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G8: Notes #1 – Transformational Geometry -Translations **Class:** _____

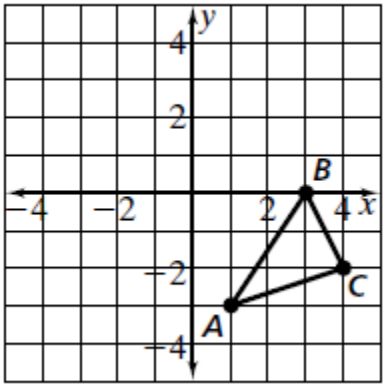
A **transformation** is a change in the _____, _____, or _____ of a figure.

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:

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



What are the coordinates of:

A (1, -3) → *A'* _____

B (3, 0) → *B'* _____

C (4, -2) → *C'* _____

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

As a general rule this translation could be written as $(x, y) \rightarrow (x + \_\_\_, y + \_\_\_)$.

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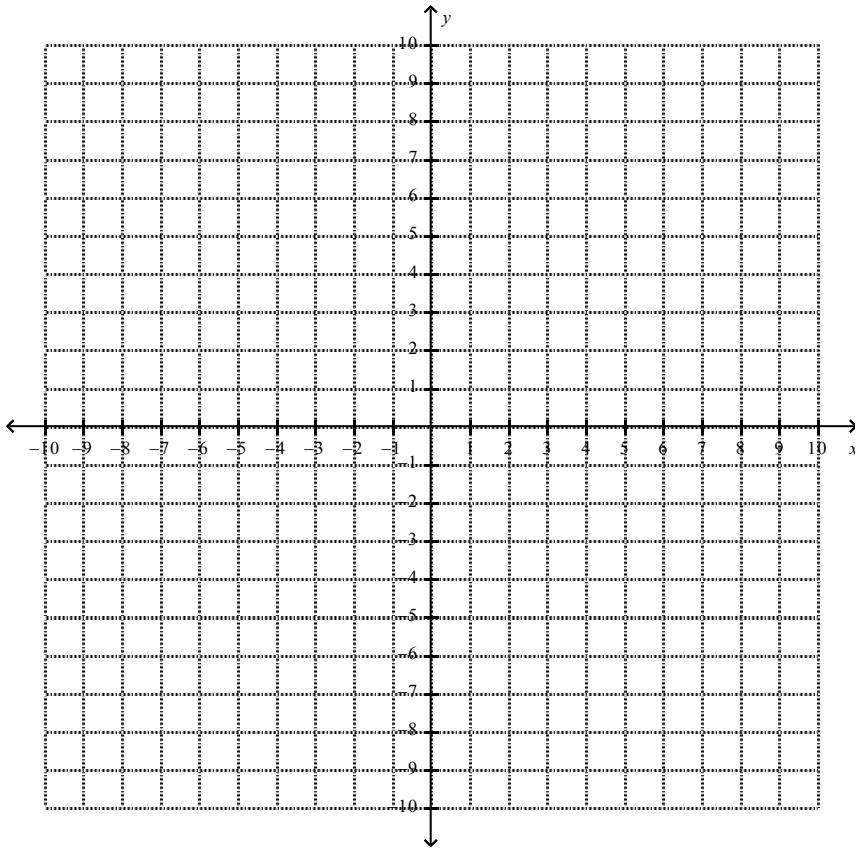
EXAMPLE 2:

ΔJKL has coordinates J (0,2), K (3,4), and L (5,1).

a) Draw ΔJKL.

b) Draw the image $\Delta J'K'L'$ 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: $(x, y) \rightarrow$ (,)

Tell me more about this figure, is it congruent or similar? Explain how you know.

Translation Location

	Add	Subtract
x coordinate		
y coordinate		

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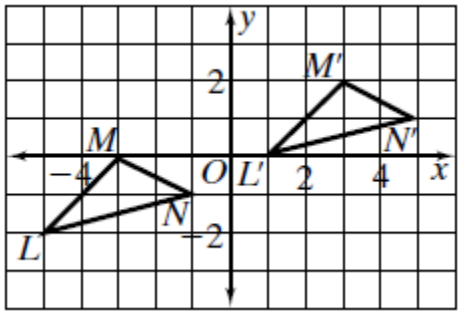
EXAMPLE 3:

Write a general rule which describes the translation shown below. ΔLMN is the original triangle.



