

Chapter 7 Percentage and Its Applications Ex 7.2

Question 1.

Find:

- (i) 15% of 250
- (ii) 25% of 120 litres
- (iii) 1% of 1 hour
- (iv) 75% of 1 kg
- (v) 120% of ₹ 250
- (vi) 0.6% of 2 km

Solution:

(i) 15% of 250

$$= \frac{250 \times 15}{100} = \frac{72}{2} = 37.5$$

(ii) 25% of 120 litres

$$= \frac{120 \times 25}{100} = 30 \text{ litres}$$

(iii) 1% of 1 hour

$$= 1 \text{ hour} = 60 \text{ minutes}$$

$$= \frac{1}{100} \times 60 = \frac{3}{5} \text{ min.}$$

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

(iv) 75% of 1 kg

$$1 \text{ kg} = 1000 \text{ m}$$

$$= \frac{75}{100} \times 1000 = 750 \text{ grams}$$

(v) 120% of ₹250

$$= ₹250 = \frac{120}{100} = ₹300$$

(vi) 0.6% of 2 km

$$1 \text{ km} = 1000 \text{ m}$$

$$\therefore 2 \text{ km} = 2000 \text{ m}$$

$$= \frac{6}{10} \% \text{ of } 2000 \text{ m}$$

$$= \frac{6}{10 \times 100} \times 2000 = 12 \text{ m}$$

Question 2.

8% of children of a class of 25 like getting wet in the rain. How many children like getting wet in the rain?

Solution:

Number of students in a class = 25

Number of children like getting wet in the rain = 8% of 25

$$= \frac{8}{100} \times 25 = 2$$

Question 3.

Vasundhara ate 3 ice cream cups out of 20 kept in the fridge. What per cent did she eat?

Solution:

Vasundra ate 3 icecream out of 20

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

Question 4.

Express:

(i) 20 as a percentage of 50

(ii) 60 litres as a percentage of 40 litres

(iii) 90 cm as a percentage of 4.5 m

(iv) 350 g as a percentage of 5.6 kg

Solution:

(i) 20 as a percentage of 50

$$\text{Percentage} = \frac{20}{50} \times 100 = 40\%$$

(ii) 60 litres as a percentage of 40 litres

$$\text{Percentage} = \frac{60}{40} \times 100 = 150\%$$

(iii) 90 cm as a percentage of 4.5 m

$$4.5 \text{ m} = 450 \text{ cm}$$

$$\text{Percentage} = \frac{90}{450} \times 100 = 20\%$$

(iv) 350 g as a percentage of 5.6 kg

$$5.6 \text{ kg} = 5.6 \times 1000 \text{ gm}$$

$$\therefore \text{Percentage} = \frac{350}{5.6 \times 1000} \times 100$$

$$= \frac{350 \times 100 \times 10}{1000 \times 56} = \frac{25}{4} \%$$

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

Question 5.

What per cent is:

(i) 12 of 80

(ii) 25 paise of 4 rupees

(iii) 300 g of 2 kg

Solution:

(i) 12 of 80

$$= \frac{12}{80} \times 100 = 15\%$$

(ii) 25 paise of 4 rupees

$$= 4 \text{ rupees} = 4 \times 100 \text{ paise}$$

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

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

(iii) 300 g of 2 kg

$$2 \text{ kg} = 2000 \text{ gm}$$

$$= \frac{300}{2 \times 1000} \times 100 = 15\%$$

Question 6.

A school team won 6 games this year against 4 games won last year. What is the per cent increase?

Solution:

A school team won 6 games this year against 4 games won last year.

Number of game more won this year = $6 - 4 = 2$

Percentage = $\frac{2}{4} \times 100 = 50\%$

Question 7.

The price of a shirt decreased from ₹ 80 to ₹ 60, find the percentage of decrease in the price of the shirt.

Solution:

Price of a shirt decreased from ₹ 80 to ₹ 60

Total decrease = ₹ 80 - ₹ 60 = ₹ 20

Percentage decreased = $\frac{20}{80} \times 100 = 25\%$

Question 8.

