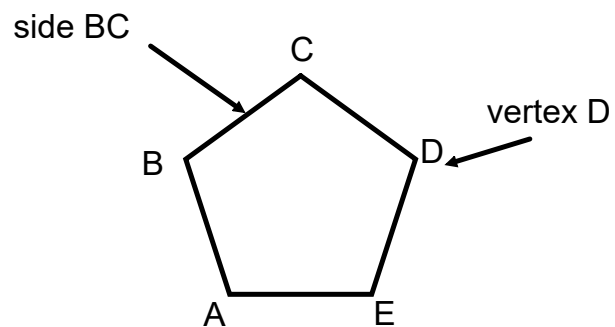


Section 1.6 Two-Dimensional Figures

A **Polygon** is a closed figure formed by a finite number of coplanar segments called **sides** such that:

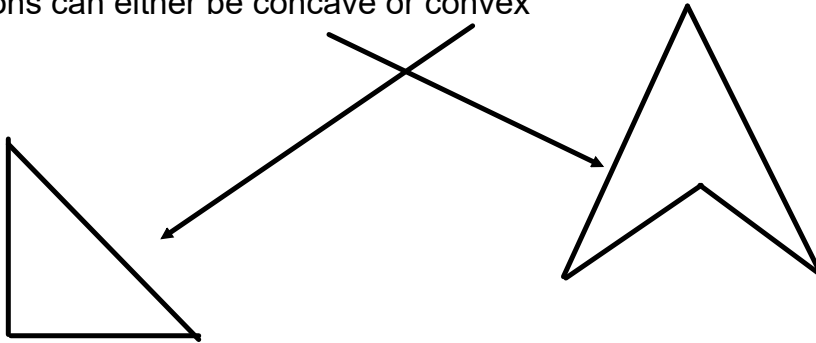
- the sides that have a common endpoint are non-collinear
- each side intersects exactly two other sides, but only at their endpoints.



A polygon is named by the letters of its vertices, written in order of consecutive vertices.

Polygons	Not Polygons

Polygons can either be concave or convex



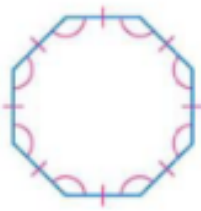
Polygons are classified by its number of sides.

Number of Sides	Polygon
3	triangle
4	quadrilateral
5	pentagon
6	hexagon
7	heptagon
8	octagon
9	nonagon
10	decagon
11	hendecagon
12	dodecagon
n	n -gon

- An equilateral polygon is a polygon in which all sides are congruent.
 - An equiangular polygon is a polygon in which all angles are congruent.
- A polygon that is both equilateral and equiangular is called a regular polygon.

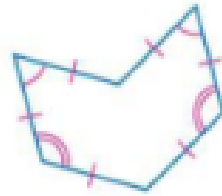
Example: Name each polygon by its number of sides. Then classify it as convex or concave and regular or irregular.

a.



Oct
vex
reg

b.



hex
concave
irreg

c.



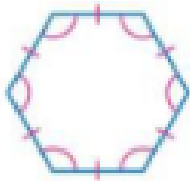
quad
vex
irreg

d.



deca
cave
reg

e.

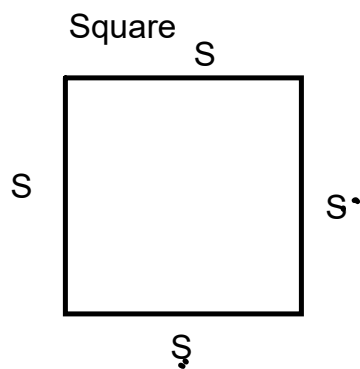


The **perimeter** of an object is the sum of the lengths of its sides.

The **area** of a object is the number of square units it encloses.

The **circumference** of a circle is the distance around the circle.

Formulas for Perimeter, Circuference and Area

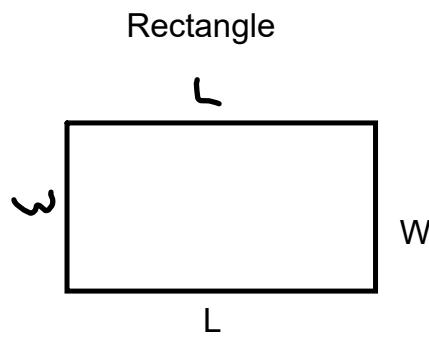


$$P = s + s + s + s$$

or

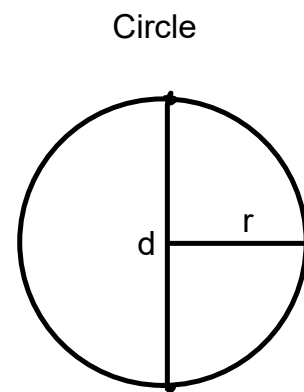
$$P = 4s$$

$$A = s^2$$



$$P = 2L + 2W$$

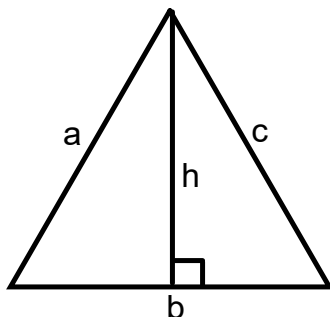
$$A = bxh$$



$$C = d\pi$$

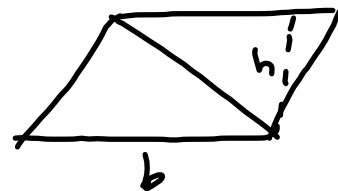
$$A = r^2\pi$$

Triangle



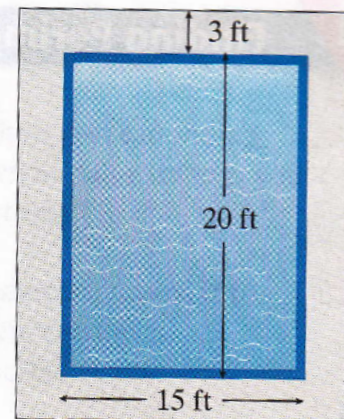
$$\text{Perimeter: } a + b + c$$

$$\text{Area: } \frac{bxh}{2}$$



1 EXAMPLE **Real-World Connection**

Fencing Your pool is 15 ft wide and 20 ft long with a 3-ft wide deck surrounding it. You want to build a fence around the deck. How much fencing will you need?



- 1 Suppose you want to frame a picture that is 6 in. by 7 in. with a $\frac{1}{2}$ -in. wide frame.
- Find the perimeter of the picture.
 - Find the perimeter of the outside edge of the frame.