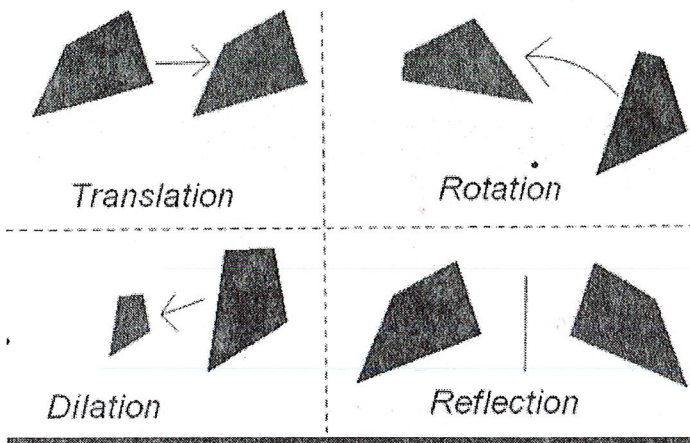


Notes: Translations

Slide

Transformation:

A transformation is the change in POSITION, SIZE, or SHAPE of a figure.



4 Types of Transformations:

- 1) Translation
- 2) Rotation
- 3) Dilation
- 4) Reflection

Translation

A transformation that moves each point of a figure the same distance and in the same direction.

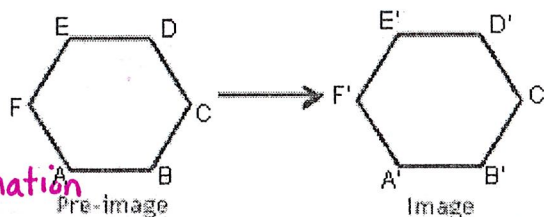
$\langle -6, 3 \rangle$
vector notation

Pre-Image = The original figure.

Image = Resulting (New) figure.

Pre-Image Points labeled just with letter, such as A.

Image Points labeled as A', which is read as A prime.



Isometry:
Congruent transformation
original = the new image

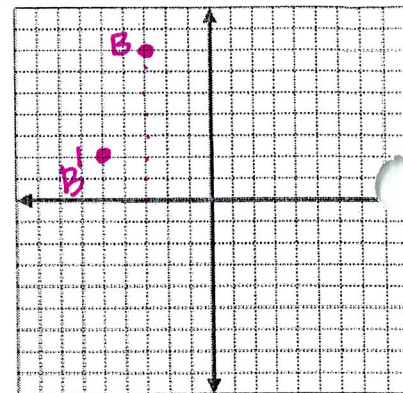
Example 1) Translate the point B(-3, 7) **left 2 units and down 5 units**.

What are the coordinates of B'?

$$B' = \underline{(-5, 2)}$$

❖ Translating a point left and right affects the X coordinate

❖ Translating a point up and down affects the Y coordinate



Vector Notation: Uses parenthesis or brackets to describe the Translation. For example, $\langle -3, 4 \rangle$ is a translation Left 3, Up 4.

Example 2) $\triangle MSU$ is graphed (to the right). Graph the image after a Translation of **left 1 unit and 7 units up**.

Arrow Notation

$$M(-8, -4) \rightarrow M'(-9, 3)$$

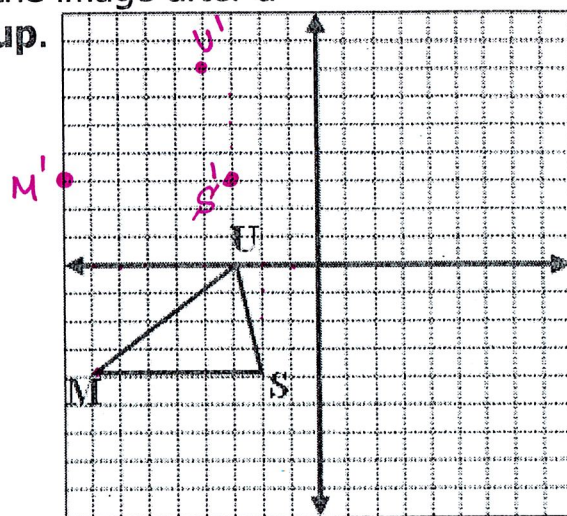
$$S(-2, -4) \rightarrow S'(-3, 3)$$

$$U(-3, 0) \rightarrow U'(-4, 7)$$

$$(x, y) \rightarrow (x-1, y+1)$$

What is this translation in vector notation?

$$\langle \underline{-1}, \underline{7} \rangle$$

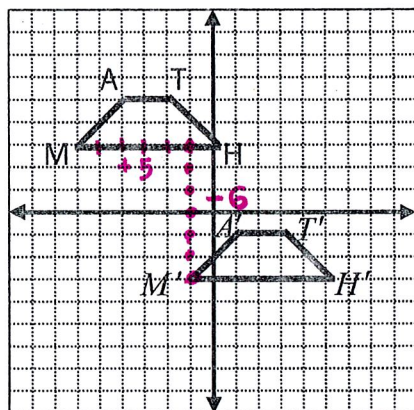


Example 3)

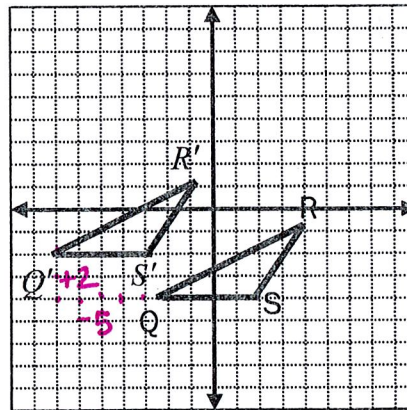
How to write a rule using arrow notation:

Always start with (x, y) and then describe how the X-value moves (by adding or subtracting) and then how the Y-value moves (by adding or subtracting).

Use arrow notation to write a rule that describes the following translations.



Right 5, down 6 $\langle 5, -6 \rangle$
 $(x, y) \rightarrow (x+5, y-6)$



left 5, up 2 $\langle -5, 2 \rangle$
 $(x, y) \rightarrow (x-5, y+2)$