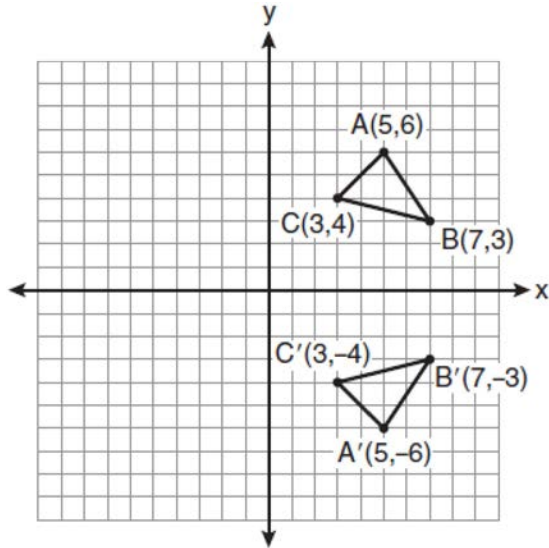


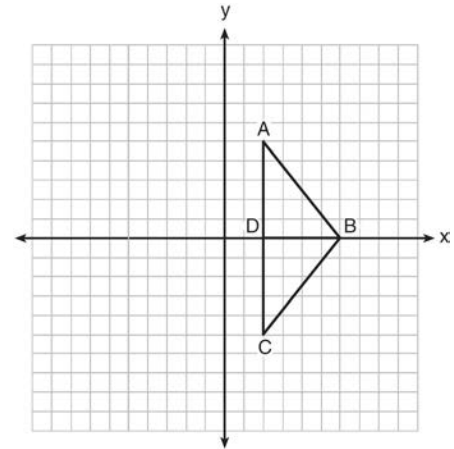
G.CO.B.6: Properties of Transformations 2

- 1 Which expression best describes the transformation shown in the diagram below?



- 1) same orientation; reflection
- 2) opposite orientation; reflection
- 3) same orientation; translation
- 4) opposite orientation; translation

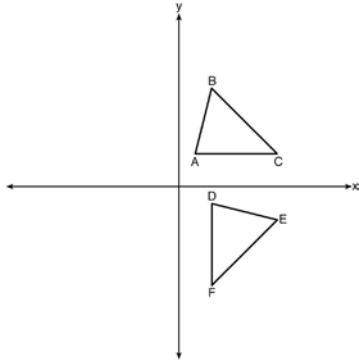
- 2 As shown in the diagram below, when right triangle DAB is reflected over the x -axis, its image is triangle DCB .



Which statement justifies why $\overline{AB} \cong \overline{CB}$?

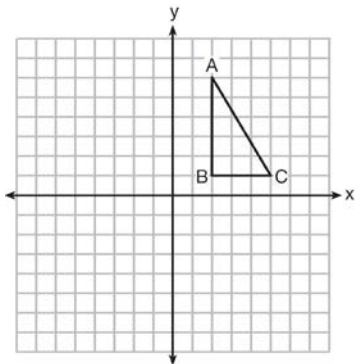
- 1) Distance is preserved under reflection.
- 2) Orientation is preserved under reflection.
- 3) Points on the line of reflection remain invariant.
- 4) Right angles remain congruent under reflection.

- 3 The image of $\triangle ABC$ after a rotation of 90° clockwise about the origin is $\triangle DEF$, as shown below.



Which statement is true?

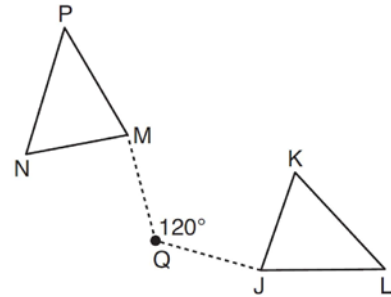
- 1) $\overline{BC} \cong \overline{DE}$
 - 2) $\overline{AB} \cong \overline{DF}$
 - 3) $\angle C \cong \angle E$
 - 4) $\angle A \cong \angle D$
- 4 Right triangle ABC is shown in the graph below.



