

RATIO : comparing two quantities of same units.

- **a:b** is same as **a / b**.
- **a:b :: c:d** is same as **a / b = c / d**
- “a” and “d” are called extreme terms, “b” and “c” are called mean terms.

PROPORTION: The equality of two ratios is called proportion.

- In the ratio **a : b** , “a” is called **antecedent** and “b” is called **consequent**.
- if **a:b = c:d** ,
then product of mean terms = product of extreme terms.

- if **a:b = c:d** , then **d** is called fourth proportional.
- if **a:b = b:c** , then **b** is called third proportional.

COMPOUNDED RATIO:

- The compounded ratio of the ratios (a:b),(c:d),(e:f) and (g:h) is
(a c e g : b d f h)
- Duplicate ratio of (a : b) is $a^2 : b^2$ Sub Duplicate ratio is $\sqrt{a} : \sqrt{b}$
- Triplicate ratio of (a : b) is $a^3 : b^3$ Sub Triplicate ratio is $\sqrt[3]{a} : \sqrt[3]{b}$
- For the ratio (a : b) , the mean proportion is \sqrt{ab}

BASIC QUESTIONS:

- 1) If $a:b = 7:8$ and $b:c = 4:3$ the find $a:b:c$. **ANS: 7:8:6**
- 2) Find equal proportion of $a:b:c:d$ if $a:b = 4:5$, $b:c = 4:7$ and $c:d = 8:9$.
ANS: 128 : 160 : 280 : 315
- 3) if a, b and c divide 500 rupees in the ratio of 5:2:3 then how much amount will “a” get ? **ANS: 250**
- 4) If Rs. 816 is divided into three parts in the ratio $(\frac{1}{4}) : (\frac{1}{2}) : (\frac{2}{3})$, what is the first part ? **ANS: 144**
- 5) Rs 5600 is to be divided among A, B, C & D in such a way that the ratio of share of A:B is 1:2, B:C is 3:1, C:D is 2: 3 then find share of (A+B) .
ANS: 3600

6) If $(a+b) : (b+c) : (c+a) = 6 : 7 : 8$ and $(a+b+c) = 14$, then the value of “c” is ? **ANS: 6**

Model: 1

1) The mean proportion of 49 & 64 is ?

- a) 48 b) 56 c) 62 d) 35

2) $\frac{a}{2} = \frac{b}{3} = \frac{c}{5}$ then find $\frac{a+b+c}{c}$.

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

3) A and B have money in the ratio 2 : 1. If **A** gives Rs.2 to **B**, the money will be in the ratio 1 : 1. What were the initial amounts they had ?

ANS: 8 & 4

4) Box A contains wheat worth Rs. 30 per kg and box B contains wheat worth Rs. 40 per kg. If both A and B are mixed in the ratio 4 : 6 then the price of mixture per kg is ?

- a) 42 b) 36 c) 28 d) 40

- 5) The ratio of income of A&B is 3:2 and ratio of their expenditure is 4:3. If they save Rs 2000 & Rs 900 , find their income.

ANS: A = 7200 & B = 4800

- 6) One month ago the ratio between **Laxman's** and **Gopal's** salaries was 3 : 5. The ratio of their individual salaries of last month and present month are 2 : 3 and 4 : 5 respectively. If their total salaries for the present month are Rs. 4300, find the present salary of Laxman.

a) 1500 b) 1800 c) 2400 d) 2050

Model: 2

- 1) Seats for M.P.C, C.E.C and M.E.C in a College 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 ?

Ans : 2 : 3 : 4

- 2) A solution of 45 Ltrs contains 12% salt. If 9 Ltrs of the solution is evaporated. Find the % of the salt in the final solution ?

a) 16.50 % b) 15 % c) 10 % d) 12.15 %

- 3) In a school 10% of the boys are in same number as $\frac{1}{4}^{\text{th}}$ of the number of girls in the same school, then find the ratio between boys and girls in the school. **Ans: 5 : 2**

4) Divide Rs.2340 into three parts, such that first part be double that of second part and second part be $\frac{1}{3}$ of the third part. Find the third part amount .

a) 1150 b) 1160 c) 1170 d) 1180

5) 30 turns of a bucket of 18 Ltrs are required to fill a tank. If 15 Ltrs bucket is used, how many turns will be required ?

a) 34 b) 36 c) 42 d) 46

Miscellaneous:

1) If the ratio of land and water on earth is in the ratio of 1:2 and the ratio of land and water in the northern hemisphere is 2:3, what is the ratio of land and water in the southern hemisphere ?

a) 4 : 11 b) 2 : 3 c) 1 : 2 d) 4 : 9

2) A bag contain 50 paise ,25 paise and 10 paise coins in the ratio of **5 : 9 : 4** amounting to Rs.**206**. Find the number of coins of each type.

Ans: 50p → 200coins 25p → 360 coins 10p → 160 coins

3) If 378 coins consist of rupees, 50 paise and 25 paise coins, whose values are in the ratio of 13 : 11 : 7. The number of 50 paise coins will be :

Ans: Number of 50 paisa coins → 132 coins

4) A milkman mixes 20 litres of water with 80 litres of milk. After selling one-fourth of this mixture, he adds water to replenish the quantity that he has sold. What is the current proportion of water to milk ?

a) 7 : 5 b) 2 : 3 c) 1 : 4 d) None of these.

5) Three coins of equal weight contain gold and copper in the ratio of 2:1, 2:3 and 1: 3. If these are melted and a single coin is made, find the ratio of **gold and copper** in the nearly made coin ?

- a) 81 : 106 b) 79 : 101 c) 64 : 85 d) 104 : 111

6) A dog takes **7** jumps for every **10** jumps of the lion and a fox takes “**12**” jumps for every **10** jumps of the lion. And the distance covered by dog in **5** jumps, distance covered by lion in **15** jumps and the distance covered by fox in **20** jumps are equal then find the ratio of their speeds .

Ans: 21 : 10 : 9

7) The cost of diamond varies directly as the square of its weight. Once, this diamond broke into four pieces with weights in the ratio 1 : 2 : 3 : 4. When the pieces were sold, the merchant got Rs.70,000 less. Find the original price of the diamond.

- a) Rs.1.4 lakh b) Rs.2 lakh c) Rs.1 lakh d) Rs.2.5 lakh

8) A Zoo has 66 fishes, some white and rest orange. Which of the following could be the ratio of white to orange fishes in the zoo?

- a) 1:7 b) 2:9 c) 3:7 d) 2:5