G.CO.A.5: Compositions of Transformations 2
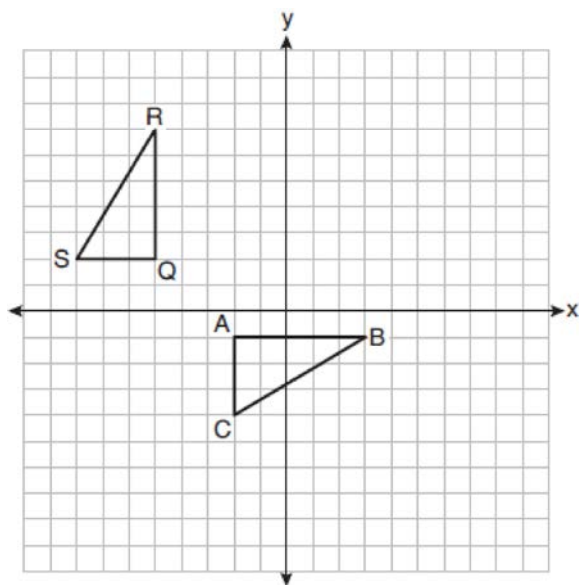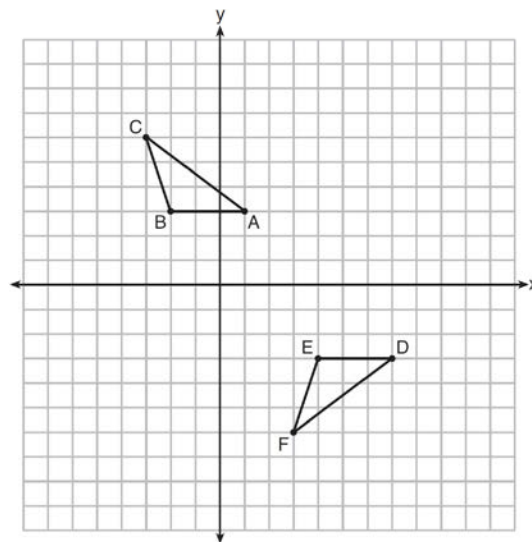
1 On the set of axes below, $\triangle ABC$ is graphed with coordinates $A(-2,-1)$, $B(3,-1)$, and $C(-2,-4)$. Triangle QRS, the image of $\triangle ABC$, is graphed with coordinates $Q(-5,2)$, $R(-5,7)$, and $S(-8,2)$.

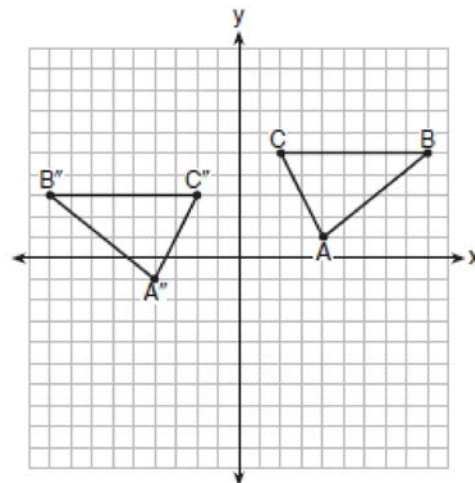

Describe a sequence of transformations that would map $\triangle ABC$ onto $\triangle QRS$.

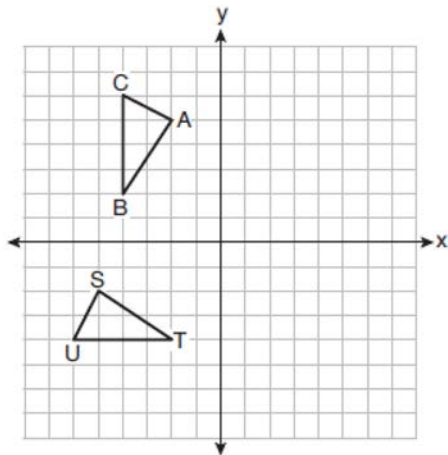2 Describe a sequence of transformations that will map $\triangle ABC$ onto $\triangle DEF$ as shown below.

