Chapter 11: Ratio and Proportion

Practice Set 28 | Q 1.1 | Page 59
In the example below, find the proportion of the first number to the second.
24, 56

SOLUTION

$$24 : 56 = \frac{24}{56} = \frac{24 \div 8}{56 \div 8} \quad \text{(HCF of 24 and 56 = 8)}$$

$$= \frac{3}{7} = 3 : 7$$

Practice Set 28 | Q 1.2 | Page 59

In the example below, find the proportion of the first number to the second.
63, 49

SOLUTION

$$63 : 49 = \frac{63}{49} = \frac{63 \div 7}{49 \div 7} \quad \text{(HCF of 63 and 49 = 7)}$$

$$= \frac{9}{7} = 9 : 7$$

Practice Set 28 | Q 1.3 | Page 59
In the example below, find the proportion of the first number to the second.
52, 65

SOLUTION

$$52 : 65 = \frac{52}{65} = \frac{52 \div 13}{65 \div 13} \quad \text{(HCF of 52 and 65 = 13)}$$

$$= \frac{4}{5} = 4 : 5$$

Practice Set 28 | Q 1.4 | Page 59
In the example below, find the proportion of the first number to the second.
84, 60

SOLUTION

$$84 : 60 = \frac{84}{60} = \frac{84 \div 12}{60 \div 12} \qquad \text{(HCF of 84 and 60 = 12)}$$

$$= \frac{7}{5} = 7 : 5$$

Practice Set 28 | Q 1.5 | Page 59
In the example below, find the proportion of the first number to the second.
35, 65

SOLUTION

$$35 : 65 = \frac{35}{65} = \frac{35 \div 5}{65 \div 5} \qquad \text{(HCF of 35 and 65 = 5)}$$

$$= \frac{7}{13} = 7 : 13$$

Practice Set 28 | Q 1.6 | Page 59
In the example below, find the proportion of the first number to the second.
121, 99

SOLUTION

$$121 : 99 = \frac{121}{99} = \frac{121 \div 11}{99 \div 11} \qquad \text{(HCF of 121 and 99 = 11)}$$

$$= \frac{11}{9} = 11 : 9$$

Practice Set 28 | Q 2.1 | Page 59
Find the ratio of the first quantity to the second.
25 beads, 40 beads

SOLUTION

25 beads : 40 beads

$$= \frac{25}{40} = \frac{25 \div 5}{40 \div 5} \qquad \text{(HCF of 25 and 40 = 5)}$$

$$= \frac{5}{8} = 5 : 8$$

Practice Set 28 | Q 2.2 | Page 59
Find the ratio of the first quantity to the second.
40 rupees, 120 rupees

SOLUTION

40 rupees : 120 rupees

$$= \frac{40}{120} = \frac{40 \div 40}{120 \div 40} \quad \text{(HCF of 40 and 120 = 40)}$$

$$= \frac{1}{3} = 1 : 3$$

Practice Set 28 | Q 2.3 | Page 59
Find the ratio of the first quantity to the second.
15 minutes, 1 hour

SOLUTION

15 minutes : 1 hour = 15 minutes : 60 minutes

$$\frac{15}{60} = \frac{15 \div 15}{60 \div 15} \quad \text{(HCF of 15 and 60 = 4)}$$

$$= \frac{1}{4} = 1 : 4$$

Practice Set 28 | Q 2.4 | Page 59
Find the ratio of the first quantity to the second.
30 litres, 24 litres

SOLUTION

30 litres : 24 litres

$$= \frac{30}{24} = \frac{30 \div 6}{24 \div 6} \quad \text{(HCF of 30 and 24 = 6)}$$

$$= \frac{5}{4} = 5 : 4$$

Practice Set 28 | Q 2.5 | Page 59
Find the ratio of the first quantity to the second.
99 kg, 44000 grams

$$44000 \text{ g} = \frac{44000}{1000} = 44 \text{ kg} \quad (1 \text{ kg} = 1000 \text{ g})$$

$$\therefore 99 \text{ kg} : 44000 \text{ g} = 99 \text{ kg} : 44 \text{ kg} = \frac{99}{44}$$

$$= \frac{99 \div 11}{44 \div 11} \quad (\text{HCF of 99 and 44} = 11)$$

$$= \frac{9}{4} = 9 : 4$$

Practice Set 28 | Q 2.6 | Page 59
Find the ratio of the first quantity to the second.
1 litre, 250 ml

