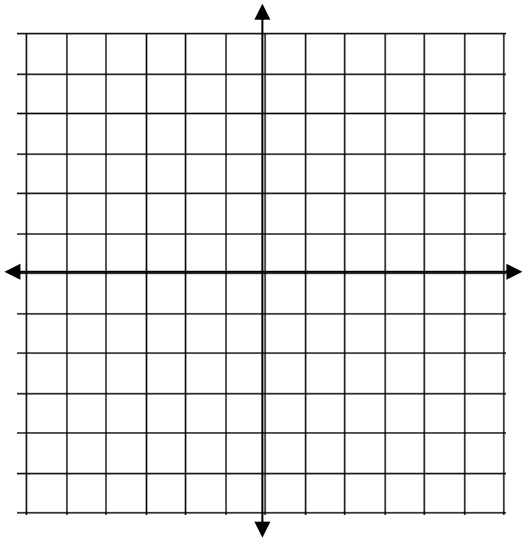
Honors Geometry Unit 1 Transformations in the Coordinate Plane Test Review

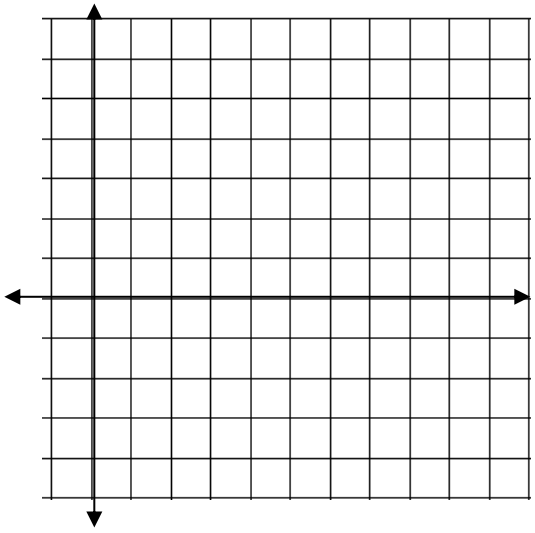
I. Find the coordinates of the reflection without using a coordinate plane.

1. L (2,3) reflected in the x-axis
2. M(-2, -4) reflected in the line x = 2
3. N (-4, 0) reflected in the line y=x
4. P (8.2, -3) reflected in y-axis

II. Draw ∆PQR, ∆P'Q'R', and ∆P" Q"R" using the given transformations in the order they appear.

5. P (5, 1), Q (3, 4), R (0, 1)
   Translation: (x, y)→(x-2, y-4)
   Reflection: in the y-axis
6. P (7, 2), Q (3, 1), R (6, -1)
   Translation: (x, y)→(x-4, y+3)
   Rotation: 90° clockwise about the origin





III. Write a rule for the translation.

7. 1 unit to the left and 1 unit up
8. 3 units down
9. 7 units to the left and 4 units down
10. 10 units right and 8 units up

IV. Rotations

11. Suppose ΔABC has vertices A(-8, -2), B (-5, -2), and C (-8, -7). If ΔABC is rotated 90° counterclockwise about the origin, what are the coordinates of the vertices of $\Delta A'B'C'$?

V. Vocabulary

Image	Isometry	Pre-image	Reflection
Rotation	Transformation	Translation	

Use only the words in the above to fill in the blanks below.

12. _____ A transformation of a figure that creates a mirror image over a line.

13. _____ A transformation that slides each point of a figure the same distance in the same direction.

14. _____ The mapping, or movement, of all points of a figure in a plane according to a common operation.

15. _____ A figure before a transformation has taken place.

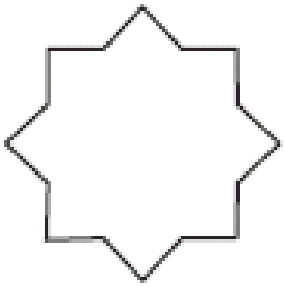
16. _____ A distance preserving map of a geometric figure to another location using a reflection, rotation, or translation.

17. _____ The result of a transformation.

Determine whether the figure has rotational symmetry. If so, state the rotations that map the figure onto itself.

18.  Rotational Symmetry? _____ If yes, state the degree of rotation:	19.  Rotational Symmetry? _____ If yes, state the degree of rotation:	20.  Rotational Symmetry? _____ If yes, state the degree of rotation:

Draw all lines of symmetry.

21. 	**22.** 

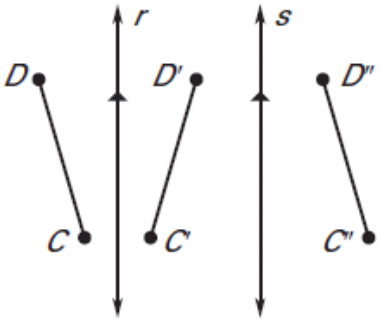
Draw a figure for the description. If not possible, write *"not possible"*.

23. A trapezoid with exactly one line of symmetry.	24. A triangle with exactly two lines of symmetry.

In the diagram, lines *r* and *s* are parallel.

