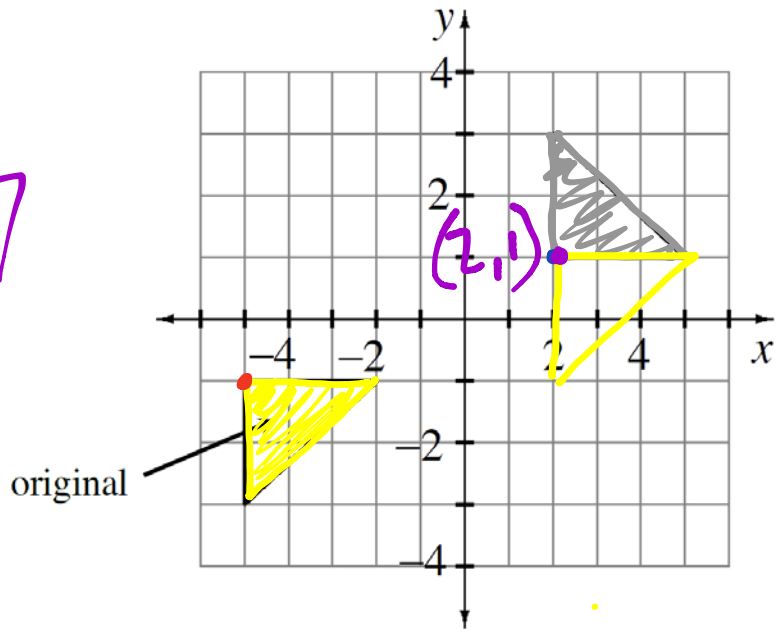
Name:_____ Date:_____ Per:____

6.1.2 How can I move a shape on a grid?

WARM UP

6-2. Describe what moves you could use to create the transformation of the original image shown at right.



Slide right 7
x+7

Slide up 2
y+2

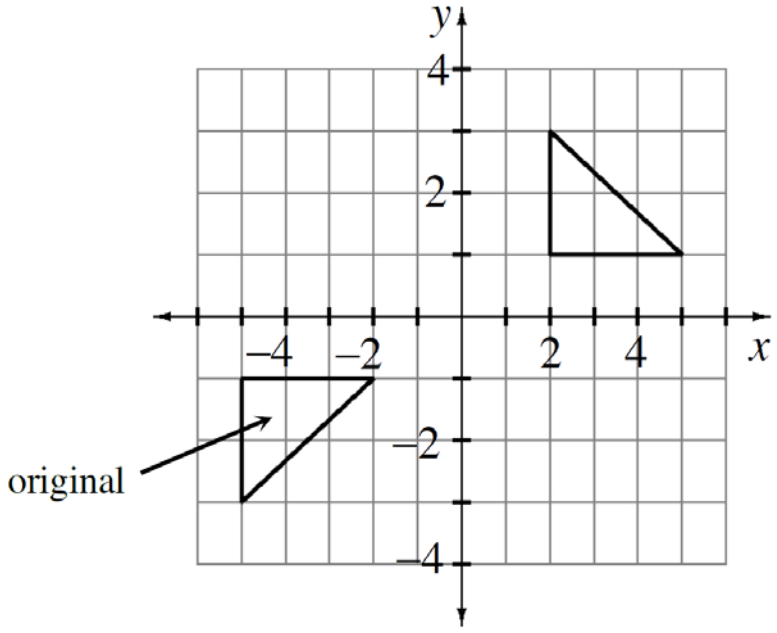
Flip over. y=1

Name:_____ Date:_____ Per:____

6.1.2 How can I move a shape on a grid?

WARM UP

6-2. Describe what moves you could use to create the transformation of the original image shown at right.

