Chapter 6 – Transformations

Name: KEY

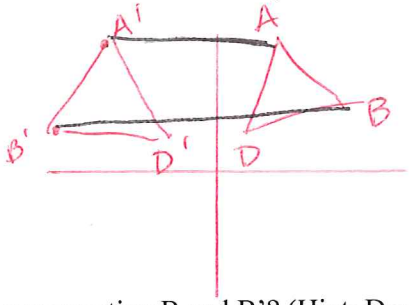
Transformations Test Review

Choose what kind of transformation is represented by the following transformational rules.

1. $(x, y) \rightarrow (-y, x)$ — Rotation – Translation – Reflection
2. $(x, y) \rightarrow (x, y - 4)$ — Rotation – Translation – Reflection
3. $(x, y) \rightarrow (y, -x)$ — Rotation – Translation – Reflection
4. $(x, y) \rightarrow (-x, y)$ — Rotation – Translation – Reflection
5. $(x, y) \rightarrow (y, x)$ — Rotation – Translation – Reflection
6. $(x, y) \rightarrow (-x, -y)$ — Rotation – Translation – Reflection

Use the following info for Questions 7 & 8. **ΔDAB is reflected over the y-axis to create ΔD'A'B'. Points A & B are not on the y-axis.**

7. What relationship must exist between the lines that connect A to A' and B to B'? (Hint: Draw a picture.)



   [A] They are parallel
   [B] They are perpendicular
   [C] They are congruent
   [D] They are not related

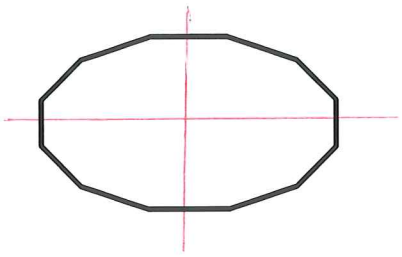
8. What relationship must exist between the y axis and the line connecting B and B'? (Hint: Draw a picture.)

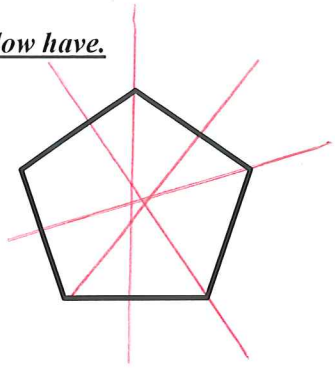
   [A] They are parallel
   [B] They are perpendicular
   [C] They are congruent
   [D] They are not related

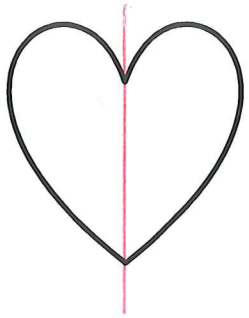
Read each statement carefully and then decide if the statement is ALWAYS/SOMETIMES/NEVER true.

9. Rotations preserve congruence (the shape stays the same size). — ALWAYS – SOMETIMES – NEVER
10. A reflection can map a point onto itself. — ALWAYS – SOMETIMES – NEVER
11. A rotation can map an entire shape onto itself. — ALWAYS – SOMETIMES – NEVER
12. If you translated an ARROW, it will be pointed in the same direction. — ALWAYS – SOMETIMES – NEVER
13. A reflection and a rotation can result in the same mapping. — ALWAYS – SOMETIMES – NEVER
14. The magnitude of a rotational symmetry is less than the order. — ALWAYS – SOMETIMES – NEVER

Draw all the lines of symmetry that the shapes below have.

15. 

16. 

17. 

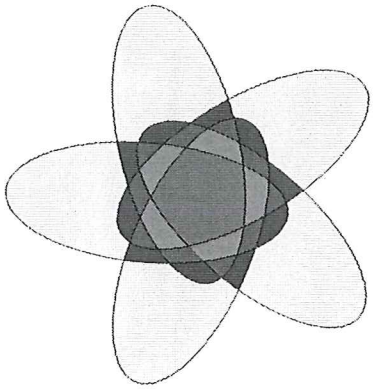
Which of the following shapes have rotational symmetry? If the shape does, state the order and magnitude of the rotational symmetry.

