POLYGONS

What is a polygon?
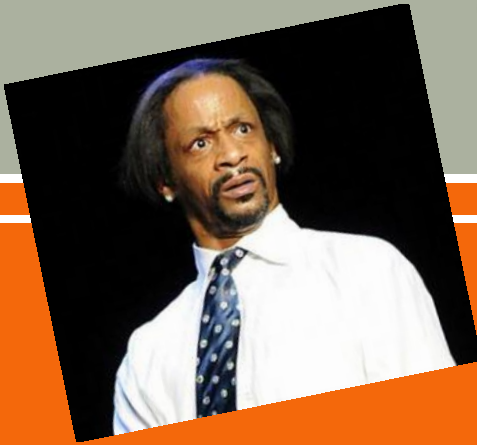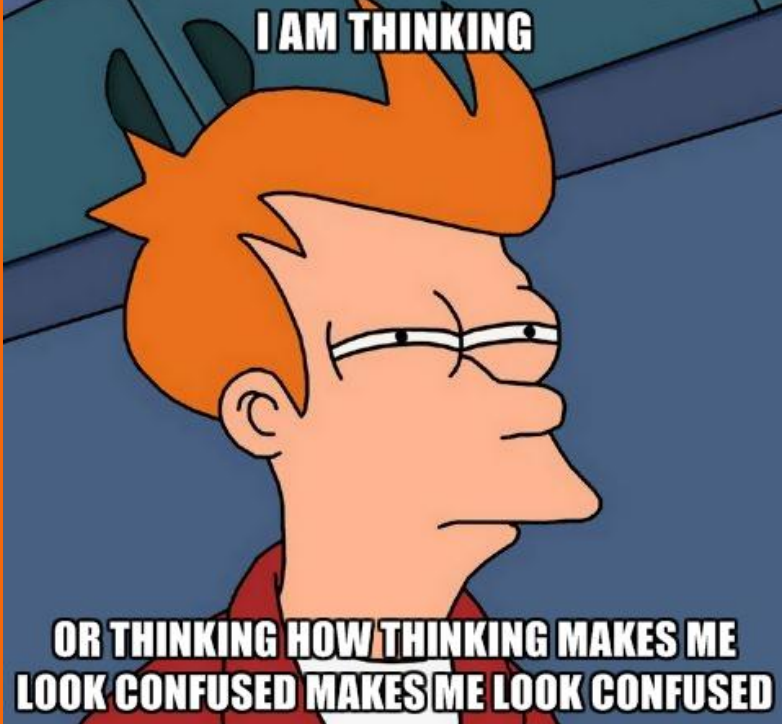
Polygons

