

EXERCISE 11.1

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1. Express each of the following percents as fractions in the simplest forms:

(i) 45%

(ii) 0.25%

(iii) 150%

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

Solution:

(i) Given 45%

$$= (45/100)$$

On simplifying the above fraction we get

$$= (9/20)$$

(ii) Given 0.25%

$$= (0.25/100)$$

$$= (25/10000)$$

On simplifying the above fraction we get

$$= (1/400)$$

(iii) Given 150%

$$= (150/100)$$

On simplifying the above fraction we get

$$= (3/2)$$

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

We can write $6 \frac{1}{4}$ as 6.25

$$= (6.25/100)$$

$$= (625/10000)$$

$$= (1/16)$$

2. Express each of the following fractions as a percent:

(i) $(3/4)$

(ii) $(53/100)$

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

(iv) $(7/20)$

Solution:

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

(ii) Given $(\frac{53}{100})$
 $= (\frac{53}{100}) \times 100$
 $= 53\%$

(iii) Given $1 \frac{3}{5}$
Convert the given mixed fraction into improper fraction
 $1 \frac{3}{5} = (\frac{8}{5})$
 $= (\frac{8}{5}) \times 100$
 $= 160\%$

(iv) Given $(\frac{7}{20})$
 $= (\frac{7}{20}) \times 100$
 $= 35\%$

EXERCISE 11.2

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1. Express each of the following ratios as per cents:

(i) 4: 5

(ii) 1: 5

(iii) 11: 125

Solution:

(i) Given 4: 5

4: 5 can be written as $(4/5)$

$$= (4/5) \times 100$$

$$= 80\%$$

(ii) Given 1: 5

1: 5 can be written as $(1/5)$

$$= (1/5) \times 100$$

$$= 20\%$$

(iii) Given 11: 125

11: 125 can be written as $(11/125)$

$$= (11/125) \times 100$$

$$= (44/5) \%$$

2. Express each of the following percents as ratios in the simplest form:

(i) 2.5%

(ii) 0.4%

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

Solution:

(i) Given 2.5%

$$= (2.5/100)$$

$$= (25/1000)$$

$$= (1/40)$$

(ii) Given 0.4%

$$= (0.4/100)$$

$$= (4/1000)$$

$$= (1/250)$$

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

$$13 \frac{3}{4} = 13.75$$

$$= 13.75/100$$

$$= 1375/10000$$

$$= 11/80$$



EXERCISE 11.3

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1. Express each of the following percents as decimals:**(i) 12.5%****(ii) 75%****(iii) 128.8%****(iv) 0.05%****Solution:**

$$\begin{aligned} \text{(i) Given } 12.5\% \\ &= (12.5/100) \\ &= 0.125 \end{aligned}$$

$$\begin{aligned} \text{(ii) Given } 75\% \\ &= (75/100) \\ &= 0.75 \end{aligned}$$

$$\begin{aligned} \text{(iii) Given } 128.8\% \\ &= (128.8/100) \\ &= 1.288 \end{aligned}$$

$$\begin{aligned} \text{(iv) Given } 0.05\% \\ &= (0.05/100) \\ &= 0.0005 \end{aligned}$$

2. Express each of the following decimals as per cents:**(i) 0.004****(ii) 0.24****(iii) 0.02****(iv) 0.275****Solution:**

$$\begin{aligned} \text{(i) Given } 0.004 \\ 0.004 \text{ can be written as } 4/1000 \\ &= (4/1000) \times 100 \\ &= 0.4\% \end{aligned}$$

(ii) Given 0.24

0.24 can be written as $(24/100)$

$$= (24/100) \times 100$$

$$= 24\%$$

(iii) Given 0.02

0.02 can be written as $(2/100)$

$$= (2/100) \times 100$$

$$= 2\%$$

(iv) Given 0.275

0.275 can be written as $(275/1000)$

$$= (275/1000) \times 100$$

$$= 27.5\%$$

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

(i) 136%

(ii) 250%

(iii) 300%

Solution:

(i) Given 136%

$$= (136/100)$$

On simplifying we get

$$= (34/25)$$

(ii) Given 250%

$$= (250/100)$$

On simplifying

$$= (5/2)$$

(iii) Given 300%

$$= (300/100)$$

$$= 3$$

EXERCISE 11.4

PAGE NO: 11.7

1. Find each of the following:

(i) 7% of Rs 7150

(ii) 40% of 400kg

(iii) 20% of 15.125liters

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

(v) 2.5% of 600meters

Solution:

(i) Given 7% of Rs 7150

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

$$= \text{Rs } 500.50$$

(ii) Given 40% of 400kg

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

$$= 160\text{kg}$$

(iii) Given 20% of 15.125liters

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

$$= 3.025\text{liters}$$

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

We know that $3\frac{1}{3} = \left(\frac{10}{3}\right)$

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

$$= 3\text{km}$$

(v) Given 2.5% of 600 meters

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

$$= 15 \text{ meters}$$

2. Find the number whose $12\frac{1}{2}$ % is 64.

Solution:

Let the required number be x

Then according to the question, $12\frac{1}{2}\% \times x = 64$

$$= 12.5\% \times x = 64$$

$$= (12.5/100) \times x = 64$$

$$x = (64 \times 100)/12.5$$

$$x = 64 \times 8 = 512$$

Therefore 512 is the number whose $12\frac{1}{2}\%$ is 64.