17.

Rotational Symmetry: Yes / No

Order: _____

Magnitude: _____



18.

Rotational Symmetry: Yes / No

Order: 5

Magnitude: 72°

19.

Rotational Symmetry: Yes / No

Order: 3

Magnitude: 120°

Match the pre-image coordinate to its corresponding image coordinate after each transformation.

20. V(5, -2) is the pre-image. +2, 5 A
(x, y) → (-y, x), what are the coordinates of V'?

21. W' (-2, 5) is the pre-image. 5, -2 G
(x, y) → (x+7, y-7), what are the coordinates of W'?

22. X' (2, 5) is the pre-image. -2, 5 B
(x, y) → (-x, y), what are the coordinates of X'?

23. Y' (-2, -5) is the pre-image. -5, -2 H
(x, y) → (y, x), what are the coordinates of Y'?

24. Z' (5, -2) is the pre-image. -5, +2 F
(x, y) → (-x, -y), what are the coordinates of Z'?

[A] (2, 5)

[B] (-2, 5)

[C] (2, -5)

[D] (-2, -5)

[E] (5, 2)

[F] (-5, 2)

[G] (5, -2)

[H] (-5, -2)

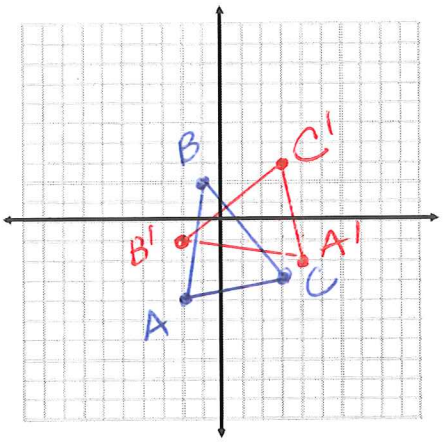
For each transformation below, write the rule, list the new coordinates and draw the pre-image and the image on the graph.

25. Rotate 90° counterclockwise

A (-2,-4) B (-1,2) C (3,-3)

Rule: (x , y) → ($-y$, x)

A' (4 , -2) B' (-2 , -1) C' (3 , 3)

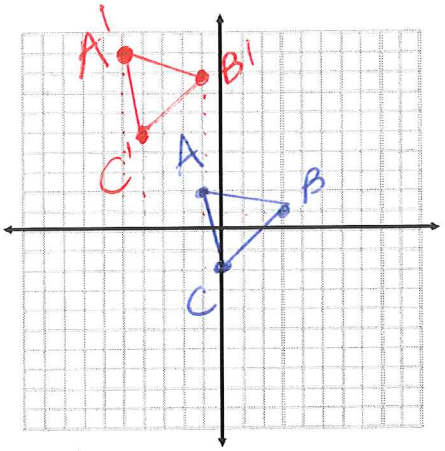


26. Translate Left 4 & Up 7

A (-1,2) B (3,1) C (0,-2)

Rule: (x , y) → ($x-4$, $y+7$)

A' (-5 , 9) B' (-1 , 8) C' (-4 , 5)

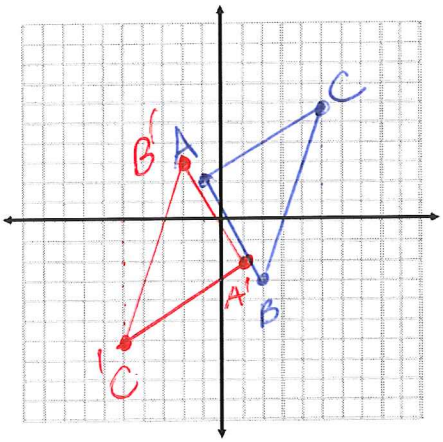


27. Rotate 180°

A (-1,2) B (2,-3) C (5,6)

