

Percent and Percentage

1. Convert each of the following fractions as percentage:

$$(i) \frac{3}{25} \quad (ii) \frac{4}{5} \quad (iii) \frac{3}{4} \quad (iv) \frac{2}{3} \quad (v) 1$$

Ans. (i) $\frac{3}{25} = \left(\frac{3}{25} \times 100\right)\% = 12\%$

(ii) $\frac{4}{5} = \left(\frac{4}{5} \times 100\right)\% = 80\%$

(iii) $\frac{3}{4} = \left(\frac{3}{4} \times 100\right)\% = 75\%$

(iv) $\frac{2}{3} = \left(\frac{2}{3} \times 100\right)\% = \left(\frac{200}{3}\right)\% = 66\frac{2}{3}\%$

(v) $1 = (1 \times 100)\% = 100\%$

2. Express each (of the following percentage into fraction in lowest terms:

$$(i) 16\% \quad (ii) 48\% \quad (iii) 5\% \quad (iv) 25\% \quad (v) 115\% \quad (vi) 1\%$$

Ans. (i) $16\% = \frac{16}{100} = \frac{4}{25}$

(ii) $48\% = \frac{48}{100} = \frac{12}{25}$

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

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

(v) $115\% = \frac{115}{100} = \frac{23}{20}$

(vi) $1\% = \frac{1}{100}$

3. Express each of the following ratio into percentage:

$$(i) 6 : 5 \quad (ii) 8 : 25 \quad (iii) 10 : 50 \quad (iv) 4 : 5 \quad (v) 7 : 25$$

Ans. (i) $6 : 5 = \frac{6}{5} = \left(\frac{6}{5} \times 100\right)\% = \frac{600}{5}\% = 120\%$

(ii) $8 : 25 = \frac{8}{25} = \left(\frac{8}{25} \times 100\right)\% = 32\%$

(iii) $10 : 50 = \frac{10}{50} = \left(\frac{1}{5} \times 100\right)\% = 20\%$

(iv) $4 : 5 = \frac{4}{5} = \left(\frac{4}{5} \times 100\right)\% = 80\%$

$$(v) 7 : 25 = \frac{7}{25} = \left(\frac{7}{25} \times 100\right)\% = 28\%$$

4. Express each of the following percentage as ratios in the simplest form:

(i) 46% (ii) 20% (iii) 125% (iv) 34% (v) 1%

Ans. (i) $46\% = \frac{46}{100} = \frac{23}{50} = 23 : 50$

(ii) $20\% = \frac{20}{100} = \frac{1}{5} = 1 : 5$

(iii) $125\% = \frac{125}{100} = \frac{5}{4} = 5 : 4$

(iv) $34\% = \frac{34}{100} = \frac{17}{50} = 17 : 50$

(v) $1\% = \frac{1}{100} = 1 : 100$

5. Express each of the following percentage as decimals:

(i) 23% (ii) 16% (iii) 47% (iv) 1% (v) 25%

Ans. (i) $23\% = \frac{23}{100} = 0.23$

(ii) $16\% = \frac{16}{100} = 0.16$

(iii) $47\% = \frac{47}{100} = 0.47$

(iv) $1\% = \frac{1}{100} = 0.01$

(v) $25\% = \frac{25}{100} = 0.25$

6. Express each of the following decimal as percent:

(i) 0.8 (ii) 1.2 (iii) 7.1 (iv) 10.1 (v) 31.3 (vi) 123.7 (vii) 101.9

Ans. (i) $0.8 = 0.8 \times 100\% = 80\%$

(ii) $1.2 = 1.2 \times 100\% = 120\%$

(iii) $7.1 = 7.1 \times 100\% = 710\%$

(iv) $10.1 = 10.1 \times 100\% = 1010\%$

(v) $31.3 = 31.3 \times 100\% = 3130\%$

(vi) $123.7 = 123.7 \times 100\% = 12370\%$

(vii) $101.9 = 101.9 \times 100\% = 10190\%$

7. Find 40% of 240

Ans. We know that R % of m is equal to $\frac{R}{100} \times m$.

So, we have 40 % of 240

$$\frac{40}{100} \times 240 = 96$$

8. 10 % of 1 hour

Ans. We know that R % of m is equal to $\frac{R}{100} \times m$.