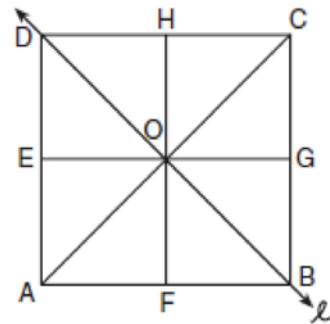
After a reflection over the y -axis, the image of $\triangle ABC$ is $\triangle A'B'C'$. Which statement is *not* true?

- 1) $\overline{BC} \cong \overline{B'C'}$
- 2) $A'B' \perp B'C'$
- 3) $AB = A'B'$
- 4) $\overline{AC} \parallel \overline{A'C'}$

- 5 Triangle MNP is the image of triangle JKL after a 120° counterclockwise rotation about point Q . If the measure of angle L is 47° and the measure of angle N is 57° , determine the measure of angle M . Explain how you arrived at your answer.

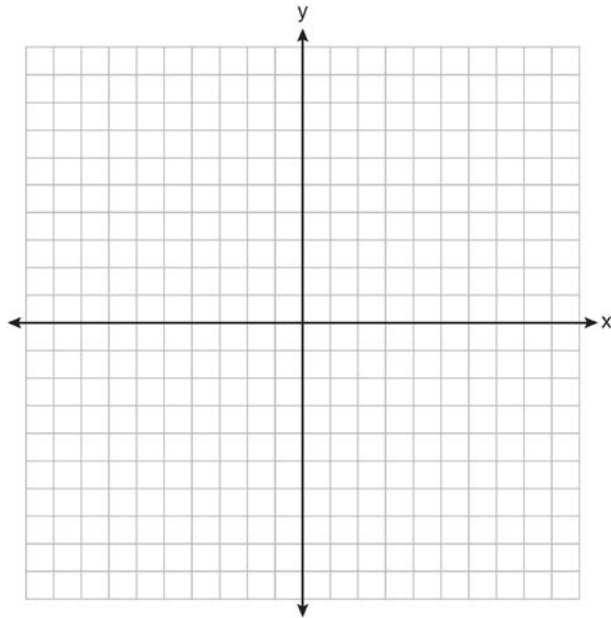


- 6 In the accompanying diagram of square $ABCD$, F is the midpoint of \overline{AB} , G is the midpoint of \overline{BC} , H is the midpoint of \overline{CD} , and E is the midpoint of \overline{DA} .

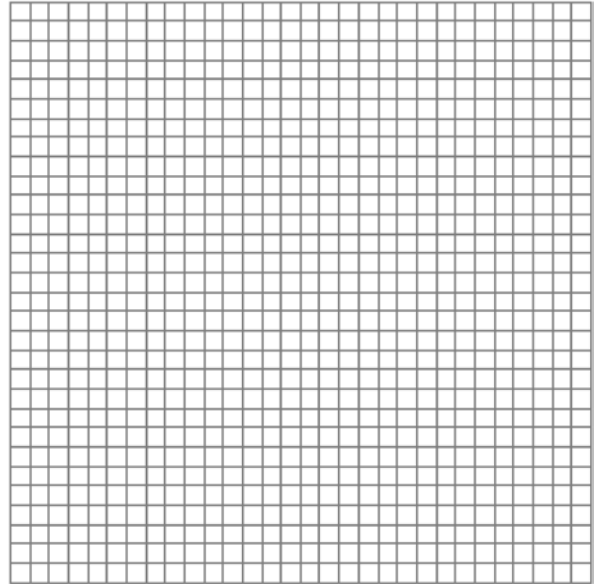


Find the image of $\triangle EOA$ after it is reflected in line ℓ . Is this isometry direct or opposite? Explain your answer.