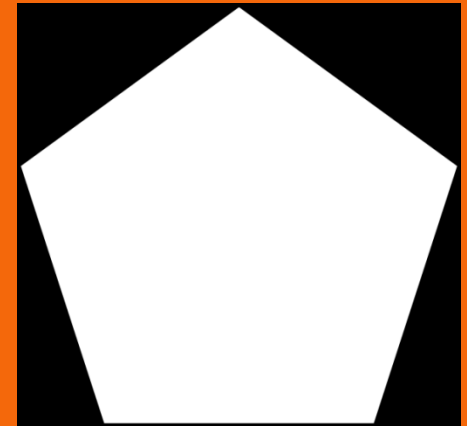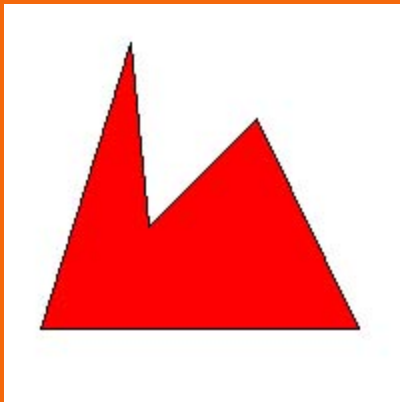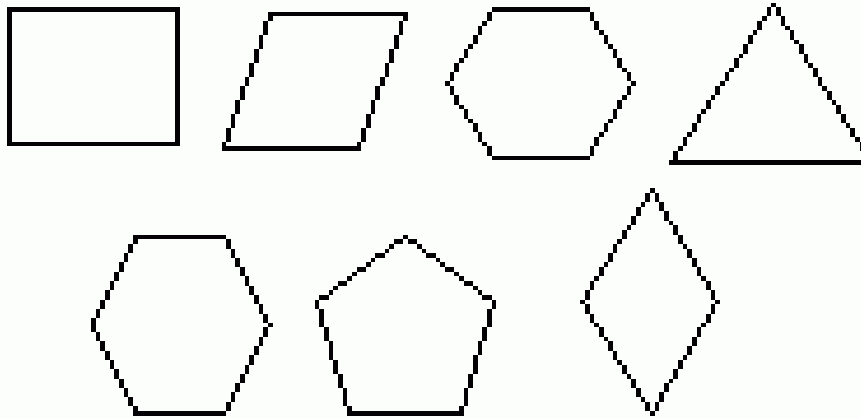* A polygon is a closed plane figure with 3 or more sides.
* They only have straight lines, no curves.
* The lines cannot cross each other.
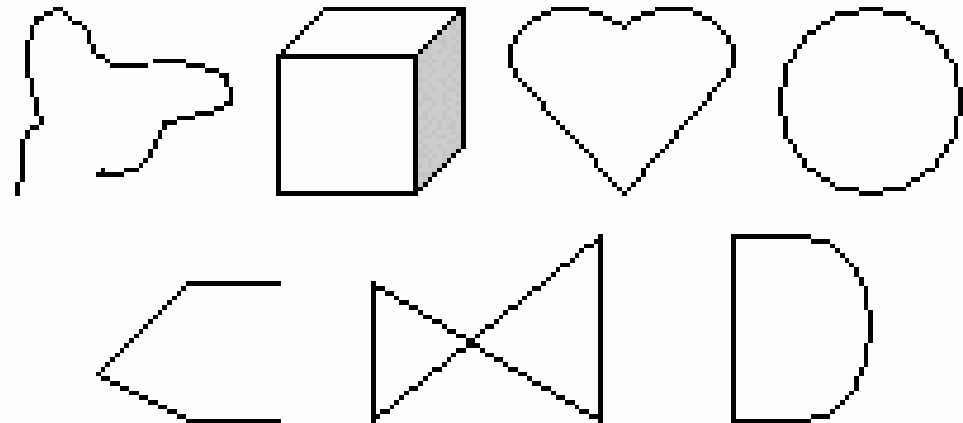* Polygons are classified by the number of sides they have.

Examples

Polygons
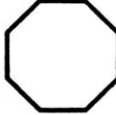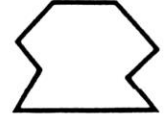
Not Polygons

# of Sides	Name
3	Triangle
4	Quadrilateral
5	Pentagon
6	Hexagon
7	Heptagon
8	Octagon
9	Nonagon
10	Decagon
11	Hendecagon
12	Dodecagon

Regular Polygons — all sides are equal in length and typically symmetrical.

