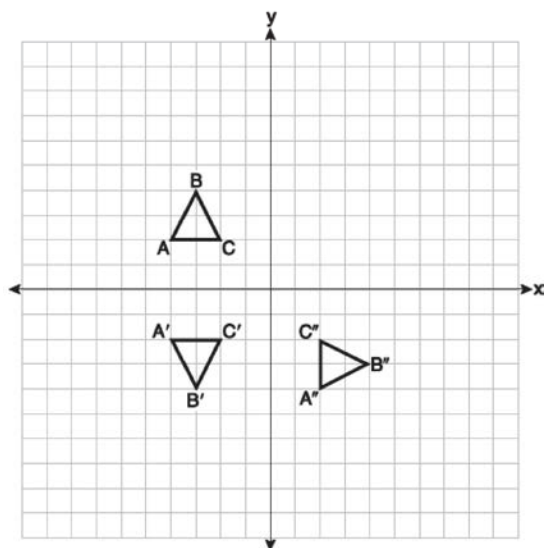


G.CO.A.5: Compositions of Transformations 1

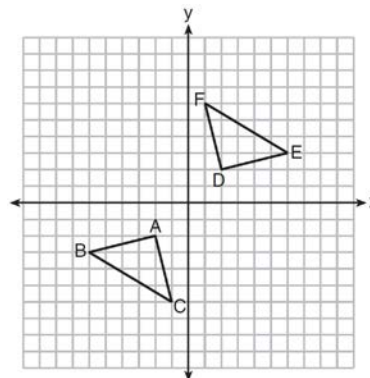
- 1 On the set of axes below, triangle ABC is graphed. Triangles $A'B'C'$ and $A''B''C''$, the images of triangle ABC , are graphed after a sequence of rigid motions.



Identify which sequence of rigid motions maps $\triangle ABC$ onto $\triangle A'B'C'$ and then maps $\triangle A'B'C'$ onto $\triangle A''B''C''$.

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

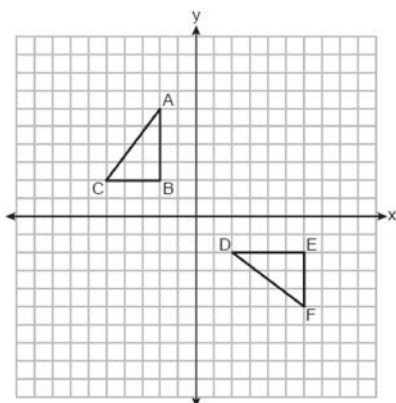
- 2 Triangle ABC and triangle DEF are graphed on the set of axes below.



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

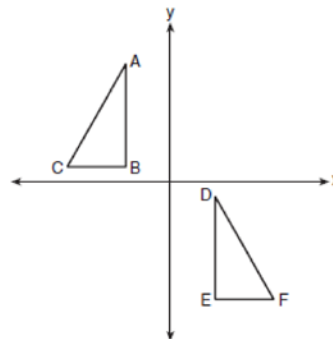
- 3 On the set of axes below, congruent triangles ABC and DEF are drawn.



Which sequence of transformations maps $\triangle ABC$ onto $\triangle DEF$?

- 1) A counterclockwise rotation of 90 degrees about the origin, followed by a translation 8 units to the right.
- 2) A counterclockwise rotation of 90 degrees about the origin, followed by a reflection over the y -axis.
- 3) A counterclockwise rotation of 90 degrees about the origin, followed by a translation 4 units down.
- 4) A clockwise rotation of 90 degrees about the origin, followed by a reflection over the x -axis.

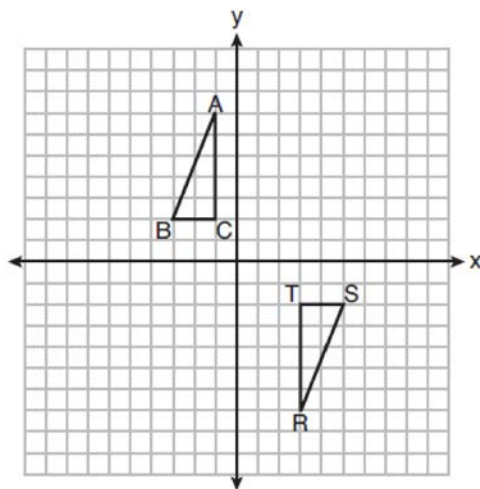
- 4 In the diagram below, $\triangle ABC \cong \triangle DEF$.



Which sequence of transformations maps $\triangle ABC$ onto $\triangle DEF$?

