

Math 9

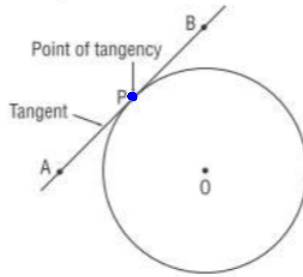
Name: _____

9.3 – Properties of Tangents to Circles

Date: _____

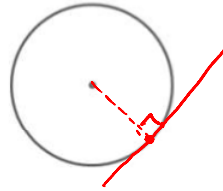
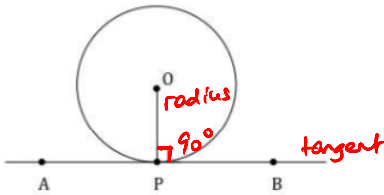
TANGENT : A line that touches the circle only at one point.

POINT of TANGENCY : The point where the tangent touches the circle.

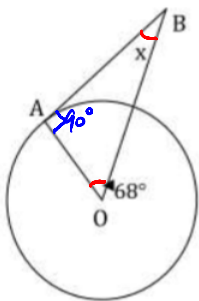


Tangent-Radius Property

A **TANGENT** to a Circle is always at 90° to the radius of the Circle at the Point of Tangency.

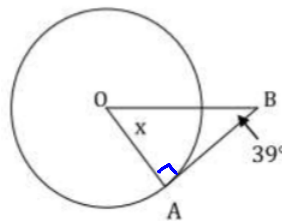


Ex. 1: Determine the value of angle x in each of the figures given below:



$\angle A = 90^\circ$: Tangent - radius

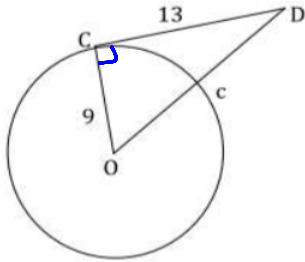
$x = 180 - 90 - 68$
 $= 22^\circ$ //



$\angle A = 90^\circ$: Tangent - radius

$x = 180 - 90 - 39$
 $= 51^\circ$ //

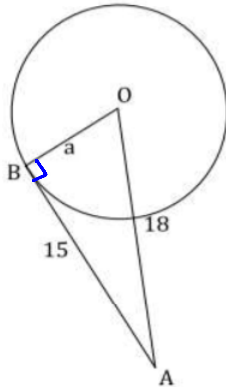
Ex. 2: Determine the length of each indicated side, below. Give reasons for your assumptions.



$\angle C = 90^\circ$: Tangent - radius

$$c = \sqrt{13^2 + 9^2}$$

$$= 15.8 \parallel$$



$\angle B = 90^\circ$: Tangent - radius prop.

$$a = \sqrt{18^2 - 15^2}$$

$$= 10.0$$

Ex. 3: (Review) A water pipe has a diameter of 30 cm. The water level in the pipe is ~~below~~^{above} the center of the pipe. The surface of the water has a cross-sectional length of 9 cm. Determine the maximum depth of the water correct to one tenth of a centimeter.

$$\text{Radius} = 30 \div 2 = 15 \text{ cm}$$

$$OC = 15 \text{ cm} : \text{Radius}$$

$$OB = 15 \text{ cm} : \text{Radius}$$

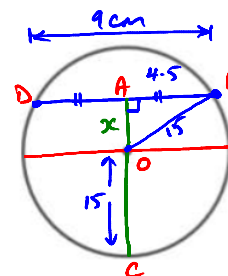
$$AB = 4.5 \text{ cm} : \text{Ac bisects BD}$$

$$\angle A = 90^\circ : \text{Chord property}$$

$$x = \sqrt{15^2 - 4.5^2} = 14.3 \text{ cm}$$

$$\Rightarrow AC = \text{max depth} = 14.3 + 15$$

$$= 29.3 \text{ cm} \parallel$$



$$= 29.3 \text{ cm} //$$

Assign! ① p. 388: # 3-9

② Chap 9 Review w/s online.

Thurs. Review

Friday Test.