Ratio

- A ratio is a way to compare two quantities of the same kind using division.
- It tells us how many times one quantity is compared to another.
- Ratio is written in the form a : b or $\frac{a}{b}$.
- Ratios do not have units.
- Always reduce the ratio to its simplest form.

Important Points

- Both quantities must be in the same unit
- Simplify ratios like fractions by dividing both terms by their highest common factor (HCF)

Examples with Solutions

Example

Find the ratio of 8 to 12

- Step 1: Write as $\frac{8}{12}$
- Step 2: Simplify by dividing both by 4
- 8 ÷ 4 = 2,
- 12÷4=3

Ratio = 2 : 3

Example

Find the ratio of 150 cm to 2 m

- Convert 2 m to cm = 200 cm
- Write ratio: $\frac{150}{200}$
- Simplify by dividing by 50
- 150 ÷ 50 = 3,
- 200 ÷ 50 = 4

Ratio = 3 : 4

Example

Find the ratio of $\frac{3}{4}$ to $\frac{5}{6}$

- Write as $(\frac{3}{4}) \div (\frac{5}{6}) = (\frac{3}{4}) \times (\frac{6}{5})$
- Multiply: $\frac{3 \times 6}{4 \times 5} = \frac{18}{20}$
- Simplify: 18 ÷ 2 = 9,
- 20÷2=10

Ratio = 9 : 10

Example

The ratio of boys to girls in a class is 18 to 12. What is the simplest form?

- Write: $\frac{18}{12}$
- Divide by 6: 18 ÷ 6 = 3,
- 12 ÷ 6 = 2

Ratio = 3 : 2

Example

Find the ratio of ₹45 to ₹60

- Write: $\frac{45}{60}$
- Divide both by 15: 45 ÷ 15 = 3,
- 60 ÷ 15 = 4

Ratio = 3 : 4

Summary Points

- Ratio compares two quantities of the same kind.
- Always convert units before comparing.
- Simplify the ratio by dividing both terms by the HCF.
- Ratios can be used in real life like comparing height, money, length, etc.
- Ratio has no units.