Regular and Irregular Polygons

Name	Regular	Irregular
Triangle		
Quadrilateral		
Pentagon		
Hexagon		
Octagon		

Classifying Polygons by # of Sides

3 sided Polygon =   Triangle

Hint: Think "Tri"cycle, "tri"pod (Tri means 3)
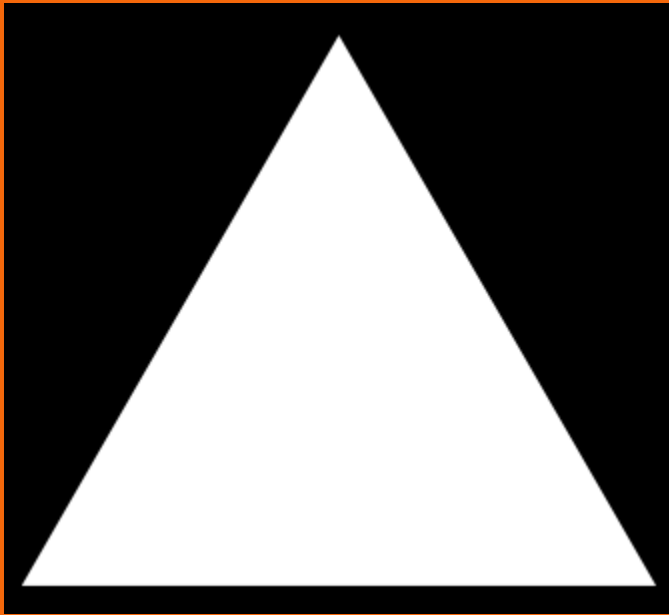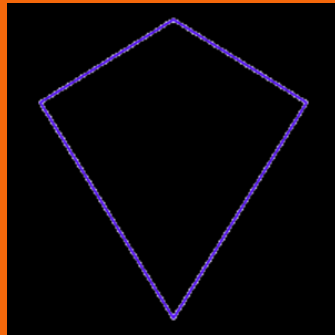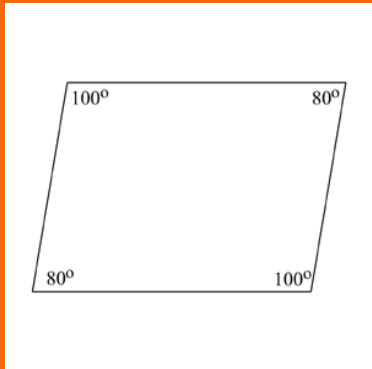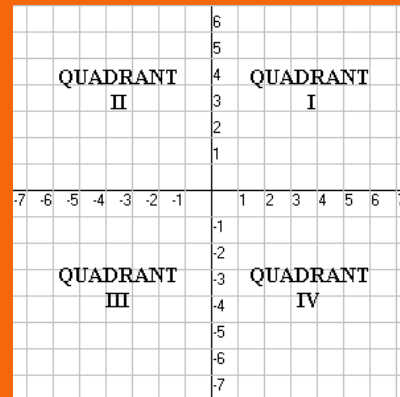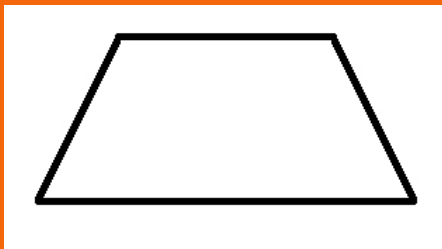
Classifying Polygons by # of Sides
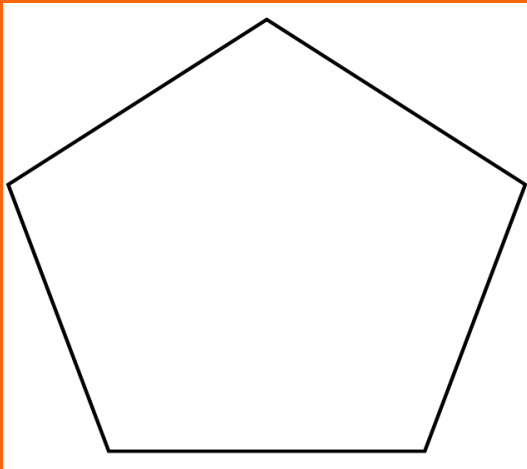
4 sided Polygon =   Quadrilateral

Hint: Think "Quad"rant, "Quad"ruple, "Quad" (AKA 4-Wheeler)