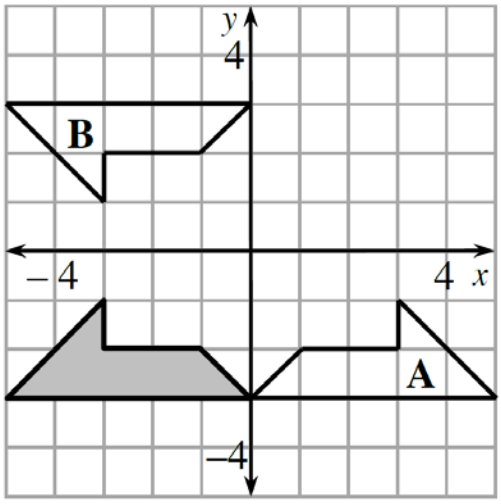


Name:_____ Date:_____ Per:____

6.1.2 How can I move a shape on a grid?

Rigid Transformations on a Coordinate Graph

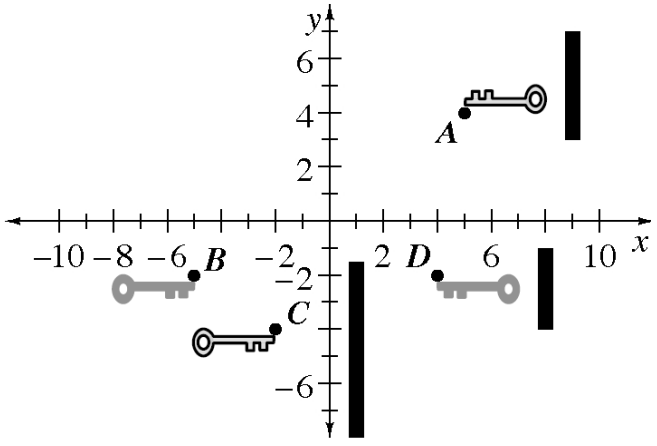
Have you ever had trouble giving directions? Sometimes describing where something is or how it has moved is difficult. For this reason, people often use coordinate graphs like the one shown at right. Coordinate graphs help you describe directions with words like “left” and “down.” They can also help you measure distances.



Today you will work with your team to describe movement on a coordinate graph. You will also look at ways to describe where an object is on the grid before and after a transformation. As you work, use the questions below to help start math discussions with your team members.

Is there a different way to get the same result?
Did we give enough information?
How can we describe the position?

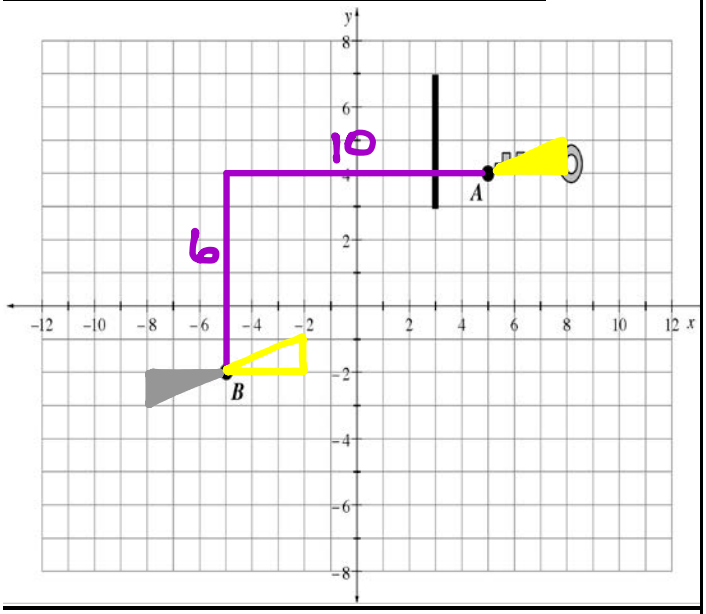
6-8. While solving the key challenge in Lesson 6.1.1, Rowan made more than one move to change his key from point A to point B and from point C to point D, as shown on the graph at right. Both of these keys are shown as triangles on the next page.



Your Task: With your team, describe how Rowan could have moved each key from the starting position to the ending position using slides (also called translations), turns (also called rotations), and/or flips (also called reflections).

- **Make sure you provide enough detail to describe the moves completely.**
- **Try to find more than one way he could have moved each key.**
- **Be ready to justify your ideas with the class.**

Moving key from point A to point B:



Description of moves:

