Unit 4 Rate, Ratio & Percentage

Exercise 4.1

1. Separate the antecedent and consequent of the following ratios.

(i) 7 : 10

Solution: First term is called antecedent and second term is called consequent. So,
Antecedent = 7
Consequent = 10

(ii) 25 : 10

Solution: First term is called antecedent and second term is called consequent. So,
Antecedent = 25
Consequent = 10

(iii) 99 : 110

Solution: First term is called antecedent and second term is called consequent. So,
Antecedent = 99
Consequent = 110

(iv) 15 : 16

Solution: First term is called antecedent and second term is called consequent. So,
Antecedent = 15
Consequent = 16

(v) 100 : 300

Solution: First term is called antecedent and second term is called consequent. So,
Antecedent = 100
Consequent = 300

(vi) 89 : 96

Solution: First term is called antecedent and second term is called consequent. So,
Antecedent = 89
Consequent = 96

2. Write the following ratios in words.

(i) 3 : 9

Solution: 3 is to 9

(ii) 15 : 27

Solution: 15 is to 27

(iii) 45 : 67

Solution: 45 is to 67

(iv) 110 : 135

Solution: 110 is to 135

(v) 85 : 100

Solution: 85 is to 100

(vi) 137 : 157

Solution: 137 is to 157

3. Write the following fractions in the form of ratio.

(i) $\frac{5}{7}$

Solution: In case of fraction numerator is antecedent and denominator is consequent. So, in the form of ratio

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

(ii) $\frac{17}{21}$

Solution: In case of fraction numerator is antecedent and denominator is consequent. So, in the form of ratio

$$\frac{17}{21} = 17:21$$

(iii) $\frac{56}{23}$

Solution: In case of fraction numerator is antecedent and denominator is consequent. So, in the form of ratio

$$\frac{56}{23} = 56:23$$

(iv) $\frac{67}{89}$

Solution: In case of fraction numerator is antecedent and denominator is consequent. So, in the form of ratio

$$\frac{67}{89} = 67:89$$

(v) $\frac{121}{125}$

Solution: In case of fraction numerator is antecedent and denominator is consequent. So, in the form of ratio

$$\frac{121}{125} = 121:125$$

(vi) $\frac{26}{30}$

Solution: In case of fraction numerator is antecedent and denominator is consequent. So, in the form of ratio

$$\frac{26}{30} = 26:30$$

4. Write the following ratios in the form of fraction.

(i) 67 : 37

Solution: To write ratio in the form of fraction make first term the numerator and second term the denominator. So, in the form of fraction

$$67:37 = \frac{67}{37}$$

(ii) 105 : 131

Solution To write ratio in the form of fraction make first term the numerator and second term the denominator. So, in the form of fraction

$$105:131 = \frac{105}{131}$$

(iii) 87 : 79

Solution: To write ratio in the form of fraction make first term the numerator and second term the denominator. So, in the form of fraction

$$87:79 = \frac{87}{79}$$

(iv) 31 : 29

Solution: To write ratio in the form of fraction make first term the numerator and second term the denominator. So, in the form of fraction

$$31:29 = \frac{31}{29}$$

(v) 125 : 150

Solution: To write ratio in the form of fraction make first term the numerator and second term the denominator. So, in the form of fraction

$$125:150 = \frac{125}{150}$$

(vi) 300 : 125

Solution: To write ratio in the form of fraction make first term the numerator and second term the denominator. So, in the form of fraction

$$300:125 = \frac{300}{125}$$

5. Write the given quantities in ratio and reduce into the lowest form.

(i) 800 *g* to 2 *kg*

Solution: First of all, make same units of given quantities.

1 *kg* = 1,000 *g* so 2 *kg* = 2,000 *g*

It implies

800 *g* to 2 *kg* = 800 *g* : 2,000 *g*

$$= \frac{800}{2000} = \frac{8^{2}}{20_{5}}$$

$$= \frac{2}{5}$$

$$= 2:5$$

(ii) 10 months to 3 years

Solution: First of all, make same units of given quantities.

1 year = 12 months so 3 years = 36 months

It implies

10 months to 3 years = 10 months : 36 months

$$= \frac{10}{36}$$

$$= \frac{5}{18}$$

$$= 5:18$$

(iii) 8 minutes to 200 seconds

Solution: First of all, make same units of given quantities.

1 minute = 60 seconds so 8 minutes = 480 seconds

It implies

8 minutes to 200 seconds = 480 seconds : 200 seconds

$$= \frac{480}{200} = \frac{\cancel{48}^{12}}{\cancel{20}_{5}}$$

$$= \frac{12}{5}$$

$$= 12:5$$

(iv) 4 weeks to 36 days

Solution: First of all, make same units of given quantities.

1 week = 7 days so 4 week = 28 days

It implies

4 weeks to 36 days = 28 days : 36 days

$$= \frac{\cancel{28}^{7}}{\cancel{36}_{9}}$$

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

$$= 7:9$$

(v) 16 feet to 48 feet

Solution: First of all, make same units of given quantities. Here units are already same. So

16 feet to 48 feet = 16 feet : 48 feet

$$= \frac{16}{48} = \frac{\cancel{16}^{1}}{\cancel{48}_{3}}$$

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

$$= 1:3$$

(vi) 700 metres to 2 kilometres

Solution: First of all, make same units of given quantities.

1 km = 1,000 m so 2 km = 2,000 m

It implies

700 m to 2 km = 700 m : 2,000 m

$$= \frac{700}{2000} = \frac{7\cancel{00}}{20\cancel{00}}$$

$$= \frac{7}{20}$$

$$= 7:20$$

6. Simplify the following ratios.

(i) $\frac{1}{14} : \frac{1}{21}$

Solution: To simplify given ratio, write it in the form of fraction.

$$\frac{1}{14} : \frac{1}{21} = \frac{\cancel{1}/\cancel{14}}{\cancel{1}/\cancel{21}} = \frac{1}{14} \times \frac{21}{1} = \frac{21}{14}$$

Now write in the lowest form of fraction

$$\frac{21}{14} = \frac{21 \div 7}{14 \div 7} = \frac{3}{2}$$

So, the simplest form is $3:2$.