Rule: (x , y) → ($-x$, $-y$)

A' (1 , -2) B' (-2 , 3) C' (-5 , -6)

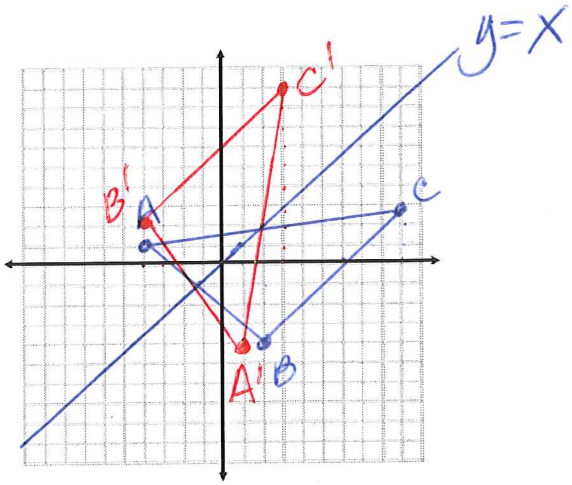


28. Reflect over the line y = x.

A (-4,1) B (2,-4) C (9,3)

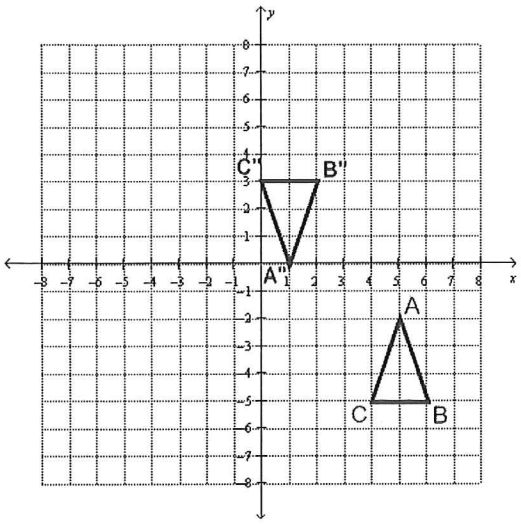
Rule: (x , y) → (y , x)

A' (1 , -4) B' (-4 , 2) C' (3 , 9)



29. Triangle *ABC* and triangle *A"B"C"* are plotted on the coordinate plane below.

Describe how you could move the ΔABC to exactly match $\Delta A"B"C"$ using a series of two transformations.



translation, then reflection

or

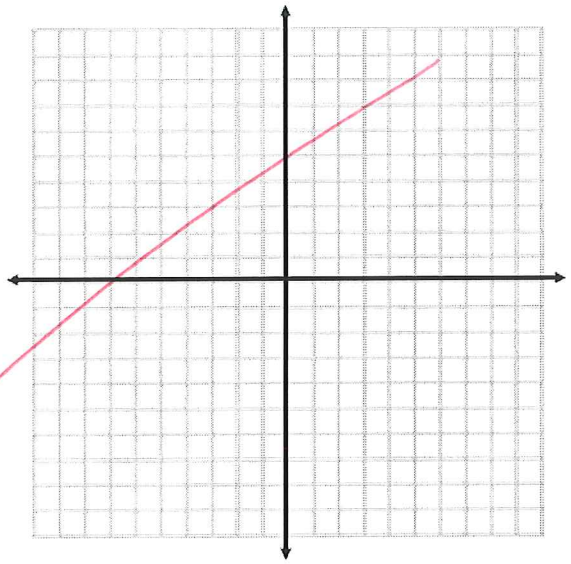
reflection, then translation

For each transformation below, draw the pre-image, list the new coordinates and draw the image on the graph.

30. Translate right 3 and down 4, then rotate 90°

A (1, 3) B (5, -2) C (-2, -1)

A' (___,___) B' (___,___) C' (___,___)



31. Rotate 270°, then reflect over the y-axis.

A (-1,4) B (2,-3) C (5,6)

A' (___,___) B' (___,___) C' (___,___)