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 × 100)% = 60%

(ii) 0.42 = (0.42 × 100)% = 42%

(iii) 0.07 = (0.07 × 100)% = 7%

(iv) 0.005 = (0.005 × 100)% = 0.5%

Q7

Answer :

We have:

(i) 32% of 425 = $\left(\frac{32}{100} \times 425\right) = \left(\frac{32 \times 17}{4}\right) = (8 \times 17) = 136$

(ii) $16\frac{2}{3}\%$ of 16 = $\frac{50}{3}\%$ 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% 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% 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% 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% 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% of Rs 76 = Rs $\left(76 \times \frac{25}{100}\right)$ = Rs $\left(76 \times \frac{1}{4}\right)$ = Rs 19

(ii) 20% of Rs 132 = Rs $\left(132 \times \frac{20}{100}\right)$ = Rs $\left(132 \times \frac{1}{5}\right)$ = Rs 26.4

(iii) 7.5% of 600 m = $\left(600 \times \frac{7.5}{100}\right)$ m = (6×7.5) m = 45 m

(iv) $3\frac{1}{3}\%$ of 90 km = $\frac{10}{3}\%$ of 90 km = $\left(90 \times \frac{10}{3 \times 100}\right)$ km = $\left(90 \times \frac{1}{30}\right)$ km = 3 km

(v) 8.5% of 5 kg = $\left(5 \times \frac{8.5}{100}\right)$ kg = $\left(5 \times \frac{85}{1000}\right)$ kg = 0.425 kg = 425 g   [∵ 1 kg = 1000 g]

(vi) 20% of 12 L = $\left(12 \times \frac{20}{100}\right)$ L = $\left(12 \times \frac{1}{5}\right)$ L = 2.4 L

Q9

Answer :

Let *x* be the required number.

Then, 13% 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% of Rs 90 = Rs $\left(\frac{10}{100} \times 90\right)$ = Rs 9

∴ Amount that is 10% more than Rs 90 = Rs (90 + 9) = Rs 99

Hence, the required amount is Rs 99.

Q12

Answer :

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

∴ Amount that is 20% less than Rs 60 = Rs (60 − 12) = 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.

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.

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

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

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

Hence, 12.5% of Rs 120 is Rs 15.

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

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

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

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

Hence, 30% of 2 h is 36 min.

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

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

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

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

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

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

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

$\Rightarrow 40x = 160$

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

Hence, 4% of 4 km is 160 m.

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

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

$\Rightarrow 10x = 175$

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

Hence, 17.5% of 1 L is 175 mL.

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

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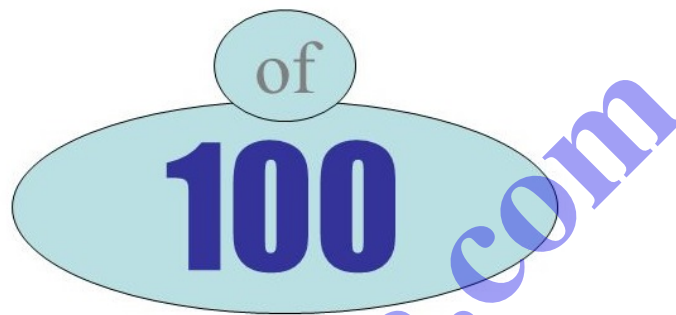
$\Rightarrow 4x = 25$

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

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

Definition

Percent can be defined as "of one hundred."

of

100

PERCENTAGE:

$$\frac{x}{n} \times 100 = p$$

where:

   x   = *given quantity*
   n   = *total amount*
   p   = *percentage of the quantity*
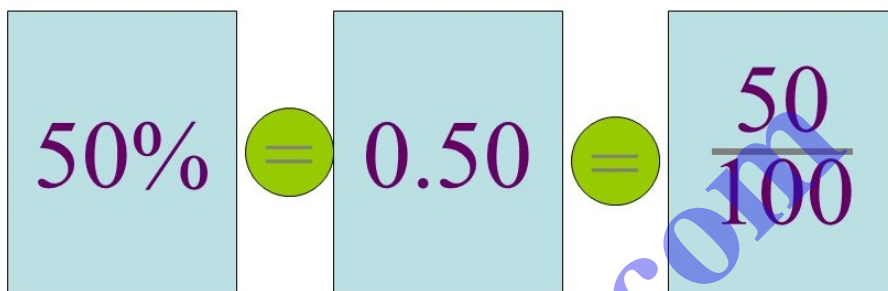   *compared to the total*