(ii) $\frac{2}{9} : \frac{1}{3}$

Solution: To simplify given ratio, write it in the form of fraction.

$$\frac{2}{9} : \frac{1}{3} = \frac{\cancel{2}/9}{\cancel{1}/3} = \frac{2}{9} \times \frac{3}{1} = \frac{6}{9}$$

Now write in the lowest form of fraction

$$\frac{6}{9} = \frac{6 \div 3}{9 \div 3} = \frac{2}{3}$$

So, the simplest form is $2:3$.

(iii) $\frac{1}{4} : 2$

Solution: To simplify given ratio, write it in the form of fraction.

$$\frac{1}{4} : 2 = \frac{\cancel{1}/4}{2} = \frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$$

So, the simplest form is $1:8$.

(iv) $\frac{1}{5} : \frac{1}{10} : \frac{1}{15}$

Solution: To simplify given ratios, multiply all fraction by LCM of denominators which is 30. So

$$\frac{1}{5} : \frac{1}{10} : \frac{1}{15} = \frac{1}{5} \times 30 : \frac{1}{10} \times 30 : \frac{1}{15} \times 30$$

$$= 6:3:2$$

So, the simplest form is $6:3:2$.

(v) 50 : 150 : 250

Solution: To simplify given ratios, divide all by common divisor. Here common divisor is 10. So,

$$50:150:250 = \frac{50}{10}:\frac{150}{10}:\frac{250}{10}$$
$$= 5:15:25$$

Again divide all by common divisor 5.

$$= \frac{5}{5}:\frac{15}{5}:\frac{25}{5}$$
$$= 1:3:5$$

So, the simplest form is 1 : 3 : 5.

(vi) 0.8 : 1.6 : 3.2

Solution: First of all, change decimals into fractions. So,

$$0.8:1.6:3.2 = \frac{8}{10}:\frac{16}{10}:\frac{32}{10}$$

To write in simplest form multiply all by 10.

$$= \frac{8}{\cancel{10}} \times \cancel{10} : \frac{16}{\cancel{10}} \times \cancel{10} : \frac{32}{\cancel{10}} \times \cancel{10}$$
$$= 8:16:32$$

Now divide all by common divisor 8.

$$= 1:2:4$$

So, the simplest form is 1 : 2 : 4.

7. Price of sugar per kg is Rs.50 and price of rice per kg is Rs. 100. Write the ratios of sugar to rice and rice to sugar.

Solution: Given that

Price of sugar per kg = Rs. 50 and Price of rice per kg = Rs. 100

Ratio of sugar to rice
Sugar : Rice
50 : 100
Divide both terms by common divisor 10
5 : 10
Again divide both terms by common divisor 5
1 : 2
So the ratio of sugar to rice is 1 : 2.

Ratio of rice to sugar
Rice : Sugar
100 : 50
Divide both terms by common divisor 10
10 : 5
Again divide both terms by common divisor 5
2 : 1
So the ratio of rice to sugar is 2 : 1.

8. A bus is running with a speed of 50 *km/hr*. Whereas a car is running with a speed of 70 *km/hr*. Find the ratios if speed, bus to car and car to bus.

Solution: Given that

Speed of bus = 50 *km/hr and* Speed of car = 70 *km/hr*

Ratio of speed, bus to car
Bus : Car
50 : 70
Divide both terms by common divisor 10
5 : 7
So, the ratio of speed, bus to car is 5 : 7.

Ratio of speed, car to bus
Car : Bus
70 : 50
Divide both terms by common divisor 10
7 : 5
So, the ratio of speed, car to bus is 7 : 5.

9. Ayesha has 36 pencils. She wants to distribute these pencils between her two friends. Noreen and Fatima in the ratio of 4 : 2. How many pencils her friends will receive from Ayesha?

Solution: Given that

Aysha has = 36 pencils, Number of friends = 2, Given ratio of distribution = 4 : 2

Sum of ratio = 4 + 2 = 6

To calculate, how many pencils Aysha's friends receive from him

$$\text{Noreen will recieve} = \frac{4}{\cancel{6}} \times \cancel{36}^{6} \qquad \text{Fatima will recieve} = \frac{2}{\cancel{6}} \times \cancel{36}^{6}$$

$$= 4 \times 6 \qquad = 2 \times 6$$

$$= 24 \qquad = 12$$

Hence, Noreen will receive 24 pencils and Fatima will receive 12 pencils.

Exercise 4.2

1. Find the continued ratio of three quantities, if:

(i) $a : b = 2 : 5$; $b : c = 5 : 2$

Solution: In both ratios b is the common term and written in the middle of the continued ratio.

a	:	b	:	c
2	:	5		
		5	:	2
2×5	:	5×5	:	5×2
10	:	25	:	10
Divide all terms by common divisor 5				
2	:	5	:	2

So, the continued ratio of given quantities is 2 : 5 : 2.

(ii) $a : b = 10 : 8$; $b : c = 7 : 9$

Solution: In both ratios b is the common term and written in the middle of the continued ratio.

a	:	b	:	c
10	:	8		
		7	:	9
10×7	:	8×7	:	8×9
70	:	56	:	72
Divide all terms by common divisor 2				
35	:	28	:	36

So, the continued ratio of given quantities is 35 : 28 : 36.

(iii) $l : m = 4 : 6$; $m : n = 2 : 5$

Solution: In both ratios m is the common term and written in the middle of the continued ratio.

l	:	m	:	n
4	:	6		
		2	:	5
4×2	:	6×2	:	6×5
8	:	12	:	30
Divide all terms by common divisor 2				
4	:	6	:	15

So, the continued ratio of given quantities is 4 : 6 : 15.

(iv) $l : m = \frac{1}{5} : \frac{1}{3}$; $m : n = \frac{1}{6} : \frac{1}{4}$

Solution: In both ratios m is the common term and written in the middle of the continued ratio.

l	:	m	:	n
$\frac{1}{5}$	:	$\frac{1}{3}$		
		$\frac{1}{6}$	:	$\frac{1}{4}$
$\frac{1}{5} \times \frac{1}{6}$	:	$\frac{1}{3} \times \frac{1}{6}$	:	$\frac{1}{3} \times \frac{1}{4}$

$$\frac{1}{30} : \frac{1}{18} : \frac{1}{12}$$

Multiply all terms by LCM of denominators which is 180.

$$\frac{1}{30}\times 180 : \frac{1}{18}\times 180 : \frac{1}{12}\times 180$$

$$\frac{1}{\cancel{30}}\times \cancel{180}^{6} : \frac{1}{\cancel{18}}\times \cancel{180}^{10} : \frac{1}{\cancel{12}}\times \cancel{180}^{15}$$

$$6 : 10 : 15$$

So, the continued ratio of given quantities is 6 : 10 : 15.

