

Tender Heart High School, Sec-33B, Chandigarh

Class - VI

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Subject - Mathematics

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Ch-8 Ratio

Ratio:- The ratio of two quantities a and b of the same kind and in same units is the fraction $\frac{a}{b}$, written as $a:b$ and read as 'a is to b'

Exercise 8A

1. Find the ratio of each of the following in simplest form:

(i) ₹ 7.80 to 65 paise

₹ 1 = 100 paise

₹ 7.80 = 7.80×100

$$= \frac{780}{100} \times 100 = 780 \text{ paise.}$$

$$\text{Now Ratio} = \frac{780}{65} = \frac{12}{1} = 12:1$$

(ii) 80 kg to 2 quintals

1 quintal = 100 kg

2 quintal = 200 kg.

∴ 80 kg to 200 kg.

$$= \frac{80}{200} = \frac{2}{5} = 2:5$$

2. Express each of the following ratios in simplest form.

$$(i) \quad 15 : 25 = \frac{15}{25} = \frac{3}{5} = 3 : 5$$

$$(ii) \quad 90 : 72 = \frac{90}{72} = \frac{10}{8} = \frac{5}{4} = 5 : 4$$

$$(iii) \quad \frac{1}{6} : \frac{1}{8}$$

$$\text{LCM of } (6, 8) = 24$$

$$\left(\frac{1}{6} \times \frac{24}{24} : \frac{1}{8} \times \frac{24}{24} \right)$$

$$= 4 : 3$$

$$\begin{array}{r|l} 2 & 6, 8 \\ \hline 2 & 3, 4 \\ \hline 2 & 3, 2 \\ \hline 3 & 3, 1 \\ \hline & 1, 1 \end{array}$$

$$(vii) \quad \left(\frac{3}{4} : \frac{4}{5} : \frac{5}{6} \right)$$

$$\text{The LCM of } (4, 5, 6) = 60$$

$$\left(\frac{3}{4} \times \frac{15}{15} : \frac{4}{5} \times \frac{12}{12} : \frac{5}{6} \times \frac{10}{10} \right)$$

$$(15 : 12 : 10)$$

$$\begin{array}{r|l} 2 & 4, 5, 6 \\ \hline 2 & 2, 5, 3 \\ \hline 3 & 1, 5, 3 \\ \hline 5 & 1, 5, 1 \\ \hline & 1, 1, 1 \end{array}$$

Q3. In a school, there are 420 boys and 180 girls.
Find the ratio of:-

(i) girls to boys

(ii) girls to total no. of students

(iii) boys to total no. of students.

Soln:- No. of boys = 420
No. of boy girls = 180
No. of students = $420 + 180 = 600$

(i) Ratio of girls to boys = $\frac{180}{420} = \frac{18}{42} = \frac{3}{7} = 3:7$

(ii) Ratio of girls to total no. of students = $\frac{180}{600}$

$$= \frac{18}{60} = \frac{3}{10} = 3:10$$

(iii) Ratio of boys to total no. of students = $\frac{420}{600}$

$$= \frac{42}{60} = \frac{7}{10} = 7:10$$

Q4. Find the ratio of the price of coffee to that of tea, if coffee costs ₹48 per 100gm and tea costs ₹280 per kg.

ln:- Price of coffee = ₹48 per 100gm = $\frac{48}{100}$
" " tea = ₹280 per kgm
 $= \frac{280}{1000} = \frac{28}{100}$ gm

Ratio of price of coffee to price of tea.

$$= \frac{48}{100} \div \frac{28}{100} = \frac{48}{100} \times \frac{100}{28} = \frac{48}{28} = \frac{12}{7}$$

$$= \frac{12}{7} = 12:7$$

Q. Divide 182 in three parts in the ratio

$$\frac{1}{10} : \frac{1}{15} : \frac{1}{20}$$

Soln:- LCM (10, 15, 20) = 60

$$\left(\frac{1}{10} \times 60 : \frac{1}{15} \times 60 : \frac{1}{20} \times 60 \right)$$

$$(6 : 4 : 3)$$

2	10, 15, 20
2	5, 15, 10
3	5, 15, 5
5	5, 5, 5
	1, 1, 1

Let the 1st part = $6x$

2nd part = $4x$

3rd part = $3x$

A/Q.

$$6x + 4x + 3x = 182$$

$$13x = 182$$

$$x = \frac{182}{13} = 14$$

$$x = 14$$

$$\therefore 1^{\text{st}} \text{ part} = 6 \times 14 = 84$$

$$2^{\text{nd}} \text{ part} = 4 \times 14 = 56$$

$$3^{\text{rd}} \text{ part} = 3 \times 14 = 42$$

Q. Divide ₹ 1155 between Amit and Sanya in the ratio 7:4.

Soln:- Let Amit's part = $7x$

Let Sanya's part = $4x$

A/Q.

$$7x + 4x = 1155$$

$$11x = 1155$$

$$x = \frac{1155}{11} = 105$$

$$x = 105$$

$$\therefore \text{Amit's part} = 7 \times 105 = ₹ 735$$

$$\text{Sanya's part} = 4 \times 105 = ₹ 420$$

Qn The sides of a triangle are in the ratio 2:3:4. If its perimeter is 54 cm, find the lengths of the sides of the triangle.

Soln:- Let the three sides of the triangle are $2x$ cm, $3x$ cm, $4x$ cm

$$\text{Perimeter of triangle} = 54 \text{ cm}$$

$$2x + 3x + 4x = 54$$

$$9x = 54$$

$$x = \frac{54}{9} = 6$$

$$x = 6$$

$$\therefore 1^{\text{st}} \text{ side} = 2 \times 6 = 12 \text{ cm}$$

$$2^{\text{nd}} \text{ side} = 3 \times 6 = 18 \text{ cm}$$

$$3^{\text{rd}} \text{ side} = 4 \times 6 = 24 \text{ cm}$$

Q13. A ratio in the simplest form is 11:15. If its antecedent is 121, find its consequent.

Soln:- It is given that $\frac{11}{15} = \frac{121}{x}$

$$11 \times x = 121 \times 15$$

$$x = \frac{\overset{11}{\cancel{121}} \times 15}{\cancel{11}} = 11 \times 15 = 165$$

So, the required consequent is 165