

Percentage

Exercise 10A

Q1

Answer :

We have the following:

$$(i) \frac{47}{100} = \left(\frac{47}{100} \times 100\right)\% = 47\%$$

$$(ii) \frac{9}{20} = \left(\frac{9}{20} \times 100\right)\% = (9 \times 5)\% = 45\%$$

$$(iii) \frac{3}{8} = \left(\frac{3}{8} \times 100\right)\% = \left(\frac{3 \times 25}{2}\right)\% = \left(\frac{75}{2}\right)\% = 37\frac{1}{2}\%$$

$$(iv) \frac{8}{125} = \left(\frac{8}{125} \times 100\right)\% = \left(\frac{8 \times 4}{5}\right)\% = \left(\frac{32}{5}\right)\% = 6.4\%$$

$$(v) \frac{19}{500} = \left(\frac{19}{500} \times 100\right)\% = \left(\frac{19}{5}\right)\% = 3.8\%$$

$$(vi) \frac{4}{15} = \left(\frac{4}{15} \times 100\right)\% = \left(\frac{4 \times 20}{3}\right)\% = \left(\frac{80}{3}\right)\% = 26\frac{2}{3}\%$$

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

$$(viii) 1\frac{3}{5} = \frac{8}{5} = \left(\frac{8}{5} \times 100\right)\% = (8 \times 20)\% = 160\%$$

Q2

Answer :

We have the following:

$$(i) 32\% = \left(\frac{32}{100}\right) = \frac{8}{25}$$

$$(ii) 6\frac{1}{4}\% = \left(\frac{25}{4}\right)\% = \left(\frac{25}{4} \times \frac{1}{100}\right) = \frac{1}{16}$$

$$(iii) 26\frac{2}{3}\% = \left(\frac{80}{3}\right)\% = \left(\frac{80}{3} \times \frac{1}{100}\right) = \left(\frac{4 \times 1}{3 \times 5}\right) = \frac{4}{15}$$

$$(iv) 120\% = \left(\frac{120}{100}\right) = \frac{6}{5} = 1\frac{1}{5}$$

$$(v) 6.25\% = \left(\frac{6.25}{100}\right) = \left(\frac{625}{100 \times 100}\right) = \left(\frac{25}{400}\right) = \frac{1}{16}$$

$$(vi) 0.8\% = \left(\frac{0.8}{100}\right) = \left(\frac{8}{10 \times 100}\right) = \left(\frac{8}{1000}\right) = \frac{1}{125}$$

$$(vii) 0.06\% = \left(\frac{0.06}{100}\right) = \left(\frac{6}{100 \times 100}\right) = \left(\frac{6}{10000}\right) = \frac{3}{5000}$$

$$(viii) 22.75\% = \left(\frac{22.75}{100}\right) = \left(\frac{2275}{100 \times 100}\right) = \frac{91}{400}$$

Q3

Answer :

We have:

$$(i) 43\% = \frac{43}{100} = 43 : 100$$

$$(ii) 36\% = \frac{36}{100} = \frac{9}{25} = 9 : 25$$

$$(iii) 7.5\% = \left(\frac{7.5}{100}\right) = \left(\frac{75}{10 \times 100}\right) = \frac{3}{40} = 3 : 40$$

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

Q4

Answer :

We have the following:

$$(i) 37 : 100 = \frac{37}{100} = \left(\frac{37}{100} \times 100\right)\% = 37\%$$

$$(ii) 16 : 25 = \frac{16}{25} = \left(\frac{16}{25} \times 100\right)\% = (16 \times 4)\% = 64\%$$

$$(iii) 3 : 5 = \frac{3}{5} = \left(\frac{3}{5} \times 100\right)\% = (3 \times 20)\% = 60\%$$

$$(iv) 5 : 4 = \frac{5}{4} = \left(\frac{5}{4} \times 100\right)\% = (5 \times 25)\% = 125\%$$

Q5

Answer :

We have the following:

$$(i) 45\% = \left(\frac{45}{100}\right) = 0.45$$

$$(ii) 127\% = \left(\frac{127}{100}\right) = 1.27$$

$$(iii) 3.6\% = \left(\frac{3.6}{100}\right) = \left(\frac{36}{10 \times 100}\right) = \frac{36}{1000} = 0.036$$

$$(iv) 0.23\% = \left(\frac{0.23}{100}\right) = \left(\frac{23}{100 \times 100}\right) = \frac{23}{10000} = 0.0023$$