(v) $x : y = \frac{5}{2} : \frac{1}{4}$; $y : z = \frac{3}{4} : \frac{1}{2}$

Solution: In both ratios *y* is the common term and written in the middle of the continued ratio.

$$x : y : z$$

$$\frac{5}{2} : \frac{1}{4} : \frac{1}{2}$$

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

$$\frac{5}{2}\times\frac{3}{4} : \frac{1}{4}\times\frac{3}{4} : \frac{1}{4}\times\frac{1}{2}$$

$$\frac{15}{8} : \frac{3}{16} : \frac{1}{8}$$

Multiply all terms by LCM of denominators which is 16.

$$\frac{15}{8}\times 16 : \frac{3}{16}\times 16 : \frac{1}{8}\times 16$$

$$\frac{15}{\cancel{8}}\times \cancel{16}^{2} : \frac{3}{\cancel{16}}\times \cancel{16}^{1} : \frac{1}{\cancel{8}}\times \cancel{16}^{2}$$

$$30 : 3 : 2$$

So, the continued ratio of given quantities is 30 : 3 : 2.

(vi) $x : y = 2 : \frac{1}{4}$; $y : z = \frac{1}{6} : 3$

Solution: In both ratios *y* is the common term and written in the middle of the continued ratio.

$$x : y : z$$

$$2 : \frac{1}{4} : 3$$

$$\frac{1}{6}$$

$$2\times\frac{1}{6} : \frac{1}{4}\times\frac{1}{6} : \frac{1}{4}\times 3$$

$$\frac{1}{3} : \frac{1}{24} : \frac{3}{4}$$

Multiply all terms by LCM of denominators which is 24.

$$\frac{1}{3}\times 24 : \frac{1}{24}\times 24 : \frac{3}{4}\times 24$$

$$\frac{1}{\cancel{3}}\times \cancel{24}^{8} : \frac{1}{\cancel{24}}\times \cancel{24}^{1} : \frac{3}{\cancel{4}}\times \cancel{24}^{6}$$

$$8 : 1 : 18$$

So, the continued ratio of given quantities is 8 : 1 : 18.

2. The ratio of the weight of chair to table is 2 : 3 and the ratio of table to basket is 7 : 2. What will be the continued ratio?

Solution: In both ratios *table* is the common term and written in the middle of the continued ratio.

Chair	:	**Table**	:	**Basket**
2	:	3		
		7	:	2
2 × 7	:	3 × 7	:	3 × 2
14	:	21	:	6

So, the continued ratio of given quantities is 14 : 21 : 6.

3. Hafsah has 28 pencils she wants to distribute among three students. The ratio of distribution between Umar and Anaya is 3 : 5 and Anaya and Danish is 4 : 7. Tell that how many number of pencils will each student get?

Solution: Hafsah has = 28 pencils, Number of students = 3

In both ratios *Anaya* is the common term and written in the middle of the continued ratio.

Umar	:	**Anaya**	:	**Danish**
3	:	5		
		4	:	7
3 × 4	:	5 × 4	:	5 × 7
12	:	20	:	35

So, the continued ratio of given quantities is 12 : 20 : 35.

Sum of ratio = 12 + 20 + 35 = 67

To calculate, how many pencils each student get

$$\text{Umar will recieve} = \frac{12}{67} \times 28 = \frac{336}{67} \approx 5$$

$$\text{Anaya will recieve} = \frac{20}{67} \times 28 = \frac{560}{67} \approx 8$$

$$\text{Danish will recieve} = \frac{35}{67} \times 28 = \frac{980}{67} \approx 15$$

Hence, Umar will get 5 pencils, Anaya will get 8 pencils and Danish will get 15 pencils.

4. Divide Rs. 500 among three children in the ratio 2 : 3 : 5.

Solution: The continued ratio of given quantities is 2 : 3 : 5.

Sum of ratio = 2 + 3 + 5 = 10

To calculate, how many rupees each child get

$$1^{st}\text{ child} = \frac{2}{10} \times 500 = \frac{100\cancel{0}}{\cancel{10}} = 100$$

$$2^{nd}\text{ child} = \frac{3}{10} \times 500 = \frac{150\cancel{0}}{\cancel{10}} = 150$$

$$3^{rd}\text{ child} = \frac{5}{10} \times 500 = \frac{250\cancel{0}}{\cancel{10}} = 250$$

Hence, 1st child will get 100 rupees, 2nd child will get 150 rupees and 3rd child will get 250 rupees.

5. Zubair's monthly income is Rs. 28,000. He spends his income on education and grocery in the ratio 6 : 3 and grocery and clothing in the ratio 4 : 2. Find his monthly expenditure on education, grocery and clothing.

Solution: Zubair's monthly income = Rs. 28,000

In both ratio *grocery* is the common term and written in the middle of the continued ratio.

Education	:	**Grocery**	:	**Clothing**
6	:	3		
		4	:	2
6 × 4	:	3 × 4	:	3 × 2
24	:	12	:	6

So, the continued ratio of given quantities is 24 : 12 : 6.

Sum of ratio = 24 + 12 + 6 = 42

To calculate, expenditure on each quantity

$$\text{Education} = \frac{24}{42} \times 28,000 = \frac{672,000}{42} = 16,000$$

$$\text{Grocery} = \frac{12}{42} \times 28,000 = \frac{336,000}{42} = 8,000$$

$$\text{Clothing} = \frac{6}{42} \times 28,000 = \frac{168,000}{42} = 4,000$$

Hence, Zubair's expenditure on education, grocery and clothing is Rs. 16,000, Rs. 8,000 and Rs. 4,000 respectively.

