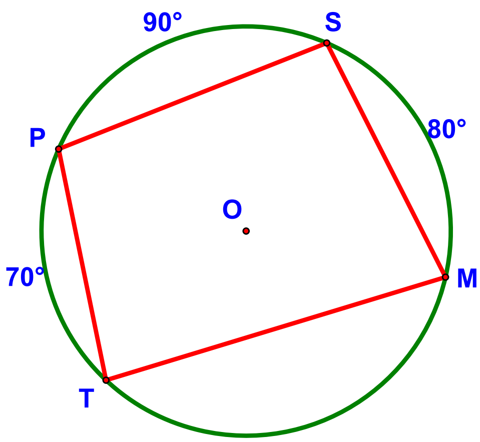
Inscribed and Circumscribed Polygons - Lesson 10-7

Here's the warmup!



$m\overset{\frown}{TM}$ =

$m\angle P$ =

$m\angle S$ =

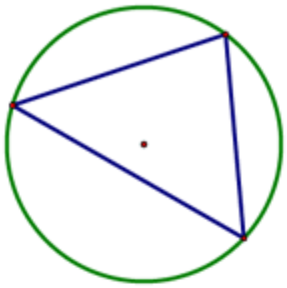
$m\angle M$ =

$m\angle T$ =

$m\angle S + m\angle T$ =

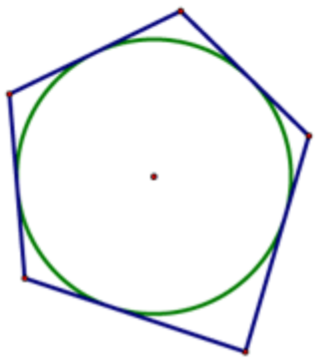
$m\angle P + m\angle M$ =

Today we're going to learn about *inscribed* and *circumscribed* polygons. Here are their definitions:



A polygon is *inscribed in* a circle if all of its vertices lie on the circle. The circle is also said to be *circumscribed about* the polygon.

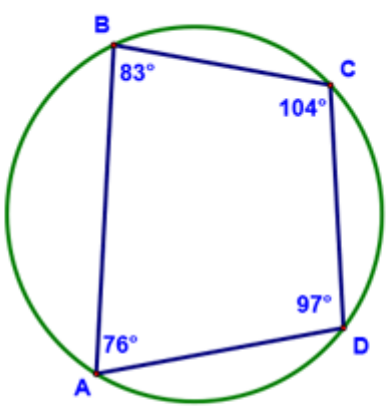
The center of a circle circumscribed about a polygon is the *circumcenter* of the polygon.



A polygon is *circumscribed about* a circle if each of its sides is tangent to the circle. The circle is also said to be *inscribed in* the polygon.

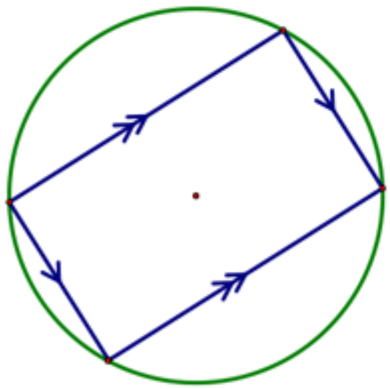
The center of a circle is inscribed in a polygon is the *incenter* of the polygon.

And here are some properties related to them:



Theorem 92

if a quadrilateral is inscribed in a circle, its opposite angles are supplementary.



Theorem 93

If a parallelogram is inscribed in a circle, it must be a rectangle.

The following diagram should give you a "visual" of why Theorem 93 is true. Notice that when the parallelogram is no longer a rectangle, it is also no longer inscribed: