Geometry – Review for Quiz
Introduction to Geometry and Transformations

Name Key

See answers below.....

1 Use the translation (x, y) → (x – 4, y + 8) for questions a – d.

a. What is the translation vector? $\langle -4, 8 \rangle$

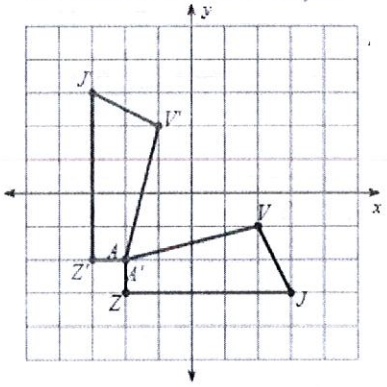
b. What is the image of A (-5, -4)? $A'(-9, 4)$

c. What is the image of A'' (use part b)? $A''(-13, 12)$

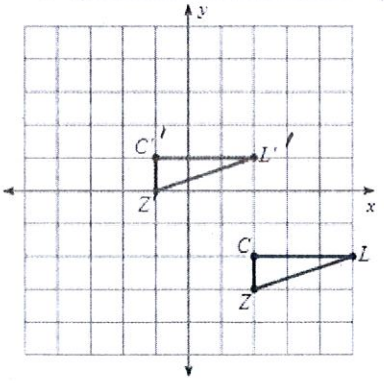
d. What is the pre-image of B' (14, 8)? $B(18, 0)$

Write the translation vector, line of reflection, or degree & direction of rotation for the following graphs.

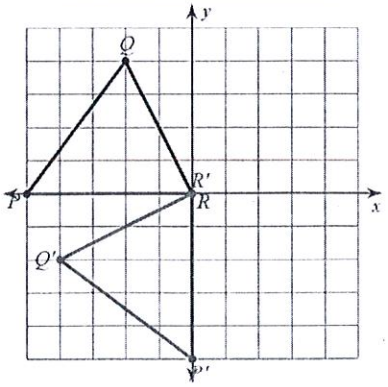
2. Reflection $y = x$



3. translation $\langle -3, 3 \rangle$



4. rotation 90° CW



5. Write your rules for the following transformations:

a. Translation right h units and down k units: (x, y) → (x+h, y-k)

b. Reflection over the x-axis: (x, y) → (x, -y)

c. Reflection over the y-axis: (x, y) → (-x, y)

d. Reflection over the line y = x: (x, y) → (y, x)

e. Reflection over the line y = -x: (x, y) → (-y, -x)

f. Rotation 90 degrees CW: (x, y) → (y, -x)

g. Rotation 90 degrees CCW: (x, y) → (-y, x)

h. Rotation 180 degrees: (x, y) → (-x, -y)

6. The vertices of ΔABC are A(2, -4), B(0, 6), and C(-5, 3). Find the vertices of ΔA'B'C' given the transformation rules below. These describe the transformation that occurred.

a. (x, y) → (x – 8, y – 3) A' = (-6, -7), B' = (-8, 3), C' = (-13, 0)

Transformation: translation <-8, -3>

b. (x, y) → (x, -y) A' = (2, 4), B' = (0, -6), C' = (-5, -3)

Transformation: reflection over x-axis

c. (x, y) → (-y, -x) A' = (4, -2), B' = (-6, 0), C' = (-3, 5)

Transformation: reflection over y = -x

d. (x, y) → (y, x) A' = (-4, 2), B' = (6, 0), C' = (3, -5)

Transformation: reflection over y = x

e. (x, y) → (-x, y) A' = (-2, -4), B' = (0, 6), C' = (5, 3)

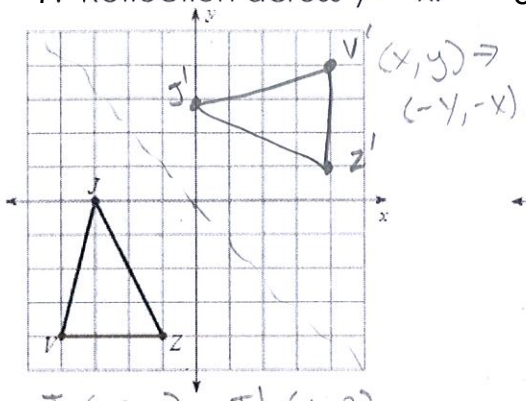
Transformation: reflection over y-axis

f. (x, y) → (y, -x) A' = (-4, -2), B' = (6, 0), C' = (3, 5)

Transformation: rotation 90° CW

Follow the instructions for each graph.

