Geometry

Mathematician: _____

Unit 2: Transformations

Period:_____

2.2A Translations in a Coordinate Plane

LEVEL: EMERGING

Directions: Use the translation $(x, y) \rightarrow (x - 8, \; y + 4)$

1) What is the image of A(2, 6)?

2) What is the image of B(-1, 5)?
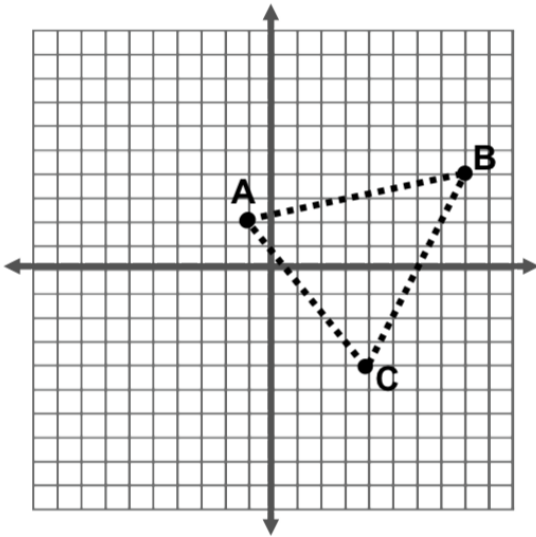
3) What is the pre-image of C'(-3, -10)?

Directions: Graph and label the image of the figure using the given translation. Make sure to use prime notation!

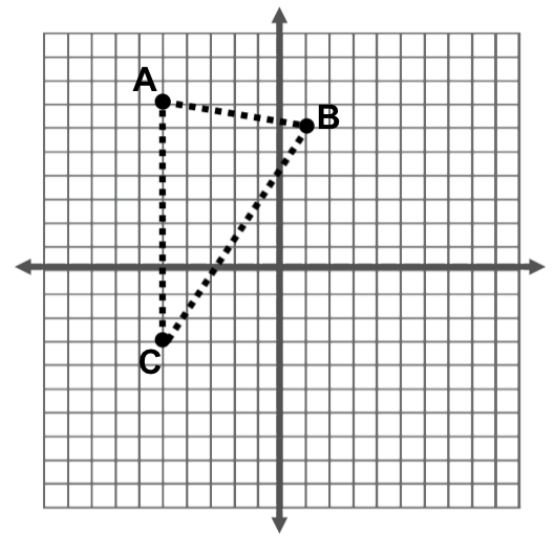4) $(x, y) \rightarrow \; (x - 1, y + 1)$

A': _____

B': _____

C': _____

5) $(x, y) \rightarrow \; (x + 3, y - 2)$
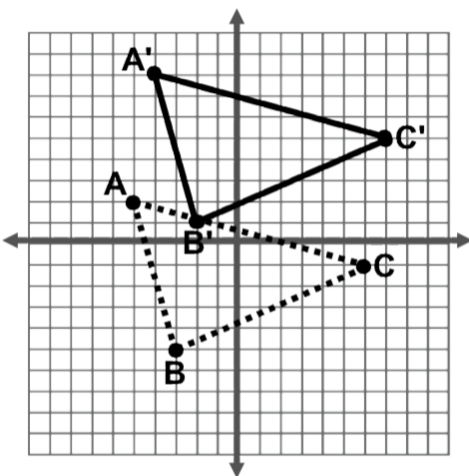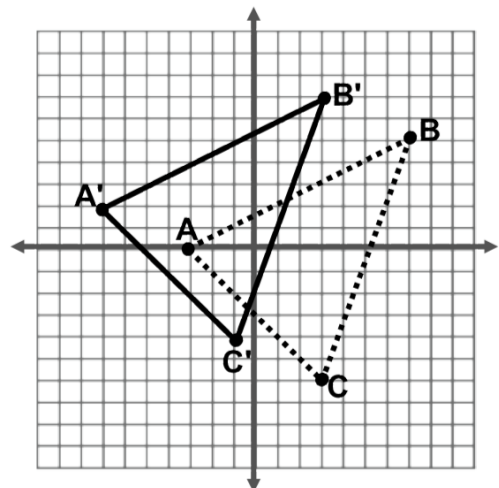
A': _____

B': _____

C': _____

LEVEL: PROFICIENT

Directions: Write a rule for the translation of $\triangle ABC$ to $\triangle A'B'C'$.

