Lesson 9-2 - Introduction to Circles

Today, we defined a whole bunch of things related to circles. We started by recalling the formulas for area and circumference of circles:

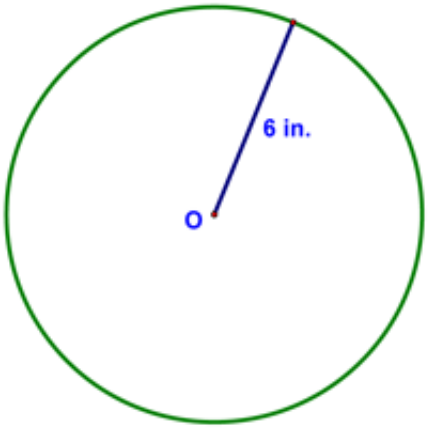
Find the area and the circumference of ⊙O.

$A = \pi r^2$

$= \pi 6^2 = 36\pi$

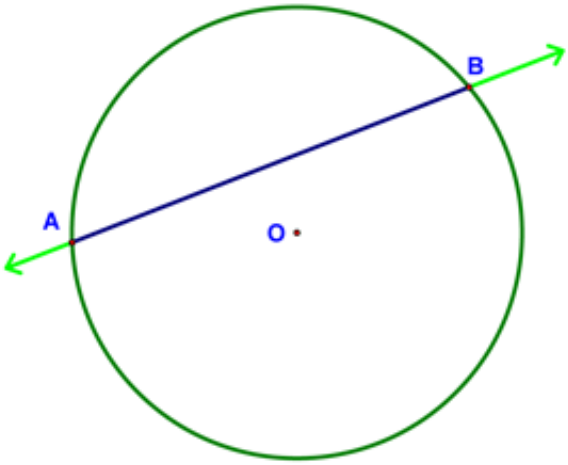
$C = 2\pi r$

$= 2\pi(6) = 12\pi$

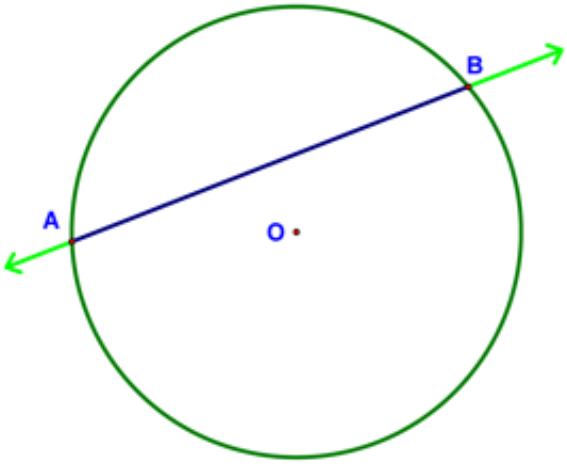


We then defined a *chord*:

A *chord of a circle* is a segment whose endpoints lie on the circle.

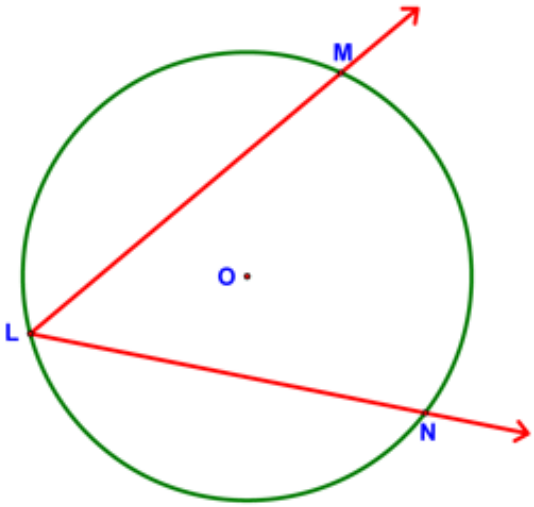


We then moved to a *diameter*:

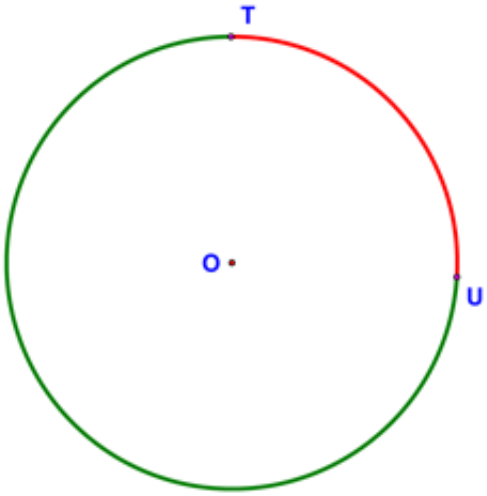


A *diameter of a circle* is a chord that passes through the center ($\overline{AB}$ is a diameter when it contains point *O*).

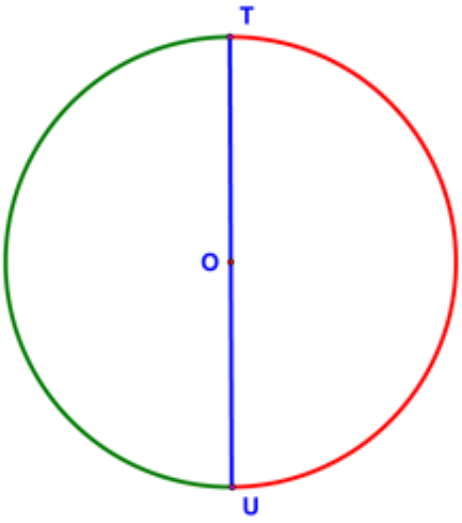
We also discussed *inscribed angles* and *arcs*:



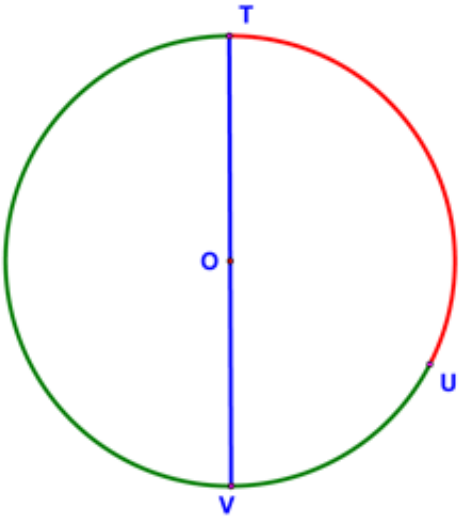
An *inscribed angle* is an angle whose vertex lies on a circle and whose sides contain chords of the circle ($\angle MLN$ is an inscribed angle).



An *arc of a circle* is two points on the circle and the continuous (unbroken) part of the circle between the two points. The two points are called the endpoints of the arc. There is a symbol for an arc: the symbol is placed above the letters that name the endpoints of the arc. So, arc TU is written $\overset{\frown}{TU}$.

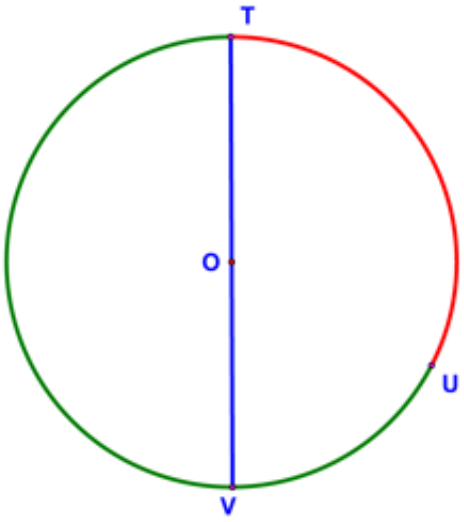


A *semicircle* is an arc of a circle whose endpoints are the endpoints of a diameter



A *minor arc* is an arc of a circle that is smaller than a semicircle of the circle. Minor arcs are named with the letters of the two endpoints of the arc (e.g., $\overset{\frown}{TU}$).

