frac{1}{3}$

5. What number should be added to or subtracted from each term of the ratio 17:24 so that it becomes equal to 1:2?

   a) 5 is subtracted   b) 10 is added   c) 7 is added

   d) 10 is subtracted

6. A drum of kerosene is $\frac{3}{4}$ full. When 30 litres of kerosene is drawn it, it remains $\frac{7}{12}$ full. The capacity of the drum is

   a) 120 litres   b) 135 litres   c) 150 litres   d) 180 litres

7. Monthly incomes of A and B are in the ratio of 4:3 and their expenses bear the ratio 3:2. Each of them saves ₹ 6,000 at the end of the month, then the monthly income of A is

   a) ₹ 12,000   b) ₹ 24,000   c) ₹ 30,000   d) ₹ 60,000

8. One year ago, the ration between A's and B's salary was 3:4. The ratio of their individual salaries between last and this year was 4:5 and 2:3 respectively. Now, the total of their salaries is ₹ 41600. A's present salary is

   a) ₹10400   b) ₹ 16000   c) ₹ 25600   d) ₹ 31200

9. 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 $\frac{1}{4}$ th of his income, then the savings of A, B and C are in the ratio of

   a) 69:56:48   b) 47:74:99   c) 37:72:49   d) 56:99:69

10. The third proportional to $\left(\frac{x}{y} + \frac{y}{x}\right)$ and $\sqrt{x^2 + y^2}$ is

    a) xy   b) $\sqrt{xy}$ c) $\sqrt[3]{xy}$ d) $\sqrt[4]{xy}$

11. Three numbers are in the ratio 1:2:3. By adding 5 to each of them, the new numbers are in the ratio 2:3:4. The numbers are

    a) 10, 20, 30   b) 15, 30, 45   c) 1, 2, 3   d) 5, 10, 15

12. The price of a school bag and a shoe are in the ratio 7:5. The price of a school bag is ₹ 200 more than the price of a shoe. Then the price of a shoe is

    a) ₹ 200   b) ₹ 700   c) ₹ 500   d) ₹ 1,200

13. A sum of ₹ 300 is divided among P, Q and R in such a way that Q gets ₹ 30 more than P and R gets ₹ 60 more than Q. The ratio of their share is

    a) 5:3:2   b) 2:3:5   c) 3:2:5   d) 2:5:3

14. Three numbers are in the ratio 3:4:5. The sum of the largest and the smallest equals the sum of the second and 52. The smallest number is

    a) 20   b) 27   c) 39   d) 52

15. An alloy contains copper, zinc and nickel in the ratio of 5:3:2. The quantity of nickel in kg that must be added to 100 kg of this alloy to have the new ratio 5:3:3, is

    a) 8   b) 10   c) 12   d) 15

16. The ratio of the ages of Ram and Rahim 10 years ago was 1:3. The ratio of their ages five years hence will be 2:3. Then the ratio of their present ages is

    a) 1:2   b) 3:5   c) 3:4   d) 2:5

17. A can contains a mixture of two liquids A and B in the ratio 7:5. When 9 litres of mixture are drawn off and the can is filled with B, the ratio of A and B becomes 7:9. Litres of liquid A contained by the can initially was

    a) 10   b) 20   c) 21   d) 25

18. The ratio of weekly incomes of A and B is 9:7 and the ratio of their expenditures is 4:3. If each saves ₹ 200 per week, then the sum of their weekly incomes is

    a) ₹ 3,600   b) ₹ 4,200   c) ₹ 3,200   d) ₹ 5,600

19. If x:y = 4:5, then (3x+y):(5x+3y) = ?

    a) 3:5   b) 5:3   c) 17:35   d) 35:17

20. The ratio of the quantities of an acid and water in a mixture is 1:3. If 5 litres of acid is further added to the mixture, the new ratio becomes 1:2. The quantity of new mixture in litres is

    a) 32   b) 40   c) 42   d) 45

21. The ratio between two numbers is 2:3. If each number is increased by 4, the ratio between them becomes 5:7. The difference between the numbers is

    a) 8   b) 6   c) 4   d) 2

22. The ratio of the income to the expenditure of a family is 10:7. If the family's expenses are ₹ 10,500, then savings of the family is

    a) ₹ 4,500   b) ₹ 10,000   c) ₹ 4,000   d) ₹ 5,000

23. If the ratio of cost price and selling price an article be as 10:11, the percentage profit is

    a) 8   b) 10   c) 11   d) 15

24. Two natural numbers are in the ratio 3:5 and their product is 2160. The smaller of the numbers is

    a) 36   b) 24   c) 18   d) 12

25. If ₹ 1,000 is divided between A and B in the ratio 3:2, then A will receive

    a) ₹ 400   b) ₹ 500   c) ₹ 600   d) ₹ 800

26. What must be added to each term of the ratio 7:11, so as to make it equal to 3:4?

    a) 8   b) 7.5   c) 6.5   d) 5

27. ₹ 700 is divided among A, B and C in such a way that the ratio of the amounts of A and B is 2:3 and that of B and C is 4:5. Find the amounts. (in ₹) Each received, in the order A, B, and C.

    a) 150, 250,300   b) 160,240,300   c) 150,250,290

    d) 150,240,310

28. 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) 75   b) 45   c) 57   d) 65

29. The expenses on rice, fish and oil of a family are in the ration of 12:17:3. The prices of these articles are increased by 20%, 30% and 50%, respectively. Find the total percentage increase in the expenses of the family?

a) $14\frac{1}{8}\%$ b) $7\frac{1}{8}\%$ c) $56\frac{1}{8}\%$ d) $28\frac{1}{8}\%$

30. Number of employees in a factory decreases in the ratio of 8:7 and salary of employees increases in the ratio of 5:6. Find weather the total salary given to the employees is increased or decreased and in what ratio?

a) 19:20, increased   b) 20:19, decreased   c) 19:21,increased

d) None of these

31. If $15(2A^2 - B^2) = 7AB$ and both A and B are positive, then A:B is equal to

a) 3:5   b) 5:3   c) 5:6   d) 6:5

32. Brothers A and B had some savings in the ratio 4:5. They decided to buy a gift for their sister, sharing the cost in the ratio 3:4. After they bought, A spent two –third of his amount while B is left with ₹ 145. Then the value of the gift is-

a) ₹140   b) ₹175   c) ₹70   d) ₹105

33. From each of two given numbers, half the smaller number is subtracted. After such subtraction, the larger number is 4 times as large as the smaller number. What is the ratio of the numbers?

a) 4:1   b) 4:5   c) 5:2   d) 1:4

34. Men, Women and children are employed to do a work in the proportion of 3:2:1 and their wages as 5:3:2. When 90 men are employed, total daily wages of all amounts to ₹ 10, 350. Find the daily wage of a man.

a) ₹115   b) ₹75   c) ₹45   d) ₹57.50

Answers

1 – b	2 - d	3 - c	4 - c	5 - d	6 - d	7 - b	8 - b	9 - d	10 - a
11 - d	12 - c	13 - a	14 - c	15 - b	16 - b	17 - c	18 - c	19 - c	20 - d
21 - a	22 - a	23 - b	24 – a	25 - c	26 - d	27 - b	28 - c	29 - d	30 - d
31 - c	32 - a	33 - c	34 - b						