$$\text{Percentage increase} = \frac{\text{actual increase}}{\text{original amount}} \times 100\%$$

$$\text{Percentage decrease} = \frac{\text{actual decrease}}{\text{original amount}} \times 100\%$$

Percent   Decimal   Fraction

$$50\% \quad = \quad 0.50 \quad = \quad \frac{50}{100}$$

$$60\% = \frac{60}{100} = 0.6$$

Percent means "per one hundred", so to convert a percent to a fraction, divide it by 100.

Q1

Answer :

Maximum marks of the examination = 750
Marks secured by Rupesh = 495
Percentage of marks secured = $\left(\frac{495}{750} \times 100\right)\%$ = 66%

Hence, Rupesh scored 66% in the examination.

Q2

Answer :

Total monthly salary = Rs 15625
Increase percentage = 12%
∴ Amount increase = 12% of Rs 15625

$$= Rs\left(15625 \times \frac{12}{100}\right) = Rs\ 1875$$

∴ New salary = Rs 15625 + Rs 1875
= Rs 17500

Hence, the new salary of the typist is Rs 17,500.

Q3

Answer :

Original excise duty on the item = Rs 950
Amount reduced on excise duty = Rs (950 − 760) = Rs 190

∴ Reduction percent = $\left(\frac{Reduction\ \ amount}{Original\ \ value} \times 100\right)$

$$= \left(\frac{190}{950} \times 100\right) = 20$$

Hence, the excise duty on that item is reduced by 20%.

Q4

Answer :

Let Rs x be the total cost of the TV set.

Now, 96% of the total cost of TV = Rs 10464
⇒ 96% of Rs x = Rs 10464
⇒ $\left(\frac{96}{100} \times x\right)$ = 10464
∴ $x = \left(\frac{10464 \times 100}{96}\right)$ = 10900

Hence, the total cost of the TV set is Rs 10900.

Q5

Answer :

Let the total number of students be 100.

Then, number of boys = 70

∴ Number of girls = (100 − 70) = 30

Now, total number of students when the number of girls is 30 = 100

Then, total number of students when the number of girls is 504 = $\left(\frac{100}{30} \times 504 \right)$ = 1680

∴ Number of boys = (1680 − 504) = 1176

Hence, there are 1176 boys in the school.

Q6

Answer :

Let x kg be the amount of the required ore.

Then, 12% of x kg = 69 kg

$\Rightarrow \left(\frac{12}{100} \times x \right)$ kg = 69 kg

$\Rightarrow x = \left(\frac{69 \times 100}{12} \right)$ kg = 575 kg

Hence, 575 kg of ore is required to get 69 kg of copper.

Q7

Answer :

Let x be the maximum marks.

Pass marks = (123 + 39) = 162

Then, 36% of x = 162

$\Rightarrow \left(\frac{36}{100} \times x \right) = 162$

$\Rightarrow x = \left(\frac{162 \times 100}{36} \right)$ = 450

∴ Maximum marks = 450

Q8

Answer :

Suppose that the fruit seller initially had 100 apples.

Apples sold = 40

∴ Remaining apples = (100 − 40) = 60

Initial amount of apples if 60 of them are remaining = 100

Initial amount of apples if 1 of them is remaining = $\left(\frac{100}{60} \right)$

Initial amount of apples if 420 of them are remaining = $\left(\frac{100}{60} \times 420 \right)$ = 700

Hence, the fruit seller originally had 700 apples.

Q9

Answer :

Suppose that 100 candidates took the examination.

Number of passed candidates = 72

Number of failed candidates = (100 − 72) = 28

Total number of candidates if 28 of them failed = 100

Total number of candidates if 392 of them failed = $\left(\frac{100}{28} \times 392 \right)$ = 1400

Hence, the total number of examinees is 1400.

