Transformations in the Coordinate Plane

Identify the coordinates of $\triangle MNO$ after each transformation. Use $\triangle XYZ$ for the transformed triangle.

1. Translate 4 units left.

2. Translate 3 units up.

3. Translate 7 units right, then 2 units down.

4. Reflect across the $x$-axis.

Use the triangle $M (3, 1), N (2, 5), O (-1, 1)$. Then complete each transformation, using the same coordinate grid.

5. Rotate $90^\circ$ counterclockwise about the origin.

6. Rotate $180^\circ$ clockwise about the origin.

7. Reflect across the $x$-axis, then the $y$-axis.

8. Reflect across the $y$-axis, then the $x$-axis.

In Exercises 9–10, identify the transformation that changes the A figure into the B figure.

9. [Diagram]

10. [Diagram]

Test Prep

11. What are the coordinates of the point $(2, -3)$ after a reflection across the $x$-axis?
   
   A (2, 3)  
   B ($-2, -3$)  
   C ($-2, 3$)  
   D None of the above

12. You translate a point 3 units to the right. Explain how to find the coordinates of the translated point.