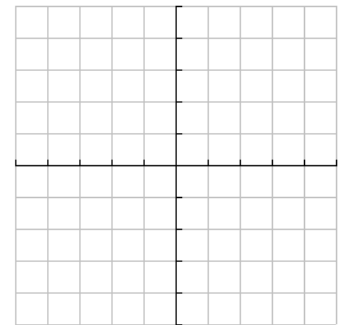


Unit 1 Test Review

For each transformation, state the coordinates of the image of the point (1, 4) and the general rule for the image of the point (x, y).

	Image of (1, 4)	Image of (x, y)
1. Reflect over y-axis	$(-1, 4)$	$(-x, y)$
2. Reflect over x-axis	$(1, -4)$	$(x, -y)$
3. Reflect over $y = x$	$(4, 1)$	(y, x)
4. Reflect over $y = -x$	$(-4, -1)$	$(-y, -x)$
5. Rotate 90° about the origin	$(4, -1)$	$(y, -x)$
6. Rotate -90° about the origin	$(-4, 1)$	$(-y, x)$
7. Rotate 180° about the origin	$(-1, -4)$	$(-x, -y)$



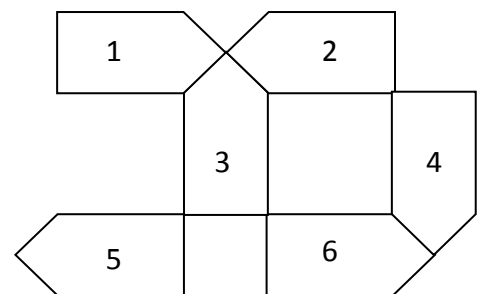
For each of the following, graph and label the image for each transformation described. Then write the rule for the transformation using correct notation.

<p>8. Reflect over the line $y = -x$</p> <p>Rule: $(-y, -x)$</p>	<p>9. Rotate 180° about the origin</p> <p>Rule: $(-x, -y)$</p>	<p>10. Translate right 4 & down 3 units</p> <p>Rule: $(x+4, y-3)$</p>
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State whether the specified pentagon is mapped to the other pentagon by a reflection, translation, or rotation

- 11. Pentagon 1 to Pentagon 3
- 12. Pentagon 5 to Pentagon 6
- 13. Pentagon 2 to Pentagon 5
- 14. Pentagon 1 to Pentagon 2
- 15. Pentagon 4 to Pentagon 6

rotation or reflection
reflection or rotation
translation
reflection or rotation
rotation or reflection



Answer each of the following.

- 16. If translation $T: (5, -3) \rightarrow (-4, 0)$, then $T: (8, 2) \rightarrow (-1, 5)$
- 17. $T: (x, y) \rightarrow (x - 5, y + 2)$, if F' is $(7, -6)$, find F . $(12, -8)$
- 18. M is reflected over the y-axis. If M' is $(6, -1)$, find M . $(-6, -1)$
- 19. C is rotated about the origin 90° . If C' is $(-9, 5)$, find C . $(5, 9)$
- 20. Y is rotated about the origin 180° . If the image of Y is $(0, -3)$ find Y . $(0, 3)$

21. A figure is reflected over the line $y = x$. If the preimage is $(2, 7)$, find the image. $(7, 2)$

22. $\triangle ABC$ has vertices $A(5, -2)$, $B(-4, 0)$, $C(7, 1)$. Find the coordinates of the image of the triangle if it is dilated using the rule: $D_{0,3}$.

$A'(\underline{15}, \underline{-6})$,

$B'(\underline{-12}, \underline{0})$,

$C'(\underline{21}, \underline{3})$

Dilation
by 3

23. Draw a regular hexagon ABCDEF.

- Describe the angle of rotation that will map A to each of the other vertices
- Draw the lines of symmetry (reflection) on your regular hexagon

24. For each problem, there is a composition of motions. Using your algebraic rules, come up with a new rule after both transformations have taken place.

- a. Translate a triangle 5 units left and 3 units up, and then reflect the triangle over the x-axis.

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

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

$(x, y) \rightarrow (x-5, -y-3)$

- b. Rotate a triangle 90 degrees counter clockwise, and then reflect in the line $y = x$.

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

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

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

- c. Reflect in the line $y = -x$, and then translate right 4 units and down 2 units.

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

$(x, y) \rightarrow (x+4, y-2)$

$(x, y) \rightarrow (-y+4, -x-2)$

25. A function has a domain of $-3 \leq x \leq 6$ and a range of $2 \leq y \leq 8$. Find the new domain and range after each of the following transformations:

- a. Translate left 2 and down 5

$D: -5 \leq x \leq 4$ $R: -3 \leq y \leq 3$

- b. Reflect over y-axis

$D: -6 \leq x \leq 3$ $R: 2 \leq y \leq 8$

- c. Rotate 90 degrees

$D: -8 \leq x \leq -2$ $R: -3 \leq y \leq 6$