Exercise 4.3

1. Convert the following in unit rate:

(i) 200 litres in 5 minutes

Solution: To find the unit rate divide first quantity by second quantity.

$$= \frac{200\,\text{litres}}{5\,\text{min}} = 40\,\text{litre / min}$$

(ii) 6,000 litres in 5 minutes

Solution: To find the unit rate divide first quantity by second quantity.

$$= \frac{6,000\,\text{litres}}{5\,\text{min}} = 1,200\,\text{litre / min}$$

(iii) 200 pages in 10 hours

Solution: To find the unit rate divide first quantity by second quantity.

$$= \frac{200\,\text{pages}}{10\,\text{hours}} = 20\,\text{pages / hour}$$

(iv) 144 kilometres in 3 hours

Solution: To find the unit rate divide first quantity by second quantity.

$$= \frac{144\,\text{kilometres}}{3\,\text{hours}} = 48\,\text{kilometres / hour}$$

(v) 450 metres in 50 seconds

Solution: To find the unit rate divide first quantity by second quantity.

$$= \frac{450\,\text{metres}}{5\,\text{sec}} = 90\,\text{metres / sec}$$

2. The cost of 20 metre ribbon is Rs. 400. Find the rate per metre.

Solution: Given that, cost of 20 metre ribbon = Rs. 400

To find rate per metre

$$= \frac{\text{Rs. } 400}{20\,\text{m}}$$

$$= \text{Rs. } 20 / \text{metre}$$

Hence, the rate of ribbon is Rs. 20 per metre.

3. Salma purchased 50 kg wheat for Rs. 2,500. Find the rate of wheat per kg.

Solution: Given that

Cost of 50 kg wheat = Rs. 2,500

To find rate per kg

$$= \frac{\text{Rs. } 2,500}{50\,\text{kg}}$$

$$= \text{Rs. } 50 / \text{kg}$$

Hence, the rate of wheat is Rs. 50 per kg.

Exercise 4.4

1. Solve the following.

(i) 15% of Rs. 990

Solution: To calculate it write percentage in fraction.

$$15\% \text{ of Rs. } 990 = \frac{\cancel{15}^{3}}{\cancel{100}_{2}} \times \cancel{990}$$

$$= \frac{3 \times 99}{2}$$

$$= \frac{297}{2}$$

$$= 148.5$$

So, 15% of Rs. 990 is Rs. 148.5.

(ii) 23% of 240 *l*

Solution: To calculate it write percentage in fraction.

$$23\% \text{ of } 240l = \frac{23}{\cancel{100}_{5}} \times \cancel{240}^{12}$$

$$= \frac{23 \times 12}{5}$$

$$= \frac{276}{5}$$

$$= 55.2$$

So, 23% of 240 *l* is 55.2 *l*.

(iii) $1\frac{5}{9}\%$ of 175 km

Solution: To calculate it write percentage in fraction..

$$1\frac{5}{9}\% \text{ of } 175\,\text{km} = \frac{\cancel{14}}{\cancel{100}} \times 175$$

$$= \frac{14}{900} \times 175$$

$$= \frac{2450}{900}$$

$$= 2.72$$

So, $1\frac{5}{9}\%$ of 175 km is 2.72 km.

(iv) 7.2% of 2,100

Solution: To calculate it write percentage in fraction.

$$7.2\% \text{ of } 2100 = \frac{7.2}{100} \times 2100$$

$$= \frac{\cancel{72}}{\cancel{100}} \times 2100$$

$$= \frac{72}{100} \times \cancel{2100}$$

$$= \frac{1512}{10}$$

$$= 151.2$$

So, 7.2% of 2,100 is 151.2.

(v) 2.5% of 120 cm

Solution: To calculate it write percentage in fraction.

$$2.5\%\text{ of }120\,\text{cm} = \frac{2.5}{100}\times 120$$
$$= \frac{25}{100}\times 120$$
$$= \frac{25}{100}\times 12\cancel{0}$$
$$= \frac{3\cancel{00}}{\cancel{100}} = 3$$

So, 2.5% of 120 cm is 3 cm.

(vi) 50% of Rs. 2,500

Solution: To calculate it write percentage in fraction.

$$50\%\text{ of Rs.}2,500 = \frac{50}{\cancel{100}}\times 25\cancel{00}$$
$$= 50\times 25$$
$$= 1250$$

So, 50% of Rs. 2,500 is Rs. 1,250.

2. In the first month, Salma used 20 kg wheat out of 30 kg. In the second month, she used 22 kg out of 25 kg. In which month did she use more wheat?

Solution: Given that

In the first month, Salma used 20 kg wheat out of 30 kg.

In the second month, Salma used 22 kg out of 25 kg.

Now, calculate percentage for:

$$\text{First month} = \frac{20}{30}\times 100 \qquad \text{Second month} = \frac{22}{25}\times 100$$
$$= \frac{2000}{30} \qquad = \frac{2200}{25}$$
$$= 66.7\% \qquad = 88\%$$

Hence, Salma used more wheat in the second month.

3. Zeeshan read 280 pages of a book out of 400 pages. Sana read 290 pages of another book out of 350 pages. Who read more number of pages?

Solution: Given that

Zeeshan read 280 pages of a book out of 400 pages.

Sana read 290 pages of a book out of 350 pages.

Now, calculate percentage for:

$$\text{Zeeshan} = \frac{280}{400}\times 100 \qquad \text{Sana} = \frac{290}{350}\times 100$$
$$= \frac{28000}{400} \qquad = \frac{29000}{350}$$
$$= 70\% \qquad = 82.85\%$$

Hence, Sana read more number of pages than Zeeshan.

4. In the first month, Ahmed spent Rs. 28,500 out of Rs. 30,000. In the second month he spent Rs. 29,000 out of Rs. 35,000. In which month did she spend more amount?

Solution: Given that

In the first month, Ahmed spent Rs. 28,500 out of Rs. 30,000.

In the second month, Ahmed spent Rs. 29,000 out of Rs. 35,000.

Now, calculate percentage for:

$$\text{First month} = \frac{28500}{30000} \times 100 \qquad \text{Second month} = \frac{29000}{35000} \times 100$$

$$= \frac{285\cancel{0000}}{3\cancel{0000}} \qquad = \frac{2900\cancel{000}}{35\cancel{000}}$$

$$= 95\% \qquad = 82.86\%$$

Hence, Ahmed spent more amount in the first month.

5. **Zainab read 50 pages of a novel out of 80 pages. Rehan read 40 pages of another novel out of 50 pages. Who did read the more number of pages?**

Solution: Given that

Zainab read 50 pages out of 80 pages.

Rehan read 40 pages out of 50 pages.

Now, calculate percentage for:

$$\text{Zainab} = \frac{50}{80} \times 100 \qquad \text{Rehan} = \frac{40}{50} \times 100$$

$$= \frac{5000}{80} \qquad = \frac{4000}{50}$$

$$= 62.5\% \qquad = 80\%$$

Hence, Rehan read more number of pages than Zainab.