3 The graph below shows $\triangle ABC$ and its image, $\triangle A''B''C''$.

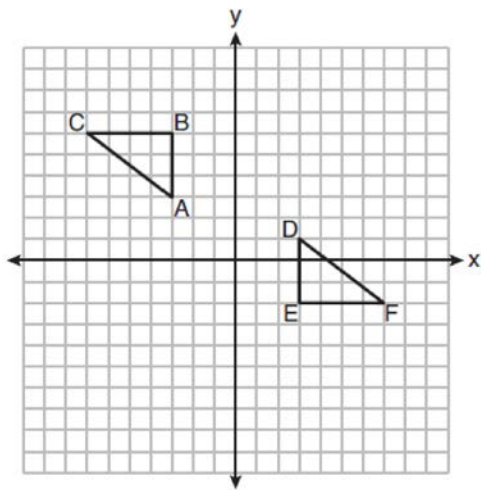
Describe a sequence of rigid motions which would map $\triangle ABC$ onto $\triangle A''B''C''$.

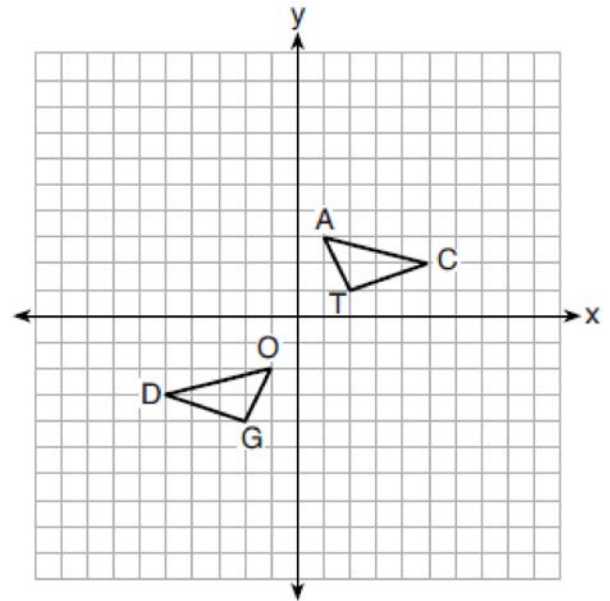4 On the set of axes below, $\triangle ABC \cong \triangle STU$.

Describe a sequence of rigid motions that maps
$\triangle ABC$ onto $\triangle STU$.

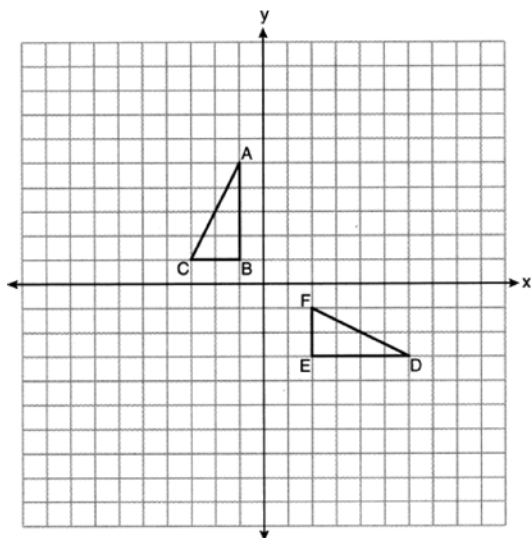5 On the set of axes below, $\triangle ABC \cong \triangle DEF$.

Describe a sequence of rigid motions that maps
$\triangle ABC$ onto $\triangle DEF$.

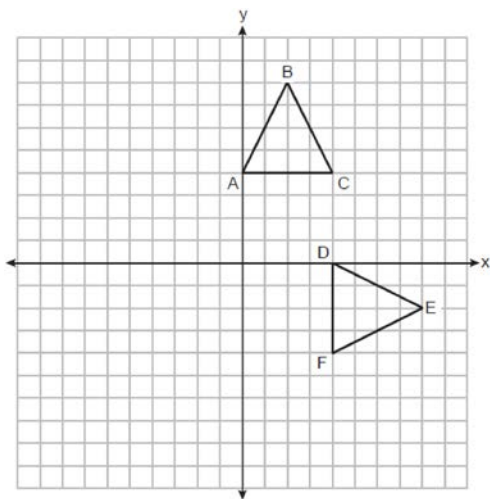6 On the set of axes below, $\triangle DOG \cong \triangle CAT$.

Describe a sequence of transformations that maps
$\triangle DOG$ onto $\triangle CAT$.

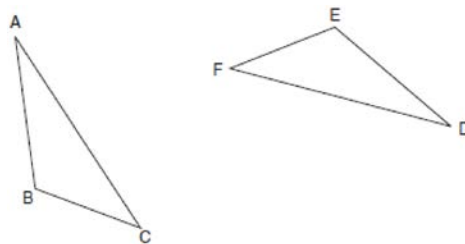7 On the set of axes below, $\triangle ABC$ and $\triangle DEF$ are graphed.