Q10

Answer :

Suppose that the gross value of the moped is Rs x.

Commission on the moped = 5%

Price of moped after deducting the commission = Rs (x − 5% of x)

$$= \text{Rs} \left(x - \frac{5x}{100}\right) = \text{Rs} \left(\frac{100x - 5x}{100}\right) = \text{Rs} \left(\frac{95x}{100}\right)$$

Now, price of the moped after deducting the commission = Rs 15200

Then, Rs $\left(\frac{95x}{100}\right)$ = Rs 15200

∴ x = Rs $\left(\frac{15200 \times 100}{95}\right)$ = Rs (160 × 100) = Rs 16000

Hence, the gross value of the moped is Rs 16000.

Q11

Answer :

Total quantity of gunpowder = 8 kg = 8000 g   (1 kg = 1000 g)

Quantity of nitre in it = 75% of 8000 g

$$= \left(\frac{75}{100} \times 8000\right) \text{g} = 6000 \text{ g} = 6 \text{ kg}$$

Quantity of sulphur in it = 10% of 8000 g

$$= \left(\frac{10}{100} \times 8000\right) \text{g} = 800 \text{ g} = 0.8 \text{ kg}$$

∴ Quantity of charcoal in it = {8000 − (6000 + 800)} g

$$= (8000 - 6800) \text{ g}$$
$$= 1200 \text{ g} = 1.2 \text{ kg}$$

Hence, the amount of charcoal in 8 kg of gunpowder is 1.2 kg.

Q12

Answer :

Total quantity of chalk = 1 kg = 1000 g

Now, we have the following:

Quantity of carbon in it = 3% of 1000 g

$$= \left(\frac{3}{100} \times 1000\right) = 30 \text{ g}$$

Quantity of calcium in it = 10% of 1000 g

$$= \left(\frac{10}{100} \times 1000\right) \text{g} = 100 \text{ g}$$

Quantity of oxygen in it = 12% of 1000 g

$$= \left(\frac{12}{100} \times 1000\right) \text{g} = 120 \text{ g}$$

Q13

Answer :

Let x be the total number of days on which the school was open.

Number of days when Sonal went to school = 219

Percentage of attendance = 75

Thus, 75% of x = 219

$$\Rightarrow \left(\frac{75}{100} \times x\right) = 219$$

∴ x = $\left(\frac{219 \times 100}{75}\right)$ = 292 days

Hence, the school was open for a total of 292 days.

Q14

Answer :

Let the total value of the property be Rs x.

Percentage of commission = 3

Amount of commission = Rs 42660

Thus, 3% of Rs x = Rs 42660

$$\Rightarrow \left(\frac{3}{100} \times x\right) = 42660$$

∴ x = $\left(\frac{42660 \times 100}{3}\right)$ = 1422000

Hence, the total value of the property is Rs 14,22,000.

Q15

Answer :

Total number of eligible voters = 60000
Number of voters who gave their votes = 80% of 60000
$$= \left(\frac{80}{100} \times 60000\right) = 48000$$
Number of votes in favour of candidate A = 60% of 48000
$$= \left(\frac{60}{100} \times 48000\right) = 28800$$
∴ Number of votes received by candidate B = (48000 − 28800) = 19200

Hence, candidate B recieved 19,200 votes.

Q16

Answer :

Let us assume that the original price of the shirt is Rs x.
Discount on the shirt = 12%
So, value of discount on the shirt = 12% of Rs x
$$= Rs \left(\frac{12}{100} \times x\right) = Rs \left(\frac{12x}{100}\right)$$
Value of the shirt after discount = Rs $\left(x - \frac{12x}{100}\right)$
$$= Rs \left(\frac{100x-12x}{100}\right) = Rs \left(\frac{88x}{100}\right)$$
Present price of the shirt = Rs 1188
Then, Rs $\left(\frac{88x}{100}\right)$ = Rs 1188
$$\Rightarrow 88x = (1188 \times 100)$$
$$\Rightarrow 88x = 118800$$
$$\therefore x = \left(\frac{118800}{88}\right) = 1350$$

Hence, the original price of the shirt is Rs 1350.

