Parts of a Circle: A Visual Glossary

Circle – the set of all points equidistant from a given point called the **center**.

Circumference – the distance around the circle.

Diameter – a segment that contains the center of a circle and has both endpoints on the circle.

Radius – a segment that has one endpoint at the center and the other endpoint on the circle.

Tangent – a line that intersects the circle in exactly one point.

Chord – a segment whose endpoints are on a circle.

Secant – a line that intersects a circle at two points.

Semicircle – half of a circle

Minor arc – smaller than a semicircle

Major arc – larger than a semicircle

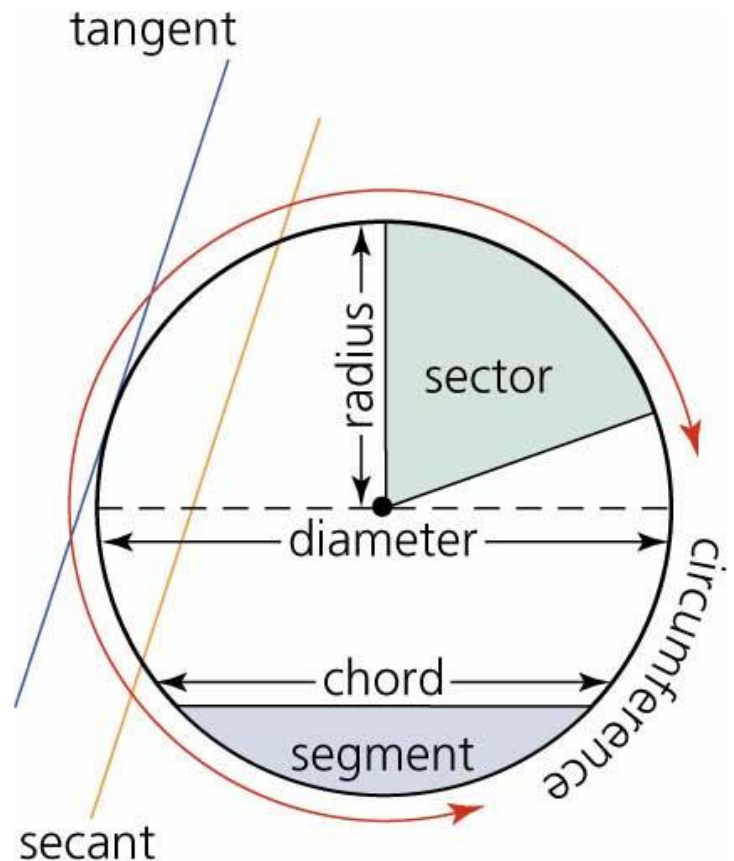**Central Angle** – An angle whose vertex is the center of the circle.

Inscribed Angle – An angle whose vertex is on the circle and whose sides are chords of the circle.

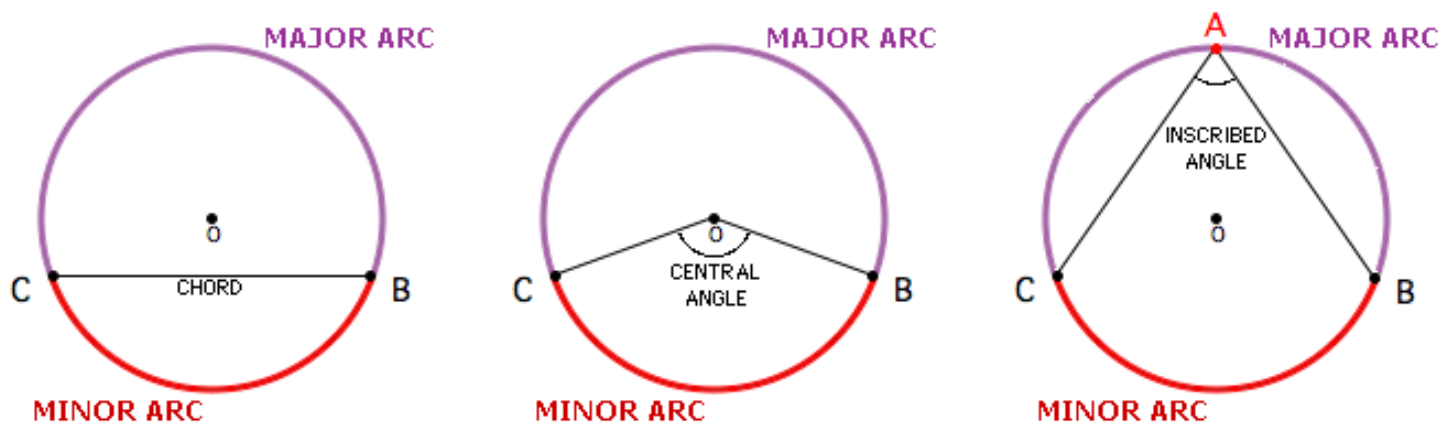**Intercepted Arc** – an arc with endpoints on the sides of an inscribed angle.