- 1) a reflection over the x -axis followed by a translation
- 2) a reflection over the y -axis followed by a translation
- 3) a rotation of 180° about the origin followed by a translation
- 4) a counterclockwise rotation of 90° about the origin followed by a translation

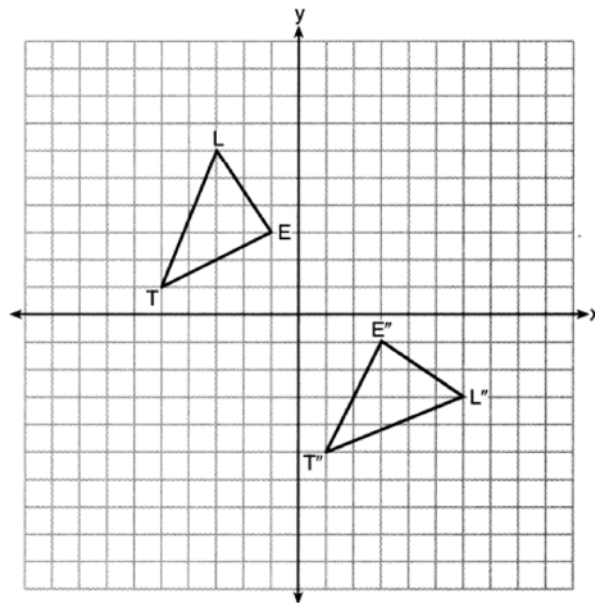
- 5 Triangles ABC and RST are graphed on the set of axes below.



Which sequence of rigid motions will prove $\triangle ABC \cong \triangle RST$?

- 1) a line reflection over $y = x$
- 2) a rotation of 180° centered at $(1, 0)$
- 3) a line reflection over the x -axis followed by a translation of 6 units right
- 4) a line reflection over the x -axis followed by a line reflection over $y = 1$

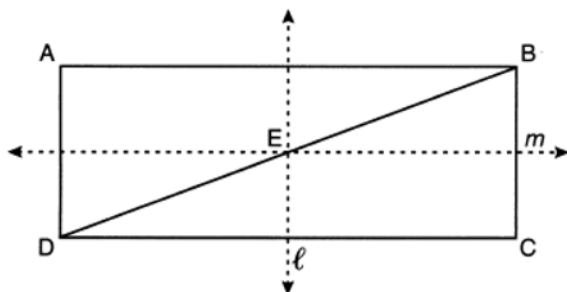
- 6 On the set of axes below, $\triangle LET$ and $\triangle L''E''T''$ are graphed in the coordinate plane where $\triangle LET \cong \triangle L''E''T''$.



Which sequence of rigid motions maps $\triangle LET$ onto $\triangle L''E''T''$?

- 1) a reflection over the y -axis followed by a reflection over the x -axis
- 2) a rotation of 180° about the origin
- 3) a rotation of 90° counterclockwise about the origin followed by a reflection over the y -axis
- 4) a reflection over the x -axis followed by a rotation of 90° clockwise about the origin

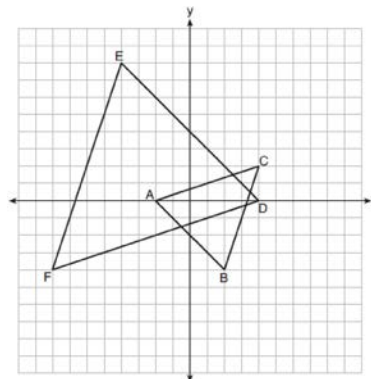
- 7 In the diagram below, $ABCD$ is a rectangle, and diagonal \overline{BD} is drawn. Line ℓ , a vertical line of symmetry, and line m , a horizontal line of symmetry, intersect at point E .



Which sequence of transformations will map $\triangle ABD$ onto $\triangle CDB$?

- 1) a reflection over line ℓ followed by a 180° rotation about point E
- 2) a reflection over line ℓ followed by a reflection over line m
- 3) a 180° rotation about point B
- 4) a reflection over \overline{DB}

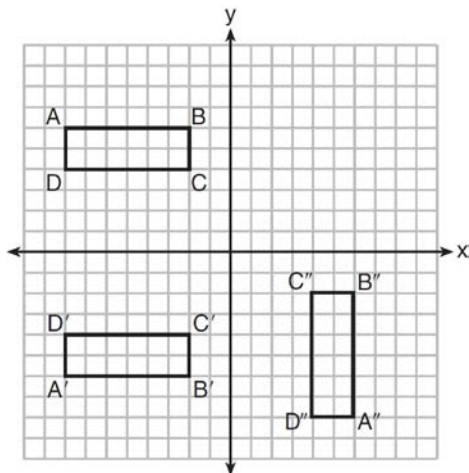
- 8 On the set of axes below, $\triangle ABC$ has vertices at $A(-2,0)$, $B(2,-4)$, $C(4,2)$, and $\triangle DEF$ has vertices at $D(4,0)$, $E(-4,8)$, $F(-8,-4)$.



Which sequence of transformations will map $\triangle ABC$ onto $\triangle DEF$?