3. What is the number, $6\frac{1}{4}\%$ of which is 2?

Solution:

Let the required number be x

Then according to the question, $6\frac{1}{4}\% \times x = 2$

$$= 6.25\% \times x = 2$$

$$= (6.25/100) \times x = 2$$

$$x = (2 \times 100)/6.25$$

$$x = 2 \times 16 = 32$$

Therefore 32 is the number whose $6\frac{1}{4}\%$ is 2.

4. If 6 is 50% of a number, what is that number?

Solution:

Let the required number be x

Given that 50% of $x = 6$

$$(50/100) \times x = 6$$

$$x = (6 \times 100)/50$$

$$x = 12$$

The required number is 12

EXERCISE 11.5

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1. What percent of**(i) 24 is 6?****(ii) Rs 125 is Rs 10?****(iii) 4km is 160 meters?****(iv) Rs 8 is 25 paise?****(v) 2 days is 8 hours?****(vi) 1 liter is 175ml?****Solution:**

(i) According to the question required percentage = $(6/24) \times 100$
= $(100/4)$
= 25%

(ii) According to the question required percentage = $(10/125) \times 100$
= $(1000/125)$
= 8%

(iii) According to the question required percentage = $(160/4) \times 100$
We know that 1km = 1000 meters
Therefore 4km = 4000 meters
= $(160/4000) \times 100$
= 4%

(iv) According to the question required percentage = $(25/8) \times 100$
We know that 1Rs = 100 paise
Therefore 8Rs = 800 paise
= $(25/800) \times 100$
= $(25/8)$
= 3.125%

(v) We know that 1day = 24 hours
1 hour = $(1/24)$ day
8 hours = $(8/24)$ day = $(1/3)$ day
According to the question required percentage = $[(1/3)/2] \times 100$

$$= 100/6$$

$$= 16 \frac{2}{3} \%$$

(vi) We know that 1liter = 1000ml

According to the question required percentage = $(175/1000) \times 100$

$$= 17500/1000$$

$$= 17.50 \%$$

2. What percent is equivalent to $(3/8)$?

Solution:

Given $(3/8)$

$$= (3/8) \times 100$$

$$= 37.5\%$$

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) Let x be the required number

Given that 4% of x = 8

$$(4/100) \times x = 8$$

$$x = (800/4)$$

$$x = 200$$

(ii) Let the required number be x

Given that 60% of x = 6

$$(60/100) \times x = 6$$

$$x = (60/6)$$

$$x = 10$$

(iii) Let the required number be x

Given that 30% of x = 6

$$(30/100) \times x = 6$$

$$x = (6 \times 100)/30$$

$$x = 20$$

(iv) Let the required number be x

Given that 25% of $x = 12$

$$(25/100) \times x = 12$$

$$x = (12 \times 100)/25$$

$$x = 48$$

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) Given 25 marks out of 30

$$\text{Consider 25 marks out of 30} = (25/30) \times 100$$

$$= (250/3)$$

$$= 83.33\%$$

Also given that 35 marks out of 40

$$\text{Now consider 35 marks out of 40} = (35/40) \times 100$$

$$= 87.5\%$$

Clearly $87.5 > 83.33$

After converting into percentage 35 marks out of 40 = 87.5% is more

(ii) Given 100 runs scored off 110 balls

$$\text{Consider 100 runs scored off 110 balls} = (100/110) \times 100$$

$$= 90.91\%$$

Also given that 50 runs scored off 55 balls

$$\text{Consider 50 runs scored off 55 balls} = (50/55) \times 100$$

$$= 90.91\%$$

Here both are equal

5. Find 20% more than Rs.200.

Solution:

$$\text{Consider 20% of 200} = (20/100) \times 200$$

$$= \text{Rs } 40$$

Therefore 20% more than Rs 200 = $200 + 40$
= Rs 240

6. Find 10% less than Rs.150

Solution:

Consider 10% of 150 = $(10/100) \times 150$
= Rs 15

Therefore 10% less than Rs 150 = $150 - 15$
= Rs 135



EXERCISE 11.6

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

Solution:

Given total number of pages Ashu had to write = 24

Number of pages Ashu completed by the evening = 25% of 24

$$= (25/100) \times 24$$

$$= 600/100$$

$$= 6$$

Therefore number of pages left for completion = $24 - 6 = 18$ pages

2. A box contains 60 eggs. Out of which $16 \frac{2}{3}$ % are rotten ones. How many eggs are rotten?

Solution:

Given that total number of eggs = 60

Number of eggs rotten = $16 \frac{2}{3}$ % of 60 eggs

$$= 16.66 \% \text{ of } 60 \text{ eggs}$$

$$= (16.66/100) \times 60$$

$$= 10 \text{ eggs}$$

Therefore number of eggs rotten = 10

3. Rohit obtained 45 marks out of 80. What percent marks did he get?

Solution:

Given total number of marks = 80

Marks scored by Rohit = 45

Percentage obtained by Rohit = $(45/80) \times 100$

$$= 56.25\%$$

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

Solution:

Given Mr Virmani's salary per month = Rs. 15900

Mr Virmani's savings = 12% of Rs. 15900

$$= (12/100) \times 15900$$

$$= \text{Rs. } 1908$$

Mr Virmani's monthly expenditure = salary - savings

$$= \text{Rs. } (15900 - 1908)$$

$$= \text{Rs. } 13992$$

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:

Given total amount with the lawyer = Rs. 250000

First son's inheritance = 30% of 250000

$$= (30/100) \times 250000$$

$$= 750000/100$$

$$= \text{Rs. } 75000$$

Second son's inheritance = 45% of 250000

$$= (45/100) \times 250000$$

$$= 1125000/100$$

$$= \text{Rs. } 112500$$

Third son's inheritance = 25% of 250000

$$= (25/100) \times 250000$$

$$= 625000/100$$

$$= \text{Rs. } 62500$$

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

Solution:

Given total number of students in Rajdhani College = 2400

Number of girls = 40% of 2400

$$= (40/100) \times 2400$$

$$= 96000/100$$

$$= 960$$

Number of boys = total number of students – number of girls

$$= 2400 - 960 = 1440 \text{ boys}$$

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:

Given Aman's marks in CBSE XII = 410/500

Percentage of marks obtained by Aman = $(410/500) \times 100$
= 82%

Given that Anish's marks in CBSE IX = 536/600

Percentage of marks obtained by Anish = $(536/600) \times 100$
= 89.33%

Clearly $89.33 > 82$

Therefore, Anish's performance is better than Aman's

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

Solution:

Given marks obtained by Rahim in Mathematics = 60/75

Percentage of marks obtained by Rahim = $(60/75) \times 100$
= 80%

9. In an orchard, $16 \frac{2}{3}$ % of the trees are apple trees. If the number of trees in the orchard is 240, find the number of other type of trees in the orchard.

Solution:

Let the number of apple trees be x

Number of trees in the orchard = 240

Number of apple trees = $16 \frac{2}{3}$ %

According to the given condition, $16 \frac{2}{3}$ % of 240 = x

= 16.66 % of 240 = x

$x = (16.66/100) \times 240$

x = 40 trees

Number of other types of trees = Total number of trees - number of apple trees

= 240 - 40

= 200 trees

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

Solution:

Given marks scored by Ram = $553/700$

Percentage of marks scored by Ram = $(553/700) \times 100$
 $= 0.79 \times 100 = 79\%$

Also given that marks scored by Gita = $(486/600)$

Percentage of marks scored by Gita = $(486/600) \times 100$
 $= 0.81 \times 100 = 81$

Gita's performance (81%) is better than Ram's (79%).

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

Solution:

Given Nazima's total income = Rs 15000

Amount Nazima spends = Rs 10200

Amount Nazima saves = $15000 - 10200$
 $= \text{Rs } 4800$

Percentage of income Nazima saves = $(4800/15000) \times 100$
 $= 480000/15000$
 $= 32\%$

Nazima saves 32% of her income.

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:

Given total number of students in the school = 880

Number of boys in the school = 45% of 880

$= (45/100) \times 880$
 $= 39600/100$

Number of boys = 396

Number of girls in the school = total number of students - number of boys
 $= 880 - 396$

Number of girls = 484

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

Solution:

Let Mr. Sidhana's monthly income be x

Monthly savings of Mr. Sidhana's = Rs 840

28% of x = Rs 840

$$\Rightarrow (28/100) \times x = \text{Rs } 840$$

$$\Rightarrow 28x = \text{Rs } 84000$$

$$\Rightarrow x = (84000/28) = \text{Rs } 3000$$

Mr. Sidhana's monthly income = Rs 3000

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:

Given total number of students who appeared for the examination = 1650

Number of students who failed = 8% of 1650

$$= (8/100) \times 1650$$

$$= (8 \times 1650)/100$$

$$= 13200/100$$

Number of students failed = 132

Number of students passed = 1650 - 132

$$= 1518$$

Percentage of students passed = $(1518/1650) \times 100$

$$= 0.92 \times 100 = 92\%$$

92% of the students passed the examination.

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

Solution:

Let the total number of candidates be x

Number of candidates who failed = 46

Number of candidates who passed = 92% of x

According to the given condition

$$92\% \text{ of } x = x - 46$$

$$\Rightarrow (92/100) x = x - 46$$

$$\Rightarrow 92x = 100x - 4600$$

$$\Rightarrow -8x = -4600$$

$$\Rightarrow x = 4600/8 = 575$$

Number of candidates who appeared for the examination = 575