Classifying Polygons by # of Sides
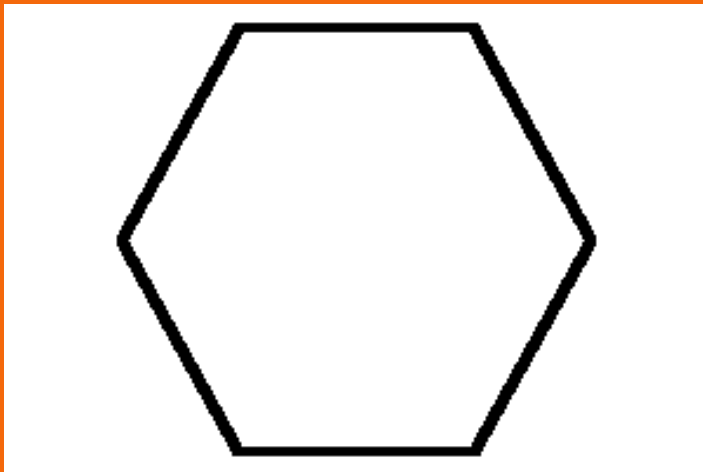
5 sided Polygon = Pentagon

Hint: Think the government building "The Pentagon"

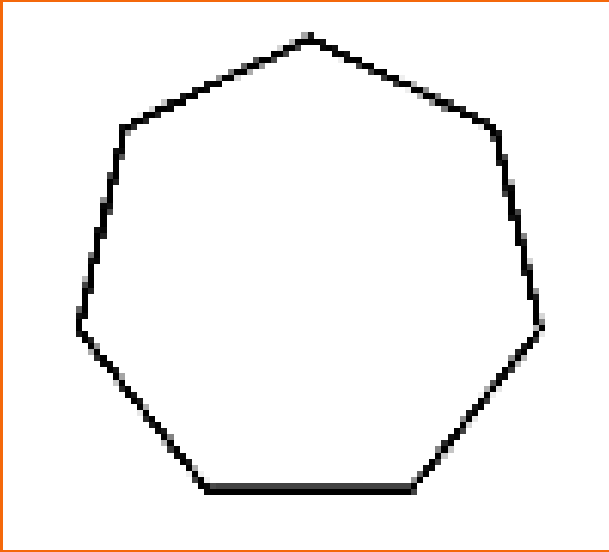# Classifying Polygons by # of Sides

6 sided Polygon = Hexagon

Hint: Both "Hexagon" and "Six" have an 'x' in them
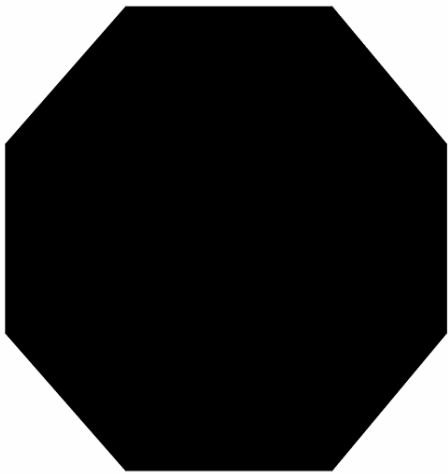
Classifying Polygons by # of Sides
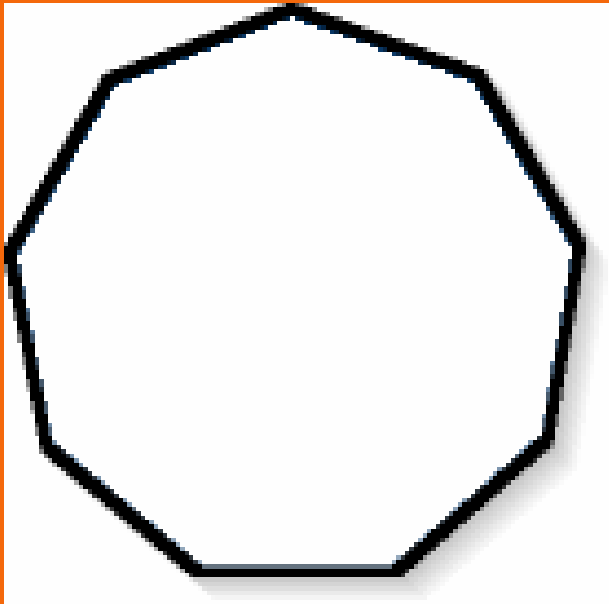
7 sided Polygon =   Heptagon

