Chapter 11: Percentage Exercise – 11.1

Question: 1

Express each of the following per cents as fractions in the simplest forms:

(i) 45%

(ii) 0.25%

(iii) 150%

(iv) 6(1/4) %

Solution:

(i) 45%

$$= \frac{45}{100}$$
$$= \frac{9}{20}$$

(ii) 0.25%

$$= \frac{0.25}{100}$$
$$= \frac{25}{10000}$$
$$= \frac{1}{400}$$

(iii) 150%

$$= \frac{150}{100}$$
$$= \frac{3}{2}$$

(iv) $6\frac{1}{4}\%$

$$= \frac{6.25}{100}$$
$$= \frac{625}{10000}$$
$$= \frac{1}{16}$$

Question: 2

Express each of the following fractions as a per cent:

(i) (3/4) %

(ii) (53/100) %

(iii) 1(3/5) %

(iv) (7/20) %

Solution:

(i) $\frac{3}{4}\%$

$= \left(\frac{3}{4} \times 100\right)\%$

$= 75\%$

(ii) $\frac{53}{100}\%$

$= \left(\frac{53}{100} \times 100\right)\%$

$= 53\%$

(iii) $1\frac{3}{5}\%$

$= \frac{8}{5}$

$= (1.6 \times 100)\%$

$= 160\%$

(iv) $\frac{7}{20}\%$

$= \left(\frac{7}{20} \times 100\right)\%$

$= 35\%$

Chapter 11: Percentage Exercise – 11.2

Question: 1

Express each of the following ratios as per cents

(i) 4:5

(ii) 1:5

(iii) 11: 125

Solution:

(i) 4:5

$= \frac{4}{5}$ =80%

$= \left(\frac{4}{5} \times 100\right)\%$

(ii) 1:5

$= \frac{1}{5}$ =20%

$= \left(\frac{1}{5} \times 100\right)\%$

(iii) 11:125

$= \frac{11}{125}$ $= \frac{44}{5}\%$

$= \left(\frac{11}{125} \times 100\right)\%$

Question: 2

Express each of the following per cents as ratios in simplest forms

(i) 2.5%

(ii) 0.4%

(iii) 13(3/4)%

Solution:

(i) 2.5%

$$\frac{2.5}{100}$$
$$= \frac{25}{1000}$$
$$= \frac{1}{40}$$

(ii) 0.4%

$$\frac{0.4}{100}$$
$$= \frac{4}{1000}$$
$$= \frac{1}{250}$$

(iii) $13\frac{3}{4}\%$

$$\frac{13.75}{100}$$
$$= \frac{1375}{10000}$$
$$= \frac{11}{80}$$

Chapter 11: Percentage Exercise – 11.3

Question: 1

Express each of the following per cents as decimals:

(i) 12.5%

(ii) 75%

(iii) 128.8%

Solution:

(i) 12.5%

$$\frac{12.5}{100}$$
$$= 0.125$$

(ii) 75%

$$\frac{75}{100}$$
$$= 0.75$$

(iii) 128.8%

$$\frac{128.8}{100}$$
$$= 1.288$$

(iv) 0.05%

$$\frac{0.05}{100}$$
$$= 0.0005$$

Question: 2

Express each of the following decimals as per cent:

(i) 0.004

(ii) 0.24

(iii) 0.02

(iv) 0.275

Solution:

(i) 0.004

$\frac{4}{1000}$

$= \left(\frac{4}{1000} \times 100\right)\%$

$= 0.4\%$

(ii) 0.24

$\frac{24}{100}$

$= \left(\frac{24}{100} \times 100\right)\%$

$= 24\%$

(iii) 0.02

$\frac{2}{100}$

$= \left(\frac{2}{100} \times 100\right)\%$

$= 2\%$

(iv) 0.275

$\frac{275}{1000}$

$= \left(\frac{275}{1000} \times 100\right)\%$

$= 27.5\%$

Question: 3

Write each of the following as whole numbers or mixed numbers:

(i) 136%

(ii) 250%

(iii) 300%

Solution:

(i) 136%

$= \frac{136}{100}$

$= \frac{34}{25}$

(ii) 250%

$= \frac{250}{100}$

$= \frac{5}{2}$

(iii) 300%

$= \frac{300}{100}$

$= 3$

Chapter 11: Percentage Exercise – 11.4

Question: 1

Find each of the following:

(i) 7% of Rs.7150

(ii) 40% of 400Kg

(iii) 20% of 15.125litres

(iv) 3(1/3)% of 90 km

(v) 2.5% of 600metres

Solution:

(i)7% of Rs.7150

$$Rs.\left(\frac{7}{100}\times 7150\right)$$
$$=Rs.500.50$$

(ii) 40% of 400Kg

$$Kg.\left(\frac{40}{100}\times 400\right)$$
$$=160Kg$$

(iii) 20% 0f 15.125litres

$$litres.\left(\frac{20}{100}\times 15.125\right)$$
$$=3.025litres$$

(iv) $3\frac{1}{3}\%$ of 90km

$$km.\left(\frac{10}{300}\times 90\right)$$
$$=3km$$

(v) 2.5% of 600metres

$$metres.\left(\frac{2.5}{100}\times 600\right)$$
$$=15metres$$

Question: 2

Find the number whose 12(1/2) % is 64.

