CHAPTER-8

Comparing Quantities

Ex 8.1:-

Question 1
Find the ratio of:
(a) ₹ 5 to 50 paise
(b) 15 kg to 210 g
(c) 9 m to 27 cm
(d) 30 days to 36 hours
Solution:
(a) ₹ 5 to 50 paise
Converting the given quantities into same units, we have
₹ 5 = 5 × 100 = 500 paise
∴ ₹ 5 : 50 paise
= 500 paise : 50 paise [∵ ₹ 1 = 100 paise]
= 10 : 1
So, required ratio is 10 : 1.

(b) 15 kg to 210 g
Converting the given quantities into same units, we have
15 kg = 15 × 1000
= 15000 g [∵ 1 kg = 1000 g]
∴ 15 kg : 210 g = 15000 g : 210 g
= 1500 : 21
= 500 : 7
So, the required ratio is 500 : 7.

(c) 9 m to 27 cm
Converting the given quantities into same units, we have
9 m = 9 × 100 = 900 cm
∴ 9m: 27 cm = 900 cm : 27 cm [∵ 1 m = 100 cm]
= 100 : 3
So, the required ratio is 100 : 3.

(d) 30 days to 36 hours
Converting the given quantities into same
units, we have
30 days = 30 × 24 hours [∵ 1 day = 24 hours]
= 720 hours
∴ 30 days : 36 hours

= 720 hours : 36 hours = 20:1
So, the required ratio is 20 : 1.

Question 2

In a computer lab, there are 3 computers for every 6 students. How many computers will be needed for 24 students?

Solution:

Using Unitary Method, we have
6 students require 3 computers
∴ 1 student will require = 36 computers
∴ 24 students will require = 36 x 24 computers
= 3 × 4 computers = 12 computers
Hence the number of computers required = 12.

Question 3

Population of Rajasthan = 570 lakhs and population of UP = 1660 lakhs.
Area of Rajasthan = 3 lakh km2 and area of UP = 2 lakh km2.
(i) How many people are there per km2 in both these States?
(ii) Which State is less populated?

Solution:

Given:
Population of Rajasthan = 570 lakhs
Population of UP = 1660 lakhs
Area of Rajasthan = 3 lakh km^2
Area of UP = 2 lakh km^2
(i) Number of people per km^2 of Rajasthan 5
$=570 \text{ lakhs } 3 \text{ lakh } km^2$
= 190 per km^2
Number of people in UP = 1660 lakhs
Area of UP = 2 lakh km^2
Number of people per km^2 of UP
= $=1660 \text{ lakhs } 2 \text{ lakh } km^2 = 830 \text{ per } km^2$
Since 190 per km^2 < 830 per km^2
(ii) Rajasthan is less populated state.

Question 1:

Find the ratio of:

(a) Rs 5 to 50 paise (b) 15 kg to 210 g

(c) 9 m to 27 cm (d) 30 days to 36 hours

Answer:

(a) Rs 5 to 50 paise

1 rupee = 100 paise

5 rupee = 500 paise

$$\therefore \frac{\text{Rs } 5}{50 \text{ paise}} = \frac{500}{50} = \frac{10}{1}$$

Hence, the required ratio is 10:1.

(b) 15 kg to 210 g

1 kg = 1000 g

15 kg = 15000 g

$$\Rightarrow \frac{15 \text{ kg}}{210 \text{ g}} = \frac{15000}{210} = \frac{500}{7}$$

Hence, the required ratio is 500:7.

(c) 9 m to 27 cm

1 m = 100 cm

9 m = 900 cm

$$\Rightarrow \frac{9 \text{ cm}}{27 \text{ cm}} = \frac{900}{27} = \frac{100}{3}$$

Hence, the required ratio is 100:3.

(d) 30 days to 36 hours

1 days = 24 hrs

30 days = 24 × 30 = 720 hrs

$$\Rightarrow \frac{30 \text{ days}}{36 \text{ hrs}} = \frac{720}{36} = \frac{20}{1}$$

Hence, the required ratio is 20:1.

Question 2:

In a computer lab, there are 3 computers for every 6 students. How many computers will be needed for 24 students?

Answer:

For 6 students, number of computers required = 3

∴ For 1 student, number of computers required = $\frac{3}{6}=\frac{1}{2}$

∴ For 24 students, number of computers required = $24\times\frac{1}{2}=$ 12

Hence, 12 computers are required for 24 students.

