

Exercise

1. Express the following ratios in simplest form:

(i) 20 : 40

(ii) 40 : 20

(iii) 81 : 108

(iv) 98 : 63

Solution:

(i) $20 : 40 = 20/40 = \frac{1}{2} = 1 : 2$

(ii) $40 : 20 = 40/20 = 2/1 = 2 : 1$

(iii) $81 : 108 = 81/108 = 9/12 = \frac{3}{4} = 3 : 4$

(iv) $98 : 63 = 98/63 = 14/9 = 14 : 9$

2. Fill in the missing numbers in the following equivalent ratios:

(i) $\frac{14}{21} = \frac{\dots}{3} = \frac{6}{\dots}$

(ii) $\frac{15}{18} = \frac{\dots}{6} = \frac{10}{\dots} = \frac{\dots}{30}$

Solution:

(i) $\frac{14}{21} = \frac{\dots}{3} = \frac{6}{\dots}$
 $= \frac{14}{21} = \frac{2}{3} = \frac{6}{9}$

($\because \frac{14 \div 7}{21 \div 7} = \frac{2}{3}$ and $\frac{2 \times 3}{3 \times 3} = \frac{6}{9}$)

(ii) $\frac{15}{18} = \frac{\dots}{6} = \frac{10}{\dots} = \frac{\dots}{30}$
 $= \frac{15}{18} = \frac{5}{6} = \frac{10}{12} = \frac{25}{30}$

($\because \frac{15 \div 3}{18 \div 3} = \frac{5}{6}$, $\frac{5 \times 2}{6 \times 2} = \frac{10}{12}$ and $\frac{5 \times 5}{6 \times 5} = \frac{25}{30}$)

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

(i) 2.1 m to 1.2 m

(ii) 91 cm to 1.04m

(iii) 3.5 kg to 250gm

(iv) 60 paise to 4 rupees

(v) 1 minute to 15 seconds

(vi) 15 mm to 2 cm

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Chapter 8: Ratio and Proportion

Solution:

$$\begin{aligned} \text{(i) } & 2.1 \text{ m} : 1.2 \text{ m} \\ & = 2.1/1.2 \\ & = 21/12 \times 10/10 \\ & = 7 : 4 \end{aligned}$$

$$\begin{aligned} \text{(ii) } & 91 \text{ cm} : 1.04 \text{ m or } (1.04 \times 100) \text{ cm} = 104 \text{ cm} & [\text{As } 1 \text{ m} = 100 \text{ cm}] \\ & = 91 \text{ cm} : 104 \text{ cm} \\ & = 91/104 \\ & = 7 : 8 \end{aligned}$$

$$\begin{aligned} \text{(iii) } & 3.5 \text{ kg} : 250 \text{ gm or } (3.5 \times 1000) \text{ gm} : 250 \text{ gm} & [\text{As } 1 \text{ kg} = 1000 \text{ gm}] \\ & = 3500 \text{ gm} : 250 \text{ gm} \\ & = 3500/250 \\ & = 14/1 \\ & = 14 : 1 \end{aligned}$$

$$\begin{aligned} \text{(iv) } & 60 \text{ paise} : 4 \text{ rupees or } 60 \text{ paise} : (4 \times 100) \text{ paise} & [\text{As } 1 \text{ Rs} = 100 \text{ paise}] \\ & = 60 \text{ paise} : 400 \text{ paise} \\ & = 60/400 \\ & = 6/40 \\ & = 3/20 \\ & = 3 : 20 \end{aligned}$$

$$\begin{aligned} \text{(v) } & 1 \text{ minute} : 15 \text{ seconds or } 60 \text{ seconds} : 15 \text{ seconds} & [\text{As } 1 \text{ minute} = 60 \text{ seconds}] \\ & = 60 : 15 \\ & = 60/15 \\ & = 4/1 \\ & = 4 : 1 \end{aligned}$$

$$\begin{aligned} \text{(vi) } & 15 \text{ mm} : 20 \text{ cm or } 15 \text{ mm} : (20 \times 10) \text{ mm} & [\text{As } 1 \text{ cm} = 10 \text{ mm}] \\ & = 15 \text{ mm} : 200 \text{ mm} \\ & = 15/200 \\ & = 3/40 \\ & = 3 : 40 \end{aligned}$$

4. The length and the breadth of a rectangular park are 125 m and 60 m respectively. What is the ratio of the length to the breadth of the park?

Solution:

Given,

Length of rectangular park = 125 m

Breadth of rectangular park = 60 m

Hence, the ratio of the length to the breadth of park is

$$125/60 = 25/12 = 25 : 12$$

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Chapter 8: Ratio and Proportion

5. The population of village is 4800. If the numbers of females is 2160, find the ratio of males to that of females.

Solution:

Given,

Population of village = 4800

No. of females = 2160

No. of males = $4800 - 2160 = 2640$

No. of males : No. of females

= $2640 : 2160$

= $2640/2160$

= $264/216$

= $11/9$

= $11 : 9$

6. In a class, there are 30 boys and 25 girls. Find the ratio of the numbers of

(i) boys to that of girls.

(ii) girls to that of total number of students.

(iii) boys to that of total numbers of students.

Solution:

Given,

Boys = 30, girls = 25

Total students = $30 + 25 = 55$

(i) boys : girls = $30 : 25$

= $30/25 = 6/5 = 6 : 5$

(ii) girls : Total no. of students = $25 : 55$

= $25/55 = 5/11 = 5 : 11$

(iii) Boys : Total no. of students = $30 : 55$

= $30/55 = 6/11 = 6 : 11$