

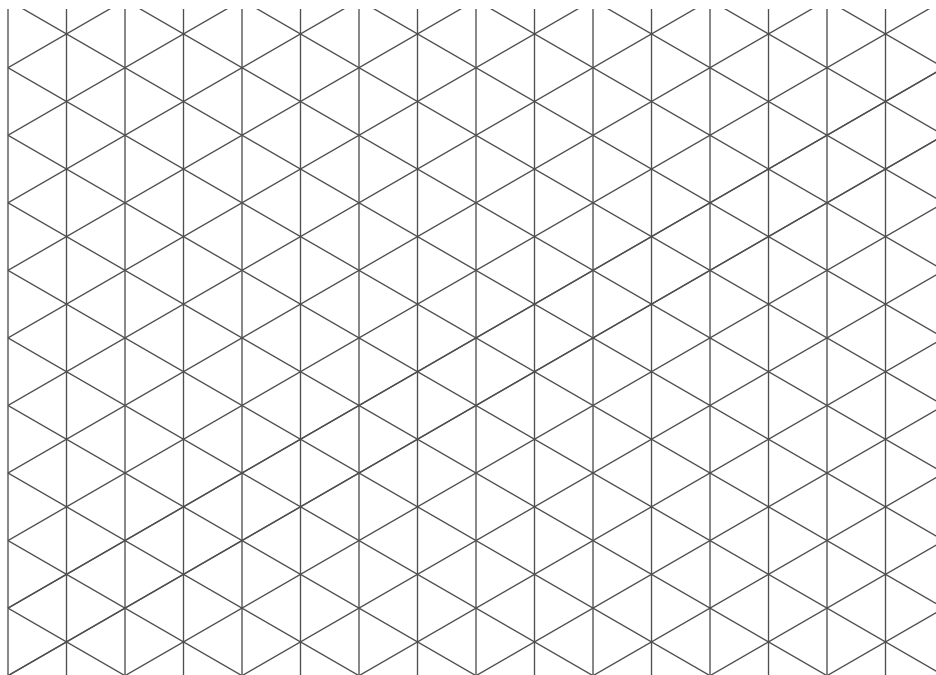


# Grid Moves

Let's transform some figures on grids.

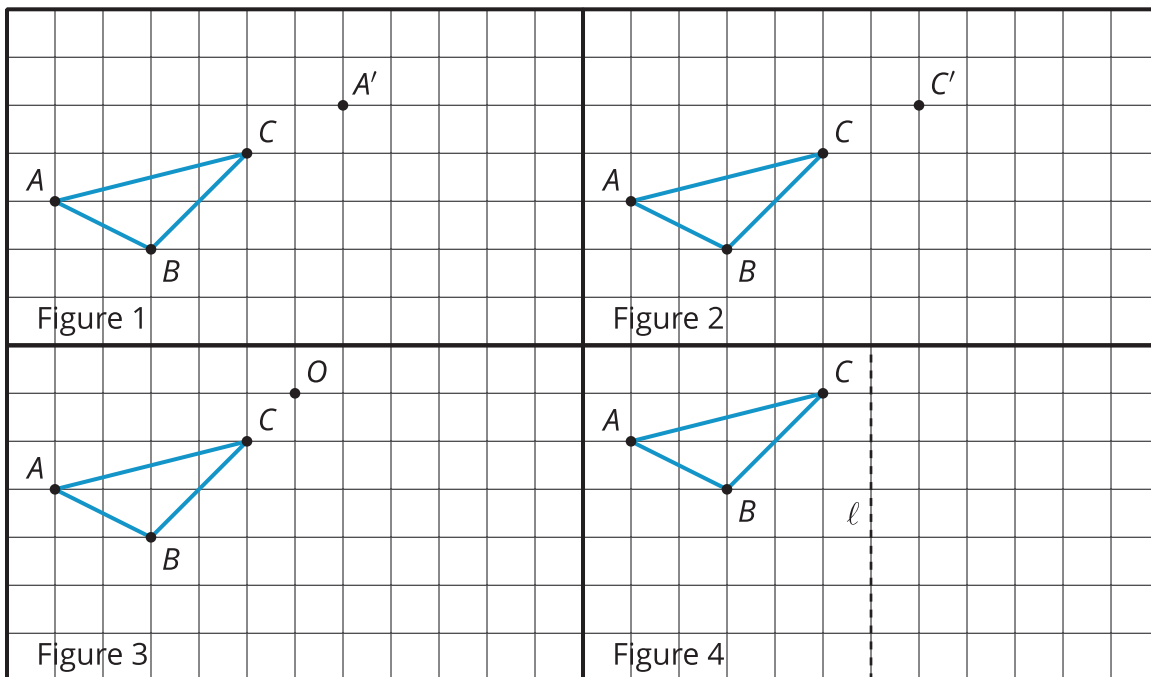
## 3.1 Notice and Wonder: The Isometric Grid