- 1) a dilation of $\triangle ABC$ by a scale factor of 2 centered at point A
- 2) a dilation of $\triangle ABC$ by a scale factor of $\frac{1}{2}$ centered at point A
- 3) a dilation of $\triangle ABC$ by a scale factor of 2 centered at the origin, followed by a rotation of 180° about the origin
- 4) a dilation of $\triangle ABC$ by a scale factor of $\frac{1}{2}$ centered at the origin, followed by a rotation of 180° about the origin

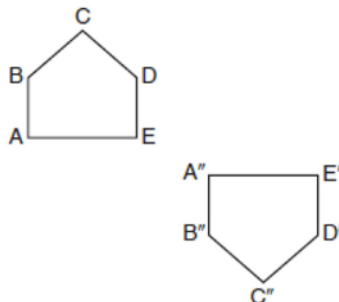
- 9 A sequence of transformations maps rectangle $ABCD$ onto rectangle $A''B''C''D''$, as shown in the diagram below.



Which sequence of transformations maps $ABCD$ onto $A'B'C'D'$ and then maps $A'B'C'D'$ onto $A''B''C''D''$?

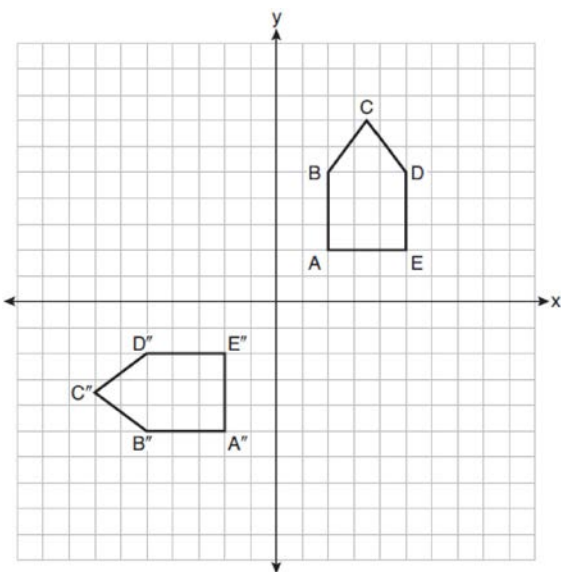
- 1) a reflection followed by a rotation
- 2) a reflection followed by a translation
- 3) a translation followed by a rotation
- 4) a translation followed by a reflection

- 10 Identify which sequence of transformations could map pentagon $ABCDE$ onto pentagon $A''B''C''D''E''$, as shown below.



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

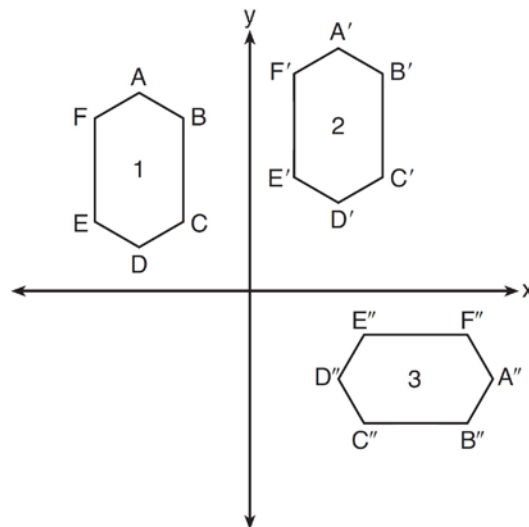
- 11 On the set of axes below, pentagon $ABCDE$ is congruent to $A''B''C''D''E''$.



Which describes a sequence of rigid motions that maps $ABCDE$ onto $A''B''C''D''E''$?

- 1) a rotation of 90° counterclockwise about the origin followed by a reflection over the x -axis
- 2) a rotation of 90° counterclockwise about the origin followed by a translation down 7 units
- 3) a reflection over the y -axis followed by a reflection over the x -axis
- 4) a reflection over the x -axis followed by a rotation of 90° counterclockwise about the origin

- 12 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

G.CO.A.5: Compositions of Transformations 1
Answer Section

1 ANS: 4 REF: 061901geo

2 ANS: 1 REF: 011608geo

3 ANS: 1 REF: 062308geo

4 ANS: 2 REF: 061701geo

5 ANS: 2 REF: 081909geo

6 ANS: 3

1) and 2) are wrong because the orientation of $\triangle LET$ has changed, implying one reflection has occurred. The sequence in 4) moves $\triangle LET$ back to Quadrant II.

REF: 062218geo

7 ANS: 2 REF: 082220geo

8 ANS: 3 REF: 011903geo

9 ANS: 1 REF: 081507geo

10 ANS: 3 REF: 011710geo

11 ANS: 2 REF: 012017geo

12 ANS: 4 REF: 061504geo