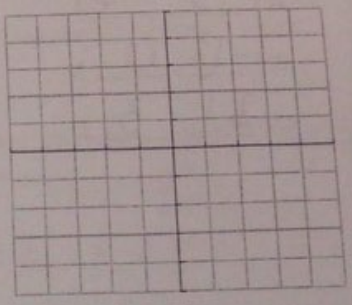
Unit 1 Review – Honors Math 2 Name: Key

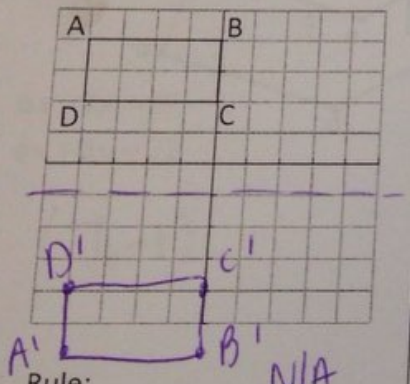
For each transformation, state the coordinates of the image of the point $(1, 4)$ and the general rule for the image of the point (x, y).

	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	$(-1, -4)$	$(-x, -y)$



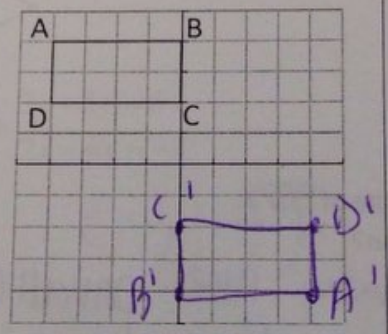
For each of the following, graph and label the image for each transformation described. Then write the rule for the transformation using correct notation.

8. Reflect over the line $y = -1$



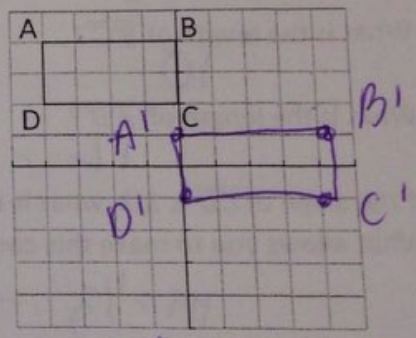
Rule: N/A

9. Rotate 180° about the origin



Rule: $(-x, -y)$

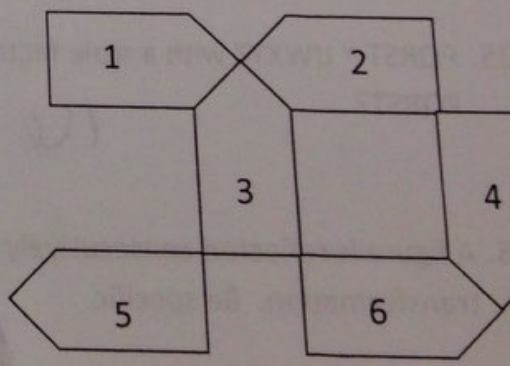
10. Translate right 4 & down 3 units



Rule: $(x+4, y-3)$

State whether the specified pentagon is mapped to the other pentagon by a reflection, translation, or rotation

11. Pentagon 1 to Pentagon 3 — Rotation
12. Pentagon 5 to Pentagon 6 — Reflection
13. Pentagon 2 to Pentagon 5 — Translation
14. Pentagon 1 to Pentagon 2 — Reflection
15. Pentagon 4 to Pentagon 6 — Rotation



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' $(7, -6)$, 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. ΔABC 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: $D_{O,3}$.

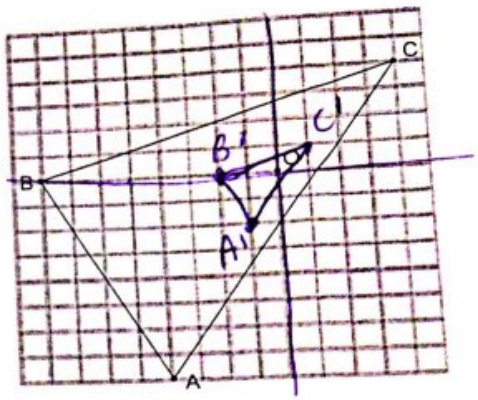
$(3x, 3y)$

A'(15 , -6),

B'(-12 , 0),

C'(21 , 3)

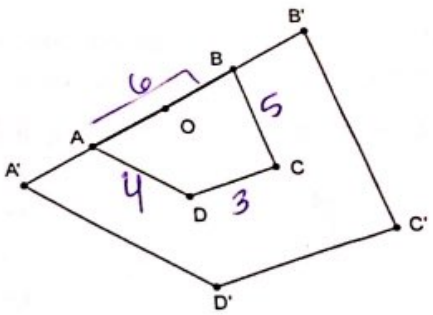
23. Dilate ΔABC about point O using magnitude $\frac{1}{4}$.



24. $D_{O,2}$ (ABCD) = A'B'C'D'.

The lengths of the segments of the preimage are as follows:

AB = 6, BC = 5, CD = 3, AD = 4



a. What is the length of $\overline{B'C'}$?

10

b. What is the length of $\overline{A'B'}$?

12

c. If the slope of $\overline{CD}$ is 1/3, what is the slope of $\overline{C'D'}$? What allows you to make this conclusion?

$m = 1/3$ → they are parallel lines

d. Why is the image of $\overline{AB}$ on the same line as $\overleftrightarrow{AB}$?

It's dilated thru the center of dilation

25. PQRST ~ UWXYZ with a scale factor of 2:5. If the perimeter of UWXYZ is 40 inches, what is the perimeter o PQRST?

16 inches

26. A figure is reflected consecutively across two lines that are parallel and 12 cm apart. Describe the resulti transformation. Be specific.

24 cm apart

Translation ⊥ to ∥ lines

27. A figure is reflected consecutively across two lines that intersect to form a 45° angle. Describe the resu transformation. Be specific.

90° Rotation

28. A figure is translated using the rule <6, 0> and then reflected in the y-axis. Is this composition of transformations a glide reflection? Explain why or why not.

Right 6

No, translation motion is not parallel to line of reflection

29. 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. $(x-5, y+3)$
b. Rotate a triangle 90 degrees counter clockwise, and then reflect in the line y = x. $(x, -y)$
c. Reflect in the line y = –x, and then translate right 4 units and down 2 units. $(-y+4, -x-2)$

Algebra needed in this unit (fair game on your test). Solve the following:

30. $\frac{2}{x} = \frac{4}{x+3}$

$x = 2/3$

31. $2x+3y=7$
$3x-3y=-12$

$(-1, 3)$

32. $2x+3y=6$
$y=-\frac{1}{3}x+3$

$(-3, 4)$

33. $6x-8y=50$
$4x+6y=22$

$(7, -1)$

34. $3x+5y=6$
$2x-4y=-7$

$\left(-\frac{1}{2}, \frac{3}{2}\right)$