6. **In a competition, Aslam ate 4 biscuits out of 9 biscuits. Sana ate 5 biscuits out of 6 biscuits. Who ate more? Also tell who won the game?**

Solution: Given that

Aslam ate 4 biscuits out of 9 biscuits.

Sana ate 5 biscuits out of 6 biscuits.

Now, calculate percentage for:

$$\text{Aslam} = \frac{4}{9} \times 100 \qquad \text{Sana} = \frac{5}{6} \times 100$$

$$= \frac{400}{9} \qquad = \frac{500}{6}$$

$$= 44.44\% \qquad = 83.33\%$$

Hence, Sana ate more biscuits and won the game.

7. **Usama's monthly income is Rs. 32,000. His expenditure is 89% of his monthly income. Find his expenditure and his savings.**

Solution: Given that

Usama's monthly income = Rs. 32,000

Expenditure = 89% of monthly income

Savings = Remaining amount

$$\text{Expenditure} = \frac{89}{1\cancel{00}} \times 320\cancel{00} \qquad \text{Savings} = \text{Total amount} - \text{Expenditure}$$

$$= 89 \times 320 \qquad = \text{Rs.}32,000 - \text{Rs.}28,480$$

$$= 28,480 \qquad = \text{Rs.}3520$$

Hence, Usama's monthly expenditure and savings are Rs. 28,480 and Rs. 3,520 respectively.

8. **There are 60 students in the class, if 70% of students use red colour for painting, how many students do not use red colour for painting?**

Solution: Given that

Total students = 60

Students who used red colour for painting = 70%

Students who do not use red colour for painting = ?

$$\text{Students who used red colour for painting} = \frac{70}{100} \times 60$$

$$= \frac{42\,\cancel{00}}{1\,\cancel{00}}$$

$$= 42\,\text{Students}$$

$$\text{Students who do not use red colour for painting} = 60 - 42$$

$$= 18\,\text{Students}$$

Hence, 18 students do not use red colour for painting.

9. **There are 900 teachers in a city. If 400 teachers are male, then find the percentage of female teachers in this city.**

Solution: Given that

Total teachers = 900, Male teachers = 400, Female teachers = 500.

Percentage of female teachers = ?

$$\text{Percentage of female teachers} = \frac{500}{900} \times 100$$

$$= \frac{500\,\cancel{00}}{9\,\cancel{00}}$$

$$= 55.5\%$$

Hence, the percentage of female teachers is 55.5%.

10. **There are three candidates in an election. Candidate 'A' got 35% of the total votes cast. Candidate 'B' got 25 % of the total votes cast. How many votes obtained by Candidate 'C' if the total number of votes cast is 2,500?**

Solution: Given that

Total number of candidates = 3

Total number of votes = 2,500

Candidate 'A' got = 35% votes, Candidate 'B' got = 25% votes, Candidate 'C' got = ?

It implies that Candidate 'C' got 40% votes.

Now, we have to calculate 40% of total votes

$$40\% \text{ of } 2,500 = \frac{40}{1\,\cancel{00}} \times 2,5\,\cancel{00}$$

$$= 40 \times 25$$

$$= 1,000$$

Hence, Candidate 'C' got 1,000 votes.

11. **Aslam has read 105 pages of a story book, which are 70% of the total number of pages. How many pages he has to read?**

Solution: Suppose that, total number of pages be "x"
Aslam has read = 70% of x
According to given condition

$$70\% \text{ of } x = 105$$

$$\frac{70}{100} \times x = 105$$

$$\frac{70x}{100} = 105$$

Multiply both sides by 100

$$\frac{70x}{\cancel{100}} \times \cancel{100} = 105 \times 100$$

$$70x = 10,500$$

Divide both sides by 70

$$\frac{\cancel{70}x}{\cancel{70}} = \frac{10,500}{70}$$

$$x = 150$$

Number of pages left to read = Total pages – Read pages
= 150 – 105 = 45
Hence, Aslam has to read 45 pages.

12. Ahmad got 778 marks out of 1,100 marks. Usama got 887 marks out of 1,000. Who got higher marks?
Solution: Given that
Ahmad got 778 marks out of 1,100 marks.
Usama got 887 marks out of 1,000 marks.
Now, calculate percentage for:

$$\text{Ahmad got} = \frac{778}{1100} \times 100 \qquad \text{Usama got} = \frac{887}{1000} \times 100$$

$$= \frac{778}{11} \qquad = \frac{887}{10}$$

$$= 70.73\% \qquad = 88.7\%$$

Hence, Usama got higher marks.

13. Noor has Rs. 8,900. He paid tax of 15%. Find the amount which he spent for the tax and remaining amount left with him.
Solution:
Noor has = Rs. 8,900
Rate of tax = 15%
Amount of tax =?
Remaining amount =?
Now, we will calculate amount of tax and remaining amount using percentage

$$\text{Amount of tax} = 15\% \text{ of } 8,900 \qquad \text{Remaining amount} = \text{Rs.}8,900 - \text{Rs.}1,335$$

$$= \frac{15}{\cancel{100}} \times 8,9\cancel{00} \qquad = \text{Rs.}7,565$$

$$= 15 \times 89$$

$$= \text{Rs. } 1,335$$

Hence, he spent Rs. 1,335 on tax and remaining amount is Rs. 7,565.

Exercise 4.5

1. A shopkeeper increases the price of sugar per kg 5%. If the old price of sugar per kg was Rs. 60. What will be the new price of sugar per kg?

Solution: Given that

The old price of sugar per kg = Rs. 60

The shopkeeper increases the price of sugar per kg 5%.

New price of sugar per kg = ?

Firstly, calculate 5% of 60 and then add in the old price to calculate new price of sugar per kg.

$$5\%\text{ of }60 = \frac{5}{100}\times 60$$
$$= \frac{3\cancel{00}}{\cancel{100}}$$
$$= 3$$

New price of sugar per kg = old price + 5% of 60

= Rs. 60 +Rs. 3

= Rs. 63

Hence, the new price of sugar is Rs. 63 per kg.

2. A shopkeeper decreases the price of rice per kg 10%. If the old price of rice per kg was Rs. 110. What will be the new price of rice per kg?

