Complete the outline as you view Video Lecture 10.3. Pause the video as needed to fill in the blanks. Then press Play to continue. Also, circle your answer to each numbered exercise.

**Objective 1**  Find the Area of a Regular Polygon

The ________ of a regular polygon is the center of the circumscribed circle.
The ________ of a regular polygon is the distance from the center to a vertex.
The ________ is the perpendicular distance from the center to a side.
A(n) ________ ________ of a regular polygon is an angle whose vertex is the center of the polygon and whose sides contain two consecutive radii (radii is the plural of radius).

**Work Video Exercise 1 with me.**

1. The regular polygon has radii and an apothem as shown. Find the measure of each numbered angle.

**Area of a Regular Polygon**

The area of a regular polygon is half the product of the apothem and the perimeter.

\[ A = \frac{1}{2} \text{apothem} \times \text{perimeter} \]
Section 10.3 Areas of Regular Polygons

Work Video Exercise 2 with me.

2. Find the perimeter and the area of a regular nonagon with apothem $a = 27.5$ in. and side length $s = 20$ in.

Pause and work Video Exercise 3.

3. Find the perimeter and the area of the regular polygon. Round your answer to the nearest tenth.

Play and check.

Objective 2 Find the Area of a Regular Polygon Using Trigonometric Ratios

Work Video Exercise 4 with me.

4. Find the area of the regular polygon. Round your answer to the nearest tenth. Trigonometric ratios may be needed.
   dodecagon with radius 20 cm

Pause and work Video Exercise 5.

5. Find the perimeter and area of the regular polygon to the nearest tenth.

Play and check.