My mother says, in her childhood petrol was ₹ 1 per litre. It is ₹ 65 per litre today. By what percentage has the prices of petrol gone up?

Solution:

Some years past, rate of petrol = ₹ 1 per litre

Present rate = ₹ 65 per litre

$$\text{Increase} = \frac{65}{1} \times 100 = 6500\%$$

Question 9.

Rate of basmati rice last year was ₹ 40 a kg. This year they are costly by 20%. What is the price this year?

Solution:

Last year, rate of basmati = ₹ 40 per kg

Increase this year = 20%

$$\therefore \text{Increased price} = \frac{40 \times (100 + 20)}{100}$$

$$= \frac{40 \times 120}{100} = ₹48 \text{ per kg}$$

Question 10.

300 students took an exam. 28% failed. Calculate the number of students who passed the exam.

Solution:

Total number of students = 300

Failed = 28%

Total failed = 28% of 300

$$= \frac{28}{100} \times 300 = 84$$

$$\text{Number of students passed} = 300 - 84 = 216$$

Question 11.

Out of 15000 voters in a constituency, 60% voted. Find the number of voters who did not vote.

Solution:

Total number of voters = 15000

Number of voters who cast their votes

$$= 15000 \times \frac{60}{100} = 9000$$

$$\text{Number of voters who did not vote} = 15000 - 9000 = 6000$$

Question 12.

20% of the length of a flagpole is painted green, 45% is painted yellow and the remaining red. If the length of the pole is 18 m, what length of it is painted red?

Solution:

Length of pole = 18 m

Percentage of pole which is painted green = 20%

Percentage of pole which is painted yellow = 45%

and remaining pole = $100 - (20 + 45) = 35\%$

and it is painted red

Length of pole which is painted red

= 35% of 18 m = $\frac{35}{100} \times 18$

= $\frac{63}{10}$

= 6.3 m

Question 13.

Chalk contains 10% calcium, 3% carbon, 12% oxygen and the remaining sand. Find the amount of carbon and calcium (in grams) in 212 kg of chalk. Also, find the amount of sand (in kg).

Solution:

In chalk,

Calcium = 10%

Carbon = 3%

Oxygen = 12%

Remaining = $100 - (10 + 3 + 12) = 100 - 25 = 75\%$

Sand = 75%

$$\text{Weight of chalk} = 2\frac{1}{2} = \frac{5}{2} \text{ kg}$$

$$\text{Amount of carbon} = \frac{5}{2} \times \frac{3}{100} = \frac{3}{40} \text{ kg}$$

$$= \frac{3}{40} \times 1000 = 75 \text{ grams}$$

$$\text{Amount of calcium} = \frac{5}{2} \times \frac{10}{100} = \frac{1}{4} \text{ kg}$$

$$= 250 \text{ grams}$$

$$\text{and amount of sand} = \frac{5}{2} \times \frac{75}{100} = \frac{15}{8} \text{ kg}$$

$$= \frac{15}{8} = 1.875 \text{ kg}$$

Question 14.

Find the whole quantity if:

(i) 25% of it is 9

(ii) 75% of it is 15

(iii) 12% of it is ₹ 1080

(iv) 8% of it is 40 litres

Solution:

(i) 25% of whole quantity = 9

$$\therefore \text{Whole quantity} = \frac{9}{25\%} = \frac{9 \times 100}{25} = 36$$

(ii) 75% of whole quantity = 15

$$\therefore \text{Whole quantity} = \frac{15}{75\%} = \frac{15 \times 100}{75} = 20$$

(iii) 12% of whole quantity = ₹1080

$$\therefore \text{Whole quantity (money)} = \frac{1080}{12\%}$$

$$= ₹ \frac{1080 \times 100}{12} = ₹9000$$

(iv) 8% of whole quantity = 40 litres

$$\begin{aligned} \therefore \text{Whole quantity} &= \frac{40}{8\%} \\ &= \frac{40 \times 100}{8} = 500 \text{ litres} \end{aligned}$$

Question 15.

Mohini saves ₹ 400 from her salary. If this is 10% of her salary, then what is her salary?

