

Name: _____

Geometry Period: _____

Station #4 Practice

Use your notes to answer (a) and (b)

a. Which transformations are NOT rigid transformations? Explain using vocabulary and include a diagram if necessary.

dilation is not a rigid motion because side lengths will change

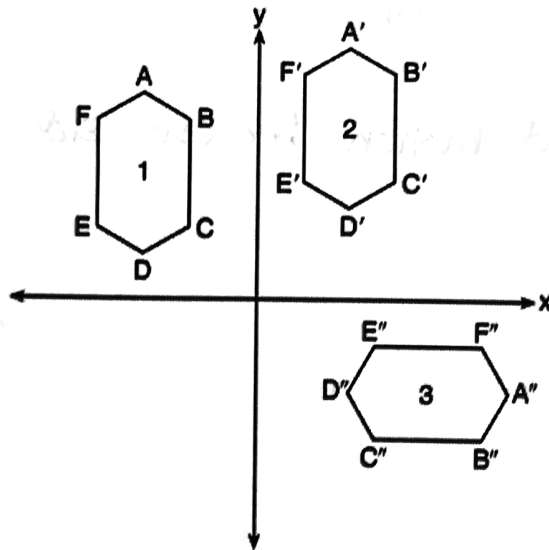
b. Which transformations are rigid transformations? Explain using vocabulary and include a diagram if necessary.

Translation
Rotation
Reflection

} all sides and angles remain the same

Station #3: Answer all questions.

1. In the diagram below, congruent figures 1, 2, and 3 are drawn.

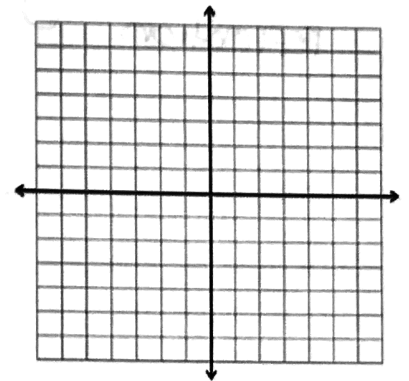


Which sequence of transformations maps figure 1 onto figure 2 and then figure 2 onto figure 3?

- (1) a reflection followed by a translation
- (2) a rotation followed by a translation
- (3) a translation followed by a reflection
- (4) a translation followed by a rotation

2. When the transformation $T_{2,-1}$ is performed on point A, its image is point $A'(-3,4)$. What are the coordinates of A?

- (1) (5, -5)
- (2) (-5, 5)
- (3) (-1, 3)
- (4) (-6, -4)



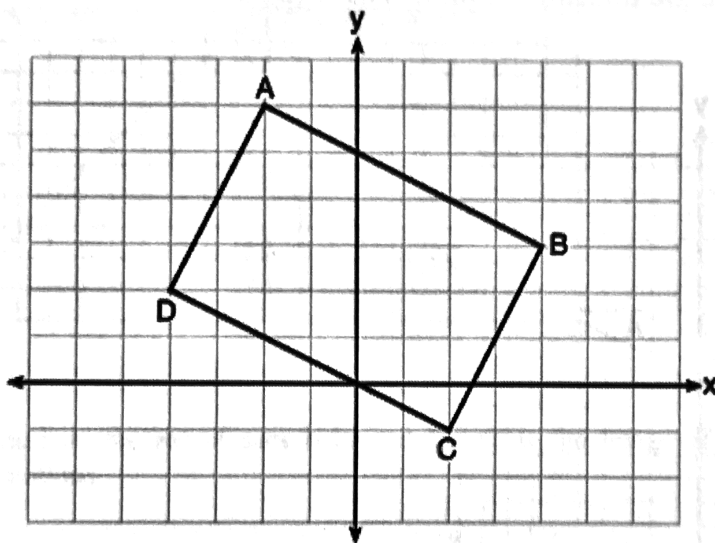
3. If $\triangle A'B'C'$ is the image of $\triangle ABC$, under which transformation will the triangles *not* be congruent?

- (1) reflection over the x-axis
- (2) translation to the left 5 and down 4
- (3) dilation centered at the origin with scale factor 2
- (4) rotation of 270° counterclockwise about the origin

4. The vertices of $\triangle JKL$ have coordinates $J(5,1)$, $K(-2,-3)$, and $L(-4,1)$. Under which transformation is the image $\triangle J'K'L'$ not congruent to $\triangle JKL$?