Q17

Answer :

Let us assume that the original price of the sweater is Rs. x
Increased percentage = 8%
So, value of increase on the sweater = 8% of Rs x
$$= Rs \left(\frac{8}{100} \times x\right) = Rs \left(\frac{2x}{25}\right)$$
Increased price of the sweater = Rs $\left(x + \frac{2x}{25}\right)$
$$= Rs \left(\frac{25x+2x}{25}\right) = Rs \left(\frac{27x}{25}\right)$$
However, increased price of the sweater = Rs 1566
Then, Rs $\left(\frac{27x}{25}\right)$ = Rs 1566
$$\therefore x = \left(\frac{1566 \times 25}{27}\right) = 1450$$
Hence, the original price of the sweater is Rs 1450

Q18

Answer :

Let the income of the man be Rs x.
Then, income spent = 80% of Rs. x
$$= Rs \left(\frac{80}{100} \times x\right) = Rs \left(\frac{80x}{100}\right) = Rs \left(\frac{4x}{5}\right)$$
Amount left after all the expenditure = Rs $\left(x - \frac{4x}{5}\right)$ = Rs $\left(\frac{5x-4x}{5}\right)$ = Rs $\left(\frac{x}{5}\right)$
Amount given to the charity = 10% of Rs $\left(\frac{x}{5}\right)$
$$= Rs \left(\frac{10}{100} \times \frac{x}{5}\right) = Rs \left(\frac{10x}{500}\right) = Rs \left(\frac{x}{50}\right)$$
Amount left after the charity = Rs $\left(\frac{x}{5} - \frac{x}{50}\right)$
$$= Rs \left(\frac{10x-x}{50}\right) = Rs \left(\frac{9x}{50}\right)$$
Now, we have:
Rs $\left(\frac{9x}{50}\right)$ = Rs 46260
$$\therefore x = Rs \left(\frac{46260 \times 50}{9}\right) = Rs 257000$$
Hence, the income of the man is Rs 2,57,000.

Q19

Answer :

Let the number be 100.
Increase in the number = 20%
Increased number = (100 + 20) =120
Now, decrease in the number = (20% of 120)
$$= \left(\frac{20}{100} \times 120\right) = 24$$
New number = (120 − 24) = 96
Net decrease = (100 − 96) = 4
Net decrease percentage = $\left(\frac{4}{100} \times 100\right)$ = 4
Hence, the net decrease is 4%.

Q20

Answer :

Let the original salary be Rs 100.
Increase in it = 20%
Salary after increment = Rs (100 + 20) = Rs 120
To restore the original salary, reduction required = Rs (120 − 100) = Rs 20
Reduction on Rs 120 = Rs 20
∴ Reduction percentage = $\left(\frac{20}{120} \times 100\right) = \left(\frac{100}{6}\right) = 16\frac{2}{3}$
Hence, the required reduction on the new salary is $16\frac{2}{3}$ %.

Q21

Answer :

Total cost of the property = Rs 540000
Commission on the first Rs 200000 = 2% of Rs 200000
$$= \left(\frac{2}{100} \times 200000\right) = \text{Rs } 4000$$

Commission on the next Rs 200000 = 1% of Rs 200000
$$= \left(\frac{1}{100} \times 200000\right) = \text{Rs } 2000$$
Remaining amount = Rs (540000 − 400000) = Rs 140000
∴ Commission on Rs 140000 = 0.5% of Rs 140000
$$= \text{Rs } \left(\frac{0.5}{100} \times 140000\right)$$
$$= \text{Rs } \left(\frac{5}{1000} \times 140000\right) = \text{Rs } 700$$
Thus, total commission on the property worth Rs 540000 = Rs (4000 + 2000 + 700)
$$= \text{Rs } 6700$$
Hence, the commission of the property dealer on the property that has been sold for Rs 540000 is Rs 6700.

