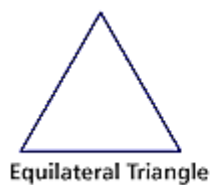


1) What **type of symmetry** is shown in this picture? *(multiple choices-select all that apply)*

- A) Point symmetry
- B) Line symmetry
- C) Rotational symmetry



2) For each regular polygon, what are the **center** and **angle of rotation**?



3) A certain transformation maps $\triangle ABC$ to $\triangle A'B'C'$.

- a) What is the image of \overline{BC} ?
- b) What is $T(A)$?
- c) What is the pre-image of $\angle B'$?

4) A positive angle of **rotation** turns a figure ... *(multiple choice)*

- A) clockwise
- B) counterclockwise

5) Which of the following transformations creates a figure that is similar (**but not congruent**) to the original figure? I. Translation II. Rotation III. Dilation *(multiple choice)*

- A) I only
- B) II only
- C) III only
- D) II and III

6) Which **transformation** is defined as a transformation along a vector such that the segment joining a point and its image has the same length as the vector and is parallel to the vector? *(multiple choice)*

- A) Reflection
- B) Dilation
- C) Rotation
- D) Translation

7) You ride in an elevator from the ground floor to the penthouse suite. **What type of transformation is this an example of?**

8) Using words, **describe the translation** that would be made by the rule: $(x, y) \rightarrow (x-5, y+4)$.

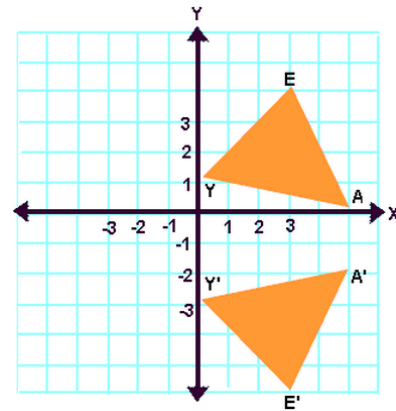


9) A statue at the park needs to be moved. Workers need to move it 7 yards north and 20 yards west. **Which of the following represents the job they must do?** (multiple choice)

{Use North = Up and West = Left on your coordinate graph}

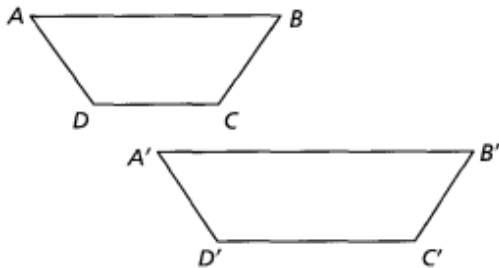
- A) 20 yards in the $-x$ direction and 7 yards in the $+y$ direction.
- B) 7 yards in the $+x$ direction and 20 yards in the $+y$ direction.
- C) 20 yards in the $+x$ direction and 7 yards in the $+y$ direction.
- D) 7 yards in the $-x$ direction and 20 yards in the $-y$ direction.

10) The **line of reflection** between these two triangles is $y = -1$.
true / false

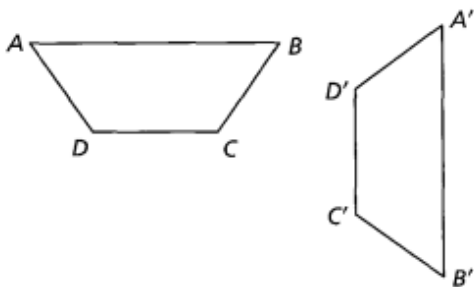


11) The figures show the pre-image ($ABCD$) and image ($A'B'C'D'$) under a transformation. **Determine which transformation is illustrated and whether the transformation appears to be rigid.**

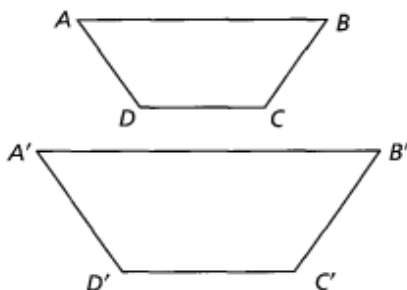
a)



b)

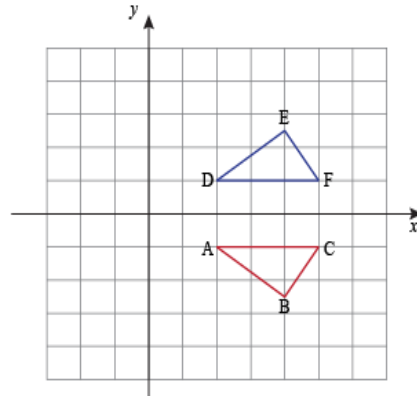


c)





12) Which transformation maps $\triangle ABC$ onto $\triangle DEF$?