Arc Measure – equal to the measure of the central angle in degrees.

Arc Length – equal to the circumference X (arc measure)/360˚

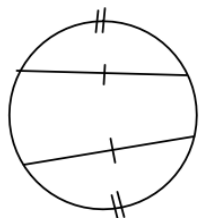**Sector Area** – equal to the circle area X (arc measure)/360 ˚
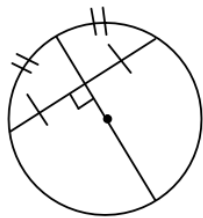

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To name an arc, use the two endpoints of the arc if minor and the two endpoints and a point in between if major. In the last circle on the right: $\overset{\frown}{BC}$ is minor, $\overset{\frown}{BAC}$ is major. If a point between is not provided, then state that the arc is a major arc.
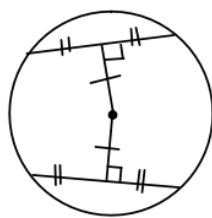
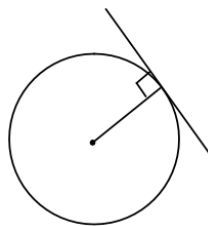# Circle Theorems: Concept Maps

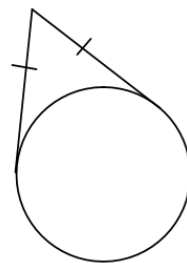Congruent chords cut off congruent arcs.

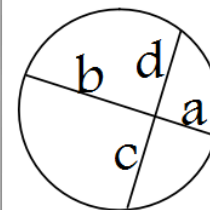A diameter perpendicular to chord bisects the chord & arc.

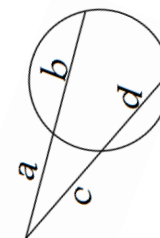2 congruent chords are equidistant from center.
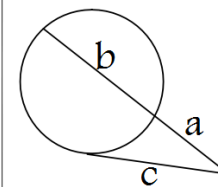
Tangent line is perpendicular to radius.

2 tangents from same point are congruent.

2 chords intersect such that:
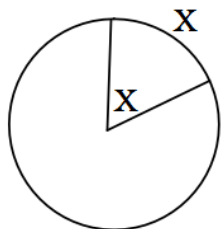
$a \cdot b = c \cdot d$
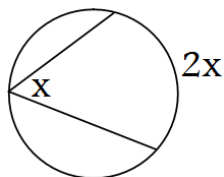
2 secants intersect such that:

$a(a+b) = c(c+d)$

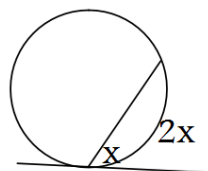Tangent and secant intersect such that:
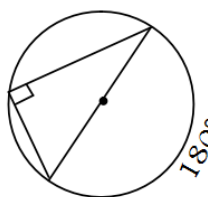
$a(a+b) = c^2$

Segments in Circles

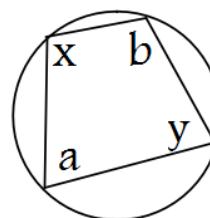Measure of central angle

=

Measure of intercepted arc
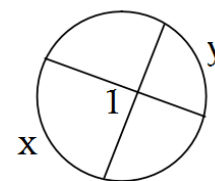
Measure of inscribed angle

=

1/2 intercepted arc

Angle formed by chord and tangent

=

1/2 intercepted arc
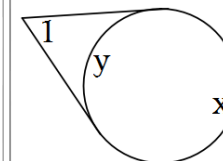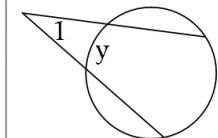
The angle inscribed in a semicircle is always right.

Inscribed quadrilateral:

$a+b = 180°$

$x+y = 180°$

Angle formed by 2 chords:

$m\angle 1 = (x+y)/2$

Angle formed by 2 tangents:

$m\angle 1 = (x - y)/2$

OR

$m\angle 1 + y = 180°$

Angle formed by 2 secants:

$m\angle 1 = (x - y)/2$

Angles in Circles