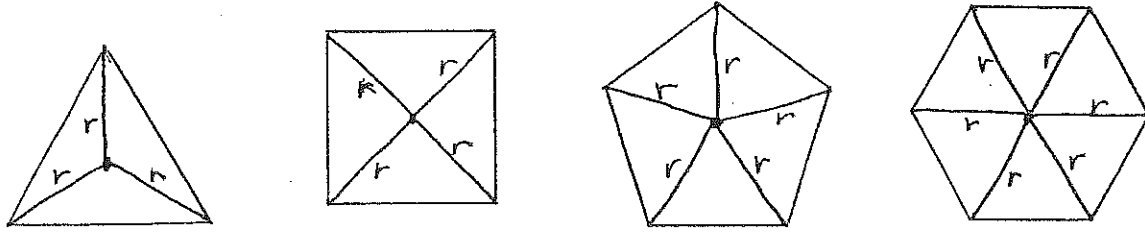


Lesson 9-2 Regular Polygons

Regular Polygon — equilateral and equiangular

Radius of a Polygon — segment from center to vertex



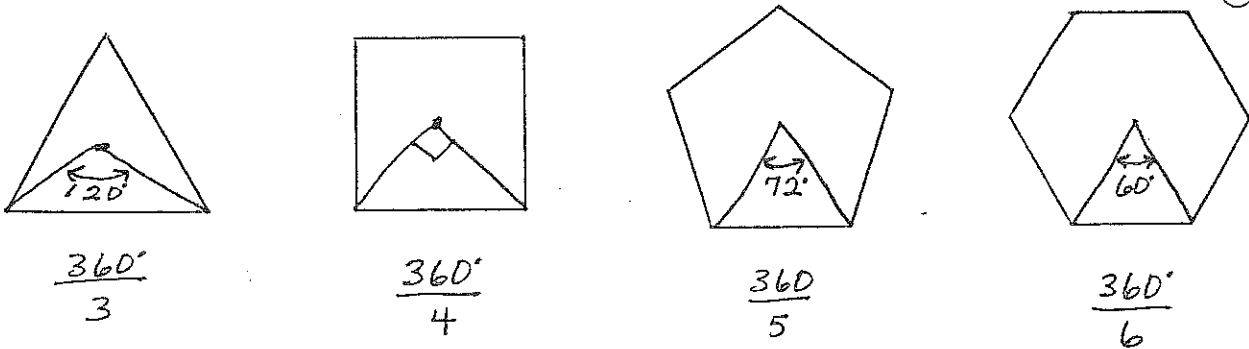
Central \angle of a Polygon — vertex at center — formed by 2 radii.

There is a central \angle for each side of the polygon.

The measure of a central \angle in a regular polygon is

$$\frac{360^\circ}{n}$$

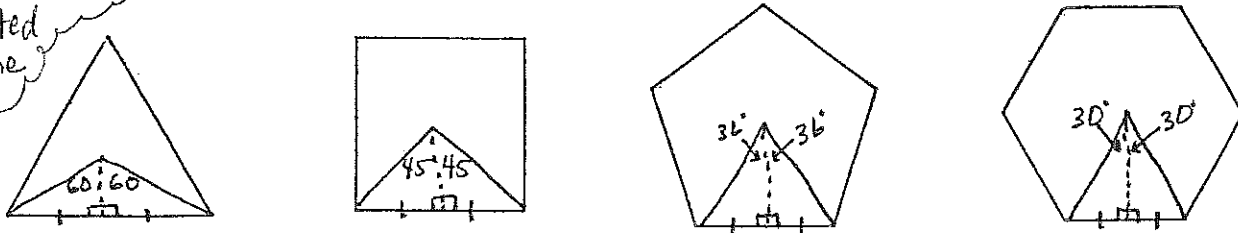
n is number of sides



Apothem of a polygon — segment from center to midpoint of side.

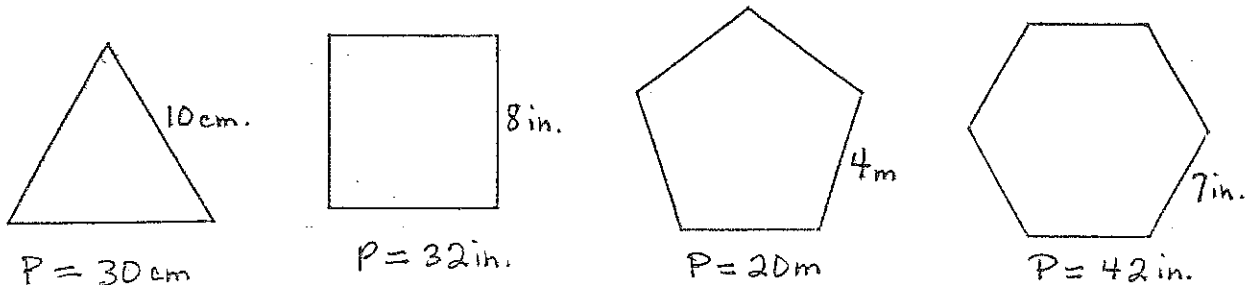
Apothem is perpendicular to the side and bisects the side and the central \angle .

apothem is dotted line



Perimeter of a regular polygon.