$$1000 \text{ mL} : 250 \text{ mL}$$

$$= \frac{1000}{250} = \frac{1000 \div 250}{250 \div 250} \quad (\text{HCF of 1000 and 250} = 250)$$

$$= \frac{4}{1} = 4 : 1$$

Practice Set 28 | Q 2.7 | Page 59
Find the ratio of the first quantity to the second.
60 paise, 1 rupee

$$60 \text{ paise, } 1 \text{ rupee} = 60 \text{ paise} : 100 \text{ paise}$$

$$= \frac{60}{100} = \frac{60 \div 20}{100 \div 20} \quad (\text{HCF of 60 and 100} = 20)$$

$$= \frac{3}{5} = 3 : 5$$

Practice Set 28 | Q 2.8 | Page 59
Find the ratio of the first quantity to the second.
750 grams, 1/2 kg

$$\frac{1}{2} \text{ kg} = \frac{1}{2} \times 1000\text{g} = 500 \text{ g} \quad (1 \text{ kg} = 1000 \text{ g})$$

$$\therefore 750 \text{ g} : \frac{1}{2} \text{ kg}$$

$$= 750 \text{ g} : 500 \text{ g}$$

$$= \frac{750}{500} = \frac{750 \div 250}{500 \div 250} \quad (\text{HCF of } 750 \text{ and } 500 = 250)$$

$$= \frac{3}{2} = 3 : 2$$

Practice Set 28 | Q 2.9 | Page 59
Find the ratio of the first quantity to the second.
125 cm, 1 metre

SOLUTION

$$125 \text{ cm} : 1 \text{ metre} = 125 \text{ cm} : 100 \text{ cm}$$

$$= \frac{125}{100} = \frac{125 \div 25}{100 \div 25} \quad (\text{HCF of } 125 \text{ and } 100 = 25)$$

$$= \frac{5}{4} = 5 : 4$$

Practice Set 28 | Q 3 | Page 59
Reema has 24 notebooks and 18 books. Find the ratio of notebooks to books.

SOLUTION

Number of notebooks = 24

Number of books = 18

∴ Ratio of notebooks to books = Number of notebooks : Number of books

= 24 : 18

$$= \frac{24}{18}$$

$$= \frac{24 \div 6}{18 \div 6} \quad \text{(HCF of 24 and 18 = 6)}$$

$$= \frac{4}{3}$$

$$= 4 : 3$$

Thus, the ratio of notebooks to books is $\frac{4}{3}$ or 4 : 3.

Practice Set 28 | Q 4 | Page 59

30 cricket players and 20 kho-kho players are training on a field. What is the ratio of cricket players to the total number of players?

SOLUTION

Number of cricket players = 30

Number of kho-kho players = 20

∴ Total number of player = Number of cricket players + Number of kho-kho players = 30 + 20 = 50

Ratio of cricket players to the total number of players = Number of cricket players : Total number of player

= 30 : 50

$$= \frac{30}{50}$$

$$= \frac{30 \div 10}{50 \div 10} \quad \text{(HCF of 30 and 50 = 10)}$$

$$= \frac{3}{5}$$

$$= 3 : 5$$

Thus, the ratio of cricket players to the total number of players is $\frac{3}{5}$ or 3 : 5.

Practice Set 28 | Q 5 | Page 59

Snehal has a red ribbon that is 80 cm long and a blue ribbon, 2.20 m long. What is the ratio of the length of the red ribbon to that of the blue ribbon?

SOLUTION

Length of red ribbon = 80 cm

Length of blue ribbon = 2.20 m = 2.20 × 100 = 220 cm

∴ Ratio of the length of the red ribbon to that of the blue ribbon = Length of red ribbon : Length of blue ribbon

= 80 cm : 2.20 m

= 80 cm : 220 cm

$$= \frac{80}{220}$$

$$= \frac{80 \div 20}{220 \div 20} \quad \text{(HCF of 80 and 220 = 20)}$$

$$= \frac{4}{11}$$

= 4 : 11

$$= \frac{80}{220}$$

$$= \frac{80 \div 20}{220 \div 20} \quad \text{(HCF of 80 and 220 = 20)}$$

$$= \frac{4}{11}$$

= 4 : 11

Thus, the ratio of the length of the red ribbon to that of the blue ribbon is 4/11 or 4 : 11.