- (1) a translation of two units to the right and two units down
- (2) a counterclockwise rotation of 180 degrees around the origin
- (3) a reflection over the x -axis
- (4) a dilation with a scale factor of 2 and centered at the origin

5. Quadrilateral $ABCD$ is graphed on the set of axes below.



When $ABCD$ is rotated 90° in a counterclockwise direction about the origin, its image is quadrilateral $A'B'C'D'$. Is distance preserved under this rotation, and which coordinates are correct for the given vertex?

- (1) no and $C'(1,2)$
- (2) no and $D'(2,4)$
- (3) yes and $A'(6,2)$
- (4) yes and $B'(-3,4)$

10. 6.

Which transformation would result in the perimeter of a triangle being different from the perimeter of its image?

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

(3) $(x,y) \rightarrow (4x,4y)$

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

(4) $(x,y) \rightarrow (x+2,y-5)$

11.

7.

Which transformation preserves both distance and angle?

(1) translation

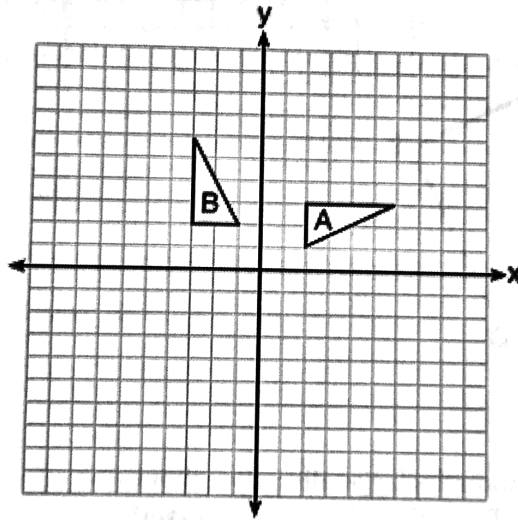
(2) horizontal stretch

(3) vertical stretch

(4) dilation

8.

In the diagram below, which single transformation was used to map triangle A onto triangle B?