Q22

Answer :

Let Akhil's income be Rs 100.
∴ Nikhil's income = Rs 80
Akhil's income when Nikhil's income is Rs 80 = Rs 100
Akhil's income when Nikhil's income is Rs 100 = Rs $\left(\frac{100}{80} \times 100\right)$ = Rs 125
i.e., if Nikhil's income is Rs.100, then Akhil's income is Rs 125.
Hence, Akhil's income is more than that of Nikhil's by 25%.

Q23

Answer :

Let Rs 100 be the income of Mr. Thomas.
∴ John's income = Rs 120
Mr. Thomas' income when John's income is Rs 120 = Rs 100
Mr. Thomas' income when John's income is Rs 100 = Rs $\left(\frac{100}{120} \times 100\right)$ = Rs $83\frac{1}{3}$
Hence, Mr Thomas' income is less than that of John's by $16\frac{2}{3}$ %.

Q21

Answer :

Let Rs x be the value of the machine one year ago.

Then, its present value = 90% of Rs x

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

It is given that present value of the machine = Rs 387000

$$\Rightarrow x = Rs \left(\frac{387000 \times 10}{9} \right) = Rs (43000 \times 10) = Rs 430000$$

Hence, the value of the machine a year ago was Rs 430000.

Q25
Answer :

The present value of the car = Rs 450000
The decrease in its value after the first year = 20% of Rs 450000

$$= Rs \left(\frac{20}{100} \times 450000 \right) = Rs 90000$$

The depreciated value of the car after the first year = Rs (450000 − 90000) = Rs 360000
The decrease in its value after the second year = 20% of Rs 360000

$$= Rs \left(\frac{20}{100} \times 360000 \right) = Rs 72000$$

The depreciated value of the car after the second year = Rs (360000 − 72000) = Rs 288000

Hence, the value of the car after two years will be Rs 288000.

Q26
Answer :

Present population of the town = 60000
Increase in population of the town after the 1 year = 10% of 60000

$$= \left(\frac{10}{100} \times 60000 \right) = 6000$$

Thus, population of the town after 1 year = 60000 + 6000 = 66000
Increase in population after 2 years = 10% of 66000

$$= \left(\frac{10}{100} \times 66000 \right) = 6600$$

Thus, population after the second year = 66000 + 6600 = 72600
Hence, the population of the town after 2 years will be 72600.

Q27
Answer :

Let the consumption of sugar originally be 1 unit and let its cost be Rs 100
New cost of 1 unit of sugar = Rs 125
Now, Rs 125 yield 1 unit of sugar.

∴ Rs 100 will yield $\left(\frac{1}{125} \times 100 \right)$ unit = $\left(\frac{4}{5} \right)$ unit of sugar.

Reduction in consumption = $\left(1 - \frac{4}{5} \right)$ = $\left(\frac{1}{5} \right)$ unit

∴ Reduction percent in consumption = $\left(\frac{1}{5} \times \frac{1}{1} \times 100 \right)$ %= $\left(\frac{100}{5} \right)$ %= 20%

Percentage
Exercise 10C

Q1

Answer:

(b) 75%

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

Q2

Answer:

(c) 40%

$$2 : 5 = \frac{2}{5} = \left(\frac{2}{5} \times 100\right)\% = 40\%$$

Q3

Answer:

(c) $\frac{1}{12}$

$$8\frac{1}{3}\% = \frac{25}{3}\% = \left(\frac{25}{3} \times \frac{1}{100}\right) = \left(\frac{1}{3 \times 4}\right) = \frac{1}{12}$$

Q4

Answer:

(c) 12

We have $x\%$ of 75 = 9

$$\Rightarrow \left(\frac{x}{100} \times 75\right) = 9$$

$$\therefore x = \left(\frac{9 \times 100}{75}\right) = 12$$

Hence, the value of x is 12

Q5

Answer :

(d) 10%

Let x be the required percent.

Then, x % of $\frac{2}{7} = \frac{1}{35}$

$\Rightarrow \left(\frac{x}{100} \times \frac{2}{7} \right) = \frac{1}{35}$

$\therefore x = \left(\frac{100 \times 7}{35 \times 2} \right) = 10$

Hence, 10% of $\frac{2}{7}$ is $\frac{1}{35}$

Q6
Answer :

(b) 2.5%

Let x % of 1 day be 36 min.