Solution:

Let the required number be x. Then,

$$12\tfrac{1}{2} \times x = 64$$
$$12.5\% \times x = 64$$
$$\tfrac{12.5}{100} \times x = 64$$
$$x = \tfrac{64 \times 100}{12.5}$$
$$= 64 \times 8 = 512$$
$$Therefore\ x = 512$$

Question: 3

What is the number, 6(1/4)% of which is 2?

Solution:

Let the required number be x. Then,

$$6\tfrac{1}{4} \times x = 2$$
$$6.25\% \times x = 2$$
$$\tfrac{6.25}{100} \times x = 2$$
$$x = \tfrac{2 \times 100}{6.25}$$
$$= 2 \times 16 = 32$$
$$Therefore\ x = 32$$

Question: 4

If 6 is 50% of a number, what is the number?

Solution:

Let the required number be x. Then,

$$50\%\ of\ x = 6$$
$$\tfrac{50}{100} \times\ x = 6$$
$$x = \tfrac{300 \times 2}{50}$$
$$\tfrac{600}{50} = 12$$
$$x = 12$$

Chapter 11: Percentage Exercise – 11.5

Question: 1

What per cent of

(i) 24 is 6?

(ii) Rs.125 is Rs.10?

(iii) 4km is 160 metres?

(iv) Rs. 8 is 25 paise?

(v) 2 days is 8 hours?

(vi) 1 lire is 175 ml

Solution:

(i) 24 is 6?

$$Required\ percentage = \frac{6}{24} \times 100$$
$$= \frac{100}{4}$$
$$= 25\%$$
$$Hence\ 6\ is\ 25\%\ of\ 24$$

(ii) Rs.125 is Rs.10?

$$Required\ percentage = Rs.\left(\frac{10}{125} \times 100\right)$$
$$= \frac{1000}{125}$$
$$= 8\%$$
$$Hence\ Rs.10\ is\ 8\%\ of\ Rs.125$$

(iii) 4km is 160 metres?

$$Required\ percentage = km\left(\frac{160}{4} \times 100\right)$$
$$1km = 1000metres$$
$$4km = 4000metres$$
$$km\left(\frac{160}{4000} \times 100\right)$$
$$\frac{16000}{4000} = 4\%$$
$$Hence\ 160metres\ of\ 4km\ is\ 4\%$$

(iv) Rs.8 is 25 paise?

$We\ know\ that, Rs.1 = 100 paise$
$Therefore Rs.8 = 800 paise$
$Required\ percentage = paise\ \left(\frac{25}{800} \times 100\right)$
$= \frac{25}{8}\%$
$= 3.125\%$
$Hence\ 25 paise\ is\ 3.125\%\ of\ Rs.8$

(v) 2 days is 8 hours?

We know that,

1day is 24 hours

$hour = \frac{1}{24} day$
$8\ hours = \frac{8}{24} day = \frac{1}{3} day$

$Therefore\ required\ percentage = \frac{\frac{1}{3}}{2} \times 100$
$= \frac{100}{6}\%$
$Hence\ 8\ hours\ is\ 16\frac{2}{3}\%\ of\ 2\ days$

(vi) 1 lire is 175ml

We know that

1lire=1000ml

$Therefore\ required\ percentage = \frac{175ml}{1litre}$
$= \frac{175ml}{1000ml} \times 100$
$= 17.5\%$
$Hence\ 175ml\ is\ 17.5\%\ of\ 1\ litre$

Question: 2

What per cent is equivalent to 3/8?

Solution:

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

Question: 3

Find the following:

(i) 8 is 4% of which number

(ii) 6 is 60% of which number

(iii) 6 is 30% of which number

(iv) 12 is 25% of which number

Solution:

(i) 8 is 4% of which number

$$let\ x\ be\ the\ required\ number.\ Then,$$
$$4\%\ of\ x = 8$$
$$\left(\frac{4}{100} \times x\right) = 8$$
$$x = \frac{800}{4}$$
$$x = 200$$

(ii) 6 is 60% of which number

$$let\ x\ be\ the\ required\ number.\ Then,$$
$$60\%\ of\ x = 6$$
$$\left(\frac{60}{100} \times x\right) = 6$$
$$x = \frac{600}{6}$$
$$x = 10$$

(iii) 6 is 30% of which number

$$let\ x\ be\ the\ required\ number.\ Then,$$
$$30\%\ of\ x = 6$$
$$\left(\frac{30}{100} \times x\right) = 6$$
$$x = \frac{6 \times 100}{30}$$
$$x = 20$$

(iv) 12 is 25% of which number

$$let\ x\ be\ the\ required\ number.\ Then,26$$
$$25\%\ of\ x = 12$$
$$\left(\frac{25}{100} \times x\right) = 12$$
$$x = \frac{12 \times 100}{25}$$
$$x = 48$$

Question: 4

Convert each of the following pairs into percentages and find out which is more?