Question 3:

Population of Rajasthan = 570 lakhs and population of UP = 1660 lakhs.

Area of Rajasthan = 3 lakh km^2 and area of UP = 2 lakh km^2.

(i) How many people are there per km^2 in both these States?

(ii) Which State is less populated?

Answer:

(i) Population of Rajasthan in 3 km^2 area = 570 lakh

Population of Rajasthan in 1 km^2 area = $\frac{570}{3}=190$ lakh

Population of U.P in 2 km^2 area = 1660 lakh

Population of U.P in 1 km^2 area = $\frac{1660}{2}$ = 830 lakh

(ii) It can be observed that population per km^2 area is lesser for Rajasthan. Therefore, Rajasthan is less populated.

Ex 8.2:-

Question 1

Convert the given fractional numbers to per cents:

$(a)\ \frac{1}{8} \qquad (b)\ \frac{5}{4} \qquad (c)\ \frac{3}{40} \qquad (d)\ \frac{2}{7}$

Solution:

$$(a)\ \frac{1}{8} = \frac{1\times 100}{8\times 100} = \frac{100}{8}\% = 12.5\% \text{ or } 12\frac{1}{2}\%$$

$$(b)\ \frac{5}{4} = \frac{5\times 100}{4\times 100} = \frac{5}{4}\times 100\% = 125\%$$

$$(c)\ \frac{3}{40} = \frac{3}{40}\times\frac{100}{100} = \frac{3\times 100}{40}\%$$

$$= \frac{15}{2}\% = 7.5\% \text{ or } 7\frac{1}{2}\%$$

$$(d)\ \frac{2}{7} = \frac{2\times 100}{7\times 100} = \frac{200}{7}\% = 28\frac{4}{7}\%$$

Question 2

Convert the given decimal fractions to per cents:

(a) 0.65

(b) 2.1

(c) 0.02

(d) 12.35

Solution:

(a) 0.65 = $0.65\times\frac{100}{100}$ = 0.65 × 100% = 65%

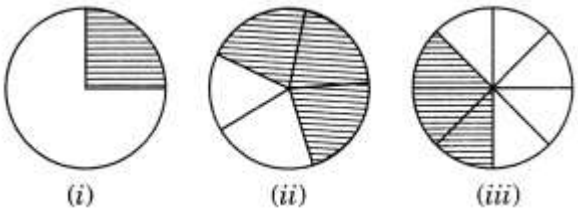
(b) 2.1 = $2.1\times\frac{100}{100}$ = 2.1 ×100% = 210%

(c) 0.02 = $0.02\times\frac{100}{100}$ = 0.02 × 100% = 2%

(d) 12.35 = $12.35\times\frac{100}{100}$ = 12.35 × 100% = 1235%

Question 3

Estimate what part of the figures is coloured and hence find the per cent which is coloured.



(i) (ii) (iii)

Solution:

(i) Fraction of coloured part = $\frac{1}{4}$

∴ Percentage of coloured parts 100

$$= \frac{1}{4}\times\frac{100}{100} = \frac{100}{4}\% = 25\%$$

(ii) Fraction of coloured part = 36
∴ Percentage of coloured parts

$$= \frac{3}{5} \times \frac{100}{100} = \frac{3}{5} \times 100\% = 60\%$$

(iii) Fraction of coloured part = 68
∴ Percentage of coloured parts

$$= \frac{3}{8} \times \frac{100}{100} = \frac{3}{8} \times 100\% = 37.5\%$$

Question 4

Find:
(a) 15% of 250
(b) 1% of 1 hour
(c) 20% of ₹ 2500
(d) 75% of 1 kg

Solution:

(a) 15% of 250 = $15100 \times 250 = 752 = 37.5$
(b) 1% of 1 hour = 1% of 60 minutes [∵ 1 h = 60 min.]

$$\doteq \frac{1}{100} \times 60 \text{ minutes} = \frac{3}{5} \text{ minutes}$$

$$= \frac{3}{5} \times 60 \text{ seconds} = 36 \text{ seconds}$$

$$(c)\ 20\% \text{ of } ₹\ 2500 = \frac{20}{100} \times ₹\ 2500 = ₹\ 500$$

$$(d)\ 75\% \text{ of } 1 \text{ kg} = 75\% \text{ of } 1000 \text{ g}$$

$$= \frac{75}{100} \times 1000\ (\because\ 1 \text{ kg} = 1000 \text{ g})$$

$$= 750 \text{ g} = 0.75 \text{ kg}$$

Question 5

Find the whole quantity if
(a) 5% of it is 600
(b) 12% of it is? 1080
(c) 40% of it is 500 km
(d) 70% of it is 14 minutes
(e) 8% of it is 40 litres

