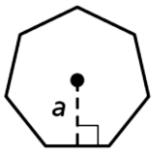
Unit 5: Right Triangle Trigonometry **Name:**_____
Day 15 Area of Regular Polygons **Date:** _____ **Hour:** _____
(PH 9-5)

AREA of a REGULAR POLYGON: $A = \frac{1}{2}Pa$



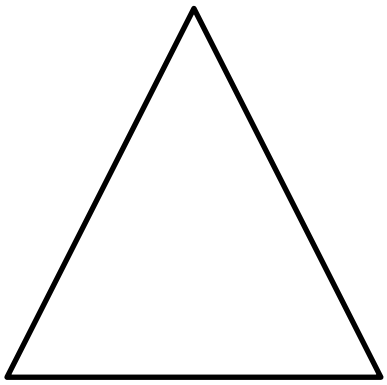
where a is the apothem and P is the perimeter

Example 1: Find the area of a regular dodecagon with side length 2yd and apothem 1.3 yd.

Steps to Solve Problems:

- **Find the perimeter**
- **Find the central angle**
- **Draw apothem and find ½ the measure of the central angle**
- **Draw a radius triangle and find the base angle and side length**
- **Use rules to find the apothem (45°-45°-90° or 30°-60°-90° or SOH-CAH-TOA)**
- **Find area using A = ½Pa**

Example2: Find the area of a regular triangle with side length 10 cm, in simplest radical form.



Step 1: Find the perimeter

Step 2: Find the central angle

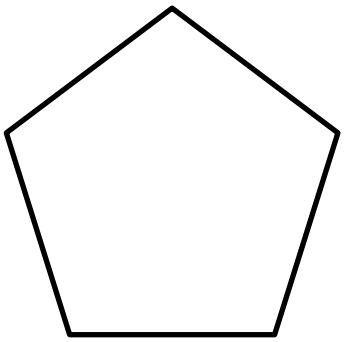
Step 3: Draw apothem and find ½ the measure of central angle

Step 4: Draw radius triangle and find the base angle and side length

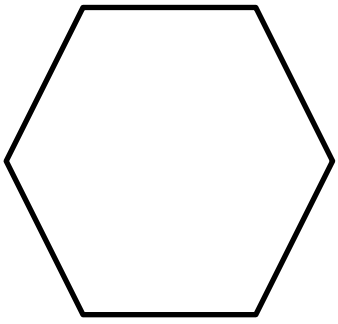
Step 5: Find apothem

Step 6: Find area of polygon using A = ½ Pa

Example 3: Find the area of a regular pentagon with perimeter 40 mm, to the nearest tenth.



Example 4: Find the area of regular hexagon with radius length 2 ft, in simplest radical form.



Homework: pages 500 – 501 #1 – 5 all, 22 – 26 all

Day 15 Homework: pages 500 – 501 #1 – 5 all, 22 – 26 all

SHOW ALL WORK ON A SEPARATE SHEET OF PAPER.

Find the area of each regular polygon. Give answers to the nearest tenth.

1. octagon with side length 6 cm

2. pentagon with side length 7 in.

3. hexagon with perimeter 60 m

4. 15-gon with perimeter 180 yd

5. *PQRST* is a regular pentagon with center *O* and radius 10 in.

a. Find $m\angle POQ$.

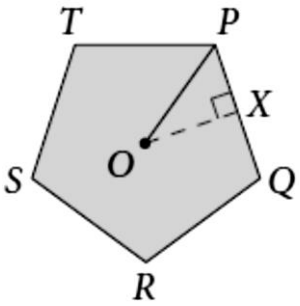
b. Find $m\angle POX$.

c. Find OX.

d. Find PQ.

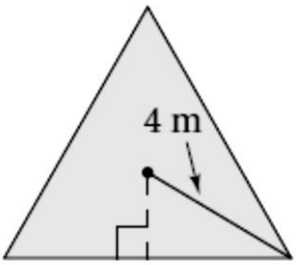
e. Find the perimeter.

f. Find the area.



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

22.



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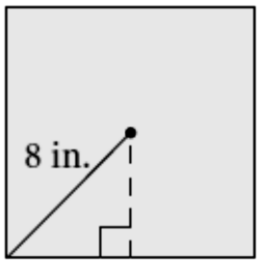

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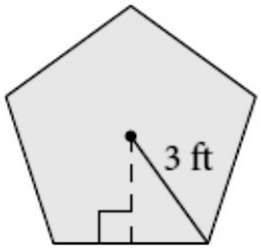

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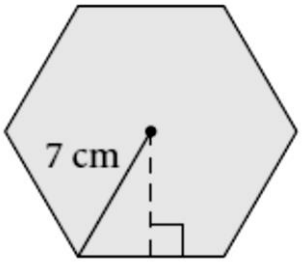

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