

## Bellwork

### 04/25/12

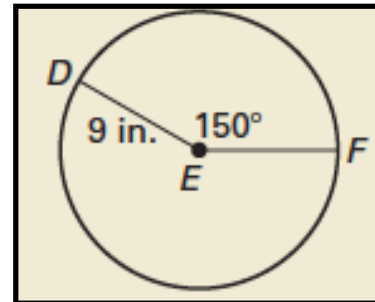
1. Find the area of the sectors formed by  $\angle DEF$ .

$$A.S. = \frac{150}{360} \cdot \frac{(9)^2 \pi}{1}$$

$$\frac{150}{360} \cdot \frac{81 \pi}{1}$$

$$\frac{12150 \pi}{360}$$

$$A.S. = \frac{135}{4} \pi \text{ in}^2$$



**Geometry**  
**11.6a Areas of Regular Polygons**  
**Standard(s): 2, 4**

**Vocabulary:**

Center of a Polygon: The center of the circumscribed circle.

Radius of a Polygon: Radius of the circumscribed circle.

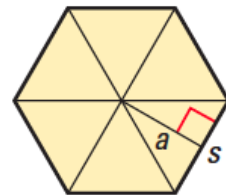
Apothem of a Polygon: The distance from the center to any side of the polygon.

Central Angle of a Regular Polygon: An angle formed by two radii drawn to consecutive vertices of the polygon.

**THEOREM***For Your Notebook***THEOREM 11.11 Area of a Regular Polygon**

The area of a regular  $n$ -gon with side length  $s$  is one half the product of the apothem  $a$  and the perimeter  $P$ ,

$$\text{so } A = \frac{1}{2}aP, \text{ or } A = \frac{1}{2}a \cdot ns.$$



## Find the Central $\angle$

Find the measure of a central angle of a regular polygon with the given number of sides. Round answers to the nearest hundredth of a degree, if necessary.

**45 Sides**

$$\frac{360}{45} = 8^\circ$$

$$\frac{360}{n}$$

**21 Sides**

$$\frac{360}{21} = 17.14^\circ$$

Find the given angle measure for the regular hexagon shown.

**$m\angle EGD$**

$$\frac{360}{6} = 60^\circ$$

**$m\angle FGD$**

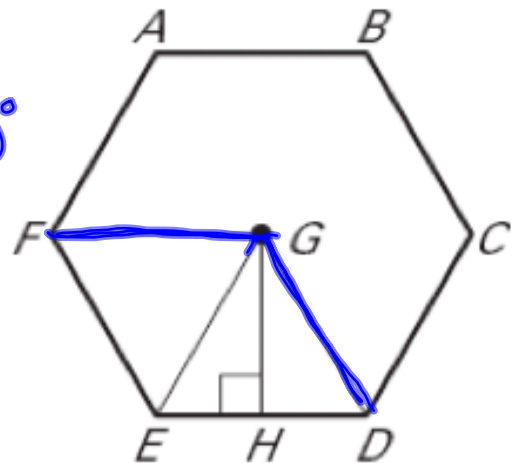
$$60 \cdot 2 = 120^\circ$$

**$m\angle GHD$**

$$90^\circ$$

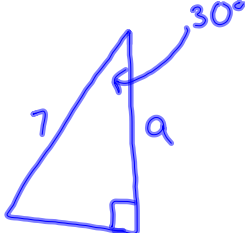
**$m\angle EGH$**

$$\frac{60}{2} = 30^\circ$$



## Find a Missing Side

What is the length of the apothem of a regular hexagon with radius 7 in.? Round the answer to the nearest tenth.



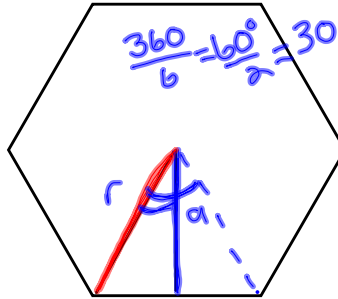
A right-angled triangle with a hypotenuse of length 7 and an angle of  $30^\circ$  at the top vertex. The side adjacent to the  $30^\circ$  angle is labeled  $a$ . A right-angle symbol is at the bottom vertex.

$$7 \cdot \cos 30 = \frac{a}{1} \rightarrow$$

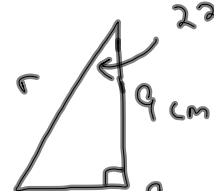
$$a = 7 \cdot \cos 30$$

$$a = (\cos 30) \cdot 7$$

$$a = 6.06 \text{ in}$$



What is the length of the radius of a regular octagon with apothem 9 cm.? Round the answer to the nearest tenth.