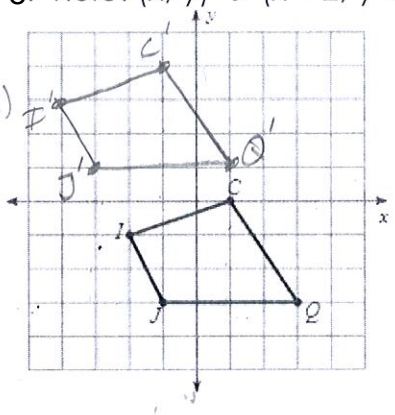
7. Reflection across y = -x.



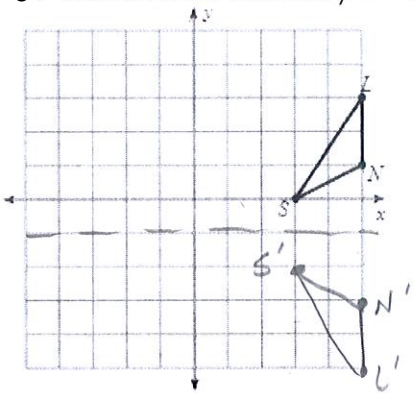
$(x, y) \rightarrow (-y, -x)$

J (-3,0) J' (0,3)
V (-4,-4) V' (4,4)
Z (-1,-4) Z' (4,1)

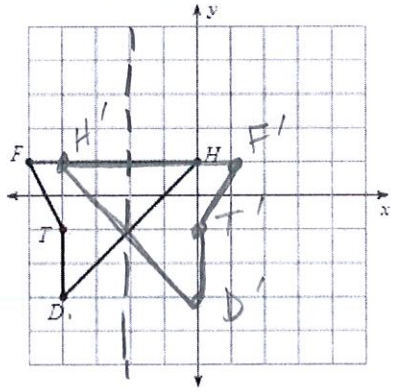
8. Rule: (x, y) → (x – 2, y + 4)



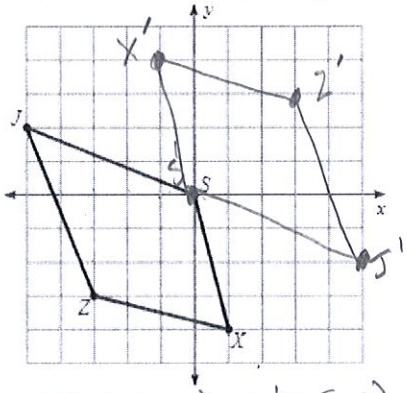
9. Reflection across y = -1.



10. Reflection across x = -2.

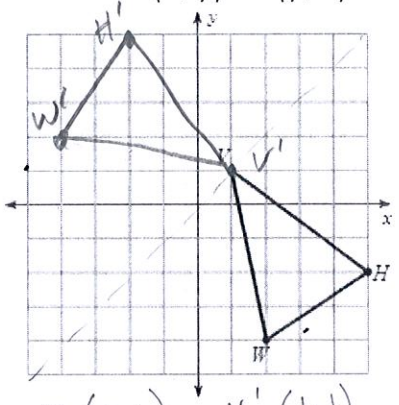


11. Rotation 180 degrees



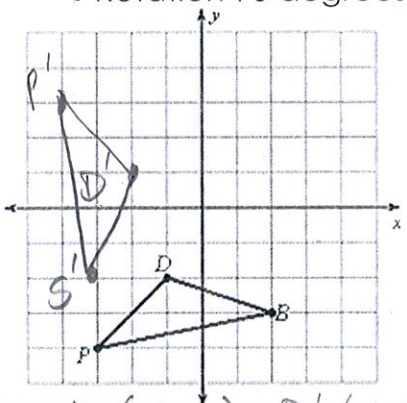
J (-5,2) J' (5,-2)
Z (-3,-3) Z' (3,3)
X (1,-4) X' (-1,4)

12. Rule: (x, y) → (y, x)



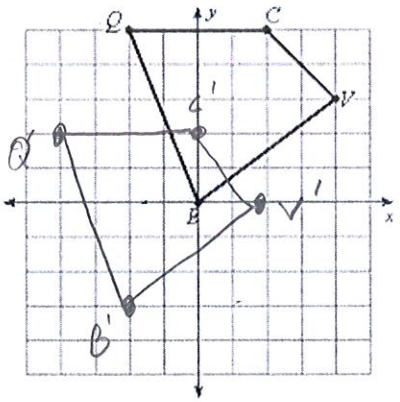
V (1,1) V' (1,1)
W (2,-4) W' (-4,2)
H (5,-2) H' (-2,5)

13. Rotation 90 degrees CW



D (-1,-2) D' (-2,1)
B (2,-3) B' (-3,-2)
P (-3,-4) P' (-4,3)

14. ⟨–2,–3⟩



15. Rule: (x, y) → (-x, y) reflection over y-axis