So, we have 10 % of 1 hour

10 % of 60 minutes (Since, 1 hour = 60 minutes)

$$= \frac{10}{100} \times 60 \text{ minutes}$$

= 6 minutes.

9. Find 15 % of \$250.

Ans. We know that R % of m is equal to $\frac{R}{100} \times m$.

So, we have 15 % of \$250.

$$\frac{15}{100} \times 250$$

$$= \$ \frac{75}{2}$$

= \$37.5

10. Sam scored 36 marks out of 60. Express the marks in percentage.

Ans. Therefore, required percent = $\left(\frac{36}{60} \times 100\right) \%$

= 60%

11. Express 80 ml as a percent of 400 ml

Ans. Therefore, required percent = $\left(\frac{80}{400} \times 100\right) \%$

= 20 %

12. Express 1 hour 36 minutes as the percent of 2 hours 40 minutes.

Ans. We know, 1 hour = 60 minutes.

Therefore, 1 hour 36 minutes = (60 + 36) minutes = 96 minutes and

2 hours 40 minutes = (120 + 40) minutes = 160 minutes

$$\begin{aligned}\text{Required percent} &= \left(\frac{96}{160} \times 100\right) \% \\ &= 60 \%\end{aligned}$$

13. Find 17 % of \$ 1700

Ans. 17 % of \$ 1700

$$\begin{aligned}&= \frac{17}{100} \times 1700 \\ &= \$289\end{aligned}$$

14. Find 10 % of 900

Ans. 10 % of 900

$$\begin{aligned}&= \frac{10}{100} \times 900 \\ &= 90\end{aligned}$$

15. Find $\frac{25}{8}$ % of 160.

Ans. $\frac{25}{8}$ % of 160

$$\begin{aligned}&= \frac{\frac{25}{8}}{100} \times 160 \\ &= \frac{25}{800} \times 160 \\ &= \frac{4000}{800} \\ &= 5\end{aligned}$$

16. The price of rice is increased from \$10 to \$12.50 per kg. Find the percentage increase in price.

Ans. Price of rice before = \$10

Price of rice now = \$12.50

Increase in price = current price – original price

$$= \$12.50 - \$10$$

$$= \$2.50$$

$$\text{Therefore, percentage increase in price} = \frac{\text{Increase in price}}{\text{Original price}} \times 100 \%$$

$$= \frac{2.50}{10} \times 100 \%$$

$$= \frac{250}{10} \%$$

$$= 25 \%$$

Thus, increase in price = 25 %

17. The population in a small town increases from 20000 to 21250 in one year. Find the percentage increase in population.

Ans. Population in a small town last year = 20000

Population in a small town after one year = 21250

Increase in population = 21250 - 20000 = 1250

Therefore, percentage increase in population = $\frac{\text{Increase in population}}{\text{Last year population}} \times 100 \%$

$$= \frac{1250}{20000} \times 100 \%$$

$$= \frac{125000}{20000} \%$$

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

$$= 6.25\%$$

Thus, the increase in population is 6.25%

18. Find the increase value if 150 is increased by 30 %.

Ans. Increase = 30 % of 150

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

$$= \frac{4500}{100}$$

$$= 45$$

Therefore, increase value = 150 + 45 = 195

19. The cost of an article is decreased by 15%. If the original cost is \$80, find the decrease cost.

Ans. Original cost = \$80

Decrease in it = 15% of \$80

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

$$= \frac{1200}{100}$$

$$= \$12$$

Therefore, decrease cost = \$80 - \$12 = \$68.

20. A television manufacturing company declares that a television is now available for \$5600 as against \$8400 one year before. Find the percentage reduction in the price of television offered by the company.

Ans. Price of the television a year before = \$8400

Price of the television after a year = \$5600

Decrease in price = \$(8400 - 5600) = \$2800

Therefore, decrease % = $\frac{2800}{8400} \times 100\% = \frac{100}{3} = 33\frac{1}{3}\%$

21. Find the decrease value if 300 decreased by 30%

Ans. Decrease 300 by 30%

$$= \frac{30}{100} \times 300$$

$$= 90$$

Therefore, decrease value = $300 - 90 = 210$.