Describe a sequence of rigid motions that would map $\triangle ABC$ onto $\triangle DEF$.

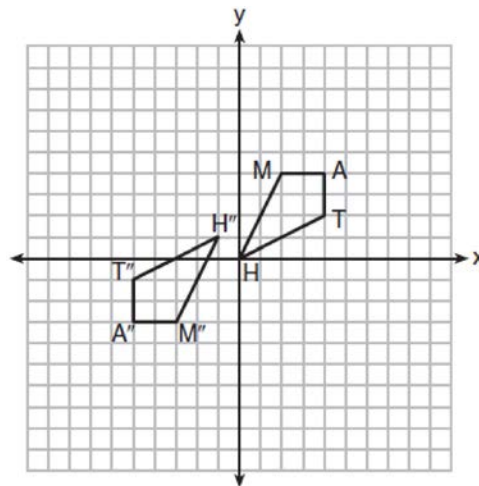8 Triangles ABC and DEF are graphed on the set of axes below.

Describe a sequence of transformations that maps $\triangle ABC$ onto $\triangle DEF$.

9 Triangle ABC and triangle DEF are drawn below.
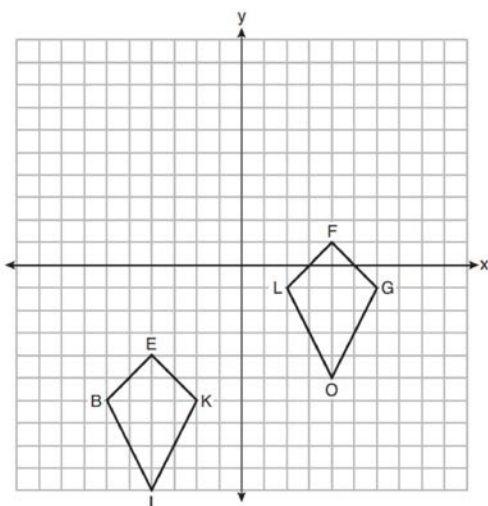

If $\overline{AB} \cong \overline{DE}$, $\overline{AC} \cong \overline{DF}$, and $\angle A \cong \angle D$, write a sequence of transformations that maps triangle ABC onto triangle DEF.

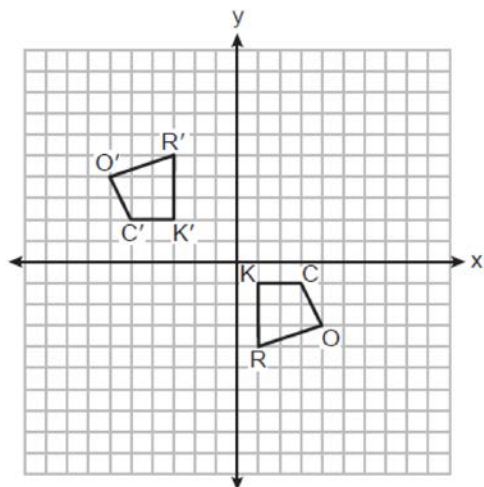10 Quadrilateral $MATH$ and its image $M''A''T''H''$ are graphed on the set of axes below.

Describe a sequence of transformations that maps quadrilateral $MATH$ onto quadrilateral $M''A''T''H''$.

11 Quadrilaterals *BIKE* and *GOLF* are graphed on the set of axes below.

Describe a sequence of transformations that maps quadrilateral *BIKE* onto quadrilateral *GOLF*.

12 On the set of axes below, congruent quadrilaterals *ROCK* and *R'O'C'K'* are graphed.

Describe a sequence of transformations that would map quadrilateral *ROCK* onto quadrilateral *R'O'C'K'*.

13 Trapezoids *ABCD* and *A"B"C"D"* are graphed on the set of axes below.
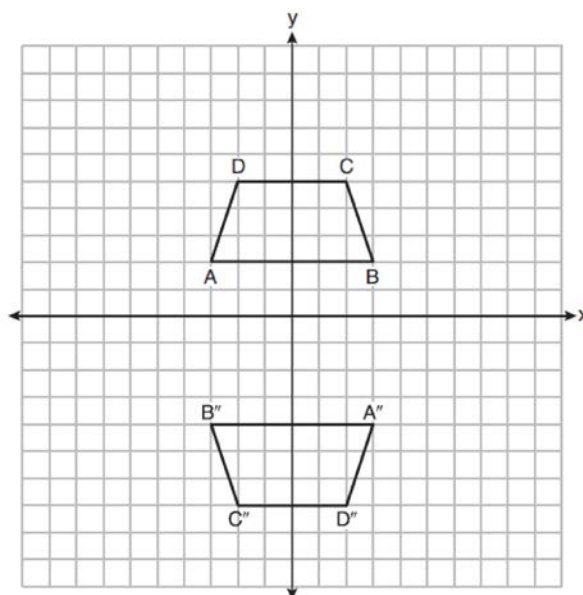
Describe a sequence of transformations that maps trapezoid *ABCD* onto trapezoid *A"B"C"D"*.

