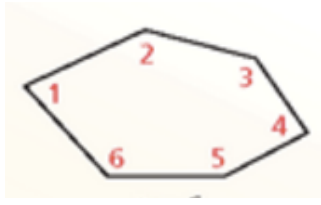
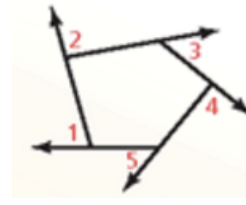


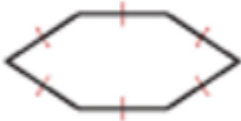

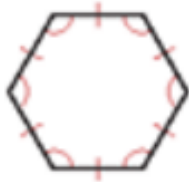
## 8.1 Angles of Polygons Notes and Practice Problems

### Polygon Interior Angles Theorem



### Polygon Exterior Angles Theorem



<u>Equilateral Polygon</u>	<u>Equiangular Polygon</u>	<u>Regular Polygon</u>
		

### Example 1: Finding the Sum of Angle Measures in a Polygon

Find the sum of the measures of the interior angles of the figure.



### YOU TRY:

1. The coin shown is in the shape of an 11-gon. Find the sum of the measures of the interior angles.



**Example 2: Finding the Number of Sides of a Polygon**

The sum of the measures of the interior angles of a convex polygon is  $900^\circ$ . Classify the polygon by the number of sides.

**Example 3: Finding an Unknown Interior Angle Measure**

Find the value of  $x$  in the diagram.



**YOU TRY:**

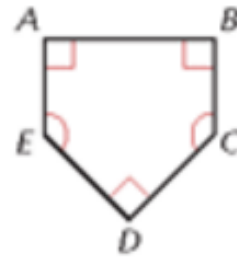
2. The sum of the measures of the interior angles of a convex polygon is  $1440^\circ$ . Classify the polygon by the number of sides.

3. The measures of the interior angles of a quadrilateral are  $x^\circ$ ,  $3x^\circ$ ,  $5x^\circ$ , and  $7x^\circ$ . Find the measures of all the interior angles.

**Example 4: Finding Angle Measures in Polygons**

A home plate for a baseball field is shown.

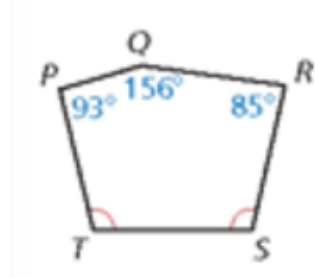
A. Is the polygon regular? Explain your reasoning.



B. Find the measures of  $\angle C$  and  $\angle E$ .

**YOU TRY:**

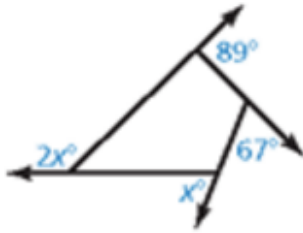
4. Find  $m\angle S$  and  $m\angle T$  in the diagram.



5. Sketch a pentagon that is equilateral but *not* equiangular.

**Example 5: Finding an Unknown Exterior Angle Measure**

Find the value of  $x$  in the diagram.



**Example 6: Finding Angle Measures in Regular Polygons**

The trampoline shown is shaped like a regular dodecagon.

**A.** Find the measure of each interior angle.



**B.** Find the measure of each exterior angle.

**YOU TRY:**

**6.** A convex hexagon has exterior angles with the measures  $34^\circ$ ,  $49^\circ$ ,  $58^\circ$ ,  $67^\circ$ , and  $75^\circ$ . What is the measure of an exterior angle at the sixth vertex?

**7.** An interior angle and an adjacent exterior angle of a polygon form a linear pair. How can you use this fact as another method to find the measure of each exterior angle in Example 6?