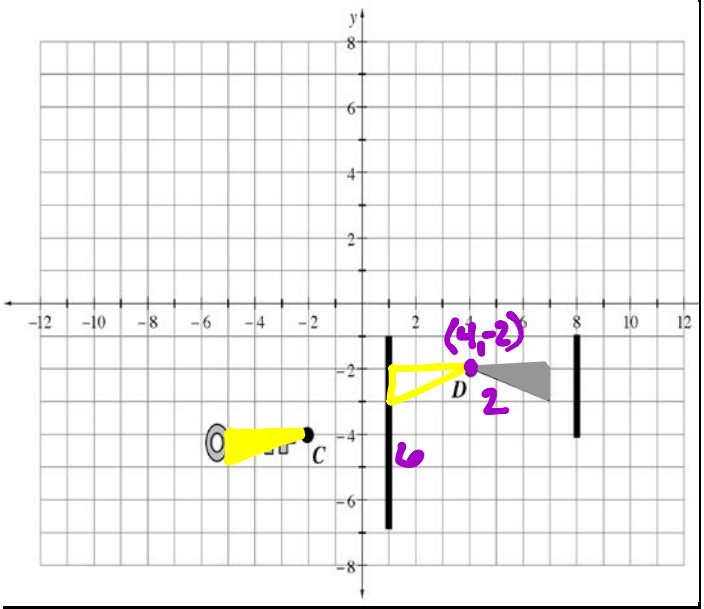
Slide left 10 x-10

Slide down 6 y-6

Turn 180°

Describe another way you could move the key from point A to point B.

Moving key from point C to point D:



Description of moves:

Slide right 6 x+6

Slide up 2 y+2

Flip over x=4

Describe another way you could move the key from point C to point D.

6-9. WHERE DOES IT LAND?

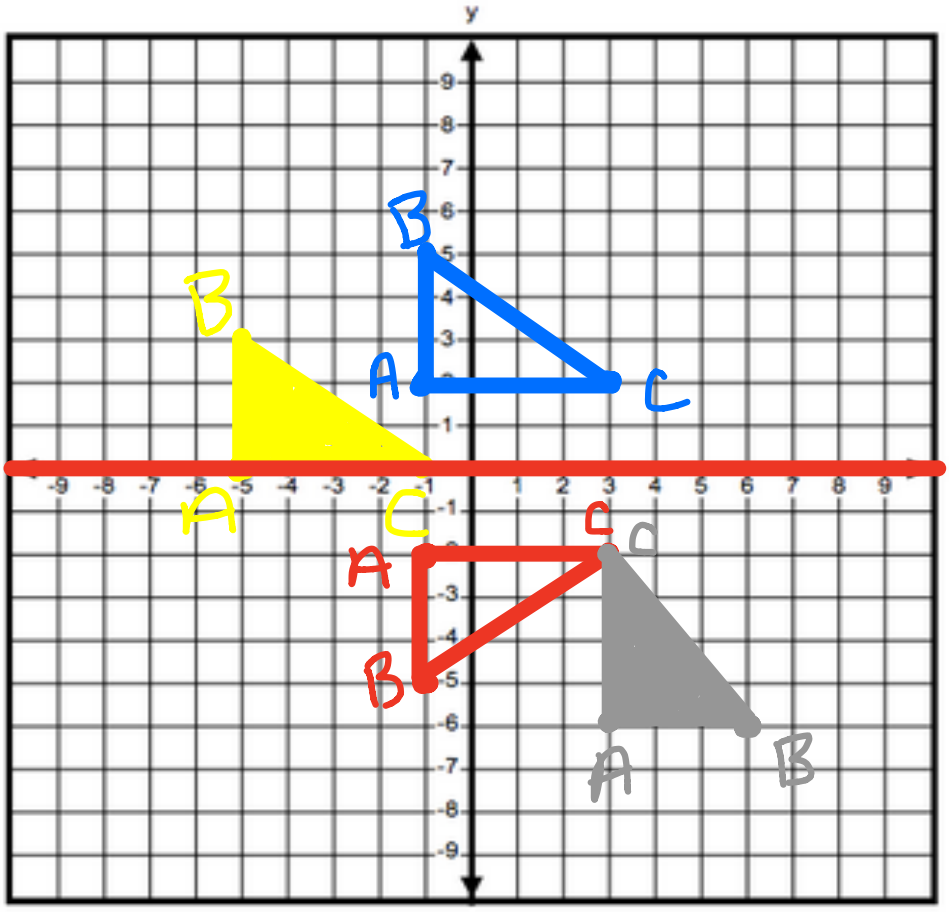
Felicia found a copy of a puzzle like the one in problem 6-1, but the lock is missing. All she has are the starting points and the moves to unlock the lock. This time her key is shaped like a triangle.

The points are at A (-5, 0), B (-5, 3), and C (-1, 0).

Step 1: Translate 4 units to the right and 2 units up.

Step 2: Reflect across the x-axis.

Step 3: Rotate counter-clockwise 90° about point (3, -2).



Help Felicia find out where the lock is by following her steps.

What are the new coordinates of the triangle?