What do you notice? What do you wonder?

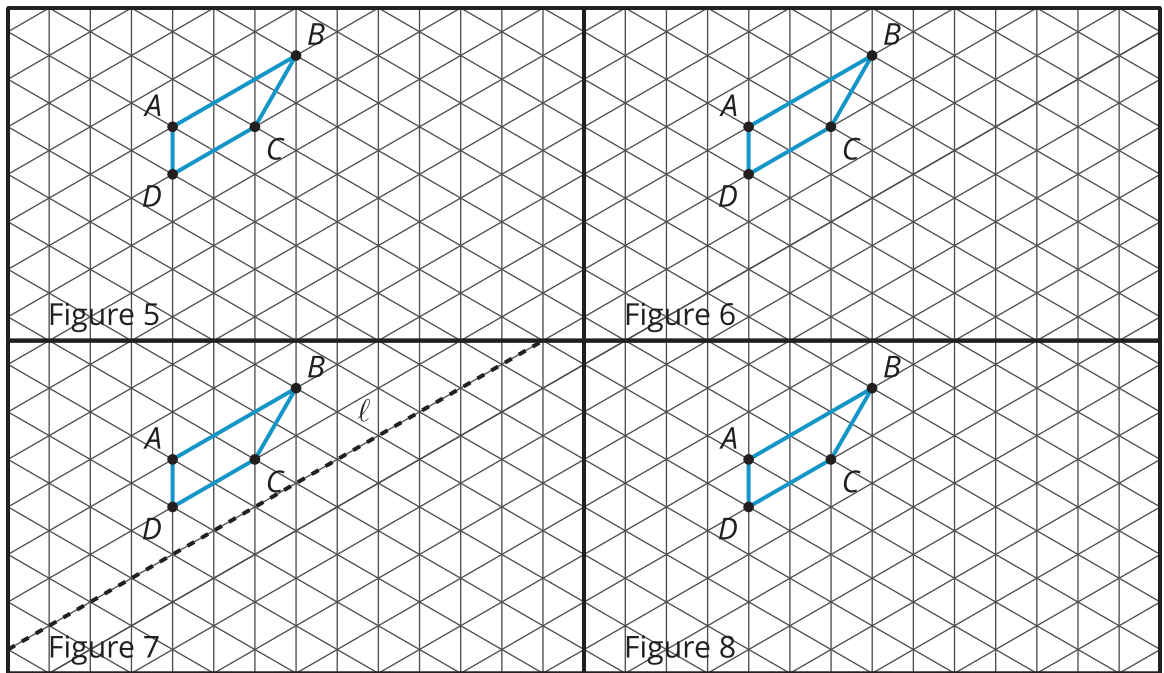


## 3.2 Image Information

Your teacher will give you tracing paper to carry out the moves specified. Use  $A'$ ,  $B'$ ,  $C'$ , and  $D'$  to indicate vertices in the new figure that correspond to the points  $A$ ,  $B$ ,  $C$ , and  $D$  in the original figure.



1. In Figure 1, translate triangle  $ABC$  so that  $A$  goes to  $A'$ .
2. In Figure 2, translate triangle  $ABC$  so that  $C$  goes to  $C'$ .
3. In Figure 3, rotate triangle  $ABC$   $90^\circ$  counterclockwise using center  $O$ .
4. In Figure 4, reflect triangle  $ABC$  using line  $\ell$ .



5. In Figure 5, rotate quadrilateral  $ABCD$   $60^\circ$  counterclockwise using center  $B$ .
6. In Figure 6, rotate quadrilateral  $ABCD$   $60^\circ$  clockwise using center  $C$ .
7. In Figure 7, reflect quadrilateral  $ABCD$  using line  $\ell$ .
8. In Figure 8, translate quadrilateral  $ABCD$  so that  $A$  goes to  $C$ .