Classifying Polygons by # of Sides

8 sided Polygon =   Octagon

Classifying Polygons by # of Sides
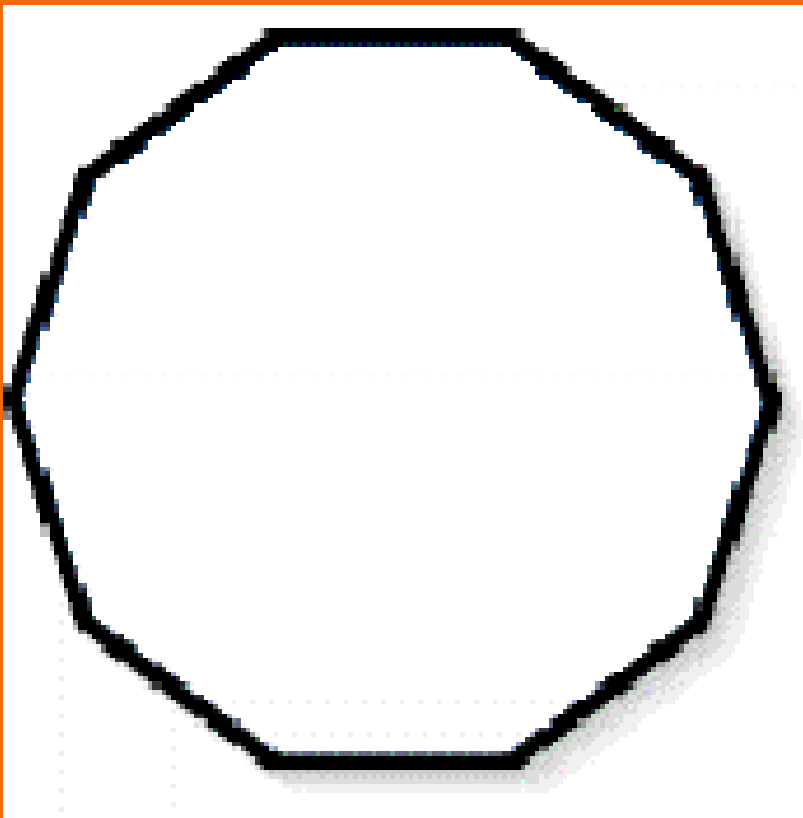
9 sided Polygon = Nonagon

Hint: "Non" is similar to "Nine"