Solution:

Mohini's savings from her salary = ₹ 400

Which is 10% of her salary

$$\text{Her salary} = ₹ \frac{400 \times 100}{10}$$

$$= ₹ 4000$$

Question 16.

16% of the apples in a basket go bad. If there are 42 good apples in the basket, find the total number of apples in the basket.

Solution:

Good apples in the basket = 42

16% of apples in a basket go bad

Remaining good apples = $100 - 16 = 84\%$

Total apples in the basket = $\frac{42 \times 100}{84}$
= 50 apples

Question 17.

In an examination, a student has to secure 45% marks to pass the exam. If Varun got 251 marks and failed by 19 marks, what are the maximum marks?

Solution:

Pass marks in an examination = 45%

Varun got 251 marks but fails by 19 marks

Pass marks = $251 + 19 = 270$

45% of total marks = 270

Total marks = $\frac{270 \times 100}{45}$
= 600 marks

Question 18.

On a rainy day, 94% of the students were students absent on that day was 174, find the total strength of the school.

Solution:

On a rainy day,

Number of students who were present = 94%

Number of students who were absent = 174

Percentage of absent students = $100 - 94 = 6\%$

6% of total students = 174

= $\frac{174 \times 100}{6}$

= 2900 students

Question 19.

40% of the population of a town are men and 39% are women. If the number of children is 12600, find the number of men.

Solutions:

Let the whole population be x

Number of men = 40% of $x = \frac{40x}{100}$

Number of women = 39% of $x = \frac{39x}{100}$

Number of children = 12600

According to given condition,

$$x - \left(\frac{40}{100}x + \frac{39}{100}x \right) = 12600$$

$$x - \left(\frac{40x + 39x}{100} \right) = 12600$$

$$x - \frac{79}{100}x = 12600$$

$$\frac{100x - 79x}{100} = 12600$$

$$\frac{21}{100}x = 12600$$

$$x = \frac{12600 \times 100}{21} = 60000.$$

Total population = 60000

Number of men = $\frac{40x}{100}$

$$= \frac{40}{100} \times 60000$$

$$= 24000 \text{ men}$$

Question 20.

If the price of a watch is increased by 15%, the increase in the price is ₹ 90.

What was the price of watching earlier?

Solution:

Let the price of watch earlier be x .

$$\text{Increase} = 15\% \text{ of } x = \frac{15x}{100} = \frac{3x}{20}$$

According to statement,

$$x + \frac{3}{20}x = x + 90$$

$$\frac{20x + 3x}{20} = x + 90$$

$$\frac{23x}{20} = x + 90$$

$$\frac{23}{20}x - x = 90$$

$$\frac{23x - 20x}{20} = 90$$

$$\frac{3}{20}x = 90$$

$$x = \frac{90 \times 20}{3} = 600$$

\therefore The price of the watch earlier = ₹600

Question 21.

(i) Find the number which when increased by 30% becomes 39.

(ii) Find the number which when decreased by 8% becomes 506.

Solution:

Let the number be x

According to statement,

$$x + 30\% \text{ of } x = 39$$

$$x + \frac{30}{100}x = 39$$

$$\frac{100x + 30x}{100} = 39$$

$$\frac{130x}{100} = 39$$

$$x = \frac{39 \times 100}{130} = 30$$

Hence the number is 30

(ii) Let the number be x

Decrease = 8% of x

$$= \frac{8}{100}x = \frac{2}{25}x$$

According to statement,

$$x - \frac{2}{25}x = 506$$

$$\frac{25x - 2x}{25} = 506$$

$$\frac{23}{25}x = 506$$

$$x = \frac{506 \times 25}{23} = \frac{12650}{23} = 550$$

hence the number is 550

Question 22.

The price of a shirt is reduced by 7% to ₹ 465. What is its original price?

Solution:

Let the original price of the shirt be x .

Rate of reduction = 7%

Reduction = 7% of x

$$= \frac{7}{100}x.$$

According to statement,

$$x - \frac{7}{100}x = 465$$

$$\frac{100x - 7x}{100} = 465$$

$$\frac{93}{100}x = 465$$

$$x = \frac{465 \times 100}{93} = 500$$

\therefore The original price is ₹500