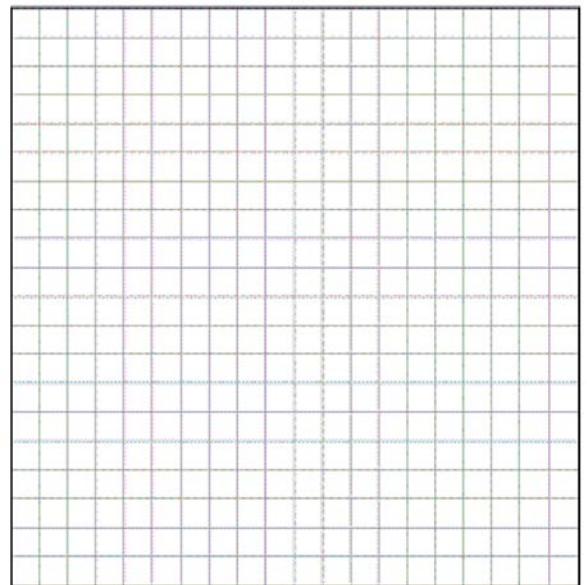
- 7 Triangle ABC has coordinates $A(2,-2)$, $B(2,1)$, and $C(4,-2)$. Triangle $A'B'C'$ is the image of $\triangle ABC$ under $T_{5,-2}$. On the set of axes below, graph and label $\triangle ABC$ and its image, $\triangle A'B'C'$. Determine the relationship between the area of $\triangle ABC$ and the area of $\triangle A'B'C'$. Justify your response.



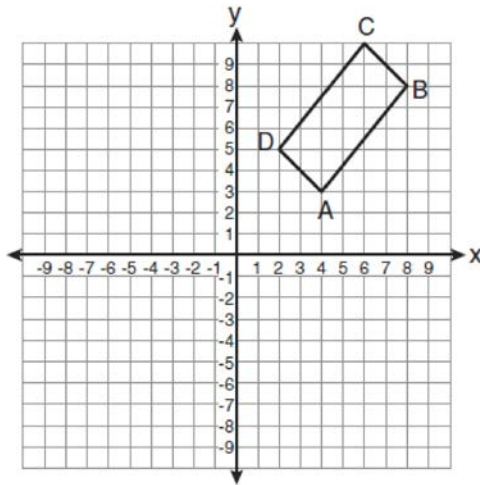
- 8 The vertices of $\triangle ABC$ are $A(3,2)$, $B(6,1)$, and $C(4,6)$. Identify and graph a transformation of $\triangle ABC$ such that its image, $\triangle A'B'C'$, results in $\overline{AB} \parallel \overline{A'B'}$.



- 9 Triangle DEG has the coordinates $D(1,1)$, $E(5,1)$, and $G(5,4)$. Triangle DEG is rotated 90° about the origin to form $\triangle D'E'G'$. On the grid below, graph and label $\triangle DEG$ and $\triangle D'E'G'$. State the coordinates of the vertices D' , E' , and G' . Justify that this transformation preserves distance.

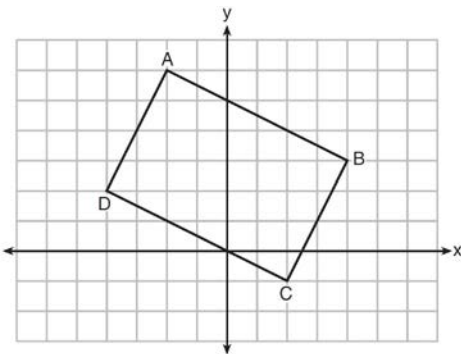


- 10 The rectangle $ABCD$ shown in the diagram below will be reflected across the x -axis.



What will *not* be preserved?

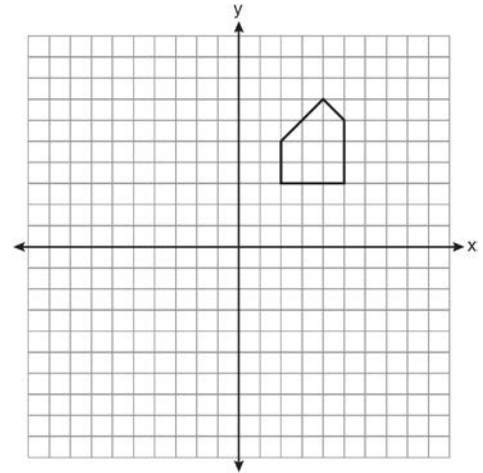
- 1) slope of \overline{AB}
 - 2) parallelism of \overline{AB} and \overline{CD}
 - 3) length of \overline{AB}
 - 4) measure of $\angle A$
- 11 Quadrilateral $ABCD$ is graphed on the set of axes below.