Classifying Polygons by # of Sides
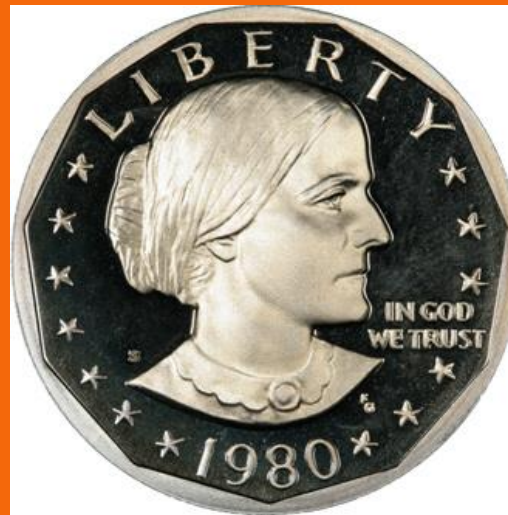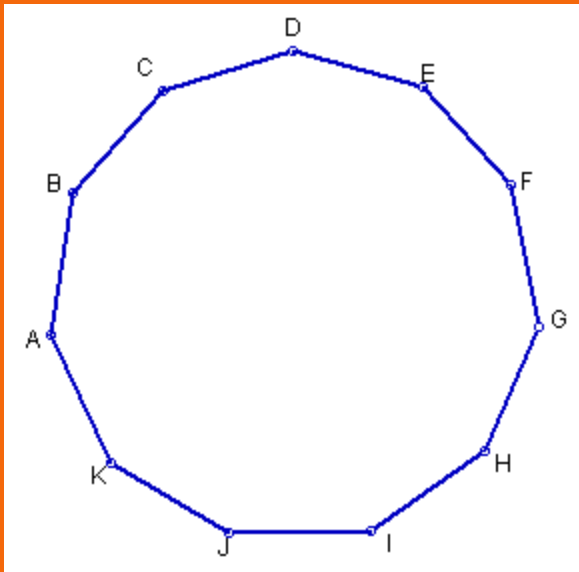
10 sided Polygon = Decagon
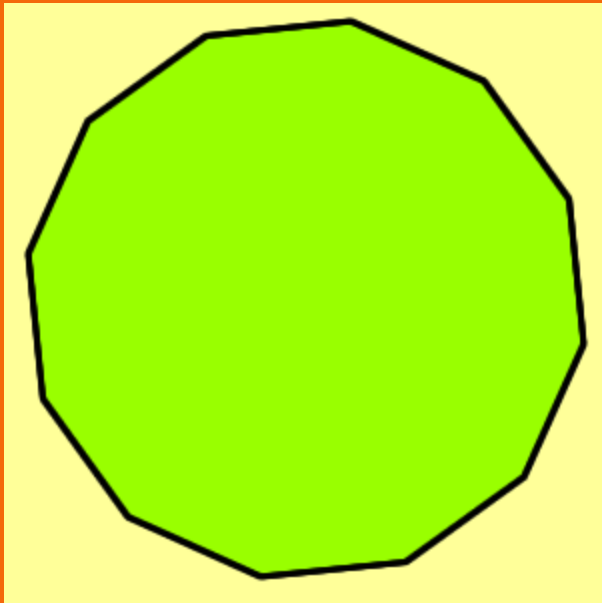
Hint: Think "Dec"ade (10 years

Classifying Polygons by # of Sides

11 sided Polygon =   Hendecagon

Classifying Polygons by # of Sides

12 sided Polygon =   Dodecagon

Classifying Polygons by # of Sides

Q: What do we call a polygon with more than 12 sides?

A: An 'n'-gon where 'n' is the number of sides

Ex: a 20 sided polygon is a 20-gon

Two Types of Polygons

<u>Convex</u> – all vertices point outward

<u>Concave</u> – at least one vertex points inward towards the center of the polygon (The side looks like it "caved" in)

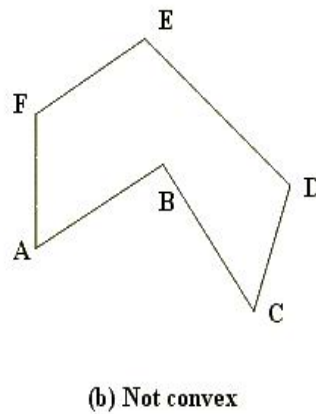E
F
D
A
C
B

(a) Convex

E
F
B
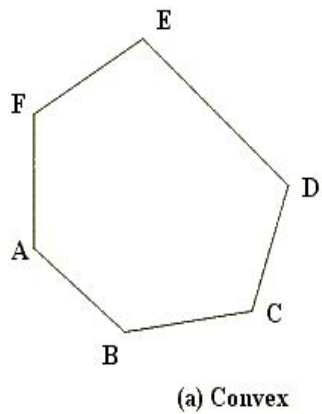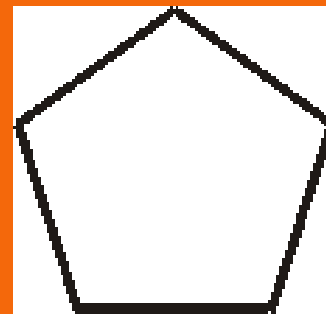D
A
C

