CHAPTER 9
PERCENTAGE

Question 1.

Express each of the following as percent :

(*i*) $\frac{3}{4}$ (*ii*) $\frac{2}{3}$

(*iii*) 0·025 (*iv*) 0·125

(*v*) $\frac{3}{8}$ (*vi*) 0·25

Solution :

(*i*) $\frac{3}{4} = \frac{3}{4} \times 100 = 75\%$

(*ii*) $\frac{2}{3} = \frac{2}{3} \times 100 = \frac{200}{3} = 66\frac{2}{3}\%$

(*iii*) $0{\cdot}025 = \frac{25}{1000} \times 100 = \frac{25}{10}\% = 2{\cdot}5\%$

(*iv*) $0{\cdot}125 = \frac{125}{1000} \times 100 = \frac{125}{10} = 12{\cdot}5\%$

(*v*) $\frac{3}{8} = \frac{3}{8} \times 100 = \frac{75}{2} = 37\frac{1}{2}\%$

(*vi*) $0{\cdot}25 = \frac{25}{100} \times 100 = 25\%$

Question 2.

Express the following percentages as fractions and as decimal numbers :

(*i*) $7\frac{1}{2}\%$ (*ii*) 2·50% (*iii*) 0·02%

(*iv*) 175% (*v*) 5%

(*vi*) 25%

Solution :

$$(i)\ 7\frac{1}{2}\% = \frac{15}{2 \times 100} = \frac{3}{40}$$

$$= \frac{15}{200} = 0{\cdot}075$$

$$\begin{array}{r} 0{\cdot}075 \\ 200\overline{)\ 15{\cdot}000} \\ -1400 \\ \hline 1000 \\ -1000 \\ \hline \times \end{array}$$

$$(ii)\ 2{\cdot}50\% = \frac{250}{100 \times 100} = \frac{1}{40}$$

$$= \frac{250}{10000} = 0{\cdot}0250$$

$$= 0{\cdot}025$$

$$(iii)\ 0{\cdot}02\% = \frac{0{\cdot}02}{100}$$

$$= \frac{2}{100 \times 100} = \frac{2}{10000} = \frac{1}{5000}$$

$$= \frac{2}{10000} = 0{\cdot}0002$$

$$(iv)\ 175\% = \frac{175}{100} = \frac{7}{4} = 1{\cdot}75$$

$$(v)\ 5\% = \frac{5}{100} = \frac{1}{20} \text{ and } \frac{5}{100} = 0{\cdot}05$$

$$(vi) 25\% = \frac{25}{100} = \frac{1}{4} = 0{\cdot}25$$

Question 3.

What percent is :

(i) 16 hours of 2 days ?

(ii) 40 paisa of Rs. 2 ?

(iii) 25 cm of 4 metres
(iv) 600 gm of 5 kg ?

Solution :

Sol. (*i*) 16 hours of 2 days

$$= \frac{16}{2 \times 24} = \frac{16}{48} \times 100\%$$

$$= \frac{100}{3}\% = 33\frac{1}{3}\%$$

(*ii*) 40 paise of Rs. 2

$$= \frac{40}{2 \times 100} = \frac{40}{200} \times 100\%$$

$= 20\%$ **Ans.**

(*iii*) 25 cm of 4 metres

$$= \frac{25}{4 \times 100} = \frac{1}{16} \times 100\%$$

$$= \frac{25}{4}\% = 6\frac{1}{4}\%$$

(*iv*) 600 gm of 5 kg $= \frac{600}{5 \times 1000} \times 100\%$

$= 12\%$

Question 4.

Find the value of:

(*i*) 5% of Rs. 350 (*ii*) 10% of Rs. 400·40

(*iii*) 1% of Rs. 500 (*iv*) $12\frac{1}{2}\%$ of 80 kg

(*v*) $\frac{5}{8}\%$ of Rs. 600 (*vi*) $33\frac{1}{3}\%$ of 27 m

Solution :

(*i*) 5% of Rs. 350

$= \text{Rs. } 350 \times \frac{5}{100} = \text{Rs.} \frac{35}{2}$

$= \text{Rs. } 17{\cdot}50$

(*ii*) $10\% \text{ of Rs. } 400{\cdot}40 = \text{Rs. } 400{\cdot}40 \times \frac{10}{100}$

$= \text{Rs. } 40{\cdot}04$

(*iii*) $1\% \text{ of Rs. } 500 = \text{Rs. } 500 \times \frac{1}{100}$

$= \text{Rs. } 5$

(*iv*) $12\frac{1}{2}\% \text{ of } 80 \text{ kg} = 80 \text{ kg} \times \frac{25}{2 \times 100}$

$= 10 \text{ kg}$

(*v*) $\frac{5}{8}\% \text{ of Rs. } 600 = \text{Rs. } 600 \times \frac{5}{8 \times 100}$

$= \text{Rs.} \frac{15}{4} = \text{Rs. } 3{\cdot}75$

(*vi*) $33\frac{1}{3}\% \text{ of } 27 \text{ m}$

$= 27 \text{ m} \times \frac{100}{3 \times 100}$

$= 9 \text{ m}$

Question 5.

