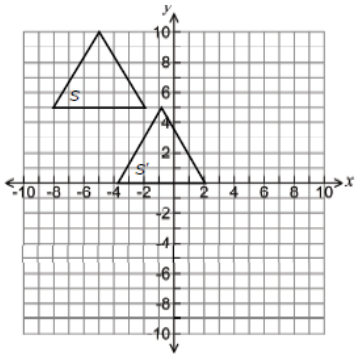
NOTES: LESSON 10.1 – IDENTIFYING TRANSFORMATIONS & CONGRUENCY Name: _____

Learning Goal: I can identify a **transformation** as a ***translation***, ***reflection***, ***rotation***, or ***dilation*** and determine **congruency** of the new and old image. **Meta de Aprendizaje**: *Puedo identificar una **transformación** como una **traducción**, **reflexión**, **rotación** o **dilatación** y determinar la **congruencia** de la imagen nueva y la vieja.*	**Language Goal:** I can discuss with a partner how to determine if a **transformation** is a ***translation***, ***reflection***, ***rotation***, or ***dilation*** and then explain our answer. **Lenguaje Objetivo**: *Puedo discutir con un compañero cómo determinar si una **transformación** es una **traducción**, **reflexión**, **rotación** o **dilatación** y luego explicar nuestra respuesta.*

4 TYPES OF TRANSFORMATIONS

TRANSLATION



Are translations congruent? _____

- The OLD and the NEW shape have ***congruent*** (equal) angles.
- The OLD and the NEW shape have ***congruent*** (equal) sides.

Rules for Translations:

- The ONLY rule that **ADDS** or **SUBTRACTS**!

Moving ____ units to the **RIGHT**..... $(x, y) \rightarrow (x + 3, y)$

Moving ____ units to the **LEFT**..... $(x, y) \rightarrow (x - 3, y)$

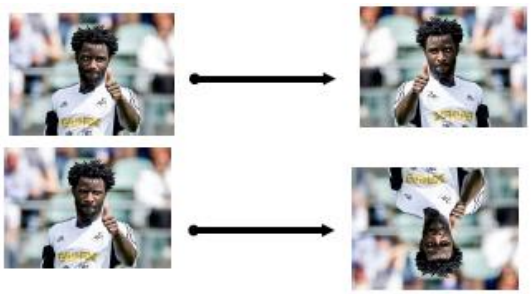
Moving ____ units **UP**..... $(x, y) \rightarrow (x, y + 3)$

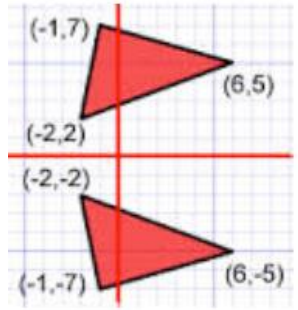
Moving ____ units **DOWN**..... $(x, y) \rightarrow (x, y - 3)$

Moving 5 units RIGHT and 4 units DOWN:

$$(x, y) \rightarrow (x + 5, y - 4)$$

REFLECTION





Are reflections congruent? _____

- The OLD and the NEW shape have ***congruent*** (equal) angles.
- The OLD and the NEW shape have ***congruent*** (equal) sides.

Rules for Reflections:

- There are only **TWO** rules for **reflections**!

To reflect across the x-axis, change the sign of the y-coordinate

Across the X-Axis

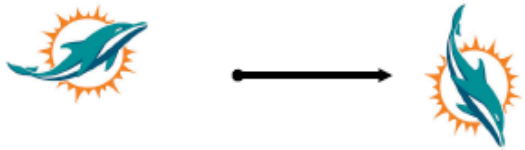
$$(x, \boldsymbol{y}) \rightarrow (x, \quad)$$

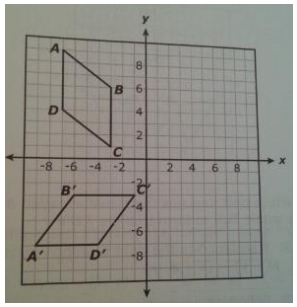
To reflect across the y-axis, change the sign of the x-coordinate

Across the Y-Axis

$$(\boldsymbol{x}, y) \rightarrow (\quad, y)$$

ROTATION





Are rotations congruent? _____

- The OLD and the NEW shape have ***congruent*** (equal) angles.
- The OLD and the NEW shape have ***congruent*** (equal) sides.

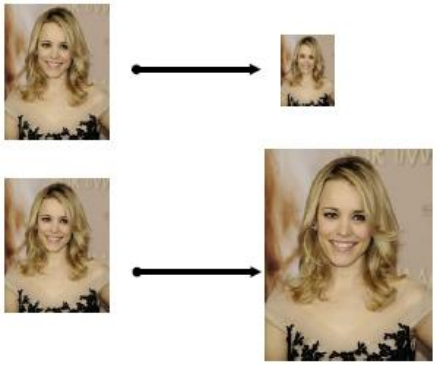
CLOCKWISE	COUNTER-CLOCKWISE

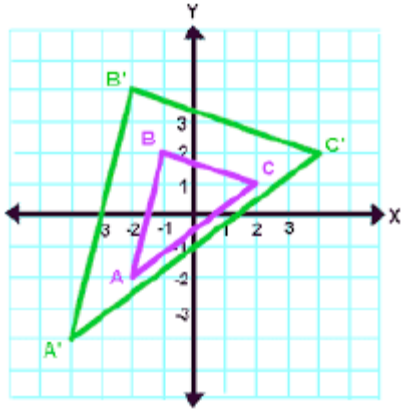
Rules for Rotations:

- There are only **FOUR** rules for **rotations**!

90° clockwise	90° counter clockwise	180°	360°
Swap the x & y coordinates, change the sign of the NEW y-coordinate	Swap the x & y coordinates, then change the sign of the NEW x-coordinate	change the sign of the x & y coordinates	Nothing changes!
$(x, y) \rightarrow (y, -x)$	$(x, y) \rightarrow (-y, x)$	$(x, y) \rightarrow (-x, -y)$	$(x, y) \rightarrow (x, y)$

DILATION





Are dilations congruent? _____

- The OLD and the NEW shape have ***congruent*** (equal) angles.
- The OLD and the NEW shape **DO NOT** have ***congruent*** (equal) sides.

Rules for Dilations:

- The ONLY rule that **MULTIPLIES**!
- **Dilations** that are _____ multiply by a **scale factor** **greater than 1**, like

$$(x, y) \rightarrow (3x, 3y) \quad \text{or} \quad (x, y) \rightarrow \left(\frac{3}{2}x, \frac{3}{2}y\right)$$

- **Dilations** that are _____ multiply by a **scale factor** **less than 1**, like

$$(x, y) \rightarrow (0.5x, 0.5y) \quad \text{or} \quad (x, y) \rightarrow \left(\frac{1}{4}x, \frac{1}{4}y\right)$$