Name _____ Period_____ Date_____

Translations (page 1)

A transformation is a change made to the location or to the size of a figure, resulting in a new figure, called the image.

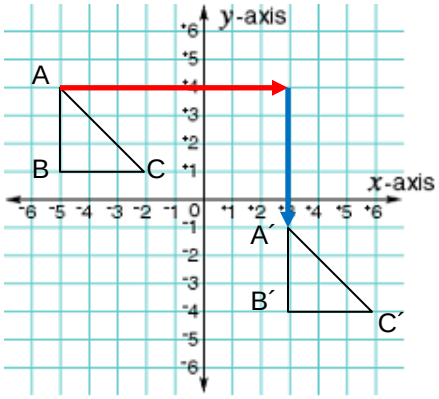
Transformations

Translation	Reflection	Rotation	Dilation
Slide	Flip	Turn	Stretch/Shrink

I. Describe the translation in four words (left or right how many, and up or down how many) then write the translation algebraically.

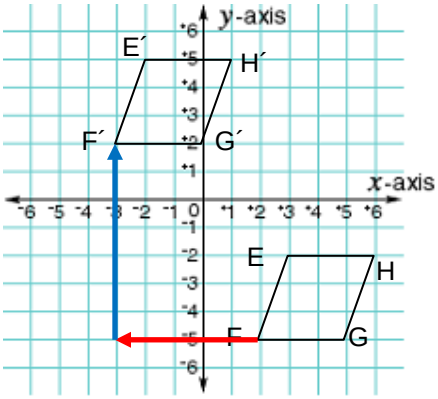
1. Words: 8 right, 5 down

Algebra: $(x, y) \rightarrow (x + 8, y - 5)$



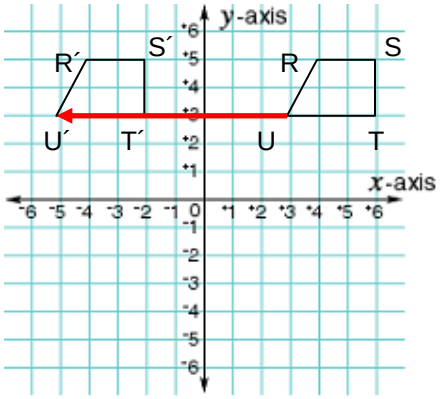
2. Words: 5 left, 7 up

Algebra: $(x, y) \rightarrow (x - 5, y + 7)$



3. Words: 8 left, stay

Algebra: $(x, y) \rightarrow (x - 8, y)$



II. Describe the translation in four words (left or right how many and up or down how many).

1. $(x, y) \rightarrow (x + 3, y - 4)$
   3 right, 4 down

2. $(x, y) \rightarrow (x - 2, y + 6)$
   2 left, 6 up

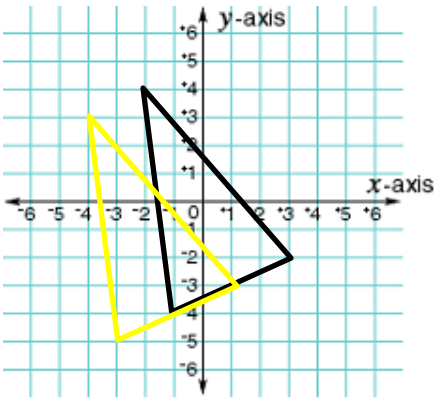
III. Complete each part of the question.

a. Draw ΔABC with vertices A(–1, –4), B(–2, 4), and C(3, –2).

b. Describe the translation $(x, y) \rightarrow (x - 2, y - 1)$
in four words: 2 left, 1 down

c. Find the coordinates
A´ (–3, –5)
B´ (–4, 3)
C´ (1, –3)

d. Draw and label the image $\Delta A´B´C´$.



Translations (page 2)

1. Describe a translation in one word:

Slide

2. Describe the translation in four words.

$(x, y) \rightarrow (x - 5, y + 3)$ **5 left, 3 up**

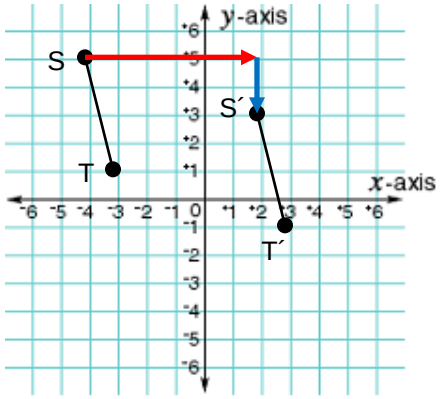
3.

a. Describe the translation in four words.

6 right, 2 down

b. *Write the translation algebraically.

$(x, y) \rightarrow (x + 6, y - 2)$



4.

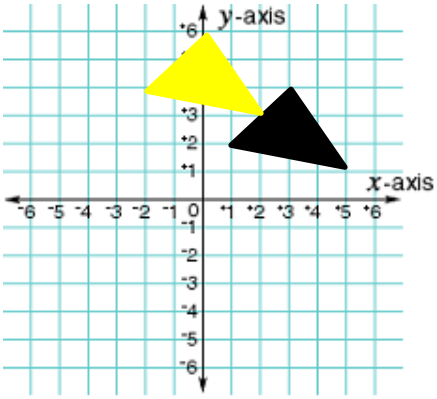
a. Draw ΔDEF with vertices:
D(1, 2), E(3, 4), and F(5, 1).

b. Find the coordinates:

D´(–2, 4) E´(0, 6) F´(2, 3)

after the translation $(x, y) \rightarrow (x - 3, y + 2)$

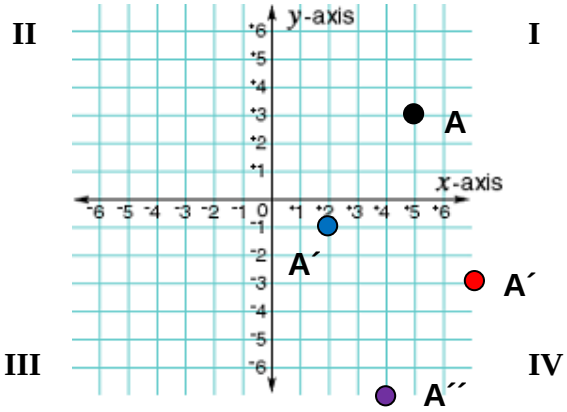
c. Draw the image ΔD´E´F´.



5.

You translate a figure using $(x, y) \rightarrow (x - 3, y - 4)$. Then you translate using $(x, y) \rightarrow (x + 2, y - 6)$. If you switch the order of the translations, is the final image the same? Justify your answer with an example.

(Hint: Draw a point in Quadrant I and use it as an example.)



Yes, ultimately it is just 1 left and 10 down.

6. CHALLENGE:

Given points A(4, 3) and B(8, 7), use coordinate notation to describe a translation from A to the midpoint of $\overline{AB}$.

A(4, 3)
B(8, 7)
Midpoint of AB $\left(\frac{4+8}{2}, \frac{3+7}{2}\right)$ = (6, 5)

Translation from A to Midpoint

$(x, y) \rightarrow (x + 2, y + 2)$
$(4, 3) \rightarrow (6, 5)$

2 right, 2 up