Solution: Given that

The old price of rice per kg = Rs. 110

The shopkeeper decreases the price of rice per kg 10%.

New price of rice per kg = ?

Firstly, calculate 10% of 110 and then subtract from the old price to calculate new price of rice per kg.

$$10\%\text{ of }110 = \frac{10}{100}\times 110$$
$$= \frac{11\cancel{00}}{\cancel{100}} = 11$$

New price of rice per kg = old price − 10% of 110

= Rs. 110 − Rs. 11

= Rs. 99

Hence, the new price of rice is Rs. 99 per kg.

3. Solve the following.

(i) Increase 650 by 25%

Solution: Firstly, calculate 25% of 650 and then add in the given value.

$$25\%\text{ of }650 = \frac{25}{100}\times 650$$
$$= \frac{1625\cancel{0}}{10\cancel{0}}$$
$$= 162.5$$

So, Increase in 650 by 25% = 650 + 162.5

= 812.5

(ii) Increase 1500 by 7.5%

Solution: Firstly, calculate 7.5% of 1500 and then add in the given value.

$$7.5\%\text{ of }1500 = \frac{7.5}{100}\times 1500$$
$$= \frac{75\cancel{0}}{100}\times 1500$$
$$= \frac{75}{10\cancel{00}}\times 15\cancel{00}$$
$$= 112.5$$

So, Increase in 1,500 by 7.5% = 1,500 + 112.5

= 1612.5

(iii) Increase 3,000 by 10%

Solution: Firstly, calculate 10% of 3,000 and then add in the given value.

$$10\%\text{ of }3000 = \frac{10}{100}\times 3000$$
$$= \frac{300\cancel{00}}{1\cancel{00}}$$
$$= 300$$

So, Increase in 3,000 by 10% = 3,000 + 300
= 3,300

(iv) Increase 7,850 by 12.5%

Solution: Firstly, calculate 12.5% of 7,850 and then add in the given value.

$$12.5\%\text{ of }7850 = \frac{12.5}{100}\times 7850$$
$$= \frac{125\diagup 10}{100}\times 7850$$
$$= \frac{125}{100\cancel{0}}\times 785\cancel{0}$$
$$= 981.25$$

So, Increase in 7,850 by 12.5% = 7,850 + 981.25
= 8831.25

4. Solve the following.

(i) Decrease 780 by 8%

Solution: Firstly, calculate 8% of 780 and then subtract from the given value.

$$8\%\text{ of }780 = \frac{8}{100}\times 780$$
$$= \frac{624\cancel{0}}{10\cancel{0}}$$
$$= 62.4$$

So, Decrease in 780 by 8% = 780 − 62.4
= 717.6

(ii) Decrease 220 by 10%

Solution: Firstly, calculate 10% of 220 and then subtract from the given value.

$$10\%\text{ of }220 = \frac{10}{100}\times 220$$
$$= \frac{22\cancel{00}}{1\cancel{00}}$$
$$= 22$$

So, Decrease in 220 by 10% = 220 − 22
= 198

(iii) Increase 2,300 by 12%

Solution: Firstly, calculate 12% of 2,300 and then subtract from the given value.

$$12\%\text{ of }2300 = \frac{12}{\cancel{100}}\times 23\cancel{00}$$
$$= 12\times 23$$
$$= 276$$

So, Decrease in 2,300 by 12% = 2,300 − 276
= 2024

(iv) Increase 3,600 by 15%

Solution: Firstly, calculate 15% of 3,600 and then subtract from the given value.

$$15\%\text{ of }3600 = \frac{15}{\cancel{100}}\times 36\cancel{00}$$
$$= 15\times 36$$
$$= 540$$

So, Decrease in 3,600 by 15% = 3,600 − 540
= 3,060

5. The cost of a packet of oil was Rs. 350. The seller increased its price by 28%. Find the new price of the oil packet.

Solution: Given that

The cost of packet of oil = Rs. 350

The seller increased the price of oil by 28%.

New price of packet of oil = ?

Firstly, calculate 28% of 350 and then add in the old price to calculate new price of packet of oil.

$$28\%\text{ of }350 = \frac{28}{100}\times 350$$
$$= \frac{98\cancel{00}}{\cancel{100}}$$
$$= 98$$

New price of packet of oil = old price + 28% of 350
= Rs. 350 + Rs. 98
= Rs. 448

Hence, the new price of packet of oil is Rs. 448.

6. In the month of Eid, the cost of a pair of shoes was Rs. 2,500. The shopkeeper decreased its price by 15%. Find the selling price of the pair of shoes.

Solution: Given that

The cost of a pair of shoes = Rs. 2,500

The shopkeeper decreased its price by 15%.

New price of the pair of shoes = ?

Firstly, calculate 15% of 2500 and then subtract from the old price to calculate new price.

$$15\%\text{ of }2500 = \frac{15}{\cancel{100}}\times 25\cancel{00}$$
$$= 15\times 25$$
$$= 375$$

New price of the pair of shoes = old price − 15% of 2,500
= Rs. 2,500 − Rs. 375
= Rs. 2,125

Hence, the new price of the pair of shoes is Rs. 2,125.

Exercise 4.6

1. Convert the given time into 24-hour format.

(i) 08:00 a.m.

Solution: 08:00 a.m. = 08:00

(ii) 09:15 p.m.

Solution: 09:15 p.m. = 09+12 : 15
= 21:15

(iii) 07:44 p.m.

Solution: 07:44 p.m. = 07+12 : 44
= 19:44

(iv) 05:18 a.m.

Solution: 05:18 a.m. = 05:18

(v) 08:57 a.m.

Solution: 08:57 a.m. = 08:57

(vi) 12:58 a.m.