13) Determine if each statement is true or false:

- a) The image of the point $(4, -3)$ under a reflection across the x -axis is $(-4, -3)$. true / false
- b) The image of the point $(-5, 4)$ under a reflection across the y -axis is $(5, 4)$. true / false
- c) The image of the point $(-1, 8)$ under a reflection across the line $y = x$ is $(8, -1)$. true / false

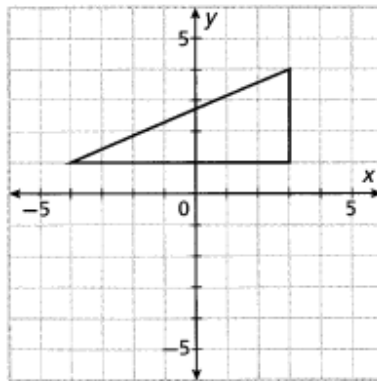
14) Name the image of each point after a reflection over the given line.

- a) $(-4, 3)$; y -axis
- b) $(5, 5)$; $y = x$
- c) $(-7, 0)$; x -axis

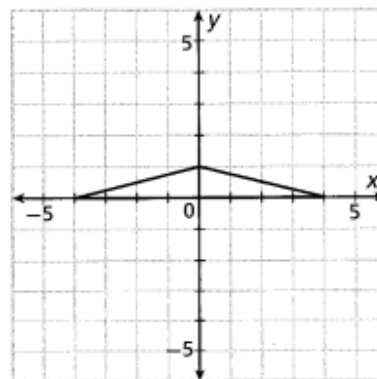
15) Mapping notation is used to indicate a transformation.

- i) **Graph the image** of the transformed figure
- ii) **State the type** of transformation
- iii) Determine if it is an **isometry**

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

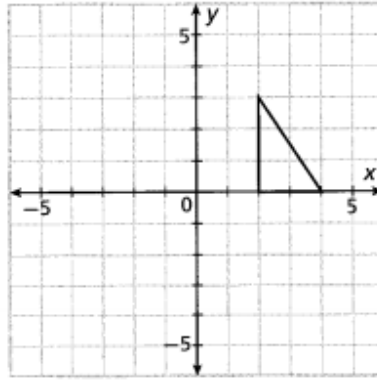


b) $(x, y) \rightarrow (x, 3y)$

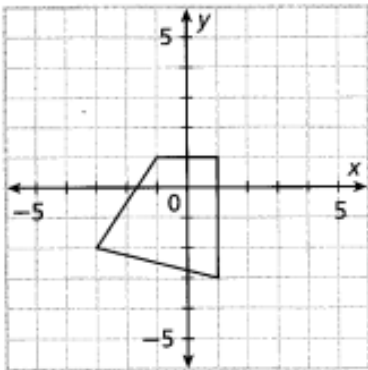




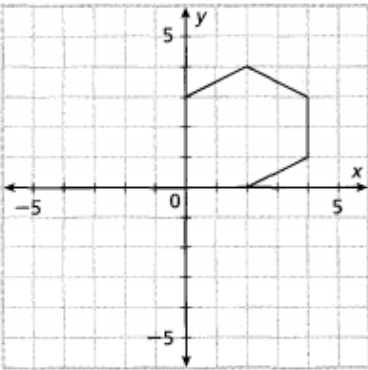
c) $(x, y) \rightarrow (x-4, y-4)$



16) Graph the image of the figure under the given translation: $\langle 3, -2 \rangle$



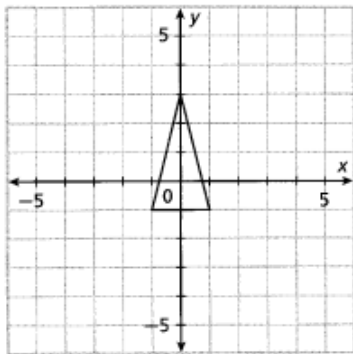
17) As the first step in designing a logo, you draw the figure shown in the first quadrant of the coordinate plane. Then you reflect the figure across the x -axis. You complete the design by reflecting the original figure and its image across the y -axis. **Draw the completed design.**



18) When point P is reflected across the y -axis, its image lies in Quadrant IV. When point P is reflected across the line $y = x$, its position does not change. **What can you say about the coordinates of point P ? In which quadrant would the pre-image point start?**



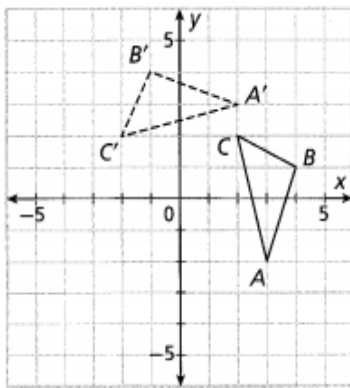
- 19) Suppose you **translate** the given triangle along $\langle -10, -10 \rangle$ and then **reflect** the image across the y-axis.



