Angles Formed by Chords   Name _____

In this lesson you will investigate the relationship

between the angles formed by chords in a circle and

the arcs they intercept.

| 1.1 | 1.2 | 1.3 | 1.4 | ▶DEG AUTO REAL | 🔋 |

Angles Formed by Chords in a Circle

THEOREM: The measure of an angle formed by two chords intersecting within a circle is equal to one-half the sum of the measures of the intercepted arcs.

Open *chords.tns* on your TI-Nspire handheld and

follow along with your teacher, using this worksheet

as a reference throughout the lesson.
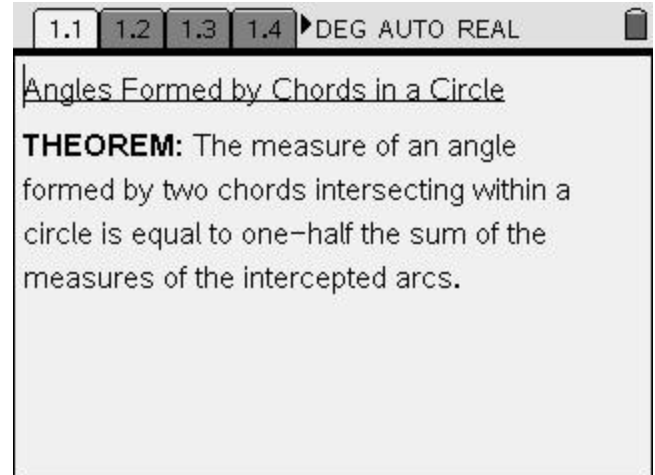
On page 1.2, you will find circle O with arcs BD & AC, as well as angle DEB, all labeled with their

measures. As you drag any of the endpoints of the 2 chords, notice how "a + b" changes to reflect the

sum of the 2 arcs. More importantly, take note of the measure of angle DEB relative to the value of this

sum. The constant 2:1 ratio indicates that the measure of the angle is truly one-half the sum of the
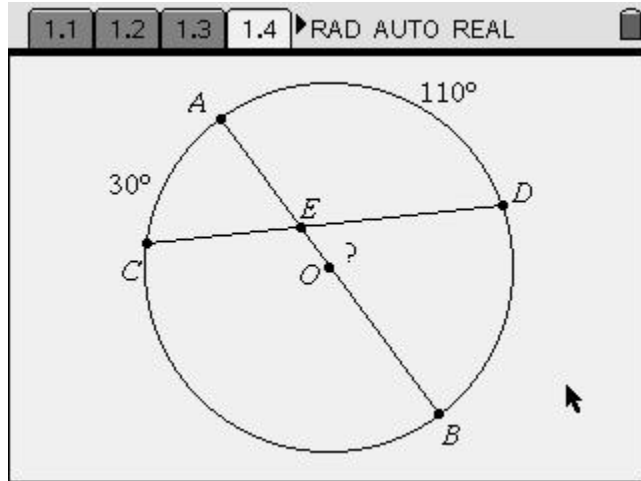
intercepted arcs.

Applying the Theorem

Now, use the theorem, and the diagrams below, to answer the questions on pages 1.3 to 1.5.
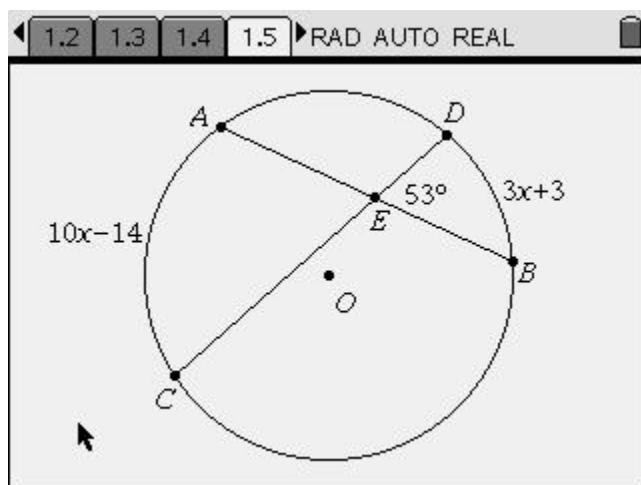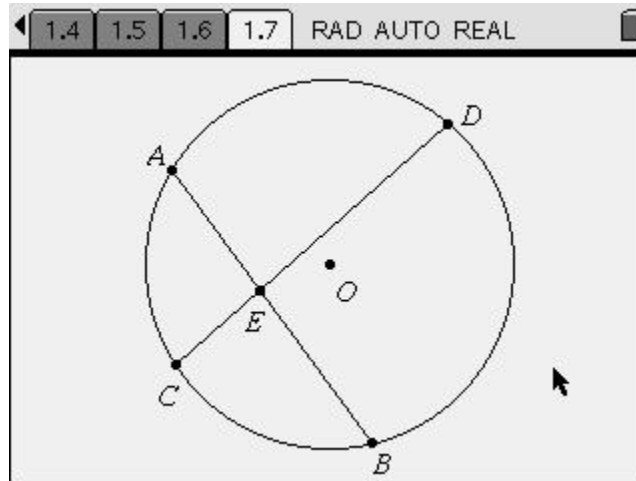
#1.3

Angles Formed by Chords

1.4

1.5
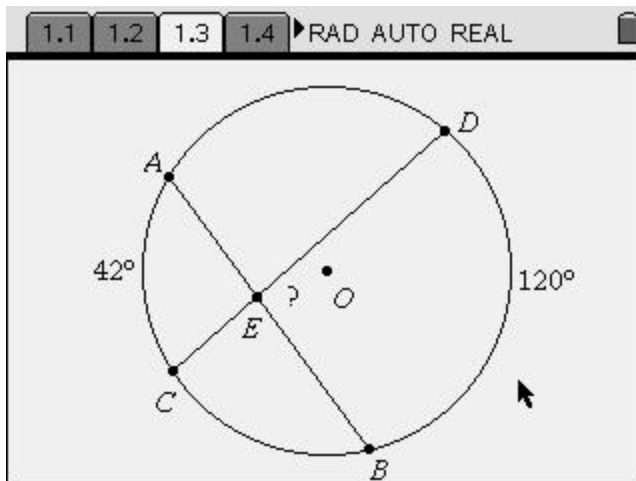
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Geometric Proof

On page 1.7, you are presented with a 2-column proof of the theorem. Complete the theorem by filling

in the missing items in both the Statements and Reasons columns.

STATEMENTS	REASONS
1. Circle O with chords AB and CD, that intersect at E.	1. Given
2. m ∠AEC = m ∠BAD + m ∠CDA	2.
3. m ∠BAD = ½ m arc BD and m ∠CDA = ½ m arc AC	3.
4. m ∠AEC =	4. Substitution
5. m ∠AEC = ½ (m arc BD + m arc AC)	5. Greatest common factor