Geometry CC – Mr. Valentino   Name: _____
Unit 4 Lesson 1: Symmetry   Date: _____ Period: _____

AIM: Identify and differentiate the three different types of symmetry: *line, point, and rotational*.

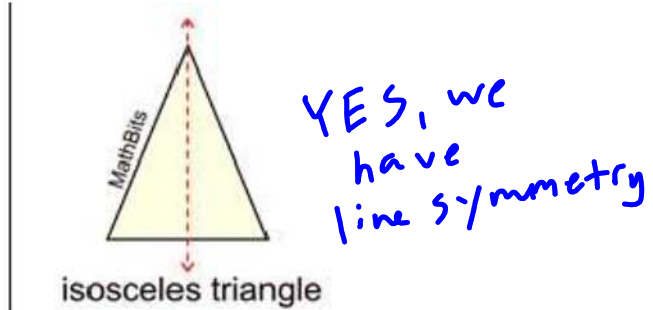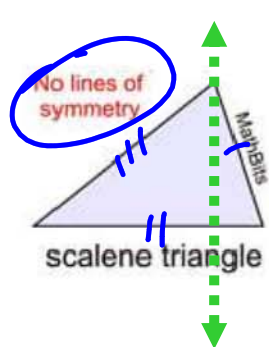**Do Now:** You will be given a shape with a pattern on it. Find a classmate that is your match.

It's time to discuss an important part of geometry…symmetry!

Line Symmetry

A line of symmetry is a line that divides a figure into **two** mirror images. The figure is mapped onto **itself** by a **reflection** in this line.
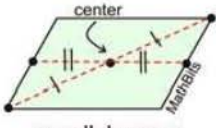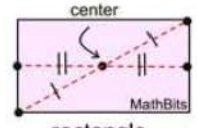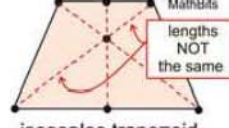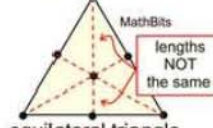
a)   b)   c)

a)   b)   c)
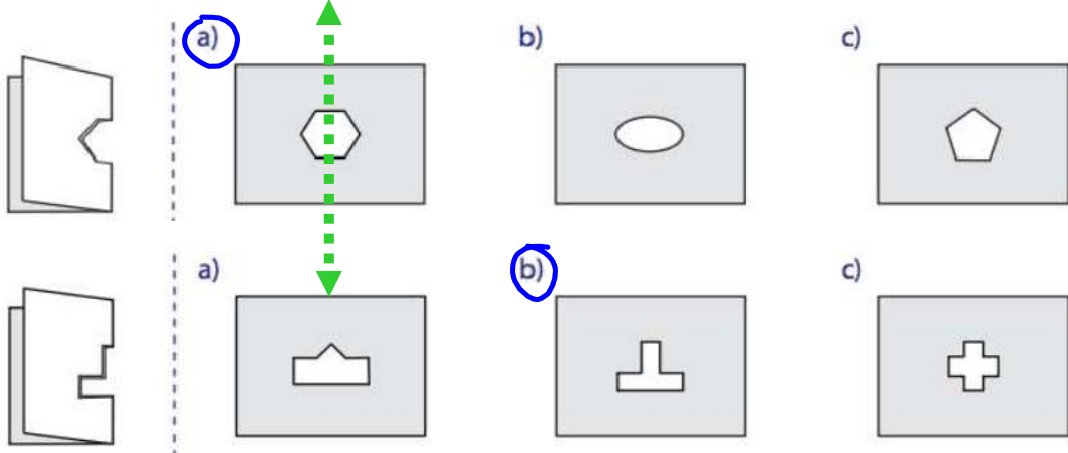
Let's discuss some lines of symmetry on geometric figures:

No lines of symmetry

scalene triangle

isosceles triangle

YES, we have line symmetry

1

Point Symmetry

A figure has **point symmetry** ~~same~~ when it looks the same __upside-down__ as it does right-side-up (180 degree rotation).

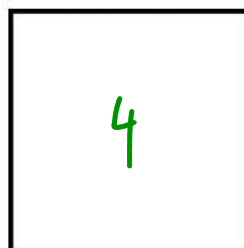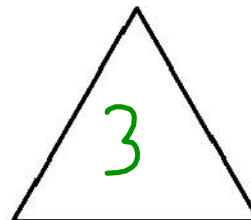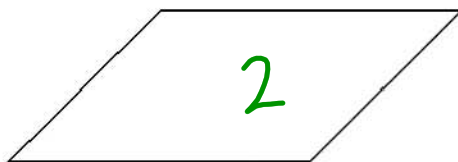| Point Symmetry	Point Symmetry	No Point Symmetry	No Point Symmetry
center	center	lengths NOT the same	lengths NOT the same
parallelogram	rectangle	isosceles trapezoid	equilateral triangle

Rotational Symmetry

A figure has **rotational symmetry** if when rotating (turning or spinning) the figure around a center point by less than 360°, the figure appears __the same or UNCHANGED__.

The number of positions in which the rotated object appears unchanged is called the <u>order</u> of the symmetry.

Let's examine the point and rotational symmetry of some geometric figures:

2

3

$$\frac{360}{3} = 120$$

4

point symmetry $\longrightarrow$ must have
rotational
symmetry

rotational symmetry $\rightarrow$ not necessarily have
point symmetry