

EXERCISE 9.2

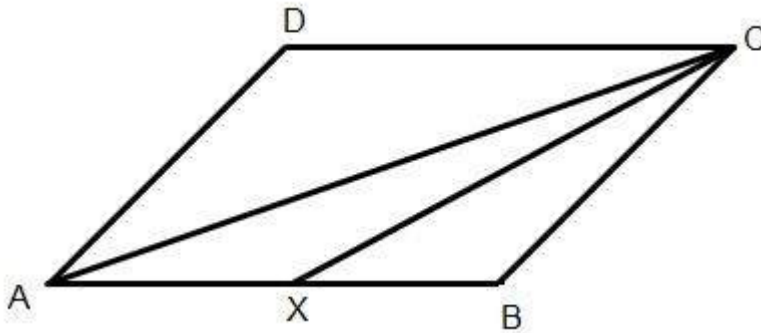
Write True or False and justify your answer:

1. ABCD is a parallelogram and X is the mid-point of AB. If $\text{ar}(\text{AXCD}) = 24 \text{ cm}^2$, then $\text{ar}(\text{ABC}) = 24 \text{ cm}^2$.

Solution:

False

Explanation:



In $\triangle ABC$, X is midpoint of AB

Considering the given question,

Hence $\text{ar}(\triangle AXC) = \text{ar}(\triangle BXC) = \frac{1}{2} \text{ar}(\triangle ABC)$

Therefore,

$\text{ar}(\triangle AXC) = \text{ar}(\triangle BXC) = 12 \text{ cm}^2$

Area of $\parallel\text{gm ABCD} = 2 \times \text{ar}(\triangle ABC)$

$$= 2 \times 24 = 48 \text{ cm}^2$$

But, according to the question,

area of $\parallel\text{gm ABCD} = \text{ar}(\text{AXCD}) + \text{ar}(\triangle BXC)$

$$= 24 + 12 = 36 \text{ cm}^2$$

Hence, we find a contradiction here.

So, If $\text{ar}(\text{AXCD}) = 24 \text{ cm}^2$, then $\text{ar}(\text{ABC}) \neq 24 \text{ cm}^2$

2. PQRS is a rectangle inscribed in a quadrant of a circle of radius 13 cm. A is any point on PQ. If $\text{PS} = 5 \text{ cm}$, then $\text{ar}(\text{PAS}) = 30 \text{ cm}^2$.

Solution:

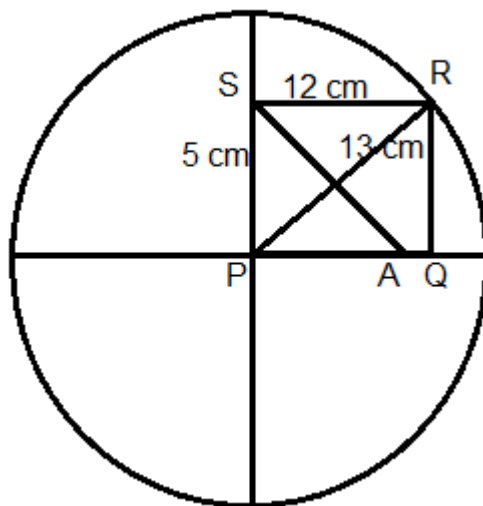
True. Since A is any point on PQ, then $\text{ar}(\text{PAS}) \neq 30 \text{ cm}^2$

But, the statement can be true if PA is equal to PS.

Justification:

According to the question,

PQRS is a rectangle inscribed in a quadrant of a circle of radius 13 cm.



Given,

A is any point on PQ

$PA < PQ$

$$\begin{aligned} \text{ar}(\triangle PQR) &= \frac{1}{2} \times PQ \times QR \\ &= \frac{1}{2} \times 12 \times 5 \\ &= 30 \text{cm}^2 \end{aligned}$$

PS = 5 cm

Suppose $PA < PQ$,

$$\text{ar}(\triangle PAS) < \text{ar}(\triangle PQR)$$

$$\text{ar}(\triangle PAS) < 30 \text{cm}^2$$

Suppose $PA = PQ$,

$$\begin{aligned} \text{ar}(\triangle PAS) &= \frac{1}{2} \times PQ \times PS \\ &= \frac{1}{2} \times 12 \times 5 \\ &= 30 \text{cm}^2 \end{aligned}$$

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