Solution: 12:58 a.m. = 12−12:58
= 00:58

2. Calculate the distance if:

(i) Speed = 20 *km/h* and Time = 2.5 hours

Solution: As we know that

Distance = Speed × Time
= 20 *km/h* × 2.5 hours
= 50 *km*

(ii) Speed = 45 *km/h* and Time = 50 minutes

Solution: As we know that

Distance = Speed × Time
= 45 *km/h* × $(\frac{50}{60})$ hours
= 45 *km/h* × 0.83 hour
= 37.5 *km*

(iii) Speed = 50 *km/h* and Time = 90 minutes

Solution: As we know that

$$\text{Distance} = \text{Speed} \times \text{Time}$$
$$= 50\ km/h \times (\frac{90}{60})\ \text{hours}$$
$$= 50\ km/h \times 1.5\ \text{hour}$$
$$= 75\ km$$

(iv) Speed = 60 *m/s* and Time = 1 hour

Solution: As we know that

$$\text{Distance} = \text{Speed} \times \text{Time}$$
$$= 60\ m/s \times (1 \times 60 \times 60)$$
$$= 60\ m/s \times 3600\ s$$
$$= 216{,}000\ m$$

3. Calculate the time if:

(i) Speed = 20 *km/h*, and Distance = 55 km

Solution: As we know that

$$\text{Time} = \frac{\text{Distance}}{\text{Speed}}$$
$$= \frac{55\,\text{km}}{20\,\text{km/h}}$$
$$= 2.75\,\text{hour}$$

(ii) Speed = 25 *km/h* and Distance = 55 *km*

Solution: As we know that

$$\text{Time} = \frac{\text{Distance}}{\text{Speed}}$$
$$= \frac{55\,\text{km}}{25\,\text{km/h}}$$
$$= 2.2\,\text{hour}$$

(iii) Speed = 40*km/h* and Distance= 60*km*

Solution: As we know that

$$\text{Time} = \frac{\text{Distance}}{\text{Speed}}$$
$$= \frac{60\,\text{km}}{40\,\text{km/h}}$$
$$= 1.5\,\text{hour}$$

(iv) Speed = 50 *m/s* and Distance = 700*m*

Solution: As we know that

$$\text{Time} = \frac{\text{Distance}}{\text{Speed}}$$
$$= \frac{700\,\text{m}}{50\,\text{m/s}}$$
$$= 14\,\text{sec}$$

4. Calculate the speed if:

(i) Time = 5 minutes and Distance = 700 m

Solution: As we know that

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}}$$
$$\text{As } 5\,\text{min} = 5 \times 60 = 300\,\text{sec}$$
$$\text{Speed} = \frac{700}{300}$$
$$= \frac{7\cancel{00}}{3\cancel{00}} = \frac{7}{3}$$
$$= 2.33\,\text{m/s}$$

(ii) Time = 20 minutes and Distance = 10 km

Solution: As we know that

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}}$$
$$\text{As } 20\,\text{min} = 20 \div 60 = 0.333\,\text{hr}$$
$$\text{Speed} = \frac{10}{0.333}$$
$$= 30\,\text{km/h}$$

(iii) Time = 45 minutes and Distance = 25 km

Solution: As we know that

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}}$$
$$\text{As } 45\,\text{min} = 45 \div 60 = 0.75\,\text{hr}$$
$$\text{Speed} = \frac{25}{0.75}$$
$$= 33.33\,\text{km/h}$$

(iv) Time = 2.5 hours and Distance = 200 km

Solution: As we know that

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}}$$
$$\text{Speed} = \frac{200}{2.5}$$
$$= 80\,\text{km/h}$$

5. Ahmed covered a distance of 20 km in 4 hours by a bicycle. What is the speed of Ahmad's cycle?

Solution: Given that, Distance = 20 km, Time = 4 hours

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}}$$

$$\text{Speed} = \frac{20\,\text{km}}{4\,\text{hours}}$$

$$= 5\,\text{km/h}$$

Hence, the speed of Ahmad's cycle is 5 km/h.

6. A car speed is 70 km/h. How much time it takes to cover 280 km?

Solution: Given that, Speed = 70 km/h, Distance = 280 km

$$\text{Time} = \frac{\text{Distance}}{\text{Speed}}$$

$$\text{Time} = \frac{280\,\text{km}}{70\,\text{km/h}}$$

$$= 4\,\text{hr}$$

Hence, the car will take 4 hours to cover the given distance.

7. Ayesha cycled for 2 hours at a speed of 15 km/h. What distance did she cover?

Solution: Given that, Speed = 15 km/h, Time = 2 hours

$$\text{Distance} = \text{Speed} \times \text{Time}$$

$$= 15\,\text{km/h} \times 2\,\text{h}$$

$$= 30\,\text{km}$$

Hence, Ayesha covered the distance of 30 km.

8. A whale swims at a constant speed of 8 m/s for 25 seconds. What distance did it travel?

Solution: Given that, Speed = 8 m/s, Time = 25 sec

$$\text{Distance} = \text{Speed} \times \text{Time}$$

$$= 8\,\text{m/s} \times 25\,\text{sec}$$

$$= 200\,\text{m}$$

Hence, the whale covered the distance of 200 metres.

Review Exercise 4

1. Choose the correct option.

(i) "Percentum" is a:

(a) Greek word (b) Latin word

(c) English word (d) Persian word

(ii) Percentage is a fraction of two numbers whose denominator is:

(a) 100 (b) % (c) 50 (d) 100

(iii) 56% of 100 is:

(a) 46 (b) 65 (c) 56 (d) 44

(iv) 45 into percentage is:

(a) 40% (b) 50% (c) 80% (d) 45%

(v) **30% of 450 *l* is:**

(a) 145 *l* (b) 130 *l* (c) 150 *l* (d) 135 *l*

(vi) **31% into decimal is:**

(a) 0.031 (b) 0.31 (c) 31 (d) 0.13

(vii) **Profit is calculated, when selling price is:**

(a) less than cost price (b) equal to cost price

(c) greater than cost price (d) none of these

(viii) **The concession which seller gives to the customer on selling a product is called:**

(a) profit (b) selling price (c) cost price (d) discount

(ix) **The comparison of two quantities in different units is called:**

(a) ratio (b) rate (c) proportion (d) continued ratio

(x) **The ratio among three quantities of same kind is called:**

(a) rate (b) ratio (c) continued ratio (d) proportion

2. In a village of 1,700 people, there are 1,100 males and 600 females. What percentage of the people are males and what percentage of people are females?

Solution: Given that

Total people = 1,700, Males = 1,100, Females = 600.

Percentage of male and female = ?

$$\text{Percentage of males} = \frac{1100}{1700}\times 100 = \frac{1100\cancel{00}}{17\cancel{00}} \approx 65\%$$

$$\text{Percentage of females} = \frac{600}{1700}\times 100 = \frac{600\cancel{00}}{17\cancel{00}} \approx 35\%$$

Hence, the percentage of males is 65% and percentage of females is 35%.