(i) 25 marks out of 30, 35 marks out of 40

(ii) 100 runs scored off 110 balls, 50 runs scored off 55 balls

Solution:

(i) 25 marks out of 30, 35 marks out of 40

$$25\ marks\ out\ of\ 30 = \frac{25}{30} \times 100$$
$$= \frac{250}{3}\%$$
$$= 83.33\%$$
$$35\ marks\ out\ of\ 40 = \frac{35}{40} \times 100$$
$$= \frac{7}{8} \times 100\%$$
$$= 87.5\%$$

Therefore 35 marks out of 40(87.5%) is more than 25 marks out of 30

(ii) 100 runs scored off 110 balls, 50 runs scored off 55 balls

$$100\ runs\ scored\ off\ 110\ balls = \frac{100}{110} \times 100$$
$$= 90.91\%$$
$$50\ runs\ scored\ off\ 55\ balls = \frac{50}{55} \times 100$$
$$= 90.91\%$$
$$Both\ are\ same\ (90.91\%)$$

Question: 5

Find 20% more than Rs.200.

Solution:

$$We\ have$$
$$20\%of\ Rs.200 = \frac{20}{100} \times 200 = Rs.40$$
$$Therefore\ 20\%\ more\ than\ Rs.200 = Rs.200 + Rs.40$$
$$= Rs.240$$

Question: 6

Find 10% less than Rs.150

Solution:

$$We\ have$$
$$10\%of\ Rs.150 = \frac{10}{100} \times 150 = Rs.15$$
$$Therefore\ 10\%\ lss\ than\ Rs.150 = Rs.150 + Rs.15$$
$$= Rs.135$$

Chapter 11: Percentage Exercise – 11.6

Question: 1

Ashu had 24 pages to write. By the evening, he had completed 25% of his work. How many pages were left?

Solution:

$$Total\ number\ of\ pages = 24$$
$$Number\ of\ pages\ completed = 25\%\ of\ 24\ pages$$
$$= \frac{25}{100} \times 24$$
$$= \frac{1}{4} \times 24$$
$$= 6\ pages$$
$$Therefore\ no\ of\ pages\ left = Total - Pages\ completed$$
$$= (24 - 6)\ pages$$
$$= 18\ pages$$

Question: 2

A box contains 60 eggs. Out of which 16(2/3)% are rotten ones. How many eggs are rotten?

Solution:

$$Total\ number\ of\ eggs = 60$$
$$Number\ of\ eggs\ rotten = 16\frac{2}{3}\%\ of\ 60\ eggs$$
$$= 16.66\%\ of\ 60\ eggs$$
$$= \frac{16.66}{100} \times 60$$
$$= 10\ eggs$$
$$Therefore\ no\ of\ eggs\ rotten = 10\ eggs$$

Question: 3

Rohit obtained 45 marks out of 80. What per cent marks did he get?

Solution:

$$Total\ number\ of\ marks = 80$$
$$Rohit\ obtained = 45$$
$$Required\ percentage = \frac{45}{80} \times 100$$
$$= \frac{9}{16} \times 100$$
$$= 56.25\%$$

Question: 4

Mr Virmani saves 12% of his salary. If he receives Rs 15900 per month as salary, find his monthly expenditure.

Solution:

$$Salary = Rs.15900$$
$$Savings = 12\%\ of\ salary$$
$$= \frac{12}{100} \times 15900$$
$$= Rs.1908$$
$$Therefore\ Expenditures = Salary - Savings$$
$$= Rs.15900 - Rs.1908$$
$$= Rs.13992$$

Question: 5

A lawyer willed his 3 sons Rs 250000 to be divided into portions 30%, 45% and 25%. How much did each of them inherit?

Solution:

$$Total\ amount = Rs.250000$$
$$Therefore$$
$$30\%\ of\ amount = \frac{30}{100} \times 250000$$
$$= 30 \times 2500$$
$$= Rs.75000$$
$$45\%\ of\ amount = \frac{45}{100} \times 250000$$
$$= 45 \times 2500$$
$$= Rs.112500$$
$$25\%\ of\ amount = \frac{25}{100} \times 250000$$
$$= 25 \times 2500$$
$$= Rs.62500$$

Question: 6

Rajdhani College has 2400 students, 40% of whom are girls. How many boys are there in the college?