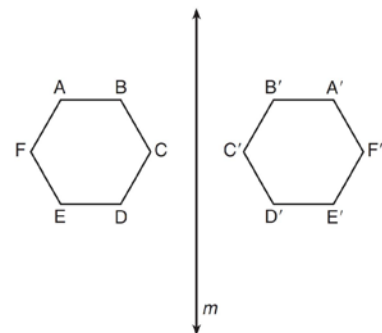
When $ABCD$ is rotated 90° in a counterclockwise direction about the origin, its image is quadrilateral $A'B'C'D'$. Is distance preserved under this rotation, and which coordinates are correct for the given vertex?

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

- 12 A pentagon is drawn on the set of axes below. If the pentagon is reflected over the y -axis, determine if this transformation is an isometry. Justify your answer. [The use of the set of axes is optional.]



- 13 As shown in the diagram below, when hexagon $ABCDEF$ is reflected over line m , the image is hexagon $A'B'C'D'E'F'$.



Under this transformation, which property is *not* preserved?

- 1) area
- 2) distance
- 3) orientation
- 4) angle measure

G.CO.B.6: Properties of Transformations 2

Answer Section

1 ANS: 2 REF: 011003ge

2 ANS: 1 REF: 061307ge

3 ANS: 4

The measures of the angles of a triangle remain the same after all rotations because rotations are rigid motions which preserve angle measure.

REF: fall1402geo

4 ANS: 4 REF: 081408ge

5 ANS:

$M = 180 - (47 + 57) = 76$ Rotations do not change angle measurements.

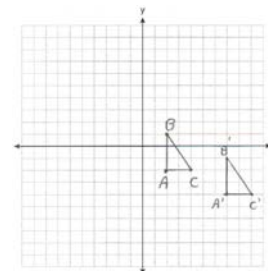
REF: 081629geo

6 ANS:

$\triangle HOC$. This reflection is an opposite isometry because the orientation of $\triangle EOA$ is different from $\triangle HOC$.

REF: 060424b

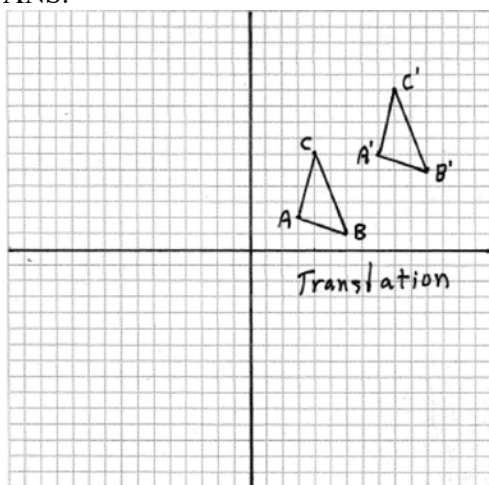
7 ANS:



$A'(7, -4), B'(7, -1), C'(9, -4)$. The areas are equal because translations preserve distance.

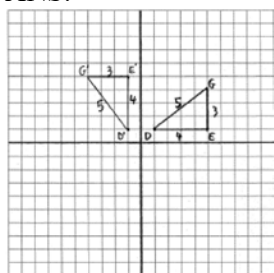
REF: 011235ge

8 ANS:



REF: fall0830ge

9 ANS:


 $D'(-1, 1), E'(-1, 5), G'(-4, 5)$

REF: 080937ge

10 ANS: 1

REF: 061005ge

11 ANS: 4

REF: 011611geo

12 ANS:

Yes. A reflection is an isometry.

REF: 061132ge

13 ANS: 3

REF: 011503ge