Solution:

Let the required whole quantity be x.
(a) 5% of x = 600

$$\Rightarrow \quad \frac{5}{100} \times x = 600$$

$$\Rightarrow \quad x = \frac{600 \times 100}{5} = 12000$$

Thus the required whole quantity is 12,000.

(b) 12% of x = ₹ 1080

$$\Rightarrow \quad \frac{12}{100} \times x = ₹\ 1080$$

$$\Rightarrow \quad x = ₹\ \frac{1080 \times 100}{12} = ₹\ 9{,}000$$

Thus, the required quantity is ₹ 9,000.

(c) 40% of x = 500 km

$$\Rightarrow \quad \frac{40}{100} \times x = 500 \text{ km}$$

$$\Rightarrow \quad x = \frac{500 \times 100}{40} \text{ km} = 1250 \text{ km}$$

Thus, the required quantity = 1250 km.

(d) 70% of x = 14 minutes

$$\Rightarrow \quad \frac{70}{100} \times x = 14 \text{ minutes}$$

$$\Rightarrow \quad x = \frac{14 \times 100}{70} \text{ minutes}$$

$$= 20 \text{ minutes}$$

Thus, the required quantity = 20 minutes,

(e) 8% of x = 40 litre 8

$$\Rightarrow \quad \frac{8}{100} \times x = 40$$

$$\Rightarrow \quad x = \frac{\cancel{40}^{5} \times 100}{\cancel{8}} = 500 \text{ litre}$$

Thus, the required quantity = 500 litres

Question 6

Convert given per cents to decimal fractions and also to fractions in simplest forms:

(a) 25%

(b) 150%

(c) 20%

(d) 5%

Solution:

Per cent	Decimal form	Fraction form
(a) 25%	$\frac{25}{100} = 0.25$	$\frac{25}{100} = \frac{1}{4}$
(b) 150%	$\frac{150}{100} = 1.50$	$\frac{150}{100} = \frac{3}{2}$
(c) 20%	$\frac{20}{100} = 0.2$	$\frac{20}{100} = \frac{1}{5}$
(d) 5%	$\frac{5}{100} = 0.05$	$\frac{5}{100} = \frac{1}{20}$

Question 7

In a city, 30% are females, 40% are males and remaining are children. What per cent are children?

Solution:

Given: 30% are females

40% are males

Total Percentage of females and males

= 30% + 40% = 70%

∴ Percentage of children

= (100 – 70)% = 30%

Question 8

Out of 15,000 voters in a constituency, 60% voted. Find the Percentage of voters who did not vote. Can you now find how many actually did not vote?

Solution:

Total number of voters = 15,000

Percentage of the voters who voted = 60%

∴ Percentage of the voters who did not vote

= (100 – 60)% = 40%

Actual number of voters who did not vote

= 40% of 15,000

$=\frac{40}{100} \times 15{,}000 = 6{,}000$

Question 9

Meena saves ₹ 400 from her salary. If this is 10% of her salary. What is her salary?

Solution:

Let Meena's salary by ₹ x.

∴ 10% of x = ₹ 400

$$\Rightarrow \quad \frac{10}{100} \times x = ₹\ 400$$

$$\therefore \quad x = ₹\ \frac{400 \times 100}{10} = ₹\ 4000$$

Thus, her salary is ₹ 4000.

Question 10

A local cricket team played 20 matches in one season. It won 25% of them. How many matches did they win?

Solution:

Number of matches played by the cricket team = 20

Percentage of the matches won by them = 25%

i.e. $25100 \times 20 = 5$ matches

Thus, the number of matches won by them = 5

Question 1:

Convert the given fractional numbers to per cents.