14 In the diagram below, $\triangle ABC$ has coordinates $A(1,1)$, $B(4,1)$, and $C(4,5)$. Graph and label $\triangle A"B"C"$, the image of $\triangle ABC$ after the translation five units to the right and two units up followed by the reflection over the line $y = 0$.
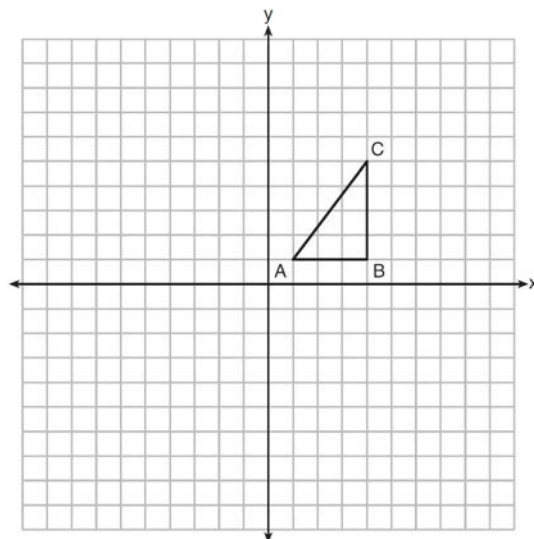
G.CO.A.5: Compositions of Transformations 2
Answer Section

1 ANS:
$R_{(-5,2),90°} \circ T_{-3,1} \circ r_{\text{x-axis}}$

  REF: 011928geo

2 ANS:
$T_{6,0} \circ r_{\text{x-axis}}$

  REF: 061625geo

3 ANS:
$T_{0,-2} \circ r_{\text{y-axis}}$

  REF: 011726geo

4 ANS:
$R_{90°}$ or $T_{2,-6} \circ R_{(-4,2),90°}$ or $R_{270°} \circ r_{\text{x-axis}} \circ r_{\text{y-axis}}$

  REF: 061929geo

5 ANS:
$r_{y=2} \circ r_{\text{y-axis}}$

  REF: 081927geo

6 ANS:
$T_{0,5} \circ r_{\text{y-axis}}$

  REF: 082225geo

7 ANS:
Rotate 90° clockwise about B and translate down 4 and right 3.

  REF: 012326geo

8 ANS:
$T_{4,-4}$, followed by a 90º clockwise rotation about point D.

  REF: 062326geo

9 ANS:
Rotate $\triangle ABC$ clockwise about point C until $\overline{DF} \parallel \overline{AC}$. Translate $\triangle ABC$ along $\overline{CF}$ so that C maps onto F.
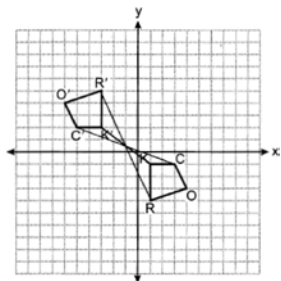
  REF: 061730geo

10 ANS:
$R_{180°}$ about $\left(-\dfrac{1}{2}, \dfrac{1}{2}\right)$

  REF: 081727geo

11 ANS:
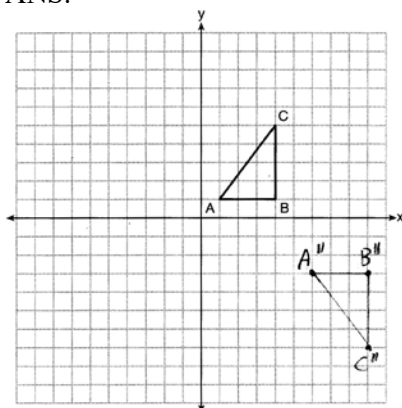Reflection across the *y*-axis, then translation up 5.

REF: 061827geo

12 ANS:

Rotate 180º about $\left(-1, \dfrac{1}{2}\right)$.

REF: 082325geo

13 ANS:
rotation 180º about the origin, translation 2 units down; rotation 180º about *B*, translation 6 units down and 6 units left; or reflection over *x*-axis, translation 2 units down, reflection over *y*-axis

REF: 081828geo

14 ANS:

REF: 081626geo