3. The price of a watch was Rs. 600. The seller increased its price by 15%. Find the selling price of the watch.

Solution: Given that

The price of watch was = Rs. 600

The seller increased the price of oil by 15%.

New price of watch = ?

Firstly, calculate 15% of 600 and then add in the old price to calculate selling price of the watch.

$$15\%\text{ of } 600 = \frac{15}{1\cancel{00}}\times 6\cancel{00} = 15\times 6 = 90$$

Selling price of the watch = old price + 15% of 600

= Rs. 600 + Rs. 90

= Rs. 690

Hence, the selling price of the watch is Rs. 690.

4. A bus travelled 440 km in 5 hours. How much distance did the bus travel in per hour. Also tell how much distance the bus will be covered in 8 hours?

Solution: Given that

Distance covered by bus = 440 km

Time taken by bus to cover the given distance =5 hours

First, find the rate

$$\text{Rate} = \frac{440}{5} = 88\,\text{km/h}$$

It means, the bus covered 88 km in one hour.

Now, to calculate how much distance the bus will be covered in 8 hours multiply the rate by 8.

Distance the bus will be covered in 8 hours = 88 × 8

= 704 km

5. Write the following fraction into ratio and express in lowest form.

(i) $\frac{78}{128}$

Solution: First we will find its lowest form. Divide numerator and denominator by common divisor.

$$\frac{78}{128} = \frac{78 \div 2}{128 \div 2}$$

$$= \frac{39}{64}$$

$$= 39 : 64$$

(ii) $\frac{136}{208}$

Solution: First we will find its lowest form. Divide numerator and denominator by common divisor.

$$\frac{136}{208} = \frac{136 \div 4}{208 \div 4} = \frac{34}{52}$$

$$= \frac{34 \div 2}{52 \div 2} = \frac{17}{26}$$

$$= 17 : 26$$

(iii) $\frac{55}{125}$

Solution: First we will find its lowest form. Divide numerator and denominator by common divisor.

$$\frac{55}{125} = \frac{55 \div 5}{125 \div 5}$$

$$= \frac{11}{25}$$

$$= 11 : 25$$

6. Find the continued ratio in given quantities.

(i) $p : q = \frac{2}{3} : \frac{1}{5}$; $q : r = \frac{1}{7} : \frac{1}{14}$

Solution: In both ratios q is the common term and written in the middle of the continued ratio.

p	:	q	:	r
$\frac{2}{3}$	:	$\frac{1}{5}$		
		$\frac{1}{7}$	:	$\frac{1}{14}$
$\frac{2}{3} \times \frac{1}{7}$	:	$\frac{1}{5} \times \frac{1}{7}$	:	$\frac{1}{5} \times \frac{1}{14}$
$\frac{2}{21}$	:	$\frac{1}{35}$	:	$\frac{1}{70}$

Multiply all terms by LCM 210

$$\frac{2}{\cancel{21}} \times \cancel{210}^{10} : \frac{1}{\cancel{35}} \times \cancel{210}^{6} : \frac{1}{\cancel{70}} \times \cancel{210}^{3}$$

$$2 \times 10 : 1 \times 6 : 1 \times 3$$

$$20 : 6 : 3$$

So, the continued ratio of given quantities is 20 : 6 : 3.

(ii) $l : m = 5 : \frac{1}{3}$; $m : n = \frac{1}{6} : \frac{1}{2}$

Solution: In both ratios q is the common term and written in the middle of the continued ratio.

p	:	q	:	r
5	:	$\frac{1}{3}$		
		$\frac{1}{6}$	:	$\frac{1}{2}$
$5\times\frac{1}{6}$	:	$\frac{1}{3}\times\frac{1}{6}$	:	$\frac{1}{3}\times\frac{1}{2}$
$\frac{5}{6}$	:	$\frac{1}{18}$	:	$\frac{1}{6}$

Multiply all terms by LCM 18

$$\frac{5}{\cancel{6}}\times\cancel{18}^{3} \quad : \quad \frac{1}{\cancel{18}}\times\cancel{18}^{1} \quad : \quad \frac{1}{\cancel{6}}\times\cancel{18}^{3}$$

5×3	:	1×1	:	1×3
15	:	1	:	3

So, the continued ratio of given quantities is 15 : 1 : 3.

7. Danish has Rs 6,500. He spent the amount on fruits and vegetable in the ratio 3:2 and vegetable and meat in the ratio 4:3. Find his expenditure on fruits, vegetable and meat.

Solution: Given that, Danish has = Rs. 6,500

In both ratio *vegetable* is the common term and written in the middle of the continued ratio.

Fruits	:	**Vegetable**	:	**Meat**
3	:	2		
		4	:	3
3×4	:	2×4	:	2×3
12	:	8	:	6

Divide all terms by common divisor 2

6	:	4	:	3

So, the continued ratio of given quantities is 6 : 4 : 3.

Sum of ratio = 6 + 4 + 3 = 13

To calculate, expenditure on each quantity

$$\text{Fruits} = \frac{6}{\cancel{13}}\times\cancel{6{,}500}^{500} = 6\times500 = 3{,}000$$

$$\text{Vegetable} = \frac{4}{\cancel{13}}\times\cancel{6{,}500}^{500} = 4\times500 = 2{,}000$$

$$\text{Meat} = \frac{3}{\cancel{13}}\times\cancel{6{,}500}^{500} = 3\times500 = 1{,}500$$

Hence, Danish's expenditure on fruits, vegetables and meat is Rs. 3,000, Rs. 2,000 and Rs. 1,500 respectively.

8. Convert the given time into 24-hour format.

(i) 07:15 a.m.

Solution: In 24-hour format

07:15 a.m. = 07:15

(ii) 01:25 a.m.

Solution: In 24-hour format

01:25 a.m. = 01:25

(iii) 09:45 p.m.

Solution: In 24-hour format

09:45 p.m. = 09+12:45

= 21:45

9. Shahzad covered a distance of 980 meters in 12 minutes. what was his speed in m/s?

Solution:

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}}$$

$$\text{As } 12\,\text{min} = 12\times60 = 720\,\text{sec}$$

$$\text{Speed} = \frac{980}{720} = \frac{98\cancel{0}}{72\cancel{0}} = \frac{\cancel{98}^{49}}{\cancel{72}_{36}} = \frac{49}{36}$$

$$= 1.361\,\text{m/s}$$