



Exercise 20C

Q1

Answer :

Base = 32 cm

Height = 16.5 cm

$$\begin{aligned}\therefore \text{Area of the parallelogram} &= \text{Base} \times \text{Height} \\ &= 32 \text{ cm} \times 16.5 \text{ cm} \\ &= 528 \text{ cm}^2\end{aligned}$$

Q2

Answer :

Base = 1 m 60 cm = 1.6 m [since 100 cm = 1 m]

Height = 75 cm = 0.75 m

$$\begin{aligned}\therefore \text{Area of the parallelogram} &= \text{Base} \times \text{Height} \\ &= 1.6 \text{ m} \times 0.75 \text{ m} \\ &= 1.2 \text{ m}^2\end{aligned}$$

Q3

Answer :

(i) Base = 14 dm = (14×10) cm = 140 cm [since 1 dm = 10 cm]
 Height = 6.5 dm = (6.5×10) cm = 65 cm

$$\begin{aligned}\text{Area of the parallelogram} &= \text{Base} \times \text{Height} \\ &= 140 \text{ cm} \times 65 \text{ cm} \\ &= 9100 \text{ cm}^2\end{aligned}$$

(ii) Base = 14 dm = (14×10) cm [since 1 dm = 10 cm and 100 cm = 1 m]
 $= 140 \text{ cm} = 1.4 \text{ m}$
 Height = 6.5 dm = (6.5×10) cm
 $= 65 \text{ cm} = 0.65 \text{ m}$

$$\begin{aligned}\therefore \text{Area of the parallelogram} &= \text{Base} \times \text{Height} \\ &= 1.4 \text{ m} \times 0.65 \text{ m} \\ &= 0.91 \text{ m}^2\end{aligned}$$

Q4

Answer :

$$\text{Area of the given parallelogram} = 54 \text{ cm}^2$$

$$\text{Base of the given parallelogram} = 15 \text{ cm}$$

$$\therefore \text{Height of the given parallelogram} = \frac{\text{Area}}{\text{Base}} = \left(\frac{54}{15}\right) \text{ cm} = 3.6 \text{ cm}$$

Q5

Answer :

$$\text{Base of the parallelogram} = 18 \text{ cm}$$

$$\text{Area of the parallelogram} = 153 \text{ cm}^2$$

$$\therefore \text{Area of the parallelogram} = \text{Base} \times \text{Height}$$

$$\Rightarrow \text{Height} = \frac{\text{Area of the parallelogram}}{\text{Base}} = \left(\frac{153}{18}\right) \text{ cm} = 8.5 \text{ cm}$$

Hence, the distance of the given side from its opposite side is 8.5 cm.

Q6

Answer :

$$\text{Base, AB} = 18 \text{ cm}$$

$$\text{Height, AL} = 6.4 \text{ cm}$$

$$\begin{aligned}\therefore \text{Area of the parallelogram ABCD} &= \text{Base} \times \text{Height} \\ &= (18 \text{ cm} \times 6.4 \text{ cm}) = 115.2 \text{ cm}^2 \quad \dots (i)\end{aligned}$$

Now, taking BC as the base:

$$\begin{aligned}\text{Area of the parallelogram ABCD} &= \text{Base} \times \text{Height} \\ &= (12 \text{ cm} \times \text{AM}) \quad \dots (ii)\end{aligned}$$

From equation (i) and (ii):

$$12 \text{ cm} \times \text{AM} = 115.2 \text{ cm}^2$$

$$\Rightarrow \text{AM} = \left(\frac{115.2}{12}\right) \text{ cm}$$

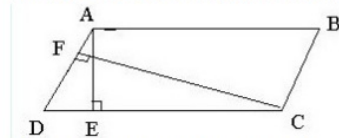
$$= 9.6 \text{ cm}$$

Q7

Answer :

ABCD is a parallelogram with side AB of length 15 cm and the corresponding altitude AE of length 4 cm.

The adjacent side AD is of length 8 cm and the corresponding altitude is CF.



$$\text{Area of a parallelogram} = \text{Base} \times \text{Height}$$

We have two altitudes and two corresponding bases.

$$\therefore AD \times CF = AB \times AE$$

$$\Rightarrow 8 \text{ cm} \times CF = 15 \text{ cm} \times 4 \text{ cm}$$

$$\Rightarrow CF = \left(\frac{15 \times 4}{8} \right) \text{ cm} = \left(\frac{15}{2} \right) \text{ cm} = 7.5 \text{ cm}$$

Hence, the distance between the shorter sides is 7.5 cm.

Q8

Answer :

Let the base of the parallelogram be x cm.

Then, the height of the parallelogram will be $\frac{1}{3}x$ cm.

It is given that the area of the parallelogram is 108 cm^2 .

Area of a parallelogram = Base \times Height

$$\therefore 108 \text{ cm}^2 = x \times \frac{1}{3}x$$

$$108 \text{ cm}^2 = \frac{1}{3}x^2$$

$$\Rightarrow x^2 = (108 \times 3) \text{ cm}^2 = 324 \text{ cm}^2$$

$$\Rightarrow x^2 = (18 \text{ cm})^2$$

$$\Rightarrow x = 18 \text{ cm}$$

$$\therefore \text{Base} = x = 18 \text{ cm}$$

$$\begin{aligned} \text{Height} &= \frac{1}{3}x = \left(\frac{1}{3} \times 18 \right) \text{ cm} \\ &= 6 \text{ cm} \end{aligned}$$

Q9

Answer :

Let the height of the parallelogram be x cm.

Then, the base of the parallelogram will be $2x$ cm.

It is given that the area of the parallelogram is 512 cm^2 .

Area of a parallelogram = Base \times Height

$$\therefore 512 \text{ cm}^2 = 2x \times x$$

$$512 \text{ cm}^2 = 2x^2$$

$$\Rightarrow x^2 = \left(\frac{512}{2}\right) \text{ cm}^2 = 256 \text{ cm}^2$$

$$\Rightarrow x^2 = (16 \text{ cm})^2$$

$$\Rightarrow x = 16 \text{ cm}$$

$$\therefore \text{Base} = 2x = 2 \times 16$$

$$= 32 \text{ cm}$$

$$\text{Height} = x = 16 \text{ cm}$$

Q10

Answer :

A rhombus is a special type of a parallelogram.

The area of a parallelogram is given by the product of its base and height.

\therefore Area of the given rhombus = Base \times Height

$$(i) \text{ Area of the rhombus} = 12 \text{ cm} \times 7.5 \text{ cm} = 90 \text{ cm}^2$$

$$(ii) \text{ Base} = 2 \text{ dm} = (2 \times 10) = 20 \text{ cm} \quad [\text{since } 1 \text{ dm} = 10 \text{ cm}]$$

$$\text{Height} = 12.6 \text{ cm}$$

$$\therefore \text{Area of the rhombus} = 20 \text{ cm} \times 12.6 \text{ cm} = 252 \text{ cm}^2$$

Q11

Answer :

(i)

Length of one diagonal = 16 cm

Length of the other diagonal = 28 cm

$$\begin{aligned} \therefore \text{Area of the rhombus} &= \frac{1}{2} \times (\text{Product of the diagonals}) \\ &= \left(\frac{1}{2} \times 16 \times 28\right) \text{ cm}^2 = 224 \text{ cm}^2 \end{aligned}$$

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