

Classifying Polygons Guide Notes

A **polygon** is a closed figure made of line segments. Polygons have at least three angles and at least three line segments.

A polygon is named by the number of sides it has.

Number of Sides	Name of Polygon
3	Triangle
4	Quadrilateral
5	Pentagon
6	Hexagon
7	Heptagon

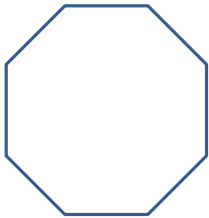
Number of Sides	Name of Polygon
8	Octagon
9	Nonagon
10	Decagon
12	Dodecagon
n	n -gon

A polygon is **convex** if no line that contains a side of the polygon contains a point in the interior of the polygon. Every interior angle in a convex polygon is less than 180° .

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

Sample Problem 1: Tell whether the figure is a polygon and whether it is convex or concave.

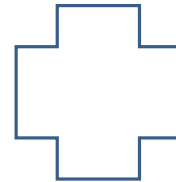
a.



b.



c.



Sample Problem 2: Draw a figure that fits the description.

a. Convex octagon

b. Concave heptagon

c. Convex decagon

In an **equilateral polygon**, all sides are congruent.

In an **equiangular polygon**, all angles in the interior of the polygon are congruent.

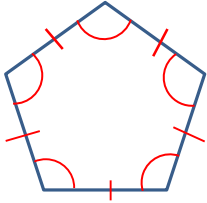
A **regular polygon** is a convex polygon that is both equilateral and equiangular.

Irregular polygon is one that does not have all sides equal and all angles equal.

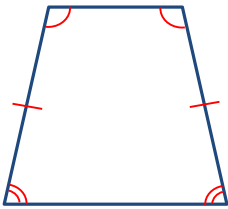
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Sample Problem 3: Classify the polygon by the number of sides. Tell whether the polygon is equilateral, equiangular, or regular.

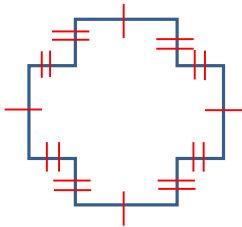
a.



b.



c.



Sample Problem 4: Draw a figure that fits the description.

- a. A triangle that is not regular. b. A pentagon that is not regular. c. A concave quadrilateral.

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Sample Problem 5: Each figure is a regular polygon. Expressions are given for two side lengths. Find the value of x .

