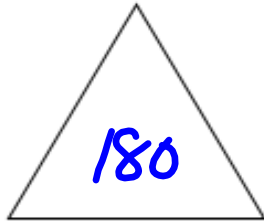


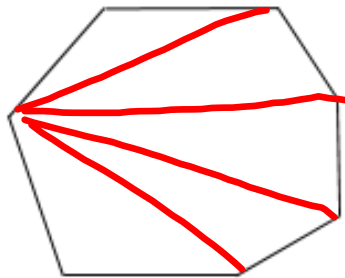
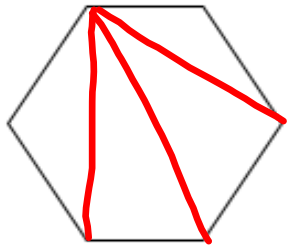
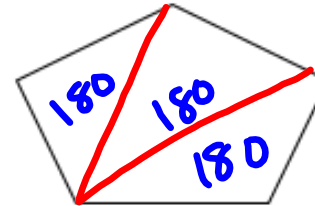
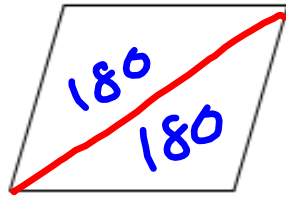
## Chapter 6 – Polygons and Quadrilaterals

### Section 6-1: The Polygon Angle-Sum Theorems

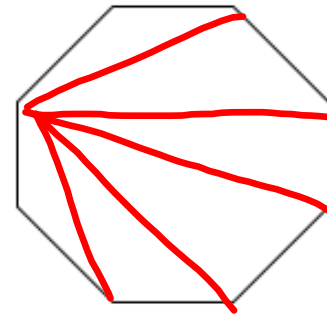
1. Draw all the diagonals from one vertex of each polygon.



No Diagonals



heptagon



## Lesson 6-1

2. Use the figures above to fill in the table below.

Polygon	Number of Sides	Number of Triangles formed with diagonals at one vertex	Total Interior Degrees in Polygon
Quadrilateral	4	2	360
Pentagon	5	3	540
Hexagon	6	4	720
Heptagon	7	5	900
Octagon	8	6	1080
n	n	n-2	180(n-2)

$$\# \text{ of } \triangle \times 180$$

$$360 \leftarrow 2 \times 180$$

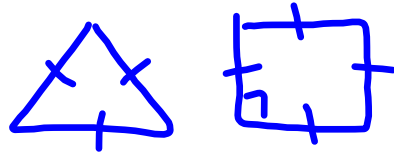
$$540 \leftarrow 3 \times 180$$

**Theorem:** The sum of the measures of the interior angles of an  $n$ -gon is

$$180(n-2)$$

## Lesson 6-1

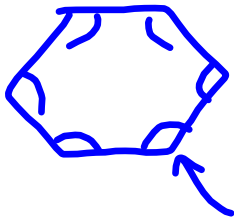
Define Regular Polygon:



All angles AND All sides are congruent

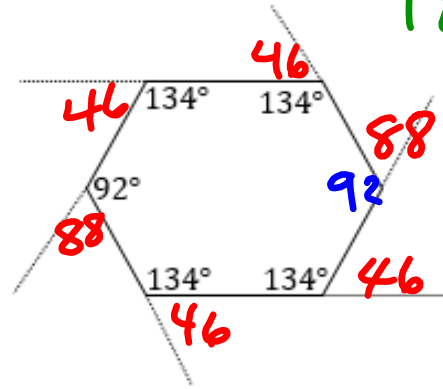
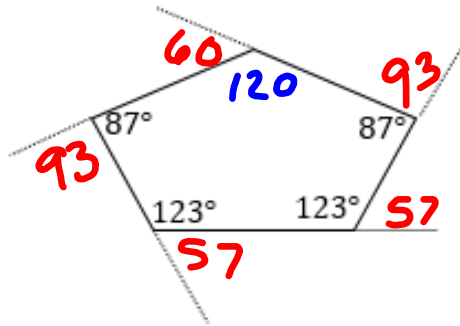
**Theorem:** The measure of each interior angle of a regular  $n$ -gon is

$$\frac{180(n-2)}{n}$$



$$180(4) = \frac{720}{6}$$

3. Find the measure of each exterior angle below.



$$180n - 180(n-2)$$

$$180n - 180n + 360$$

$$360$$

4. What do you notice about the sum of the exterior angles of a polygon? Will this always be the sum? Explain.  $= 360$

**Theorem:** The sum of the measures of the exterior angles of a polygon, one at each vertex, is  $360$

## Lesson 6-1

### **On Your Own:**

Do Problems 1-4 on PearsonRealize and the Got Its in your Student Companion.

Do the Lesson Quiz 6-1 on PearsonRealize.

**Optional:** Answers will be posted on-line

Do Page 421 #1-10