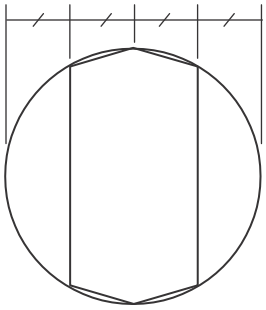
NAME _____ DATE _____ PERIOD _____

10-3 Word Problem Practice

Arcs and Chords

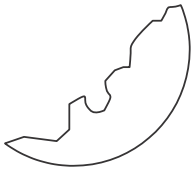
1. HEXAGON A hexagon is constructed as shown in the figure.



How many different chord lengths occur as side lengths of the hexagon?

2. WATERMARKS For security purposes a jewelry company prints a hidden watermark on the logo of all its official documents. The watermark is a chord located 0.7 cm from the center of a circular ring that has a 2.5 cm radius. To the nearest tenth, what is the length of the chord?

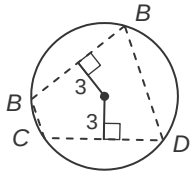
3. ARCHAEOLOGY Only one piece of a broken plate is found during an archaeological dig. Use the sketch of the pottery piece below to demonstrate how constructions with chords and perpendicular bisectors can be used to draw the plate's original size.



4. CENTERS Neil wants to find the center of a large circle. He draws what he thinks is a diameter of the circle and then marks its midpoint and declares that he has found the center. His teacher asks Neil how he knows that the line he drew is the diameter of the circle and not a smaller chord. Neil realizes that he does not know for sure. What can Neil do to determine if it is an actual diameter.

5. QUILTING Miranda is following directions for a quilt pattern "In a 10-inch diameter circle, measure 3 inches from the center of the circle and mark a chord $\overline{AB}$ perpendicular to the radius of the circle. Then cut along the chord." Miranda is to repeat this for another chord, $\overline{CD}$. Finally, she is to cut along chord $\overline{DB}$ and $\overline{AC}$. The result should be four curved pieces and one quadrilateral.

a. If Miranda follows the directions, is she guaranteed that the resulting quadrilateral is a rectangle? Explain.



b. Assume the resulting quadrilateral is a rectangle. One of the curved pieces has an arc measure of 74. What are the measures of the arcs on the other three curved pieces?

Lesson 10-3