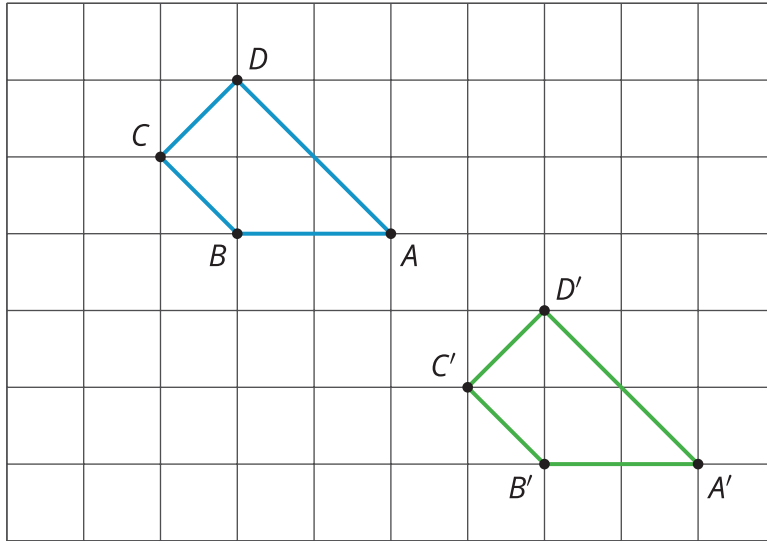
### Are you ready for more?

The effects of each move can be “undone” by using another move. For example, to undo the effect of translating 3 units to the right, we could translate 3 units to the left. What move undoes each of the following moves?

1. Translate 3 units up
2. Translate 1 unit up and 1 unit to the left
3. Rotate  $30^\circ$  clockwise around a point  $P$
4. Reflect across a line  $\ell$

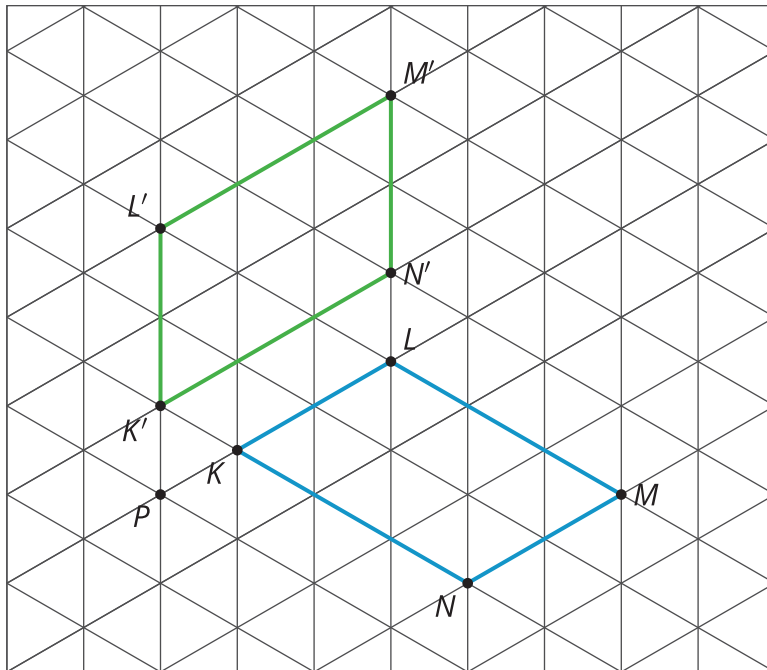
## Lesson 3 Summary

When a figure is on a grid, we can use the grid to describe a move. For example, here is a figure and an **image** of the figure after a move.



Quadrilateral  $ABCD$  is translated 4 units to the right and 3 units down to the position of quadrilateral  $A'B'C'D'$ .

This type of grid is called an *isometric grid*. The isometric grid is made up of equilateral triangles. The angles in the triangles all measure  $60^\circ$ , making the isometric grid convenient for showing rotations of  $60^\circ$ .



Here is quadrilateral  $KLMN$  and its image  $K'L'M'N'$  after a 60-degree counterclockwise rotation around a point  $P$ .