



### Exercise 18C

Q1.

Answer :

(b)  $144 \text{ cm}^2$

$$\begin{aligned}\text{Area of the trapezium} &= \left\{ \frac{1}{2} \times (14 + 18) \times 9 \right\} \text{ cm}^2 \\ &= \left( \frac{1}{2} \times 32 \times 9 \right) \text{ cm}^2 \\ &= 144 \text{ cm}^2\end{aligned}$$

Q2.

Answer :

(c) 8 cm

Let the distance between the parallel sides be  $x$  cm.

$$\begin{aligned}\text{Then, area of the trapezium} &= \left\{ \frac{1}{2} \times (19 + 13) \times x \right\} \text{ cm}^2 \\ &= \left( \frac{1}{2} \times 32 \times x \right) \text{ cm}^2 \\ &= 16x \text{ cm}^2\end{aligned}$$

But it is given that the area of the trapezium is  $128 \text{ cm}^2$ .

$$\therefore 16x = 128$$

$$\Rightarrow x = \frac{128}{16}$$

$$\Rightarrow x = 8 \text{ cm}$$

Q3.

Answer :

(a) 45 cm

Let the length of the parallel sides be  $3x$  cm and  $4x$  cm, respectively.

$$\begin{aligned}\text{Then, area of the trapezium} &= \left\{ \frac{1}{2} \times (3x + 4x) \times 12 \right\} \text{ cm}^2 \\ &= \left( \frac{1}{2} \times 7x \times 12 \right) \text{ cm}^2 \\ &= 42x \text{ cm}^2\end{aligned}$$

But it is given that the area of the trapezium is  $630 \text{ cm}^2$ .

$$\therefore 42x = 630$$

$$\Rightarrow x = \frac{630}{42}$$

$$\Rightarrow x = 15 \text{ cm}$$

$$\text{Length of the parallel sides} = (3 \times 15) \text{ cm} = 45 \text{ cm}$$

$$(4 \times 15) \text{ cm} = 60 \text{ cm}$$

Hence, the shorter of the parallel sides is 45 cm.

Q4.

**Answer :**

(b) 23 cm

Let the length of the parallel sides be  $x$  cm and  $(x + 6)$  cm, respectively.

$$\begin{aligned}\text{Then, area of the trapezium} &= \left\{ \frac{1}{2} \times (x + x + 6) \times 9 \right\} \text{ cm}^2 \\ &= \left\{ \frac{1}{2} \times (2x + 6) \times 9 \right\} \text{ cm}^2 \\ &= 4.5(2x + 6) \text{ cm}^2 \\ &= (9x + 27) \text{ cm}^2\end{aligned}$$

But it is given that the area of the trapezium is  $180 \text{ cm}^2$ .

$$\begin{aligned}\therefore 9x + 27 &= 180 \\ \Rightarrow 9x &= (180 - 27) \\ \Rightarrow 9x &= 153 \\ \Rightarrow x &= \frac{153}{9} \\ \Rightarrow x &= 17\end{aligned}$$

Therefore, the length of the parallel sides are 17 cm and  $(17 + 6)$  cm, which is equal to 23 cm.

Hence, the length of the longer parallel side is 23 cm.

Q5.

**Answer :**

(c)  $80 \text{ cm}^2$

From the given trapezium, we find :

$$DC = AL = 7 \text{ cm} \quad [\text{since } DA \perp AB \text{ and } CL \perp AB]$$

From the right  $\triangle CBL$ , we have :

$$\begin{aligned}CL^2 &= CB^2 - LB^2 \\ \Rightarrow CL^2 &= (10)^2 - (6)^2 \\ \Rightarrow CL^2 &= 100 - 36 \\ \Rightarrow CL^2 &= 64 \\ \Rightarrow CL &= \sqrt{64} \\ \Rightarrow CL &= 8 \text{ cm}\end{aligned}$$

$$\begin{aligned}\text{Area of the trapezium} &= \left\{ \frac{1}{2} \times (7 + 13) \times 8 \right\} \text{ cm}^2 \\ &= \left( \frac{1}{2} \times 20 \times 8 \right) \text{ cm}^2 \\ &= 80 \text{ cm}^2\end{aligned}$$

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