Q6

Answer :

We have:

- (i) $0.6 = (0.6 \times 100)\% = 60\%$
- (ii) $0.42 = (0.42 \times 100)\% = 42\%$
- (iii) $0.07 = (0.07 \times 100)\% = 7\%$
- (iv) $0.005 = (0.005 \times 100)\% = 0.5\%$

Q7

Answer :

We have:

- (i) $32\% \text{ of } 425 = \left(\frac{32}{100} \times 425\right) = \left(\frac{32 \times 17}{4}\right) = (8 \times 17) = 136$
- (ii) $16\frac{2}{3}\% \text{ of } 16 = \frac{50}{3}\% \text{ of } 16 = \left(\frac{50}{3 \times 100} \times 16\right) = \left(\frac{1}{6} \times 16\right) = \frac{8}{3} = 2\frac{2}{3}$
- (iii) $6.5\% \text{ of } 400 = \left(\frac{6.5}{100} \times 400\right) = \left(\frac{65}{10 \times 100} \times 400\right) = \left(\frac{65 \times 4}{10}\right) = \frac{260}{10} = 26$
- (iv) $136\% \text{ of } 70 = \left(\frac{136}{100} \times 70\right) = \left(\frac{136 \times 7}{10}\right) = \left(\frac{952}{10}\right) = 95.2$
- (v) $2.8\% \text{ of } 35 = \left(\frac{2.8}{100} \times 35\right) = \left(\frac{28}{10 \times 100} \times 35\right) = \left(\frac{14 \times 7}{100}\right) = \frac{98}{100} = 0.98$
- (vi) $0.6\% \text{ of } 45 = \left(\frac{0.6}{100} \times 45\right) = \left(\frac{6}{10 \times 100} \times 45\right) = \left(\frac{3 \times 45}{5 \times 100}\right) = \left(\frac{3 \times 9}{100}\right) = \frac{27}{100} = 0.27$

Q8

Answer :

We have the following:

- (i) $25\% \text{ of Rs } 76 = \text{Rs } \left(76 \times \frac{25}{100}\right) = \text{Rs } \left(76 \times \frac{1}{4}\right) = \text{Rs } 19$
- (ii) $20\% \text{ of Rs } 132 = \text{Rs } \left(132 \times \frac{20}{100}\right) = \text{Rs } \left(132 \times \frac{1}{5}\right) = \text{Rs } 26.4$
- (iii) $7.5\% \text{ of } 600 \text{ m} = \left(600 \times \frac{7.5}{100}\right) \text{ m} = (6 \times 7.5) \text{ m} = 45 \text{ m}$
- (iv) $3\frac{1}{3}\% \text{ of } 90 \text{ km} = \frac{10}{3}\% \text{ of } 90 \text{ km} = \left(90 \times \frac{10}{3 \times 100}\right) \text{ km} = \left(90 \times \frac{1}{30}\right) \text{ km} = 3 \text{ km}$
- (v) $8.5\% \text{ of } 5 \text{ kg} = \left(5 \times \frac{8.5}{100}\right) \text{ kg} = \left(5 \times \frac{85}{1000}\right) \text{ kg} = 0.425 \text{ kg} = 425 \text{ g} \quad [\because 1 \text{ kg} = 1000 \text{ g}]$
- (vi) $20\% \text{ of } 12 \text{ L} = \left(12 \times \frac{20}{100}\right) \text{ L} = \left(12 \times \frac{1}{5}\right) \text{ L} = 2.4 \text{ L}$

Q9

Answer :

Let x be the required number.

Then, $13\% \text{ of } x = 65$

$$\Rightarrow \left(\frac{13}{100} \times x\right) = 65$$

$$\Rightarrow x = \left(65 \times \frac{100}{13}\right) = 500$$

Hence, the required number is 500.

Q10

Answer :

Let x be the required number.

Then, $6\frac{1}{4}\%$ of $x = 2$

$$\Rightarrow \left(6\frac{1}{4}\% \times x\right) = 2$$

$$\Rightarrow \left(\frac{25}{400} \times x\right) = 2$$

$$\Rightarrow x = \left(2 \times \frac{400}{25}\right) = 32$$

Hence, the required number is 32.

