A → (-1, 6) B → (2, 4)
C → (1, -1) D → (-2, 1)

Tuesday, February 19, 2019

- Warm-up
  - Rewrite each of the points from the matrix into coordinate point form (x, y)

$$\begin{matrix} & A & B & C & D \\ x & \begin{bmatrix} -1 & 2 & 1 & -2 \\ y & 6 & 4 & -1 & 1 \end{bmatrix} \end{matrix}$$

- Talk about Tests
- Matrices & Translations

Content Objective: I will write and apply the rules for various graphical transformations.

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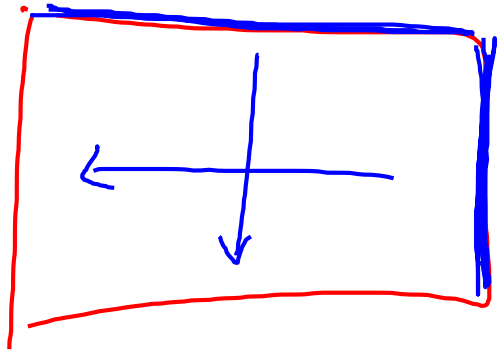
Language Objective: I will use correct vocabulary when describing graphical transformations both in writing and verbally with my class and group.

Talk about tests



Brain Break

Investigation Structure

- Person a leads a, b leads b, etc.
- What does it mean to lead?

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Translating Shapes A **translation**, or sliding motion, is determined by distance and direction. By looking carefully at a simple shape and its translated image, you can discover patterns relating the coordinates of the shape and the coordinates of its image.

2 On the screen below, a flag *ABCDE* and its translated image *A′B′C′D′E′* are shown.

Pre Image
Start

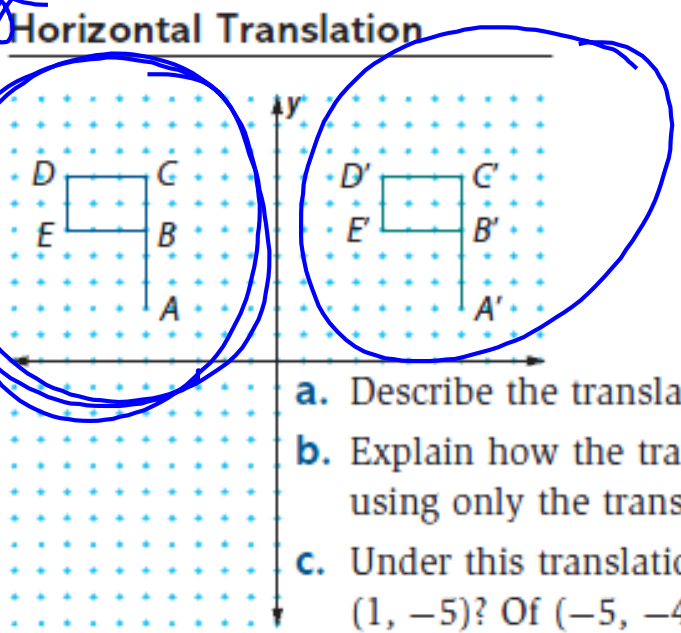

Image
A′ "A prime"

a. Describe the translation as precisely as you can.

b. Explain how the translated image of the flag could be produced using only the translated images of points *A*, *B*, *C*, *D*, and *E*.

c. Under this translation, what would be the image of (0, 0)? Of (1, −5)? Of (−5, −4)? Of (*a*, *b*)?

d. Write a rule you can use to obtain the image of any point (*x*, *y*) in the coordinate plane under this translation. State your rule in words and in symbolic form (*x*, *y*) → (__, __).

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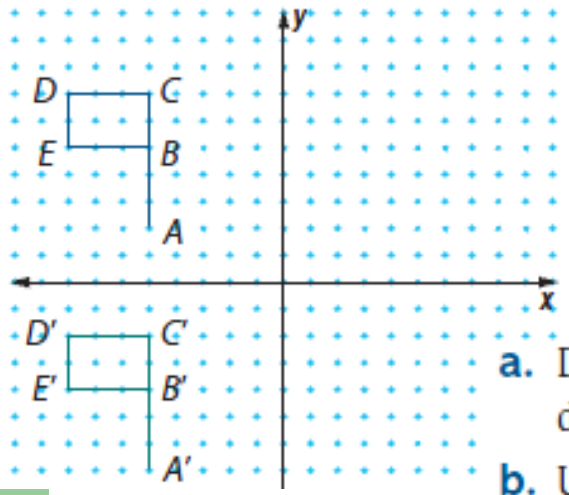
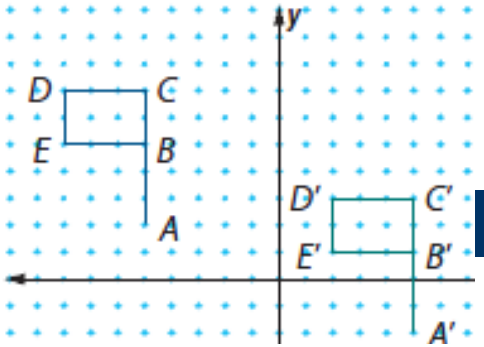
3 The screens below show a flag *ABCDE* and its image under two ot translations.

Vertical Translation



Oblique Translation



a. Describe the vertical translation as precisely as you can. The diagonal (oblique) translation.

b. Under the vertical translation, what would be the image of (0, 0)? Of (2, 5)? Of (4.1, −2)? Of (a, b)?

c. Write a rule you can use to obtain the image of any point (x, y) under the vertical translation. State your rule in words and in symbolic form $(x, y) \rightarrow (\_\_, \_\_)$.

d. Under the oblique translation, what would be the image of (0, 0)? Of (2, 5)? Of (4.1, −2)? Of (a, b)?

e. Write a rule you can use to obtain the image of any point (x, y) under the oblique translation. State your rule in words and in symbolic form.

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4 Compare the transformation rules you developed for Part d of Problem 2 and for Parts c and e of Problem 3. Write a general rule that tells how to take any point (x, y) and find its translated image if the preimage is moved horizontally h units and vertically k units. Compare your rule with others and resolve any differences.

You now have a rule you can use to find the translated image of any point when you know the **components of the translation**—the horizontal and vertical distances and directions the point is moved (left or right, up or down). This is exactly the information a calculator or computer graphics program needs in order to display a set of points and their translated images.

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Brain Break

- Clean Up

What is the slope of the line in the xy-plane that passes through the points $\left(-\frac{5}{2}, 1\right)$ and $\left(-\frac{1}{2}, 4\right)$?

A) -1

B) $-\frac{2}{3}$

C) 1

D) $\frac{3}{2}$

Exit Slip

- Show your process
- Choose an answer
- What made this problem more difficult than a typical slope problem?
- How did you overcome those difficulties?