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| Theorem |
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| Circle Theorem \#1 |
| The measure of a central angle is the same as the degree |
| measure of the arc it intercepts. |
| Circle Theorem \#2 |
| The measure of an inscribed angle in a circle is half the |
| measure of the arc it intercepts. |
| Circle Theorem \#3 |
| Inscribed angles that intercept the same arc are congruent. |
| Angles inscribed in a semicircle are right angles. |

## Circle Theorem \#5

The opposite angles of a quadrilateral inscribed in a circle are supplementary.


## Circle Theorem \#6

A tangent to a circle is perpendicular to the radius drawn to the point of tangency.

$$
a+c=180^{\circ} \text { and } b+\boldsymbol{d}=180^{\circ}
$$

Circle Theorem \#7
Tangent segments to a circle from a point outside the circle
are congruent.
Circle Theorem \#8
Parallel lines intercept congruent arcs on a circle.
Converse: If two arcs are congruent, then their chords are
congruent
If two chords are congruent, then their arcs are congruent

## Circle Theorem \#11

An angle formed by a tangent ray and a secant is always half the measure of the arc it intercepts


## Circle Theorem \#12

The measure of an angle formed by two intersecting chords is the average of the measures of the arcs that are intercepted by it and its vertical angle.


## Circle Theorem \#13

The measure of an angle formed by two secants that intersect outside of a circle is half the difference of the arcs intercepted by it.


## Circle Theorem \#14

In a circle, if a diameter is perpendicular to a chord, then it bisects the chord and its arc.


If $\overline{A B}$ is a diameter and $\overline{A B} \perp \overline{C D}$ then,

$$
\overline{C E} \cong \overline{E D} \text { and } \overparen{C A} \cong \overparen{A D}
$$

## Circle Theorem \#15

In a circle, if a diameter bisects a chord (that is not a diameter), then it is perpendicular to the chord


If $\overline{A B}$ is a diameter and $\overline{C E} \cong \overline{E D}$ then
Circle Theorem \#16
In a circle, the perpendicular bisector of a chord contains the
center of the circle.
Circle Theorem \#17
The products of the chord segments are equal
Circle Theorem \#18
The products of the secants and their out segments are equal.
Circle Theorem \#19
square of the tangent.
Circle Theorem \# $\boldsymbol{x})^{2}=r^{2}$