(a) $\frac{1}{8}$ (b) $\frac{5}{4}$

(c) $\frac{3}{40}$ (d) $\frac{2}{7}$

Answer:

(a)

$$\frac{1}{8}=\frac{1}{8}\times\frac{100}{100}$$
$$=\frac{1}{8}\times 100\ \%$$
$$=12.5\%$$

(b) $\frac{5}{4}$

$$\frac{5}{4}=\frac{5}{4}\times\frac{100}{100}$$
$$=\frac{500}{4}\ \%=125\ \%$$

(c) $\frac{3}{40}$

$$\frac{3}{40}=\frac{3}{40}\times\frac{100}{100}$$
$$=\frac{300}{40}\ \%=7.5\ \%$$

(d) $\frac{2}{7}$

$$\frac{2}{7}=\frac{2}{7}\times\frac{100}{100}=\frac{200}{7}\ \%=28\frac{4}{7}\ \%$$

Question 2:

Convert the given decimal fractions to per cents.

(a) 0.65 (b) 2.1 (c) 0.02 (d) 12.35

Answer:

(a) 0.65

$$0.65 = 0.65 \times 100\ \%$$

$$= \frac{65 \times 100}{100}\ \% = 65\%$$

(b)2.1

$$2.1 = 2.1 \times 100\ \%$$

$$= \frac{21 \times 100}{10}\ \% = 210\%$$

(c) 0.02

$$0.02 = 0.02 \times 100\ \%$$

$$= \frac{2 \times 100}{100}\ \% = 2\%$$

(d) 12.35

$$12.35 = 12.35 \times 100\ \%$$

$$= \frac{1235 \times 100}{100}\ \% = 1235\ \%$$

Question 3:

Estimate what part of the figures is coloured and hence find the per cent which is coloured.

(i) (ii) (iii)

Answer:

(i) Here, 1 part out of 4 equal parts are shaded which represents the fraction $\frac{1}{4}$.

$$\frac{1}{4} = \frac{1}{4} \times 100\ \% = 25\ \%$$

(ii) Here, 3 parts out of 5 equal parts are shaded which represents the fraction $\frac{3}{5}$.

$$\frac{3}{5}=\frac{3}{5}\times 100\ \%=60\ \%$$

(iii) Here, 3 parts out of 8 equal parts are shaded which represents the fraction $\frac{3}{8}$.

$$\frac{3}{8}=\frac{3}{8}\times 100\ \%=\frac{300}{8}\ \%=37.5\ \%$$

Question 4:

Find:

(a) 15% of 250 (b) 1% of 1 hour

(c) 20% of Rs 2500 (d) 75% of 1 kg

Answer:

(a) $$15\%\ \text{of}\ 250=\frac{15}{100}\times 250=\frac{75}{2}=37.5$$

(b) 1 hour = 60 minutes

$$1\%\ \text{of}\ 60\ \text{minutes}=\frac{1}{100}\times 60=\frac{3}{5}\text{minutes}$$

(c) $$20\%\ \text{of Rs}\ 2500=\frac{20}{100}\times 2500=\text{Rs}\ 500$$

(d) $$75\%\ \text{of}\ 1\ \text{kg}=\frac{75}{100}\times 1=0.75\ \text{kg}=\left(0.75\times 1000\right)\ \text{g}=750\ \text{g}$$

Question 5:

Find the whole quantity if

(a) 5% of it is 600 (b) 12% of it is 1080

(c) 40% of it is 500 km (d) 70% of it is 14 minutes

(e) 8% of it is 40 litres

Answer:

(a) 5% of x = 600

$$\frac{5}{100}\times x = 600$$

$$x = 600\times\frac{100}{5} = 12000$$

(b) 12% of x = Rs 1080

$$\frac{12}{100}\times x = \text{Rs}1080$$

$$x = \text{Rs}1080\times\frac{100}{12} = \text{Rs } 9000$$

(c) 40% of x = 500 km

$$\frac{40}{100}\times x = 500 \text{ km}$$

$$x = 500\times\frac{100}{40} = 1250 \text{ km}$$

(d) 70% of x = 14 min

$$x\times\frac{70}{100} = 14 \text{ min}$$

$$x = 14\times\frac{100}{70} = 20 \text{ min}$$

(e) 8% of x = 40 L

$$x\times\frac{8}{100} = 40 \text{ L}$$

$$x = 40\times\frac{100}{8}$$

= 500 L

Question 6:

Convert given percents to decimal fractions and also to fractions in simplest forms:

(a) 25% (b) 150%

(c) 20% (d) 5%

Answer:

(a) 25% $= \frac{25}{100} = \frac{1}{4} = 0.25$

(b) 150% $= \frac{150}{100} = 1.5 = \frac{3}{2}$

(c) 20% $= \frac{20}{100} = 0.2 = \frac{1}{5}$

(d) 5% $= \frac{5}{100} = 0.05 = \frac{1}{20}$

Question 7:

In a city, 30% are females, 40% are males and remaining are children. What per cent are children?

