

Name: _____ Date: _____ Class: _____

Unit 1: Notes #1 – Transformational Geometry -Translations

Objective: Represent Transformations in the plane using transformations as functions that take points in the plane as inputs and give other points as outputs.

Essential Question: _____

Learning Targets:

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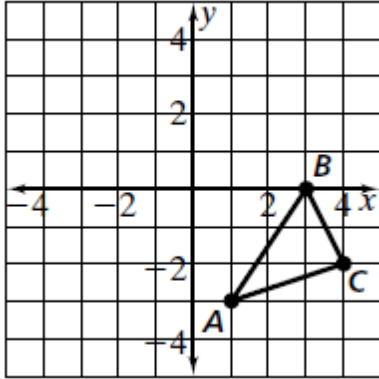
A **transformation** is a change in the _____, _____, or _____ of a figure.

A **translation** is a transformation which _____ each point of a figure the same _____ and in the same _____.

The resulting figure after a transformation is called the _____ of the original figure.

EXAMPLE 1:

$\triangle ABC$ is translated 1 unit right and 4 units up. Draw the image $\triangle A'B'C'$.



What are the coordinates of:

A (1, -3) → A' _____

B (3, 0) → B' _____

C (4, -2) → C' _____

From EXAMPLE 1, $\triangle ABC \rightarrow \triangle A'B'C'$

As a general rule this translation could be written as $(x, y) \rightarrow (x + \underline{\hspace{1cm}}, y + \underline{\hspace{1cm}})$.

EXAMPLE 2:

$\triangle JKL$ has coordinates $J(0,2)$, K

$(3,4)$, and $L(5,1)$.

a) Draw $\triangle JKL$.

b) Draw the image $\triangle J'K'L'$ after a translation of 4 units to the left and 5 units up. Label the triangle. What are the coordinates of:

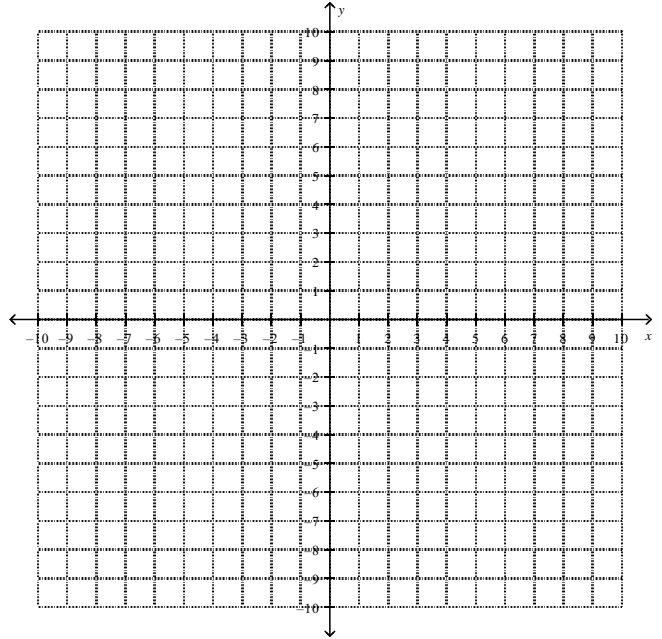
J _____ (0, 2) → J' _____

K _____ (3, 4) → K' _____

L _____ (5, 1) → L' _____

Rule: $(x, y) \rightarrow (\underline{\hspace{1cm}}, \underline{\hspace{1cm}})$

Tell me more about this figure, is it congruent or similar?

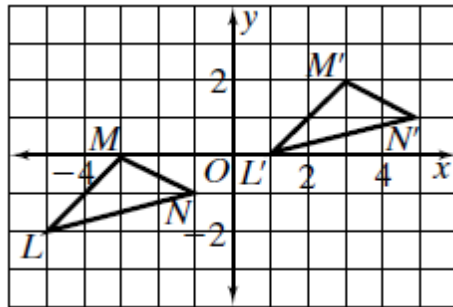


Translation Location

	Add	Subtract
x coordinate		
y coordinate		

EXAMPLE 3:

Write a general rule which describes the translation shown below. $\triangle LMN$ is the original triangle.



$(x, y) \rightarrow (\quad , \quad)$

EXAMPLE 4:

a) Graph points $T(0,3)$, $U(2, 4)$ and $V(5, -1)$ and connect the points to make a triangle.

b) Translate $\triangle TUV$ using the rule $(x, y) \rightarrow (x - 3, y - 1)$.

c) In words, describe what the rule is asking you to do.

d) Draw the image $\triangle T'U'V'$.

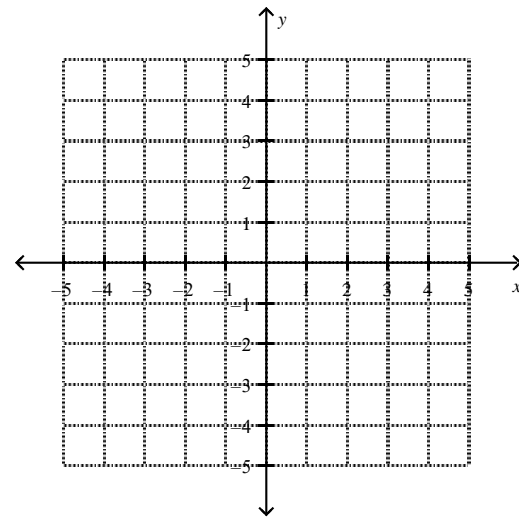
e) Identify the coordinates of $\triangle T'U'V'$.