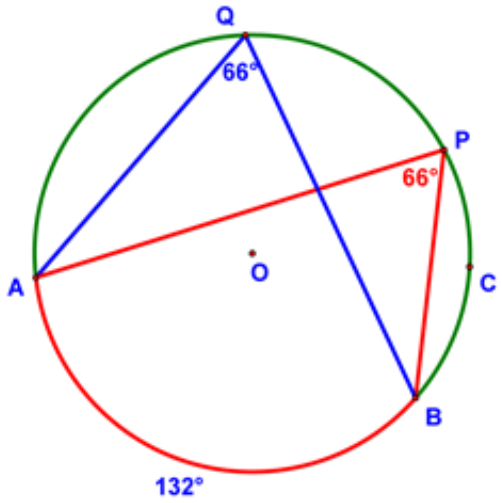
A *major arc* is an arc of a circle that is larger than a semicircle of the circle. Major arcs are named with the letters of three points - the first and last are the endpoints and the middle letter is any other point on the arc (e.g., $\overset{\frown}{TVU}$).



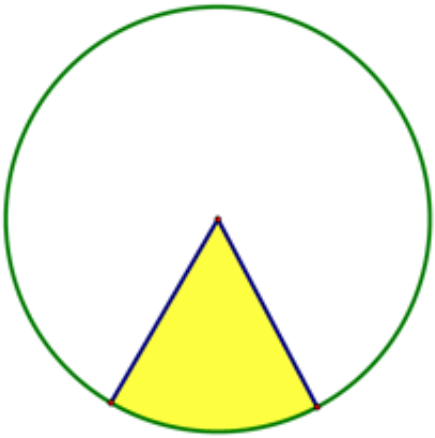
The *measure of an arc* is equivalent to the number of degrees it occupies.

The *length of an arc* is a fraction of the circle's circumference, so is expressed in linear units.

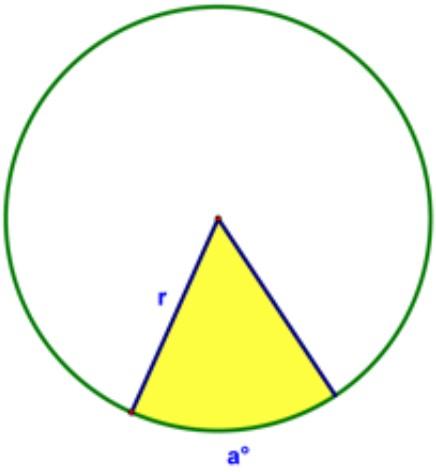
We then talked about the measure of inscribed angles. Remember...it's always half of the measure of the arc it intercepts:



And wrapped up by discussing *sectors* and how to find their areas:

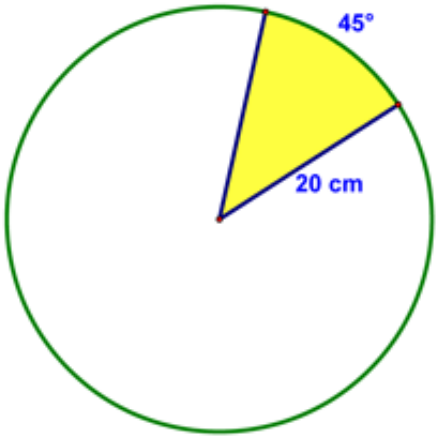


A *sector of a circle* is the region between two radii of a circle and the included arc



$$A = \left(\frac{a}{360}\right)\pi r^2$$

This was an example of calculating the area of a given sector:



$$A = \frac{45}{360}(\pi 20^2) = 50\pi \text{ cm}^2$$