Then, $\left(\frac{x}{100} \times 1 \times 24 \times 60 \right)$ min = 36 min

$\therefore x = \left(\frac{36 \times 100}{24 \times 60} \right) = \left(\frac{3 \times 5}{2 \times 3} \right)\% = \left(\frac{5}{2} \right)\% = 2.5\%$

Hence, 2.5% of 1 day is 36 min.

Q7
Answer :

(a) 35

Let the required number be x.

Then, x + 20% of x = 42

$\Rightarrow \left(x + \frac{20x}{100} \right) = 42$

$\Rightarrow \left(x + \frac{x}{5} \right) = 42$

$\Rightarrow \left(\frac{5x + x}{5} \right) = 42$ [∵ LCM of 1 and 5 = 5]

$\Rightarrow \left(\frac{6x}{5} \right) = 42$

$\therefore x = \left(\frac{42 \times 5}{6} \right) = 35$

Hence, the required number is 35.

Q8
Answer :

(b) 75

Let the required number be x.

Then, x − 8% of x = 69

$\Rightarrow \left(x - \frac{8x}{100} \right) = 69$

$\Rightarrow \left(x - \frac{2x}{25} \right) = 69$

$\Rightarrow \left(\frac{25x - 2x}{25} \right) = 69$ [Since L.C.M. of 1 and 25 = 25]

$\Rightarrow \left(\frac{23x}{25} \right) = 69$

$\therefore x = \left(\frac{69 \times 25}{23} \right) = 75$

Hence, the required number is 75

Q9
Answer :

(d) 8 kg

Let x kg be the required amount of ore.

Then, 5% of x kg = 400 g = 0.4 kg   [∵ 1 kg = 1000 g]

$\Rightarrow \left(\frac{5}{100} \times x \right) = 0.4$

$\Rightarrow x = \left(\frac{0.4 \times 100}{5} \right) = 8$

Hence, 8 kg of ore is required to obtain 400 g of copper.

Q10

Answer :

(b) Rs. 20000

Suppose that the gross value of the TV is Rs x.

Commission on the TV = 10%

Price of the TV after deducting the commission = Rs (x – 10% of x)

$$= \text{Rs}\left(x - \frac{10}{100}x\right) = \text{Rs}\left(\frac{100x-10x}{100}\right) = \text{Rs}\left(\frac{9x}{10}\right)$$

However, price of the TV after deducting the commission = Rs 18000

Then, Rs $\left(\frac{9x}{10}\right)$ = Rs 18000

$\therefore x = \left(\frac{18000\times10}{9}\right)$ = Rs (2000 × 10) = Rs 20000

Hence, the gross value of the TV is Rs 20,000

Q11

Answer :

(b) Rs. 16000

Let us assume that the original salary of the man is Rs x.

Increase in it = 25%

Value increased in the salary = 25% of Rs. x

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

Salary after increment= Rs $\left(x + \frac{x}{4}\right)$ = Rs $\left(\frac{5x}{4}\right)$

However, increased salary = Rs 20000

Then, Rs $\left(\frac{5x}{4}\right)$ = Rs 20000

$\therefore x$ = Rs $\left(\frac{20000\times4}{5}\right)$ = Rs 16000

Hence, the original salary of the man is Rs 16,000

Q12

Answer :

(c) 560

Suppose that the number of examinees is 100.

Number of passed examinees = 95

Number of failed examinees = (100 – 95) = 5

Total number of examinees if 5 of them failed = 100

Total number of examinees if 28 of them failed = $\left(\frac{100}{5}\times 28\right) = (20 \times 28) = 560$

Hence, there were 560 examinees.

Q13

Answer :

(c) 700

Suppose that the fruit seller initially had 100 apples.

Number of apples sold = 40

$\therefore$ Number of remaining apples = (100 – 40) = 60

Initial number of apples if 60 of them are remaining = 100

Initial number of apples if 420 of them are remaining = $\left(\frac{100}{60}\times 420\right)$ = 700

Hence, the fruit seller originally had 700 apples with him.

Q14

Answer :

(c) Rs. 25250

Present value of the machine = Rs 25000

Decrease in its value after 1 year = 10% of Rs 25000

$$= \text{Rs}\left(\frac{10}{100}\times 25000\right) = \text{Rs } 2500$$

Depreciated value after 1 year = Rs (25000 – 2500) = Rs 22500

Hence, the value of the machine after 1 year will be Rs 22500

Q15

Answer :

(c) 75

Let the required number be x. Then, we have:

8% of x = 6

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

$\therefore x = \left(\frac{6 \times 100}{8}\right) = 75$

Hence, the required number is 75

Q16
Answer :

(c) 270

$60\% \text{ of } 450 = \left(\frac{60}{100} \times 450\right)$

$= \left(\frac{3}{5} \times 450\right) = (3 \times 90) = 270$

Q17
Answer :

(d) Rs. 700

Let us assume that the original price of the chair is Rs x.

Reduce percentage on the chair = 6%

So, value of reduction on the chair = 6% of Rs. x

$= \text{Rs} \left(\frac{6}{100} \times x\right) = \text{Rs} \left(\frac{3x}{50}\right)$

Reduced price of the chair $= \text{Rs} \left(x - \frac{3x}{50}\right)$

$= \text{Rs} \left(\frac{50x - 3x}{50}\right) = \text{Rs} \left(\frac{47x}{50}\right)$

However, present price of the chair = Rs 658

Then, $\text{Rs} \left(\frac{47x}{50}\right) = \text{Rs } 658$

$\Rightarrow \text{Rs} \left(\frac{47x}{50}\right) = \text{Rs } 658$

$\Rightarrow x = \text{Rs} \left(\frac{658 \times 50}{47}\right) = \text{Rs} (14 \times 50) = 700$

Hence, the original price of the chair is Rs 700

Q18
Answer :

(b) 560

Let the total number of students be 100.

Then, number of boys = 70

∴ Number of girls = (100 − 70) = 30

Now, total number of students if there are 30 girls = 100

Total number of students if there are 240 girls $= \left(\frac{100}{30} \times 240\right) = 800$

∴ Number of boys = (800 − 240) = 560

Hence, there are 560 boys in the school.

Q19
Answer :

(c) 450

Let x be the number.

(11% of x) − (7% of x) = 18

$\Rightarrow \left(\frac{11x}{100} - \frac{7x}{100}\right) = 18$

$\Rightarrow \frac{4x}{100} = 18$

$\therefore x = \left(\frac{18 \times 100}{4}\right) = (18 \times 25) = 450$

Hence, the required number is 450

Q20

Answer :

(a) 60

Let x be the number.

According to question, we have:

(35% of x) + 39 = x

$\Rightarrow \left(\frac{35}{100} \times x\right) + 39 = x$

$\Rightarrow \left(\frac{7x}{20}\right) + 39 = x$

$\Rightarrow \left(x - \frac{7x}{20}\right) = 39$

$\Rightarrow \left(\frac{20x - 7x}{20}\right) = 39$

$\Rightarrow \left(\frac{13x}{20}\right) = 39$

$\therefore x = \left(\frac{39 \times 20}{13}\right) = 60$

Hence, the required number is 60

Q21

Answer :

(c) 500

Let x be the maximum marks.

Pass marks = (145 + 35) = 180

$\therefore$ 36% of x = 180

$\Rightarrow \left(\frac{36}{100} \times x\right) = 180$

$\Rightarrow x = \left(\frac{180 \times 100}{36}\right) = (5 \times 100) = 500$

Hence, maximum marks = 500

Q22

Answer :

(d) 225

Let x be the number.

According to question, we have:

$x - 40\%$ of x = 135

$\Rightarrow \left(x - \frac{40x}{100}\right) = 135$

$\Rightarrow \left(\frac{100x - 40x}{100}\right) = 135$

$\Rightarrow \left(\frac{60x}{100}\right) = 135$

$\Rightarrow x = \left(\frac{135 \times 100}{60}\right) = 225$

Hence, the required number is 225