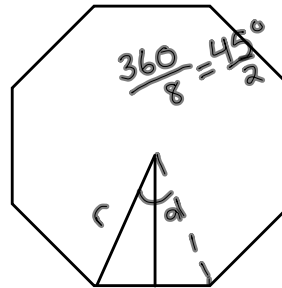


A right-angled triangle with a hypotenuse of length  $r$  and an angle of  $22.5^\circ$  at the top vertex. The side adjacent to the  $22.5^\circ$  angle is labeled 9 cm. A right-angle symbol is at the bottom vertex.

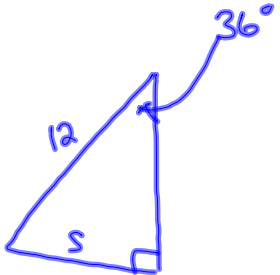
$$\cos 22.5 = \frac{9}{r}$$

$$r = \frac{9}{\cos 22.5}$$

$$r = 9.74 \text{ cm}$$

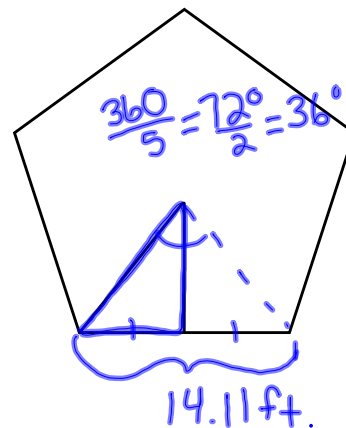


What is the length of a side of a regular pentagon with radius 12 ft.? Round the answer to the nearest tenth.



A right-angled triangle with a hypotenuse of length 12 and an angle of  $36^\circ$  at the top vertex. The side opposite to the  $36^\circ$  angle is labeled  $s$ . A right-angle symbol is at the bottom vertex.

$$12 \cdot \sin 36 = \frac{s}{12} \cdot 12$$



$$s = 12 \cdot \sin 36$$

$$s = 7.05 \text{ ft}$$

$$s = 14.11 \text{ ft}$$

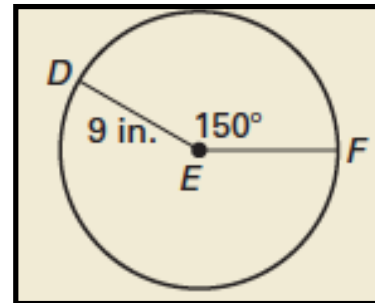
## Homework Assignment

**Pg. 765**  
**#1-13**

## Bellwork

### 04/26/12

1. Find the area of the sectors formed by  $\angle DEF$ .



**Geometry**  
**11.6b Areas of Regular Polygons**  
**Standard(s): 2, 4**

**Vocabulary:**

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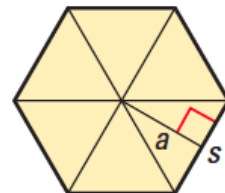
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**THEOREM***For Your Notebook***THEOREM 11.11 Area of a Regular Polygon**

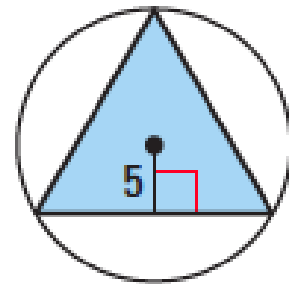
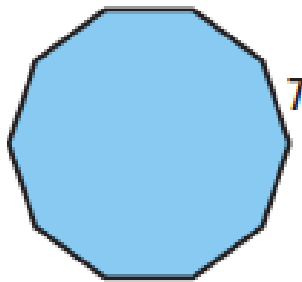
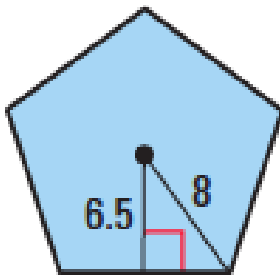
The area of a regular  $n$ -gon with side length  $s$  is one half the product of the apothem  $a$  and the perimeter  $P$ ,

$$\text{so } A = \frac{1}{2}aP, \text{ or } A = \frac{1}{2}a \cdot ns.$$



## Find the Area

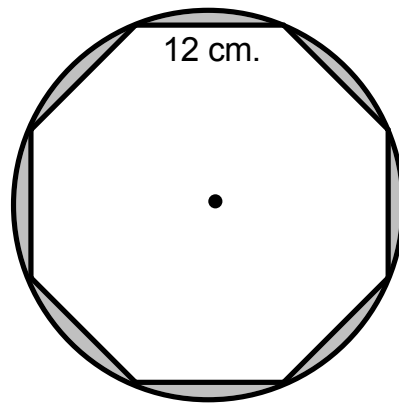
Find the perimeter and the area of the polygon. Round to the nearest tenth, if necessary.





## Area of Shaded Regions

Find the area of the shaded region.



## **Homework Assignment**

**Pg. 765-766  
#14-16, 19-21, 27-30**