Practice Set 28 | Q 6.1 | Page 59
Shubham's age today is 12 years and his father's is 42 years. Shubham's mother is younger than his father by 6 years. Find the ratio of Shubham's age today to his mother's age today.

SOLUTION

Shubham's age today = 12 years

Shubham's father age today = 42 years

∴ Shubham's mother age today = Shubham's father age today − 6 years

= 42 years − 6 years

= 36 years

Ratio of Shubham's age today to his mother's age today

= Shubham's age today : Shubham's mother age today

= 12 years : 36 years

$$= \frac{12}{36}$$

$$= \frac{12 \div 12}{36 \div 12} \quad \text{(HCF of 12 and 36 = 12)}$$

$$= \frac{1}{3}$$

$$= 1 : 3$$

Thus, the ratio of Shubham's age today to his mother's age today is 1/3 or 1 : 3.

Practice Set 28 | Q 6.2 | Page 59

Shubham's age today is 12 years and his father's is 42 years. Shubham's mother is younger than his father by 6 years. Find the ratio of Shubham's mother's age today to his father's age today.

SOLUTION

Shubham's age today = 12 years

Shubham's father age today = 42 years

∴ Shubham's mother age today = Shubham's father age today − 6 years

= 42 years − 6 years

= 36 years

Ratio of Shubham's mother's age today to his father's age today

= Shubham's mother age today : Shubham's father age today

= 36 years : 42 years

$$= \frac{36}{42}$$

$$= \frac{36 \div 6}{42 \div 6} \quad \text{(HCF of 36 and 42 = 6)}$$

$$= \frac{6}{7}$$

$$= 6 : 7$$

Thus, the ratio of Shubham's mother's age today to his father's age today is 6/7 or 6 : 7.

Practice Set 28 | Q 6.3 | Page 59
Shubham's age today is 12 years and his father's is 42 years. Shubham's mother is younger than his father by 6 years. Find the ratio of Shubham's age to his mother's age when Shubham was 10 years old.

SOLUTION

Shubham's age today = 12 years

Shubham's father age today = 42 years

∴ Shubham's mother age today = Shubham's father age today − 6 years

= 42 years − 6 years

= 36 years

Difference between the present age of Shubham and when he was 10 year old

= 12 years − 10 years = 2 years

∴ Shubham's mother age when Shubham was 10 years old

= 36 years − 2 years = 34 years

Ratio of Shubham's age to his mother's age when Shubham was 10 years old

= 10 years : 34 years

$$= \frac{10}{34}$$

$$= \frac{10 \div 2}{34 \div 2} \quad \text{(HCF of 10 and 34 = 2)}$$

$$= \frac{5}{17}$$

$$= 5 : 17$$

Thus, the ratio of Shubham's age to his mother's age when Shubham was 10 years old is 5/17 or 5 : 17.

PRACTICE SET 29 [PAGE 60]

Practice Set 29 | Q 1 | Page 60
Solve the following.
If 20 meters of cloth cost ₹ 3600, find the cost of 16 m of cloth.

SOLUTION

Cost of 20 m of cloth = ₹ 3,600

∴ Cost of 1 m of cloth = ₹ $\dfrac{3600}{20}$ = ₹180

⇒ Cost of 16 m of cloth = ₹ 180 × 16 = ₹ 2,880

Thus, the cost of 16 m of cloth is ₹ 2,880.

Practice Set 29 | Q 2 | Page 60

Solve the following.
Find the cost of 8 kg of rice, if the cost of 10 kg is ₹ 325.

SOLUTION

Cost of 10 kg of rice = ₹ 325

∴ Cost of 1 kg of rice = ₹ $\dfrac{325}{10}$ = ₹ 32.50

⇒ Cost of 8 kg of rice = ₹ 32.50 × 8 = ₹ 260

Thus, the cost of 8 kg of rice is ₹ 260.

Practice Set 29 | Q 3 | Page 60
Solve the following.
If 14 chairs cost ₹ 5992, how much will have to be paid for 12 chairs?