Solution:

$$Total\ number\ of\ students = 2400$$
$$40\%\ of\ 2400 = \frac{40}{100} \times 2400$$
$$= 40 \times 24$$
$$= 960 girls$$
$$Therefore\ no\ of\ boys = Total\ students - girls$$
$$= 2400 - 960$$
$$= 1440\ boys$$

Question: 7

Aman obtained 410 marks out of 500 in CBSE XII examination while his brother Anish gets 536 marks out of 600 in IX class examination. Find whose performance is better?

Solution:

$$Aman\ scored\ 410\ marks\ out\ of\ 500$$
$$= \frac{410}{500} \times 100$$
$$= 82\%$$
$$Anish\ scored\ 536\ marks\ out\ of\ 600$$
$$= \frac{536}{600} \times 100$$
$$= 89\%$$
$$Anish\ performance\ is\ better$$

Question: 8

Rahim obtained 60 marks out of 75 in Mathematics. Find the percentage of marks obtained by Rahim in Mathematics.

Solution:

$$Total\ no\ of\ marks = 75$$
$$Rahim\ obtained = 60$$
$$Required\ percentage = \frac{60}{75} \times 100$$
$$= 80\%$$

Question: 9

In an orchard, 16(2/3) % of the trees are apple trees. If the number of trees in the orchard is 240, 3 find the number of other type of trees in the orchard.

Solution:

$$Total\ number\ of\ trees = 240$$
$$Apple\ trees = 16\frac{2}{3} \times\ 240$$
$$= 16.66\%\ of\ 240$$
$$= \frac{16.66}{100} \times 240$$
$$= 40\ trees$$
$$No\ of\ trees\ other\ than\ apple\ tree = Total\ trees - apples\ trees$$
$$= 240 - 40$$
$$= 40\ trees$$

Question: 10

Ram scored 553 marks out of 700 and Gita scored 486 marks out of 600 in science. Whose performance is better?

Solution:

$$Ram\ obtained\ 553\ out\ of\ 700$$
$$Ram\ percentage = \frac{553}{700} \times 100$$
$$= \frac{553}{7}$$
$$= 79\%Gita\ obtained\ 486\ out\ of\ 600$$
$$ita\ percentage = \frac{486}{600} \times 100$$
$$= \frac{486}{6}$$
$$= 81\%$$
$$Therefore\ Gita\ performance\ is\ better$$

Question: 11

Out of an income of Rs 15000, Nazima spends Rs 10200. What per cent of her income does she save?

Solution:

$$Total\ income = Rs.15000$$
$$Savings = Income - Expenditure$$
$$= Rs.15000 - Rs.10200$$
$$= Rs.4800$$
$$Percentage\ of\ income = \frac{4800}{15000} \times 100$$
$$= 32\%$$

Question: 12

45% of the students in a school are boys. If the total number of students in the school is 880, find the number of girls in the school.

Solution:

$$Total\ number\ of\ students = 880$$
$$number\ of\ boys = 45\%\ of\ 880$$
$$= \frac{45}{100} \times 880$$
$$= 45 \times 8.8$$
$$= 396 boys$$
$$No\ of\ girls = Total\ students - no\ of\ boys$$
$$= 880 - 396$$
$$= 484\ girls$$
$$Therefore\ no\ of\ girls = 484\ girls$$

Question: 13

Mr. Sidhana saves 28% of his income. If he saves As 840 per month, find his monthly income.

Solution:

$$28\% of\ salary = Rs.840$$
$$Let\ the\ salary\ of\ Mr.\ Sidhana\ be\ x 28\%\ of\ x = 840$$
$$x = \frac{840 \times 100}{28}$$
$$= Rs.3000$$
$$Therefore\ Mr.\ Sidhana\ salary\ is\ Rs.3000$$

Question: 14

In an examination, 8% of the students fail. What percentage of the students pass? If 1650 students appeared in the examination, how many passed?

Solution:

$Total\ no\ of\ students = 1650$
$8\%\ of\ students\ failed$
$Passed\ students\% = 100\% - 8\%$
$= 92\%$
$Therefore\ number\ of\ students\ passed = 92\%\ of\ 1650$
$= \frac{92}{100} \times 1650$
$= 92 \times 16.5$
$= 1518$
$Therefore\ 1518\ students\ passed$

Question: 15

In an examination, 92% of the candidates passed and 46 failed. How many candidates appeared?

Solution:

$92\%\ of\ students\ passed\ means\ 8\%\ students\ failed$
$Let\ the\ number\ of\ students\ be\ x\ then,$
$8\%\ of\ x = 46$
$x = \frac{46 \times 100}{8}$
$= 575$
$Therefore\ total\ number\ of\ students = 575$