One side multiplied by the number of sides.

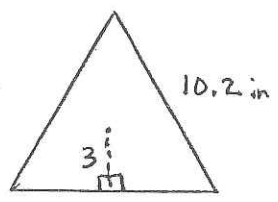


$S \frac{0}{n} \quad C \frac{a}{n} \quad T \frac{a}{n}$

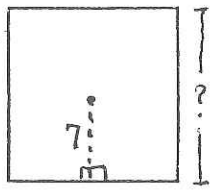
Area of a Regular Polygon

$A = \frac{1}{2} P a$

$A = \frac{1}{2} \cdot \text{Perimeter} \cdot \text{apothem}$

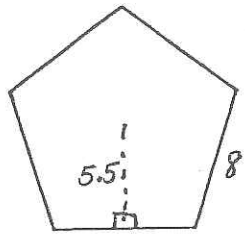


$A = \frac{1}{2} P a$
 $\frac{1}{2} (30.6)(3)$
 45.9 in^2

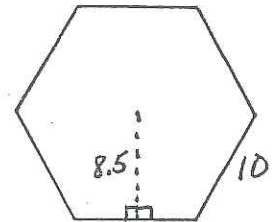


$A = \frac{1}{2} P a$
 $\frac{1}{2} (56)(7)$
 $196 \checkmark \text{ units}^2$

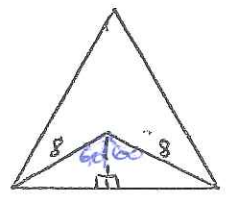
$A = s^2$
 14^2
 $196 \checkmark \text{ units}^2$



$A = \frac{1}{2} P a$
 $\frac{1}{2} (40)(5.5)$
 110 units^2



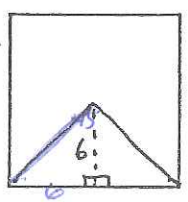
$A = \frac{1}{2} P a$
 $\frac{1}{2} (60)(8.5)$
 255 units^2



$r = 8$

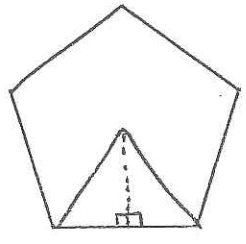
- central $\angle =$ ___
- apothem = ___
- side = ___
- Perimeter = ___
- Area = ___

$\frac{360}{n}$



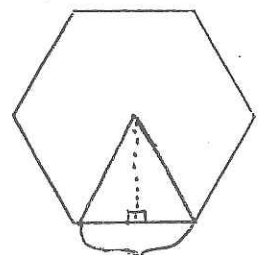
$a = 6$

- central $\angle =$ ___
- side = ___
- radius = ___
- Perimeter = ___
- Area = ___



Perimeter = 60

- central $\angle =$ ___
- side = ___
- apothem = ___
- Area = ___



side = 14

- central $\angle =$ ___
- Perimeter = ___
- apothem = ___
- Area = ___

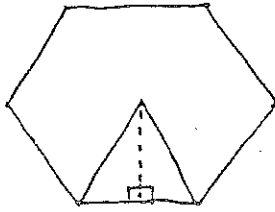
$C = \frac{360}{n}$

Regular Polygon 9-2

Use the given measurement to find the other measures in each regular polygon below.

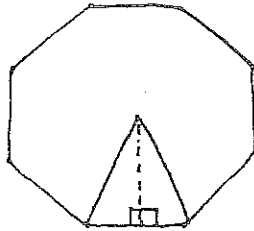
1. Regular hexagon

central angle = _____
apothem = _____
radius = 12
side = _____
perimeter = _____
Area = _____



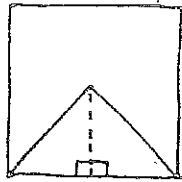
2. Regular Octagon

central angle = _____
apothem = 10
radius = _____
side = _____
perimeter = _____
Area = _____



3. Square

central angle = _____
apothem = _____
radius = _____
side = 8
perimeter = _____
Area = _____



4. Regular triangle

central angle = _____
apothem = _____
radius = 16
side = _____
perimeter = _____
Area = _____