Answer:

It is given that 30% are females and 40% are males.

Children = (100 − 30 − 40) % = 30%

Question 8:

Out of 15, 000 voters in a constituency, 60% voted. Find the percentage of voters who did not vote. Can you now find how many actually did not vote?

Answer:

Percentage of voters who voted = 60%

Percentage of those who did not vote = 100% − 60% = 40%

Number of people who did not vote = 40% of 15000

$= \frac{40}{100} \times 15000 = 6000$

Therefore, 6000 people did not vote.

Question 9:

Meeta saves Rs 400 from her salary. If this is 10% of her salary. What is her salary?

Answer:

Let Meeta's salary be Rs x.

Given that,

10% of x = 400

$$\frac{10}{100} \times x = 400$$

$$\frac{x}{10} = 400$$

x = 400 × 10 = Rs 4000

Therefore, Meeta's salary is Rs 4000.

Question 10:

A local cricket team played 20 matches in one season. It won 25% of them. How many matches did they win?

Answer:

Number of games won = 25% of 20

$$= \frac{25}{100} \times 20 = 5$$

Therefore, the team won 5 matches.

Ex 8.3:-

Question 1

Tell what is the profit or loss in the following transactions. Also find profit per cent or loss per cent in each case.

(a) Gardening shears bought for ₹ 250 and sold for ₹ 325.

(b) A refrigerator bought for ₹ 12,000 and sold at ₹ 13,500.

(c) A cupboard bought for ₹ 2,500 and sold at ₹ 3,000.

(d) A skirt bought for ₹ 250 and sold at ₹ 150.

Solution:

(a) Here, CP = ₹ 250

SP = ₹ 325

Since SP > CP

∴ Profit = SP – CP

= ₹ 325 – ₹ 250 = ₹ 75

$$\therefore \quad \text{Profit\%} = \frac{\text{Profit} \times 100}{\text{CP}}$$

$$= \frac{75}{250} \times 100 = 30\%$$

Hence, the required profit = ₹ 75

and Profit per cent = 30%

(b) Here, CP = ₹ 12,000

SP = ₹ 13,500

Since SP > CP

∴ Profit = SP – CP

= ₹ 13,500 – ₹ 12,000 = ₹ 1,500

$$\text{Profit \%} = \frac{\text{Profit}}{\text{CP}} \times 100 = \frac{1500 \times 100}{12000}$$
$$= \frac{25}{2}\% = 12\frac{1}{2}\%$$

Hence, the required profit = ₹ 1500 × 100
profit % = 12_{12}%
(c) Here, CP = ₹ 2500
SP = ₹ 3000
Since SP > CP
∴ Profit = SP – CP
= ₹ 3000 – ₹ 2500 = ₹ 500

$$\therefore \quad \text{Profit\%} = \frac{\text{Profit}}{\text{CP}} \times 100$$
$$= \frac{500}{2500} \times 100 = 20\%$$

Hence, the required profit = ₹ 500 and profit% = 20%

(d) Here, CP = ₹ 250
SP = ₹ 150
Here CP > SP
∴ Loss = CP – SP
= ₹ 250 – ₹ 150 = ₹ 100

$$\text{Loss\%} = \frac{\text{Loss} \times 100}{\text{CP}} = \frac{100 \times 100}{250} = 40\%$$

Hence, the required loss = ₹ 100 and loss% = 40%

Question 2
Convert each part of the ratio to Percentage:
(a) 3:1
(b) 2:3:5
(c) 1 : 4
(d) 1:2:5
Solution:
(a) 3 : 1
Sum of the ratio parts = 3 + 1 = 4