In a class of 60 children, 30% are girls. How many boys are there ?

Solution :

Total children = 60,

Girls = 30%

∴Total girls = 30% of 60 = 60 x 30/100= 18

∴ No. of boys = 60 – 18 = 42

Question 6.

In an election, two candidates A and B contested. A got 60% of the votes. The total votes polled were 8000. How many votes did each get ?

Solution :
Total number of votes polled = 8000
A got 60% of the votes
A got total votes = 60% of 8000 = 8000 x $\frac{60}{100}$ = 4800
∴ B got total votes = 8000 – 4800 = 3200

Question 7.
A person saves 12% of his salary every month. If his salary is ₹2,500, find his expenditure.

Solution :
Total salary = ₹2500
Saving = 12% of the salary
∴ Total savings = 12% of ₹2500
= ₹2500 x$\frac{12}{100}$ = ₹300
∴Total expenditure = ₹2500 – ₹300 = ₹2200

Question 8.
Seeta got 75% marks out of a total of 800. How many marks did she lose ?

Solution :
Total marks = 800
Marks Seeta got = 75% of total marks
∴ Total marks Seeta got = 75% of 800
= 800 x $\frac{75}{100}$ = 600
∴ Marks Seeta lose = 800 – 600 = 200

Question 9.
A shop worth ₹25,000 was insured for 95% of its value. How much would the owner get in case of any mishappening ?

Solution :
Value of shop =₹25,000
Insured amount = 95% of total value
=95% of ₹25,000
= ₹25,000 x $\frac{95}{100}$
= ₹ 23,750

Question 10.

A class has 30 boys and 25 girls. What is the percentage of boys in the class ?

Solution :

No. of boys = 30

No. of girls = 25

Total number of children = 30 + 25 = 55

∴Percentage of boys in the class

= 30/55 x 100

= 600/11=546/11 %

Question 11.

Express :

(i) 3 2/5 as a percent

(ii) 0.0075 as percent

(iii) 3 : 20 as percent

(iv) 60 cm as percent of 1 m 25 cm

(v) 9 hours as a percent of 4 days.

Solution :

$(i)\ 3\frac{2}{5}$ as a percent

$$3\frac{2}{5} = \frac{3\times5+2}{5} = \frac{17}{5}$$

Now, convert $\frac{17}{5}$ as a percent

$$= \frac{17}{5} \times 100 = 340\%$$

(ii) 0.0075 as percent

$$.0075 \times 100 = 0.75\%$$

$$\text{or } \frac{0.0075}{10000} \times 100 = 0.75\%$$

(*iii*) 3 : 20 as percent

$$= \frac{3}{20} \times 100 = 15\%$$

(*iv*) 60 cm as percent of 1 m 25 cm

60 cm as percent of $(1 \times 100 + 25)$ cm

$\because$ 1 metre = 100 cm

$$= \frac{60}{125} \times 100 = 12 \times 4 = 48\%$$

(*v*) 9 hours as a percent of 4 days

= 1 days = 24 hours

$\therefore$ 4 days = $4 \times 24 = 96$ hours

$$= \frac{9}{96} \times 100 = \frac{75}{8}\%$$

$$\text{or } 9\frac{3}{8}\%$$

Question 12.

(i) Find 2% of 2 hours 30 min.

(ii) What percent of 12 kg is 725 gm?

Solution :

(*i*) 2% of 2 hours 30 min

$\because$ 1 hour = 60 minutes

$\therefore$ 2 hours 30 min. = 2 × 60 min. + 30 min.

$= 120 + 30 = 150$ min

$$= 150 \times \frac{2}{100} = \frac{30}{10}$$

= 3 minutes

(*ii*) 12 kg is 725 gm

1 kg = 1000 gm

$\therefore$ 12 kg = 12 × 1000 = 12000 gm

$$\frac{725}{12000} \times 100 = \frac{725}{120}$$

$$= \frac{145}{24}\% \text{ or } 6\frac{10}{24}\%$$

Question 13.

In an examination, the maximum marks are 900. A student gets 33% of the maximum marks and fails by 45 marks. What is the passing mark ? Also, find the pass percentage.

Solution :

Maximum marks = 900

A student got 33% of 900 marks

$$= 900 \times \frac{33}{100} = 297$$

No. of marks by which he failed = 45

$\therefore$ Pass marks = 297 + 45 = 342

$$\text{Percentage of pass marks} = \frac{342 \times 100}{900}$$

= 38%