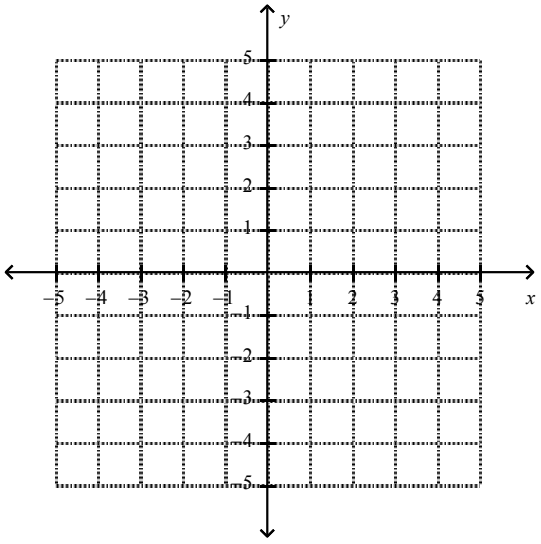
$(x, y) \rightarrow$ (,)

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 ΔTUV 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 $\Delta T'U'V'$.

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

T'_____
U'_____
V'_____

f) Using the image of $\Delta T'U'V'$ perform an additional translation using the rule $(x, y) \rightarrow (x + 3, y - 3)$. State the new coordinates of $\Delta T''U''V''$. Is this new image congruent or similar to the original figure?

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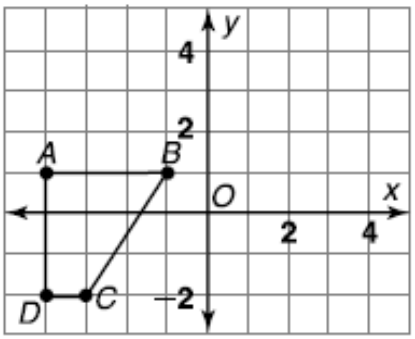
Practice:

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

right 5 units, up 1 unit

_____



b) Graph and label the image after the translation.

c) Name the coordinates of the image.

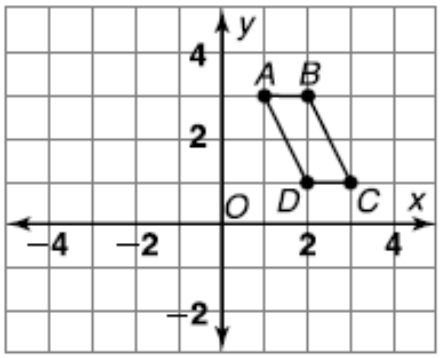
A' _____ B' _____

C' _____ D' _____

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

left 3 units, down 2 units

_____



b) Graph and label the image after the translation.

c) Name the coordinates of the image.

A' _____

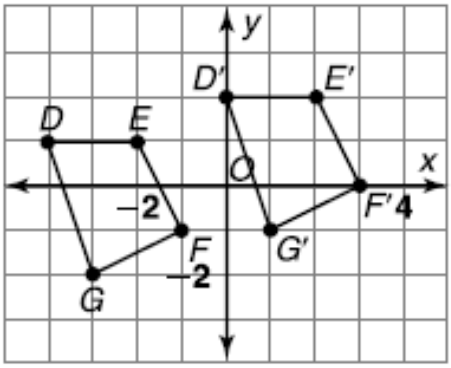
B' _____

C' _____

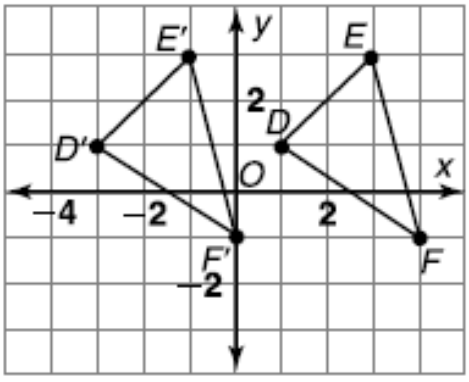
D' _____

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