In which quadrant would the final image lie? Write a single rule that completes both transformations.

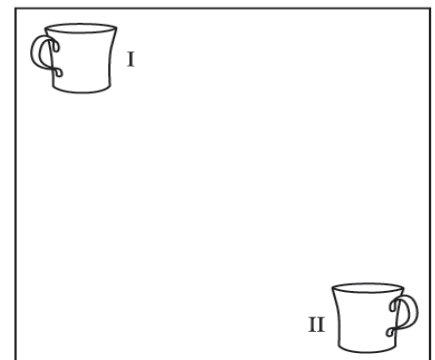
- 20) Point M is the midpoint of \overline{AB} . After a rigid motion, can you conclude that M' is the midpoint of $\overline{A'B'}$? Why or why not?

- 21) Use coordinate notation to write a rule for the rotation that maps $\triangle ABC$ to $\triangle A'B'C'$. What is the angle of rotation?



- 22) Jessica is a computer graphics designer and is working on an ad for the local coffee shop. The figure shows a coffee mug in two different positions. Which describes the transformation of the coffee mug in position I to the image in position II?
(multiple choice)

- A) a reflection over a horizontal line and a translation down.
- B) translation down and a reflection over a vertical line.
- C) 180° rotation.
- D) translation to the right and a reflection over a vertical line.



- 23) A student was asked to use coordinate notation to describe the result of a 180° rotation followed by a translation 3 units to the right and 5 units up.

The student wrote this notation: $(x, y) \rightarrow (-[y + 3], -[x - 5])$.

Find and correct the student's error(s). Explain.

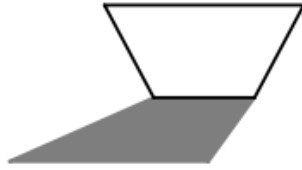


24) Which shadow shows a reflection of the corresponding figure? (multiple choice)

A)



B)



C)



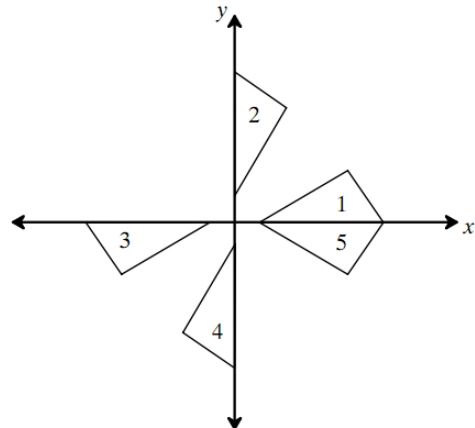
D)



25) Which figure represents a reflection of figure 3?

(multiple choice)

- A) figure 1
- B) figure 2
- C) figure 4
- D) figure 5

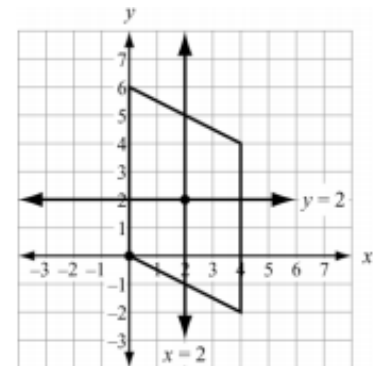


26) A parallelogram has vertices at (0, 0), (0, 6), (4, 4), and (4, -2).

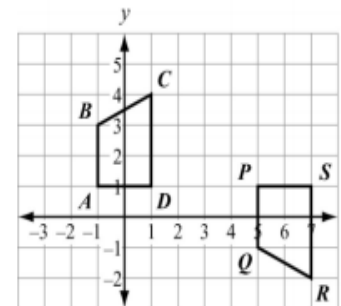
Which transformation maps the parallelogram to itself?

(multiple choice)

- A) A reflection across the line $x = 2$.
- B) A reflection across the line $y = 2$.
- C) A rotation of 180° about the point (2, 2).
- D) A rotation of 180° about the point (0, 0).



27) Specify a sequence of transformations that will map ABCD to PQRS.



28) Which of the following capital letters (if written simply) has line symmetry?

(multiple choice)

- A) F
- B) R
- C) O
- D) L



29) What are the coordinates of point T' , the image point of $T(-2, 5)$ after a reflection in the origin?

(multiple choice)

A) (2, 5)

C) (-2, -5)

B) (2, -5)

D) (5, -2)

30) \overline{JT} has coordinates $J(-2, -5)$ and $T(2, 3)$. The segment is rotated about the origin 180° to form $J'T'$. $J'T'$ is translated over 6 to the right and down 3 to form $J''T''$. What are the coordinates of $J'T'$ and $J''T''$?