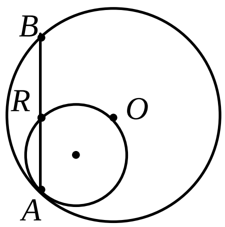
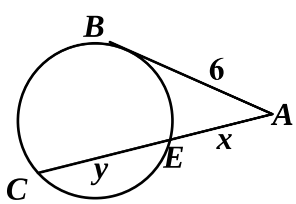
NAME:______________________________

1. If you draw a circle with a 4 in. radius, describe how you would find the measure of the arc cut off by the chord 3 in. from the center.

2. The circles shown are tangent at *A*. The smaller circle passes through *O*, the center of the larger circle. Explain why any chord of the larger circle containing *A* is bisected by the smaller circle.



3. If $EC = 2AE$ and $AB = 6$, explain how you can find *x* and *y*.



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4. Theorem 12-12 states that the measure of an angle formed by two chords that intersect inside a circle is half the sum of the measures of the intercepted arcs. Theorem 12-13 states that the measure of an angle formed by two secants, two tangents or a secant and a tangent is half the difference of the measures of the intercepted arcs. Describe the differences between the two theorems.

5. Write a problem that uses the relationship of the segments of intersecting chords. Include your solution.

6. Central angles in two circles are congruent but the circles are not congruent. There is a chord joining the endpoints of the radii of the central angles in each circle. What is the relationship of the lengths of the chords?

7. Write a problem that can be solved using the properties of inscribed angles. Include your solution.

8. Write a problem using secants or chords. Include your solution.

[1] Measure 3 in. along a radius to construct a perpendicular at that point. Draw the central angle formed by radii to the ends of the chord and measure that angle.

[2] $\angle ARO$ is a right angle because it is inscribed in a semi-circle. $\overline{OR}$ is the perpendicular bisector of $\overline{AB}$ since the perpendicular bisector of a chord contains the center of the circle.

[3] If $AE = x$, then $EC = 2x$ and $AC = 3x$. So, multiply $3x$ by x, set the product equal to $6 \cdot 6$, and solve for x. Then double that value to find y.

[4] Check students' work.

[5] Check students' work.

[6] The chords are proportional in the same ratio as the radii.

[7] Check students' work.

[8] Check students' work.