$$\text{Percentage of first part} = \frac{3}{4} \times 100 = 75\%$$

$$\text{Percentage of second part} = \frac{1}{4} \times 100 = 25\%$$

(b) 2 : 3 : 5
Sum of the ratio parts = 2 + 3 + 5 = 10

$$\text{Percentage of first part} = \frac{2}{10} \times 100 = 20\%$$

$$\text{Percentage of second part} = \frac{3}{10} \times 100 = 30\%$$

$$\text{Percentage of third part} = \frac{5}{10} \times 100 = 50\%$$

(c) 1 : 4
Sum of the ratio parts =1 + 4 = 5

$$\text{Percentage of first part} = \frac{1}{5} \times 100 = 20\%$$

$$\text{Percentage of second part} = \frac{4}{5} \times 100 = 80\%$$

(d) 1 : 2 : 5
Sum of the ratio parts = 1 + 2 + 5 = 8

$$\text{Percentage of first part} = \frac{1}{8} \times 100 = 12\frac{1}{2}\%$$

$$\text{Percentage of second part} = \frac{2}{8} \times 100 = 25\%$$

$$\text{Percentage of third part} = \frac{5}{8} \times 100 = 62\frac{1}{2}\%$$

Question 3
The population of a city decreased from 25,000 to 24,500. Find the Percentage decrease.
Solution:
Initial population = 25,000
Decreased population = 24,500
Decrease in population
= 25,000 – 24,500 = 500
Percentage of decrease = $\frac{500 \times 100}{25000}$ = 2%
Hence the Percentage of decrease in population = 2%.

Question 4
Arun bought a car for ₹ 3,50,000. The next year, the price went upto ₹ 3,70,000. What was the Percentage of price increase?
Solution:
Original price of the car = ₹ 3,50,000
Price increased next year = ₹ 3,70,000
Increase in price = ₹ 3,70,000 – ₹ 3,50,000
= ₹ 20,000
∴ Percentage of the increase in the price

$$= \frac{20,000 \times 100}{3,50,000} = \frac{40}{7}\% = 5\frac{5}{7}\%$$

Hence, the Percentage of increase in price = $5\frac{5}{7}\%$

Question 5

I buy a TV for ₹ 10,000 and sell it at a profit of 20%. How much money do I get for it?

Solution:

Here, CP = ₹ 10,000

Profit = 20%

SP = ?

$$SP = CP\left(1 + \frac{Profit}{100}\right) = 10,000\left(1 + \frac{20}{100}\right)$$

$$= 10,000 \times \frac{6}{5} = ₹\ 12,000$$

Hence, the required money got by me = ₹ 12,000.

Question 6

Juhi sells a washing machine for ₹ 13,500. She loses 20% in the bargain. What was the price at which she bought it?

Solution:

SP of the washing machine = ₹ 13,500

Loss = 20%

CP = ?

$$SP = CP\left(1 - \frac{Loss}{100}\right)$$

$$13500 = CP\left(1 - \frac{20}{100}\right)$$

$$\Rightarrow \quad 13500 = CP\left(1 - \frac{1}{5}\right)$$

$$\Rightarrow \quad 13500 = CP \times \frac{4}{5}$$

$$\therefore \quad CP = \cancel{13500}^{3375} \times \frac{5}{\cancel{4}}$$

$$= 3375 \times 5 = ₹\ 16875$$

Hence, the cost price of the machine = ₹ 16875.

Question 7

(i) Chalk contains calcium, carbon and oxygen in the ratio 10 : 3 : 12. Find the Percentage of carbon in chalk.

(ii) If in a stick of chalk, carbon is 3 g, what is the weight of the chalk stick?

Solution:

(i) Sum of the ratio parts = 10 + 3 + 12 = 25

∴ Percentage of carbon in chalk

= $=\frac{3}{25}\times 100\%=12\%$
Hence, the Percentage of carbon in chalk = 12%
(ii) Weight of carbon = 3 g
∴ Weight of chalk = $=\frac{3}{3}$ × 25 g = 25 g
Hence, the weight of chalk = 25 g

Question 8

Amina buys a book for ₹ 275 and sells it at a loss of 15%. How much does she sell it for?

Solution:

CP of book = ₹ 275
Loss = 15%

$$\therefore \quad SP = CP\left(1-\frac{\text{Loss}}{100}\right) = 275\left(1-\frac{15}{100}\right)$$

$$= 275\times\frac{\cancel{85}^{17}}{\cancel{100}_{20}} = \frac{4675}{20} = ₹\ 233.75$$

Hence, the required selling price = ₹ 233.75

Question 9

Find the amount to be paid at the end of 3 years in each case.
(a) Principal = ₹ 1200 at 12% p.a.
(b) Principal = ₹ 7500 at 5% p.a.

