

9-4 Practice

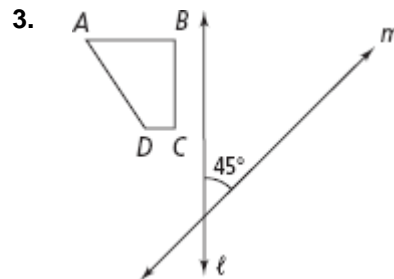
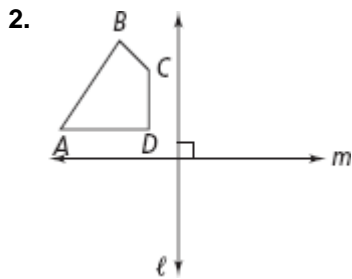
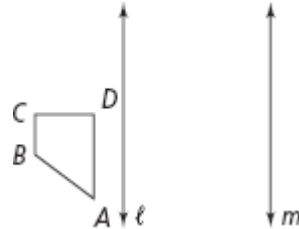
Form K

Compositions of Isometries

Find the image of each figure after the transformation $R_m \circ R_\ell$. Is the resulting transformation a translation or a rotation? For a translation, describe the direction and distance. For a rotation, tell the center of rotation and the angle of rotation.

1. To start, if the lines ℓ and m are parallel, then it is a ? .

If ℓ and m intersect, then it is a ? .



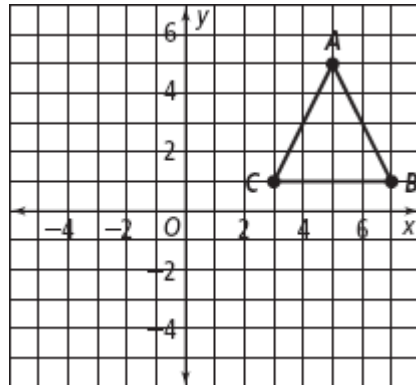
Graph $\triangle ABC$ and its glide reflection image.

4. $(R_{x\text{-axis}} \circ T_{\langle -2, 0 \rangle})(\triangle ABC)$

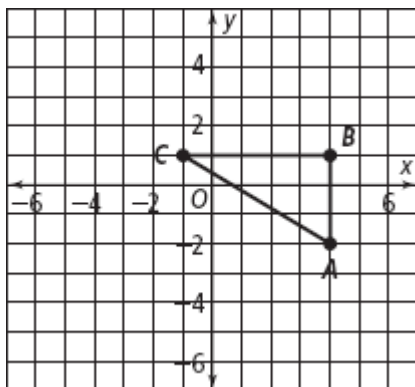
To start, translate the vertices of $\triangle ABC$ to:

$A'(\square, \square), B'(\square, \square), C'(\square, \square)$.

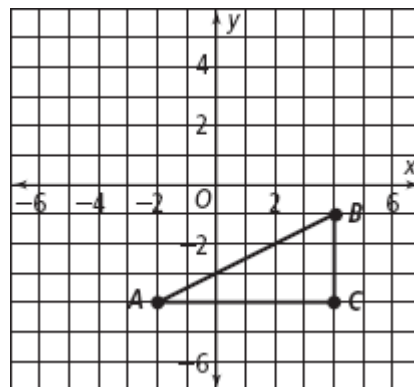
Then, reflect $\triangle A'B'C'$ across \square .



5. $(R_{y\text{-axis}} \circ T_{\langle 0, -3 \rangle})(\triangle ABC)$



6. $(R_{y=-1} \circ T_{\langle 1, -1 \rangle})(\triangle ABC)$



9-4

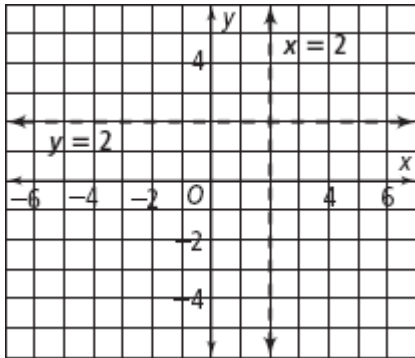
Practice (continued)

Form K

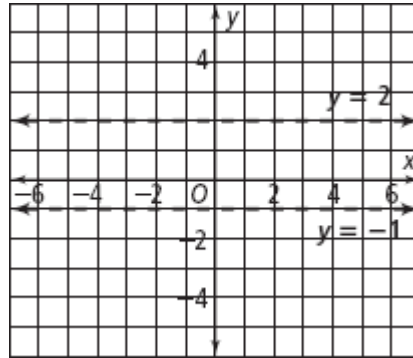
Compositions of Isometries

Use the given points and lines. Graph \overline{XY} and its image $\overline{X'Y'}$ after a reflection first across l_1 and then across l_2 . Is the resulting transformation a translation or a rotation? For a translation, describe the distance and direction. For a rotation, tell the center of rotation and the angle of rotation.

7. $X(4, 3), Y(-2, 1); l_1: y = 2; l_2: x = 2$



8. $X(-3, 4), Y(2, 3); l_1: y = 2; l_2: y = -1$



9. **Open-Ended** Draw a quadrilateral on a coordinate grid. Draw the image of the quadrilateral for one example of each transformation.

- a. reflection
- b. translation
- c. rotation
- d. glide reflection

Identify each mapping as a translation, reflection, rotation, or glide reflection. Write the rule for each translation, reflection, rotation, or glide reflection. For glide reflections, write the rule as a composition of a translation and a reflection.

10. trapezoid $ABCD \rightarrow$ trapezoid $JICD$

11. trapezoid $ABCD \rightarrow$ trapezoid $NKLM$

12. trapezoid $CIJD \rightarrow$ trapezoid $LKNM$

13. trapezoid $CIJD \rightarrow$ trapezoid $TSNU$

14. trapezoid $KLMN \rightarrow$ trapezoid $STUN$