(1) line reflection

(3) dilation

(2) rotation

(4) translation

9. Solve for the value of x. Round to the nearest hundredths.

$$-2x + 5x - 8x = 180$$

$$\frac{-5x}{-5} = \frac{180}{-5}$$

$$x = -36$$

$$\frac{4x - 16}{-3x} = \frac{3k + 72}{-3x}$$

$$\frac{x - 4}{-3} = \frac{72}{-3}$$

$$\frac{x - 4}{-3} = -24$$

$$x - 4 = 72$$

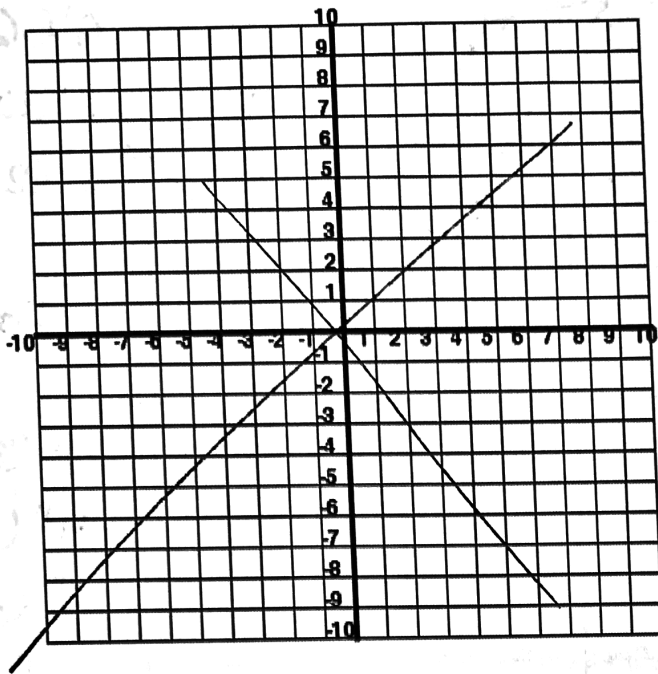
$$x = 76$$

10. State whether you believe this transformation is a rigid transformation.

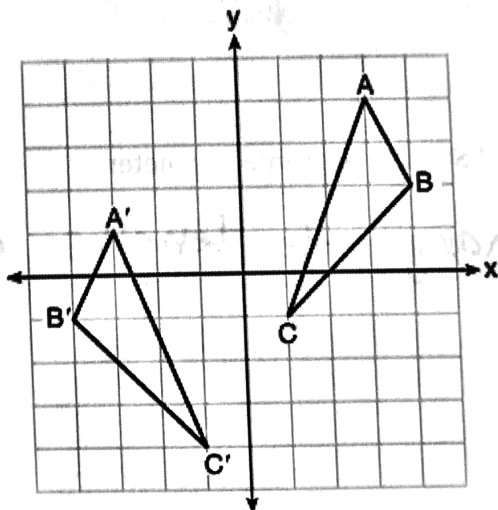
$$(x, y) \rightarrow (x - 3, y + 6)$$

yes, this is a translation

11. Describe the sequence of transformations that maps $\triangle ABC$ onto $\triangle A''B''C''$.



WR. As graphed on the set of axes below, $\triangle A'B'C'$ is the image of $\triangle ABC$ after a sequence of transformations.

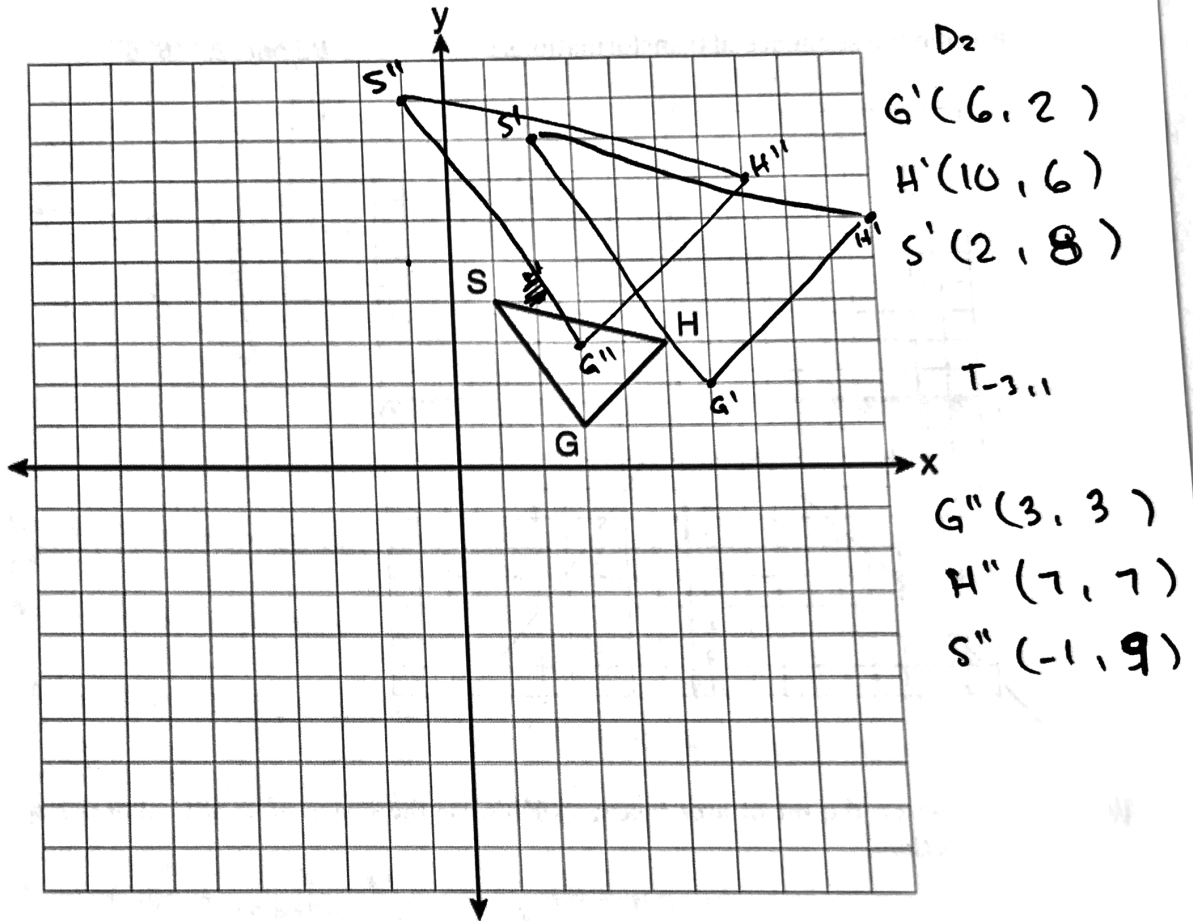


Is $\triangle A'B'C'$ congruent to $\triangle ABC$? Use the properties of rigid motion to explain your answer.