Solution:

(a) Given: Principal = ₹ 1200
Rate of interest = 12% p.a., T = 3 years
∴ Interest = $\frac{P\times R\times T}{100}=\frac{1200\times 12\times 3}{100}$
Amount = Principal + Interest
= ₹ 1200 + ₹ 432 = ₹ 1632
Hence, the required amount = ₹ 1632
(b) Given: Principal = ₹ 7500
Rate = 5% p.a.
Time = 3 years
∴ Interest = $\frac{P\times R\times T}{100}=\frac{7500\times 5\times 3}{100}$
= ₹1125
Amount = Principal + Interest
= ₹ 7500 + 11125 = ₹ 8625
Hence, the required amount = ₹ 8625.

Question 10

What rate gives ₹ 280 as interest on a sum of ₹ 56,000 in 2 years?

Solution:

Given: Principal = ₹ 56,000
Interest = ₹280
Time = 2 years
Rate = ?

$$\text{Rate} = \frac{100 \times I}{P \times T} = \frac{100 \times 280}{56{,}000 \times 2}$$

$$= \frac{1}{4}\% \text{ or } 0.25\%$$

Hence, the required rate = 0.25%

Question 11

If Meena gives an interest of ₹ 45 for one year at 9% rate p.a. What is the sum she has borrowed?

Solution:

Given: Interest = ₹ 45

Time = 1 year

Rate = 9% p.a.

$$\text{Principal} = \frac{100 \times I}{R \times T} = \frac{100 \times 45}{9 \times 1} = ₹\ 500$$

Hence, the required sum = ₹ 500.

Question 1:

Tell what is the profit or loss in the following transactions. Also find profit percent or loss percent in each case.

(a) Gardening shears bought for Rs 250 and sold for Rs 325.

(b) A refrigerator bought for Rs 12,000 and sold at Rs 13,500.

(c) A cupboard bought for Rs 2,500 and sold at Rs 3,000.

(d) A skirt bought for Rs 250 and sold at Rs 150.

Answer:

(a) Cost price = Rs 250

Selling price = Rs 325

Profit = 325 − 250 = Rs 75

$$\text{Profit \%} = \frac{\text{Profit}}{\text{CP}} \times 100$$

$$= \frac{75}{250} \times 100 = 30\%$$

(b) Cost price = Rs 12000

Selling price = Rs 13,500

Profit = 13500 − 12000 = Rs 1500

$$\text{Profit \%} = \frac{\text{Profit}}{\text{CP}} \times 100$$

$$\text{Profit \%} = \frac{1500}{12000} \times 100 = 12.5\%$$

(c) Cost price = Rs 2500

Selling price = Rs 3000

Profit = 3000 − 2500 = Rs 500

$$\text{Profit \%} = \frac{\text{Profit}}{\text{CP}} \times 100$$

$$\text{Profit \%} = \frac{500}{2500} \times 100 = 20\%$$

(d) Cost price = Rs 250

Selling price = Rs 150

Loss = 250 − 150 = Rs 100

$$\text{Loss \%} = \frac{\text{Loss}}{\text{CP}} \times 100$$

Loss % = $\frac{100}{250} \times 100$ = 40%

Question 2:

Convert each part of the ratio to percentage:

(a) 3:1 (b) 2:3:5 (c) 1:4 (d) 1:2:5

Answer:

(a) 3: 1

Total parts = 3 + 1 = 4

1st part $= \frac{3}{4} = \frac{3}{4} \times 100\% = 75\%$

2nd part = $\frac{1}{4} = \frac{1}{4} \times 100\% = 25\%$

(b) 2: 3: 5

Total parts = 2 + 3 + 5 = 10

1st part = $\frac{2}{10} = \frac{2}{10} \times 100\% = 20\%$

2nd part = $\frac{3}{10} = \frac{3}{10} \times 100\% = 30\%$

3rd part = $\frac{5}{10} = \frac{5}{10} \times 100\% = 50\%$

(c) 1: 4

Total parts =1 + 4 = 5

1st part = $\frac{1}{5} = \frac{1}{5} \times 100\% = 20\%$

2nd part = $\frac{4}{5} = \frac{4}{5} \times 100\% = 80\%$

(d) 1: 2: 5

Total parts = 1 + 2 + 5 = 8

1st part = $\frac{1}{8} = \frac{1}{8} \times 100\% = 12.5\%$

2nd part = $\frac{2}{8} = \frac{2}{8} \times 100\% = 25\%$

3rd = $\frac{5}{8} = \frac{5}{8} \times 100\% = 62.5\%$

Question 3:

The population of a city decreased from 25,000 to 24,500. Find the percentage decrease.