Q11

Answer :

$$10\% \text{ of Rs } 90 = \text{Rs } \left(\frac{10}{100} \times 90\right) = \text{Rs } 9$$

$$\therefore \text{Amount that is } 10\% \text{ more than Rs } 90 = \text{Rs } (90 + 9) = \text{Rs } 99$$

Hence, the required amount is Rs 99.

Q12

Answer :

$$20\% \text{ of Rs } 60 = \text{Rs } \left(60 \times \frac{20}{100}\right) = \text{Rs } 12$$

$$\therefore \text{Amount that is } 20\% \text{ less than Rs } 60 = \text{Rs } (60 - 12) = \text{Rs } 48$$

Hence, the required amount is Rs 48.

Q13

Answer :

3% of $x = 9$

$$\Rightarrow \left(\frac{3}{100} \times x\right) = 9$$

$$\Rightarrow x = \left(9 \times \frac{100}{3}\right) = 300$$

Hence, the value of x is 300.

Q14

Answer :

12.5% of $x = 6$

$$\Rightarrow \left(\frac{12.5}{100} \times x\right) = 6$$

$$\Rightarrow x = \left(6 \times \frac{100}{12.5}\right) = (6 \times 8) = 48$$

Hence, the value of x is 48.

Q15

Answer :

Let $x\%$ of 84 be 14.

$$\text{Then, } \left(\frac{x}{100} \times 84\right) = 14$$

$$\Rightarrow \frac{21x}{25} = 14$$

$$\Rightarrow x = \left(14 \times \frac{25}{21}\right) = \left(\frac{2 \times 25}{3}\right) = \frac{50}{3} = 16\frac{2}{3}\%$$

Hence, $16\frac{2}{3}\%$ of 84 is 14.

Q16

Answer :

(i) Let $x\%$ of Rs 120 be Rs 15.

$$\text{Then, Rs } \left(\frac{x}{100} \times 120 \right) = \text{Rs } 15$$

$$\Rightarrow \left(\frac{6x}{5} \right) = 15$$

$$\therefore x = \left(\frac{15 \times 5}{6} \right) \% = \left(\frac{25}{2} \right) \% = 12.5\%$$

Hence, 12.5% of Rs 120 is Rs 15.

(ii) Let $x\%$ of 2 h be 36 min.

$$\text{Then, } \left(\frac{x}{100} \times 2 \times 60 \right) \text{ min} = 36 \text{ min}$$

$$\Rightarrow \left(\frac{120x}{100} \right) = 36$$

$$\therefore x = \left(\frac{36 \times 100}{120} \right) \% = 30\%$$

Hence, 30% of 2 h is 36 min.

(iii) Let $x\%$ of 2 days be 8 h.

$$\text{Then, } \left(\frac{x}{100} \times 2 \times 24 \right) \text{ h} = 8 \text{ h}$$

$$\Rightarrow \left(\frac{48x}{100} \right) = 8$$

$$\therefore x = \left(\frac{8 \times 100}{48} \right) \% = 16 \frac{2}{3} \%$$

Hence, $16 \frac{2}{3} \%$ of 2 days is 8 h.

(iv) Let $x\%$ of 4 km be 160 m.

$$\text{Then, } \left(\frac{x}{100} \times 4 \times 1000 \right) \text{ m} = 160 \text{ m}$$

$$\Rightarrow 40x = 160$$

$$\therefore x = \left(\frac{160}{40} \right) \% = 4\%$$

Hence, 4% of 4 km is 160 m.

(v) Let $x\%$ of 1 L be 175 mL.

$$\text{Then, } \left(\frac{x}{100} \times 1 \times 1000 \right) \text{ mL} = 175 \text{ mL}$$

$$\Rightarrow 10x = 175$$

$$\therefore x = \left(\frac{175}{10} \right) \% = 17.5\%$$

Hence, 17.5% of 1 L is 175 mL.

(vi) Let $x\%$ of Rs 4 be 25 paise.

$$\text{Then, } \left(\frac{x}{100} \times 4 \times 100 \right) \text{ paise} = 25 \text{ paise}$$

$$\Rightarrow 4x = 25$$

$$\therefore x = \left(\frac{25}{4} \right) \% = 6 \frac{1}{4} \%$$

Hence, $6 \frac{1}{4} \%$ of Rs 4 is 25 paise.

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