T' _____, U' _____, V' _____

f) Using the image of $\triangle T'U'V'$ perform an additional translation using the rule

$(x, y) \rightarrow (x + 3, y - 3)$.

State the new coordinates of $\triangle T''U''V''$. Is this new image congruent or similar to the original figure?



Unit 1: Translations Practice:

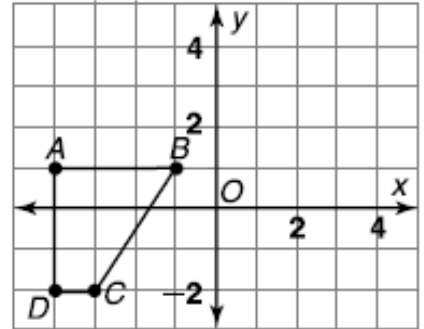
1) a) Use arrow notation to write a rule for the given translation.

b) Graph and label the image after the translation.
 c) Name the coordinates of the image.

A' _____ B' _____

C' _____ D' _____

right 5 units, up 1 unit



2) a) Use arrow notation to write a rule for the given translation.

b) Graph and label the image after the translation.
 c) Name the coordinates of the image.

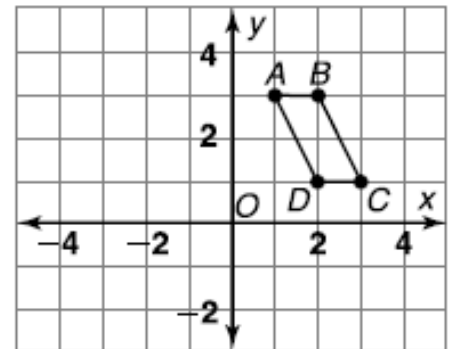
A' _____

B' _____

C' _____

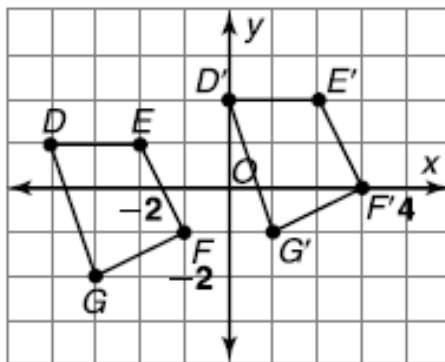
D' _____

left 3 units, down 2 units

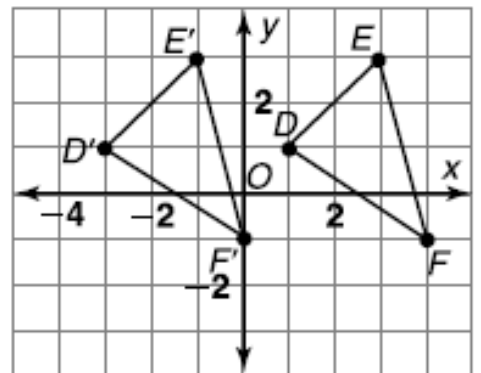


In questions 3 and 4 below, use arrow notation to write a rule that describes the translation shown on the graph.

3)



4)

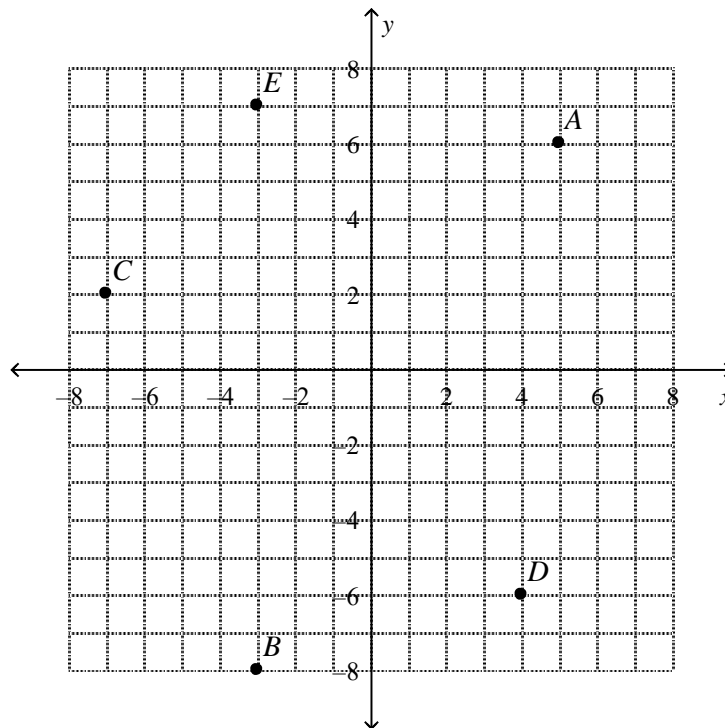


5) MULTIPLE CHOICE:

Write a description of the rule $(x, y) \rightarrow (x - 7, y + 4)$.

- (a) translation 7 units to the right and 4 units up
- (b) translation 7 units to the left and 4 units down
- (c) translation 7 units to the right and 4 units down
- (d) translation 7 units to the left and 4 units up

Use the grid below to answer questions 6 through 8.



- 6. Find the rule to describe the translation from point *A* to point *B*.
- 7. Find the rule to describe the translation from point *C* to point *D*.
- 8. Find the rule to describe the translation from point *E* to point *A*.