(b) Not convex

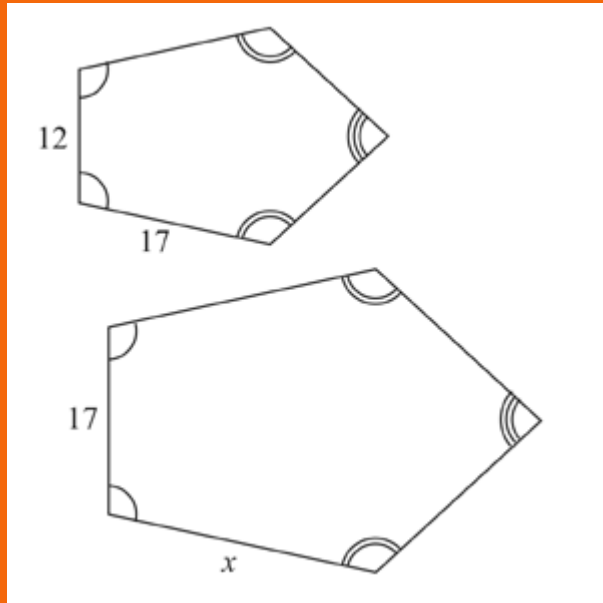Figure 1: Closed polygons

Convex polygon   Concave polygon

Similar and Congruent
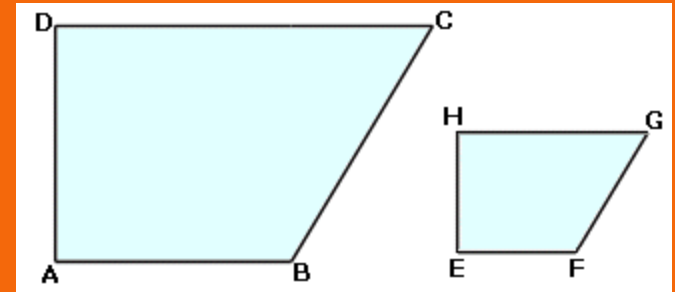
Similar = same shape & position, but size is different.

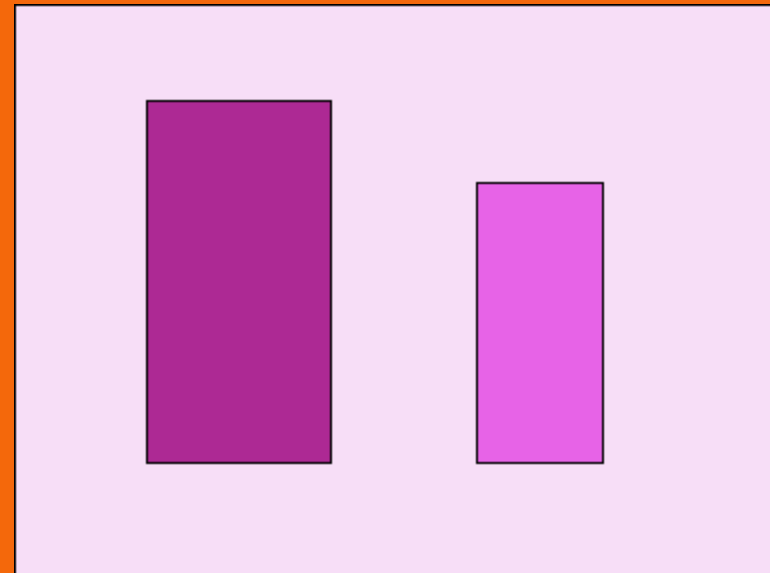Congruent = same shape in every way, equal to each other.

Similar Polygons

Similar Trapezoids
→

^ Similar Pentagons ^

Similar Rectangles
→

Congruency