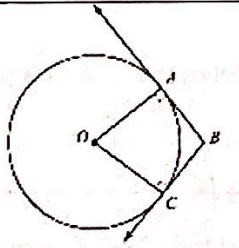
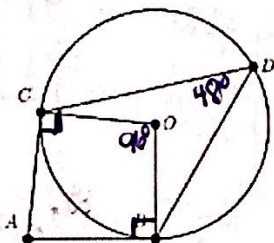


## Day 4 - Circumscribed Angles & Inscribed Polygons - Notes

**Learning Target:** I can use properties & theorems of inscribed polygons & circumscribed angles to solve problems.

Name	Theorem	Hypothesis	Conclusion
<b>Circumscribed Angle</b>	Angle formed by two rays that are each tangent to a circle.	The measure of a circumscribed angle is equal to 180 degrees minus the measure of the central angle that forms the intercepted arc. The rays are perpendicular to the radii of the circle.	 $180 - \angle AOC = \angle B$

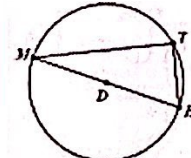
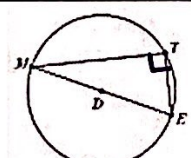
**Example:** What is the measure of angle A if angle D is 48 degrees?



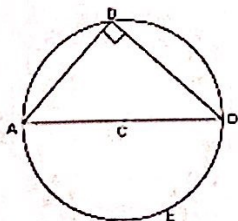
$$180 - 96 = 84^\circ$$

$$\angle A = 84^\circ$$

### Inscribed Triangles

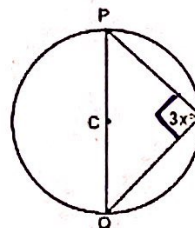
Name	Theorem	Hypothesis	Conclusion
<b>Inscribed Right Triangle Diameter Theorem</b>	If a triangle is inscribed in a circle such that one side of the triangle is a diameter of the circle, then the triangle is a right triangle.		$\triangle MTE$ is a right $\triangle$ .
<b>Converse of Right Triangle Diameter Theorem</b>	If a right triangle is inscribed in a circle, then the hypotenuse is a diameter of the circle.		$\overline{ME}$ is hypotenuse/diameter of the $\triangle$ .

**Example:** Find the measure of arc AED.



$$\widehat{AED} = 180^\circ$$

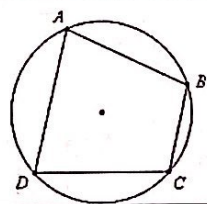
**Example:** Find the value of x.



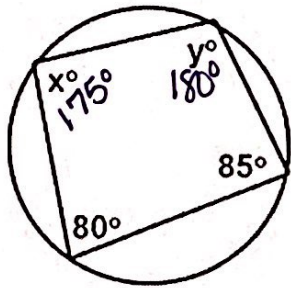
$$3x = 90$$

$$x = 30$$

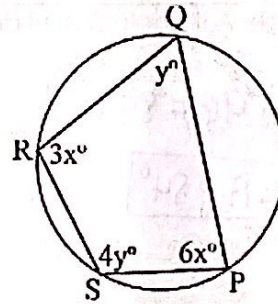
Inscribed Polygons

Name	Theorem	Hypothesis	Conclusion
Inscribed Polygons	A polygon whose vertices lie on the circle.	Opposite angles are supplementary.	 $\angle A + \angle C = 180^\circ$ $\angle B + \angle D = 180^\circ$

Example: Find the value of x and y.



Example: Find the value of x and y.

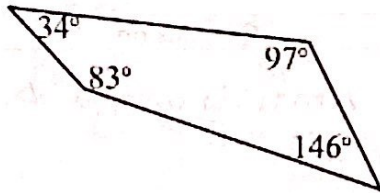


$$4y + y = 180 \quad 3x + 6x = 180$$

$$5y = 180 \quad 9x = 180$$

$$\boxed{y = 36} \quad \boxed{x = 20}$$

Example: Can this quadrilateral be inscribed inside a circle?



$$83 + 97 = 180^\circ$$

$$34 + 146 = 180$$

Yes because opposite angles are supplementary.