yes, this is a reflection which is a rigid motion

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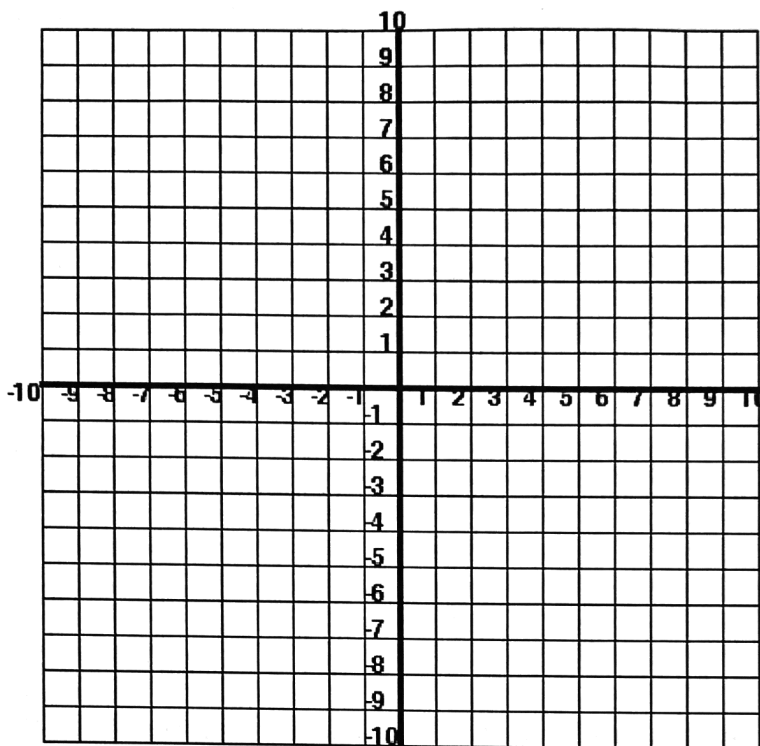
As shown on the set of axes below, $\triangle GHS$ has vertices $G(3, 1)$, $H(5, 3)$, and $S(1, 4)$. Graph and state the coordinates of $\triangle G''H''S''$, the image of $\triangle GHS$ after the transformation $T_{-3,1} \circ D_2$.



Explain whether or not $\triangle GHS$ and $\triangle G''H''S''$ have the same perimeter.

NO, Dilation will change the lengths of the sides

13. The coordinates of rectangle $MATH$ are $M(-1, -3)$, $A(-4, -3)$, $T(-4, 2)$, and $H(-1, 2)$. State the coordinates of $M''A''T''H''$, the image of $MATH$ after it undergoes a translation two units to the left and three units down, followed by a point reflection through the origin.



left 2 down 3

$$M'(-3, -6)$$

$$A'(-6, -6)$$

$$T'(-6, -1)$$

$$H'(-3, -1)$$

reflection through origin

$$M''(3, 6)$$

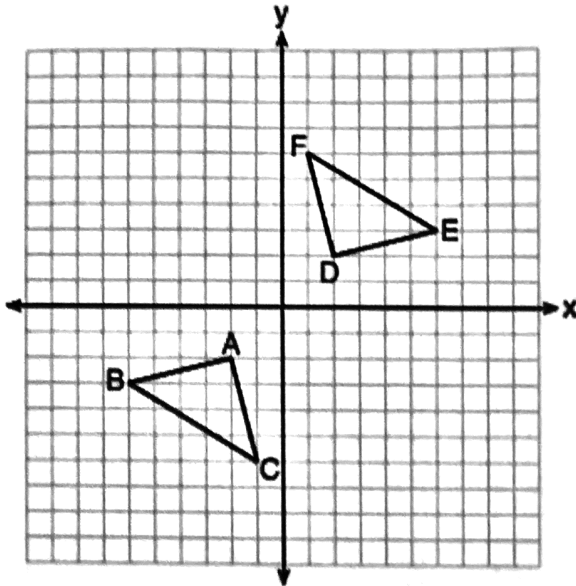
$$A''(6, 6)$$

$$T''(6, 1)$$

$$H''(3, 1)$$

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Triangle ABC and triangle DEF are graphed on the set of axes below.



Which sequence of transformations maps triangle ABC onto triangle DEF ?

- (1) a reflection over the x -axis followed by a reflection over the y -axis
- (2) a 180° rotation about the origin followed by a reflection over the line $y = x$
- (3) a 90° clockwise rotation about the origin followed by a reflection over the y -axis
- (4) a translation 8 units to the right and 1 unit up followed by a 90° counterclockwise rotation about the origin