Areas of Parallelograms and Triangles Ex 15.3 Q3

Answer :

Given:

(1) PQRS is a trapezium in which SR∥PQ.

(2) PT = 5 cm.

(3) QT = 8 cm.

(4) RQ = 17 cm.
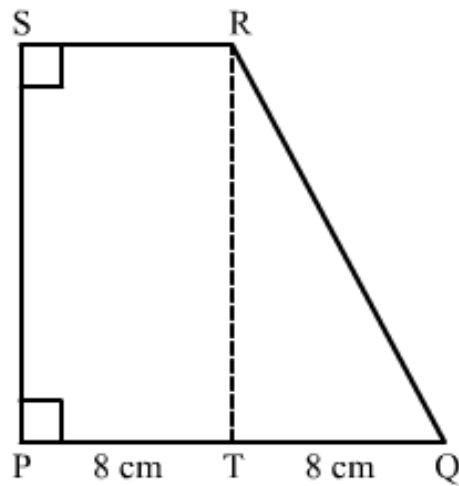
To Calculate: Area of trapezium PQRS.

Calculation:

In triangle

$$RQ^2 = TQ^2 + RT^2$$

$$17^2 = 8^2 + RT^2$$

$$RT^2 = 17^2 - 8^2$$

$$= 289 - 64$$

$$= 225$$

$$RT = 15 \text{ cm}$$

We know that Area of a triangle $= \dfrac{1}{2}$ base $\times$ height. So

Area of $\Delta QTR = \dfrac{1}{2}$ base $\times$ height

$= \dfrac{1}{2}(8 \times 15)$

$= \dfrac{1}{2}(120)$

$= 60 \text{ cm}^2$

No area of rectangle PTRS

Area $(\square PTRS) =$ base $\times$ height

$= 8 \times 15$

$= 120 \text{ cm}^2$

Therefore area of trapezium PQRS is

$=$ Area $(\Delta QRT) +$ Area $(PTRS)$

$= 60 + 120$

$= 180 \text{ cm}^2$

Hence the answer is $\boxed{\text{Area of a trapezium PQRS} = 180 \text{ cm}^2}$

Areas of Parallelograms and Triangles Ex 15.3 Q4
Answer :

Given: In figure:
(1) $\angle AOB = 90°$
(2) $AC = BC$,
(3) $OA = 012$ cm,
(4) $OC = 6.5$ cm.
To find: Area of ΔAOB
Calculation:
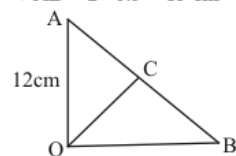It is given that $AC = BC$ where C is the mid point of AB
We know that the mid point of hypotenuse of right triangle is equidistant from the vertices
Therefore
$CA = BC = OC$
$\Rightarrow CA = BC = 6.5$
$\Rightarrow AB = 2 \cdot 6.5 = 13$ cm

Now inn triangle OAB use Pythagoras Theorem

$$AB^2 = OB^2 + OA^2$$

$$13^2 = OB^2 + 12^2$$

$$OB^2 = 13^2 - 12^2$$

$$OB^2 = 169 - 144$$

$$OB^2 = 25$$

$$OB = 5 \text{ cm}$$

So area of triangle OAB

$$= \frac{1}{2} \times \text{base} \times \text{height}$$

$$= \frac{1}{2} \times 12 \times 5$$

$$= \frac{1}{2} \times 60$$

$$30 \text{ cm}^2$$

Hence area of triangle is $\boxed{\Delta \text{ AOB } = 30 \text{ cm}^2}$

********** END *********