SOLUTION

Cost of 14 chairs = ₹ 5,992

∴ Cost of 1 chair = ₹ $\dfrac{5992}{14}$ = ₹ 428

⇒ Cost of 12 chairs = ₹ 428 × 12 = ₹ 5,136

Thus, the amount of money to be paid for 12 chairs is ₹ 5,136.

Practice Set 29 | Q 4 | Page 60
Solve the following.
The weight of 30 boxes is 6 kg. What is the weight of 1080 such boxes?

SOLUTION

Weight of 30 boxes = 6 kg

∴ Weight of 1 box = $\dfrac{6}{30}$ = $\dfrac{1}{5}$ kg

⇒ Weight of 1080 boxes = $\dfrac{1}{5}$ × 1080 = 216 kg

Thus, the weight of 1080 such boxes is 216 kg.

Practice Set 29 | Q 5.1 | Page 60
Solve the following.
A car travelling at a uniform speed covers a distance of 165 km in 3 hours. At that same speed, How long will it take to cover a distance of 330 km?

SOLUTION

Time taken by car to cover 165 km = 3 hours

∴ Time taken by car to cover 1 km = $\dfrac{3}{165}$ = $\dfrac{1}{55}$ hours

⇒ Time taken by car to cover 330 km = $\dfrac{1}{55}$ × 330 = 6 hours

Thus, the time taken by car to cover a distance of 330 km is 6 hours.

Practice Set 29 | Q 5.2 | Page 60
Solve the following.
A car travelling at a uniform speed covers a distance of 165 km in 3 hours. At that same speed, How far will it travel in 8 hours?

SOLUTION

Distance covered by the car in 3 hours = 165 km

∴ Distance covered by the car in 1 hour = $\dfrac{165}{3}$ = 55 km

⇒ Distance covered by the car in 8 hours = 55 × 8 = 440 km

Thus, the distance travelled by car in 8 hours is 440 km.

Practice Set 29 | Q 6 | Page 60

Solve the following.
A tractor uses up 12 litres of diesel while ploughing 3 acres of land. How much diesel will be needed to plough 19 acres of land?

SOLUTION

Amount of diesel used by tractor to plough 3 acres of land = 12 litres

∴ Amount of diesel used by tractor to plough 1 acre of land = $\dfrac{12}{3}$ = 4 litres

⇒ Amount of diesel used by tractor to plough 19 acres of land = 4 × 19 = 76 litres

Thus, the amount of diesel needed to plough 19 acres of land is 76 litres.

Practice Set 29 | Q 7 | Page 60
Solve the following.
At a sugar factory, 5376 kg of sugar can be obtained from 48 tonnes of sugarcane. If Savitatai has grown 50 tonnes of sugarcane, how much sugar will it yield?

SOLUTION

Amount of sugar obtained from 48 tonnes of sugarcane = 5376 kg

∴ Amount of sugar obtained from 1 ton of sugarcane = $\dfrac{5376}{48}$ = 112 kg

⇒ Amount of sugar obtained from 50 tonnes of sugarcane = 112 × 50 = 5600 kg

Thus, the amount of sugar yielded from 50 tonnes of sugarcane is 5600 kg.

Practice Set 29 | Q 8 | Page 60
Solve the following.

In an orchard, there are 128 mango trees in 8 rows. If all the rows have an equal number of trees, how many trees would there be in 13 rows?

Number of mongo trees in 8 rows = 128

∴ Number of mango trees in 1 row = $\dfrac{128}{8} = 16$

⇒ Number of mango trees in 13 rows = 16 × 13 = 208

Thus, there are 208 mango trees in 13 rows in an orchard.

Practice Set 29 | Q 9 | Page 60
Solve the following.
A pond in a field holds 120000 liters of water. It costs 18000 rupees to make such a pond. How many ponds will be required to store 480000 liters of water, and what would be the expense?

Number of ponds required to store 120000 litres of water = 1

∴ Number of ponds required to store 1 litre of water = 1/120000

⇒ Number of ponds required to store 480000 litres of water = 1/120000 × 480000 = 4

Thus, 4 ponds required to store 480000 litres of water.

Now,

Cost of making 1 pond = ₹ 18,000

∴ Cost of making 4 ponds = ₹ 18,000 × 4 = ₹ 72,000

Thus, the expense to make 4 ponds to store 480000 litres of water is ₹ 72,000.