

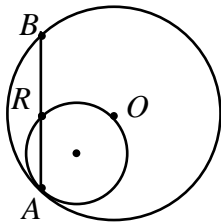
NAME: \_\_\_\_\_

*G.G.49: Investigate, justify and apply theorems regarding chords of a circle - perpendicular bisectors of chords*

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.

*G.G.50: Investigate, justify and apply theorems about tangent lines to a circle - common tangents of two tangent circles*

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.

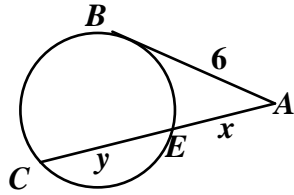


*G.G.51: Investigate, justify and apply theorems about the arcs determined by the rays of angles formed by two lines intersecting a circle when the vertex is inside the circle (two chords) and outside the circle (two tangents, two secants, or tangent and secant)*

3. 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.

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



*G.G.53: Investigate, justify and apply theorems regarding segments intersected by a circle along two intersecting chords of a given circle*

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.

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

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

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[3] Check students' work.

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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  
[4]  $x$ . Then double that value to find  $y$ .

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[5] Check students' work.

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

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[7] Check students' work.

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[8] Check students' work.

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