25. A translation maps $\overline{CD}$ onto which segment?

26. Is the distance from C to *r* the same as the distance from C′ to *r*? Explain.



27. Use the translation (x, y) → (x + 1, y - 7) to answer each question below.

a. What is the translation vector? _____

b. What is the image of A (10, -4)? _____

c. What is the image of A' from part b, which would be called A"? _____

d. What is the pre-image of C' (-9, 12)? _____

28. Given ΔABC with A(-1, 0), B(5, 3), and C(2, -4), find the vertices of ΔA'B'C' given the transformation rules below. Then determine the type of transformation which occurred.

a. (x, y) → (x + 11, y – 5) A' = _____ B' = _____ C' = _____

Transformation: _____

b. (x, y) → (-x, -y) A' = _____ B' = _____ C' = _____

Transformation: _____

c. (x, y) → (y, -x) A' = _____ B' = _____ C' = _____

Transformation: _____

d. (x, y) → (y, x) A' = _____ B' = _____ C' = _____

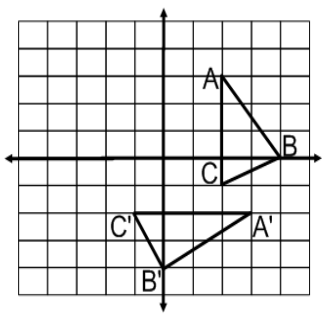
Transformation: _____

e. (x, y) → (-y, x) A' = _____ B' = _____ C' = _____

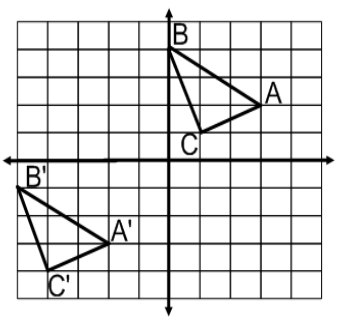
Transformation: _____

Write the transformation rule for the following graphs.

29. _____

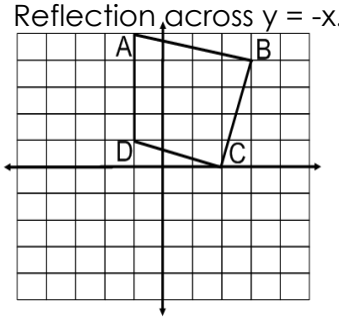


30. _____

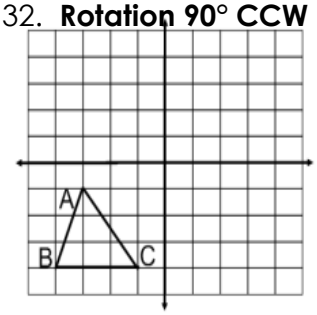


Follow the instructions for each graph.

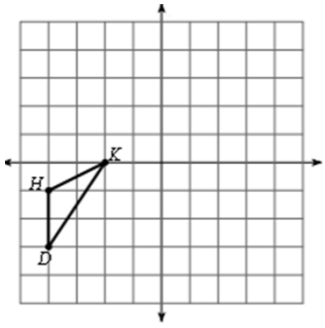
31. Reflection across y = -x.



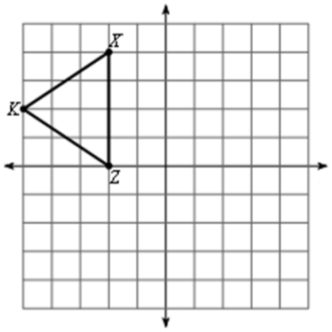
32. **Rotation 90° CCW**



33. <2, 3>



34. (x, y) → (x, y – 4)

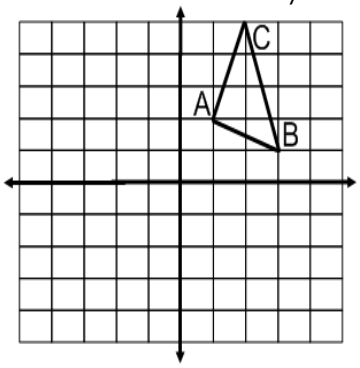


Composition of Transformations

Remember to label/name the first transformation with ΔA'B'C', the second transformation with ΔA"B"C".

35. a. **Rotation 180°**

b. reflection over y = -1



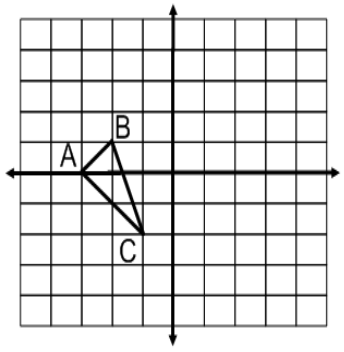
A' _____ A" _____

B' _____ B" _____

C' _____ C" _____

36. a. reflection across y = x.

b. **Rotation 90°CW**



A' _____ A" _____

B' _____ B" _____

C' _____ C" _____