A(3 , -6)

B(6 , -6)

C(3 , -2)

6-10. Now compare the triangle in problem 6-9 that you have after Step 3 with the original triangle.

How do the lengths of the sides compare? Stayed the same

How do the sizes of the angles compare? Stayed the same

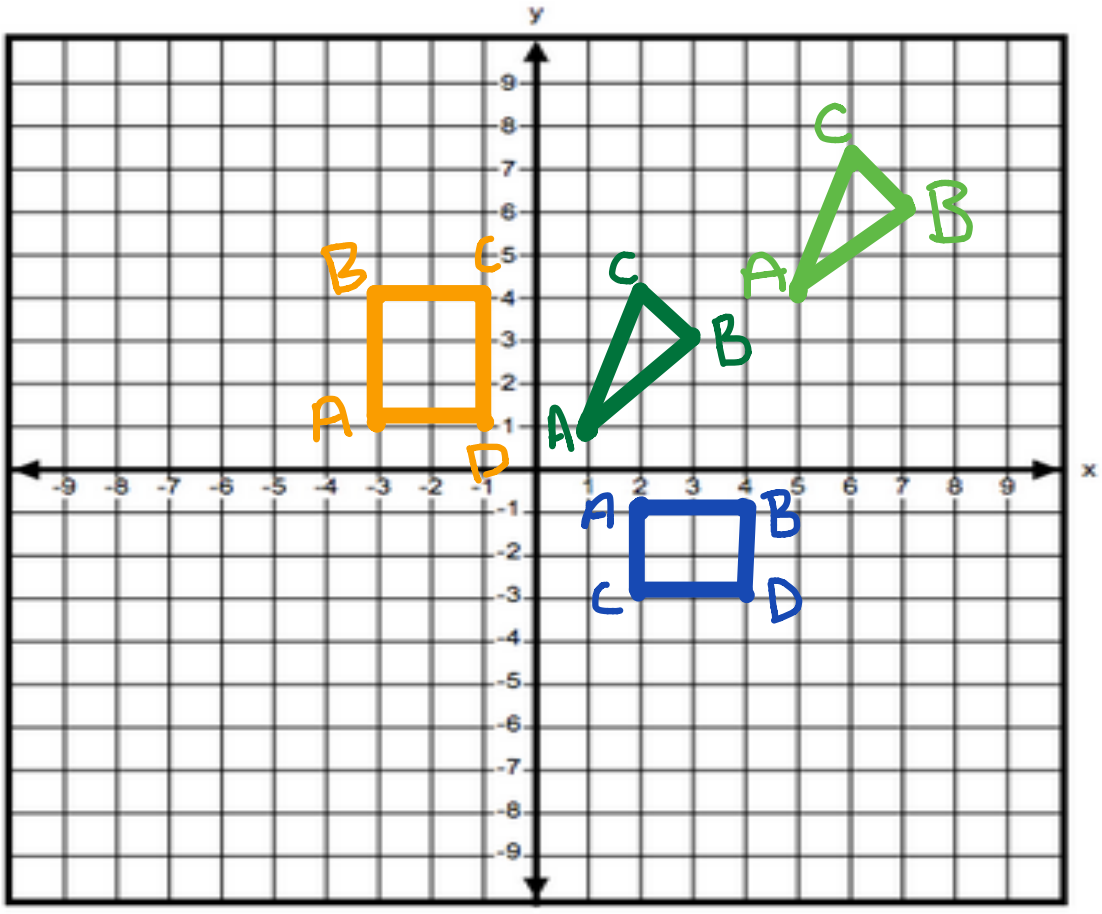
6-11. Could Felicia's team have used different steps to "unlock" her puzzle in problem **6-9**? In other words, could she have used different moves and still have the key end up in the same final position? • If it is possible, list a new set of steps that would move her key from the same starting location to the same final position. • If it is not possible, explain why not.

6-12. Graph shapes A, B, and C as described below.

a. Shape A is a triangle with vertices (1,1) , (3, 3) , and (2, 4) .

b. Shape B is a square with vertices (2, -1) , (4, -1) , (2, -3) , and (4, -3) .

c. Shape C is a rectangle with vertices (-3,1) , (-3, 4) , (-1, 4) , and (-1,1).



6-13. On the same grid you used in problem 6-12, translate triangle A four units right and three units up to create triangle D. Write the coordinates of the new vertices.

(5, 4) (7, 6) (6, 7)