6)

Rule: $(x, y) \rightarrow (x \underline{\quad\quad}, y\underline{\quad\quad})$

7)

Rule: $(x, y) \rightarrow (x \underline{\quad\quad}, y\underline{\quad\quad})$

8) Write a translation that shifts the pre-image up 4 and left 2. Write your answer in the form:
$$(x, y) \rightarrow (x \pm a, y \pm b).$$

9) Write a translation that shifts the pre-image right 1. Write your answer in the form:
$$(x, y) \rightarrow (x \pm a, y \pm b).$$

Directions: Find the coordinates of the vertices of each figure after the given translation. Make sure to use prime notation!

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

$X(-2,4), Y(-5,-7), Z(4,8)$

11) $(x, y) \rightarrow (x + 4, y - 10)$

$E(0,2), F(-4,-5), G(3,7), H(6,-2)$

LEVEL: MASTERY

12) Describe what the difference is between the **<u>image</u>** and the **pre-image** of a shape.
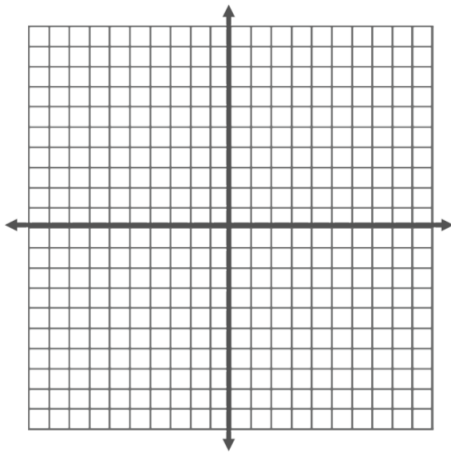
13) List three real life examples of translations.

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14) Graph and label the quadrilateral ABCD with vertices $A(-3,4)$, $B(2,5)$, $C(4,-1)$ and $D(-2,-5)$. Find the image of each vertex after the translation $(x, y) \rightarrow (x - 4, y + 1)$. Then graph and label the image using prime notation.
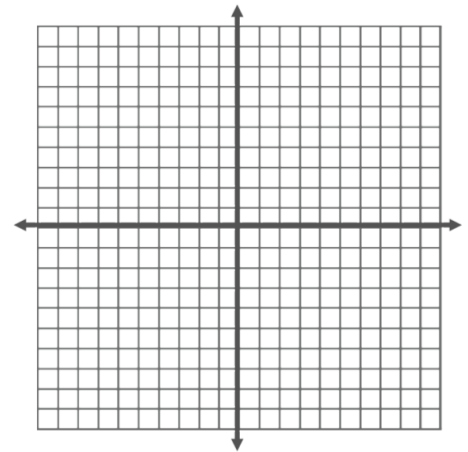
A': _____

B': _____

C': _____

D': _____

15) Graph and label the quadrilateral ABCD with vertices $A(0,2)$, $B(3,6)$, $C(1,-5)$ and $D(-3,-4)$. Find the image of each vertex after the translation $(x, y) \rightarrow (x + 2, y - 2)$. Then graph and label the image using prime notation.

A': _____

B': _____

C': _____

D': _____

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16) When a figure is translated $(x, y) \rightarrow (x - 2, y + 1)$, which of the following applies? Select all that apply.

(a) Translation is a rigid motion
(b) Figure is moved up
(c) Figure is moved right
(d) Figure is dilated

17) When a figure is translated $(x, y) \rightarrow (x, y - 7)$, which of the following applies? Select all that apply.

(a) Translation is a rigid motion
(b) Figure is moved down
(c) Figure is moved right
(d) Figure is dilated

Unit 2.2A Worksheet Answers

1. $A'(-6,10)$
2. $B'(-9,9)$
3. $C(5,-14)$
4. $A'(-2,3), B'(7,5), C'(3,-3)$
5. $A'(-2,5), B'(4,4), C'(-2,-5)$
6. $(x,y) \rightarrow (x+1, y+6)$
7. $(x,y) \rightarrow (x-4, y+2)$
8. $(x,y) \rightarrow (x-2, y+4)$
9. $(x,y) \rightarrow (x+1, y)$
10. $X'(-7,11), Y'(-10,0), Z'(-1,15)$
11. $E'(4,-8), F'(0,-15), G'(10,-12)$
12. Answers may vary
13. Answers may vary
14. $A'(-7,5), B'(-2,6), C'(0,0), D'(-6,-4)$
15. $A'(2,0), B'(5,4), C'(3,-7), D'(-1,-6)$
16. A, B
17. A, B