Answer:

Initial population = 25000

Final population = 24500

Decrease = 500

% decrease = $\frac{500}{25000} \times 100 = 2\%$

Question 4:

Arun bought a car for Rs 3,50,000. The next year, the price went upto

Rs 3,70,000. What was the percentage of price increase?

Answer:

Initial price = Rs 350000

Final price = Rs 370000

Increase = Rs 20000

% increase = $\frac{20000}{350000} \times 100$

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

Question 4:

Arun bought a car for Rs 3,50,000. The next year, the price went upto

Rs 3,70,000. What was the percentage of price increase?

Answer:

Initial price = Rs 350000

Final price = Rs 370000

Increase = Rs 20000

$$\% \text{ increase} = \frac{20000}{350000} \times 100$$

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

Question 6:

Juhi sells a washing machine for Rs 13, 500. She loses 20% in the bargain. What was the price at which she bought it?

Answer:

Selling price = Rs 13500

Loss % = 20%

Let the cost price be *x*.

∴ Loss = 20% of *x*

Cost price − Loss = Selling price

$$x - \frac{20}{100} \times x = 13500$$

$$x - \frac{1}{5}x = 13500$$

$$\frac{4}{5}x = 13500$$

$$x = 13500 \times \frac{5}{4}$$

= 16875

Therefore, she bought it for Rs 16875.

Question 7:

(i) Chalk contains calcium, carbon and oxygen in the ratio 10:3:12. Find the percentage of carbon in chalk.

(ii) If in a stick of chalk, carbon is 3g, what is the weight of the chalk stick?

Answer:

(i) Ratio of calcium, carbon, and oxygen = 10: 3: 12

As 10 + 3 +12 = 25,

Therefore, percentage of carbon = $\frac{3}{25}\times 100$ = 12%

(ii) Let the weight of the stick be x g.

12 % of x = 3

$$\frac{12}{100}\times x = 3$$

$$x = 3\times\frac{100}{12} = 25 \text{ g}$$

Question 8:

Amina buys a book for Rs 275 and sells it at a loss of 15%. How much does she sell it for?

Answer:

Cost price = Rs 275

Loss % = 15%

Loss = 15% of 275

Cost price − Loss = Selling price

$$275 - \frac{15}{100}\times 275 = \text{Selling price}$$

$$275 - \frac{4125}{100} = \text{Selling price}$$

275 − 41.25 = Selling price

Selling price = Rs 233.75

Question 9:

Find the amount to be paid at the end of 3 years in each case:

(a) Principal = Rs 1,200 at 12% p.a.

(b) Principal = Rs 7,500 at 5% p.a.

Answer:

(a) Principal (P) = Rs 1200

Rate (R) = 12 % p.a.

Time (T) = 3 years

$$S.I. = \frac{P \times R \times T}{100}$$
$$= \frac{1200 \times 12 \times 3}{100}$$

= Rs 432

Amount = P + S.I.

= 1200 + 432

= Rs 1632

(b) P = Rs 7500

R = 5% p.a.

T = 3 years

$$S.I. = \frac{P \times R \times T}{100}$$
$$= \frac{7500 \times 5 \times 3}{100}$$

= Rs 1125

Amount = 7500 + 1125

= Rs 8625

Question 10:

What rate gives Rs 280 as interest on a sum of Rs 56,000 in 2 years?

Answer:

$$S.I = \frac{P \times R \times T}{100}$$
$$280 = \frac{56000 \times R \times 2}{100}$$
$$R = \frac{280}{560 \times 2} = \frac{1}{4} = 0.25$$

Therefore, 0.25% gives Rs 280 as interest on the given sum.

Question 11:

If Meena gives an interest of Rs 45 for one year at 9% rate p.a.. What is the sum she has borrowed?

Answer:

$$S.I = \frac{P \times R \times T}{100}$$

$$45 = \frac{P \times 9 \times 1}{100}$$

$$P = \frac{45 \times 100}{9}$$

= Rs 500

Therefore, she borrowed Rs 500.