

Bellwork

08/30/2011

List a pair of angles for the following type.

1. Supplementary angles

$$\angle 5 + \angle 6$$

$$\angle 1 + \angle 2$$

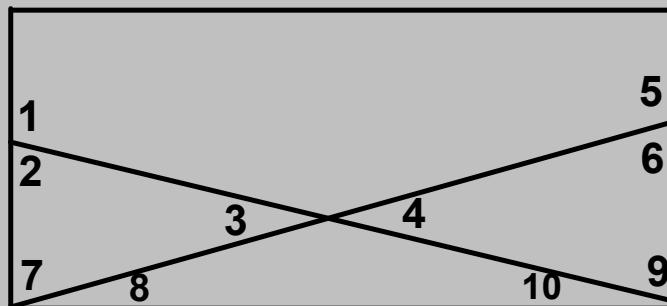
2. Vertical Angles

$$\angle 3 + \angle 4$$

3. Complementary angles

$$\angle 7 + \angle 8$$

$$\angle 9 + \angle 10$$



Geometry

1.6 Classify Polygons

Standard(s): 3,8

Vocabulary:



1. **Polygon:** A closed plane figure formed by three or more sides, where no two sides with a common endpoint are collinear.

KEY CONCEPT *For Your Notebook*

Identifying Polygons

In geometry, a figure that lies in a plane is called a *plane figure*. A **polygon** is a closed plane figure with the following properties.

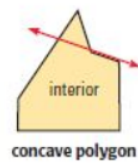
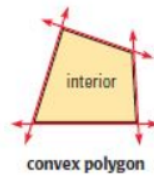
1. It is formed by three or more line segments called **sides**.
2. Each side intersects exactly two sides, one at each endpoint, so that no two sides with a common endpoint are collinear.

Each endpoint of a side is a **vertex** of the polygon. The plural of vertex is *vertices*. A polygon can be named by listing the vertices in consecutive order. For example, *ABCDE* and *CDEAB* are both correct names for the polygon at the right.

2. **Vertex:** Each endpoint of a side.

3. **Convex:**

A polygon is convex if **no line that contains a side of the polygon contains a point in the interior of the polygon.**



4. **Concave:**

A polygon that is not convex is called **nonconvex or concave.**

5. **n-gon:** The name of a polygon where *n* is the number of its sides.

27 27-gon 30-gon

6. **Equilateral:** All sides of the polygon are congruent.

7. **Equiangular:** All interior angles of the polygon are congruent.

8. **Regular:** A convex polygon that is both equilateral and equiangular.

The term *n*-gon, where *n* is the number of a polygon's sides, can also be used to name a polygon. For example, a polygon with 14 sides is a 14-gon.

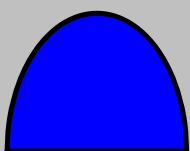
In an **equilateral** polygon, all sides are congruent. In an **equiangular** polygon, all angles in the interior of the polygon are congruent. A **regular** polygon is a convex polygon that is both equilateral and equiangular.

regular pentagon

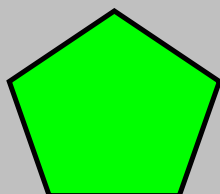
Number of sides	Type of polygon	Number of sides	Type of polygon
3	Triangle	8	Octagon
4	Quadrilateral	9	Nonagon
5	Pentagon	10	Decagon
6	Hexagon	12	Dodecagon
7	Heptagon	<i>n</i>	<i>n</i> -gon

Identify Polygons

Tell whether each figure is a polygon. If it is, tell whether it is convex or concave.



No!



Pentagon
Convex



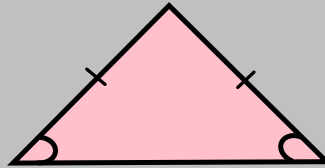
Decagon
Concave



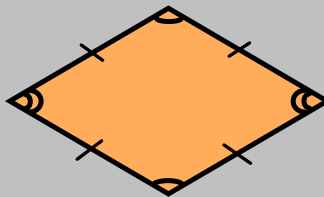
No!

Classify Polygons

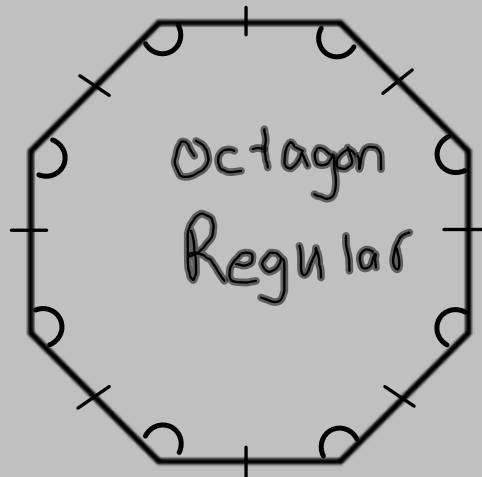
Classify the polygon by the number of sides. Tell whether the polygon is equilateral, equiangular, or regular. Explain.



Not enough
info
triangle



Quad.
equilateral

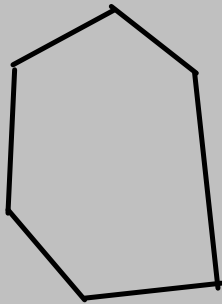


Octagon
Regular

Draw a Figure

Draw a figure that fits the description.

A hexagon that is not regular

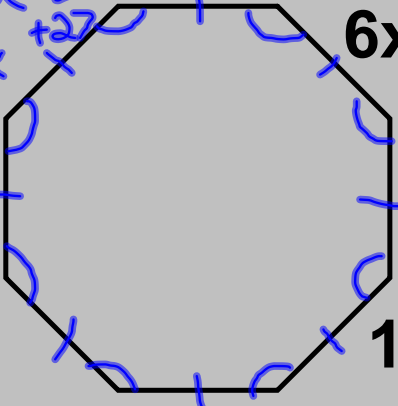


A quadrilateral that is equilateral not equiangular

Find a Missing Value

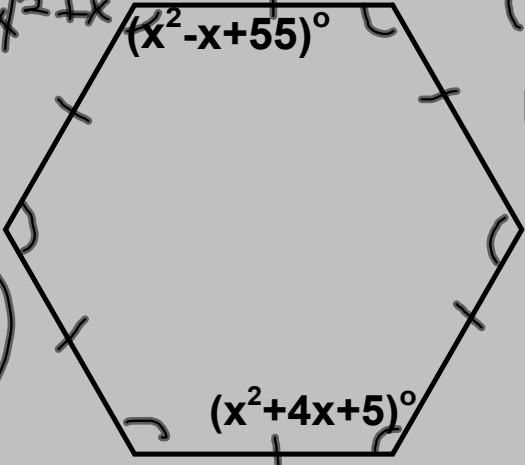
Each figure is a regular polygon. Expressions are given for two side lengths. Find the value of x . Then find a side length of the polygon.

$6x+17 = 10x-27$
 $-6x \quad +27 \quad -6x \quad +27$
 $4x = 44$
 $x = 11$



$6(11)+17$
 $66+17$
 83

$x^2 - x + 55 = x^2 + 4x + 5$
 $-x^2 \quad +x \quad -x^2 \quad +x$
 $5x = 50$
 $x = 10$



$(10)^2 - 10 + 55$
 $100 - 10 + 55$
 $90 + 55$
 145°

Homework Assignment

Worksheet 1.6B

