Lesson 2.8 – More Rotations and Reflections

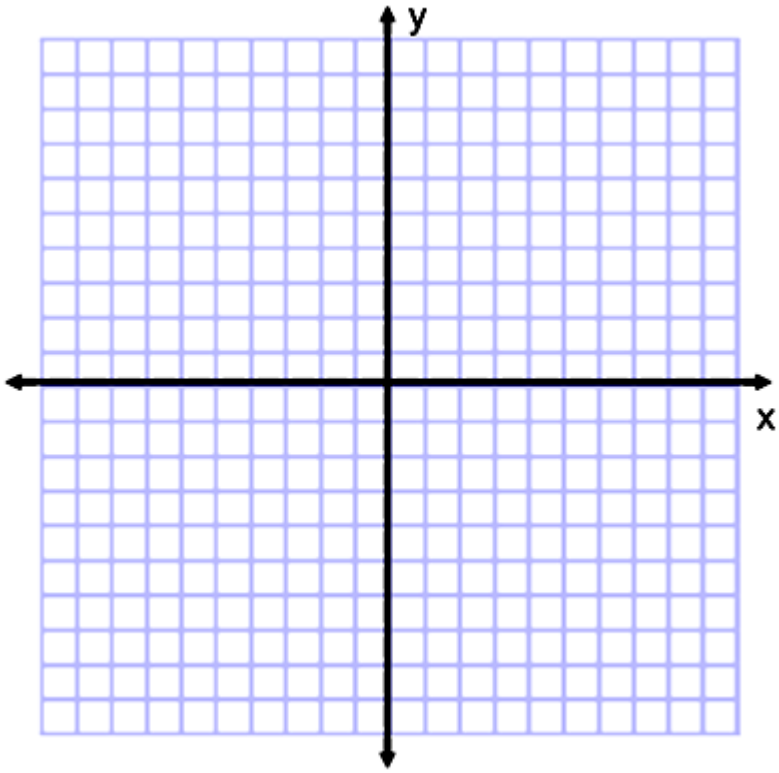
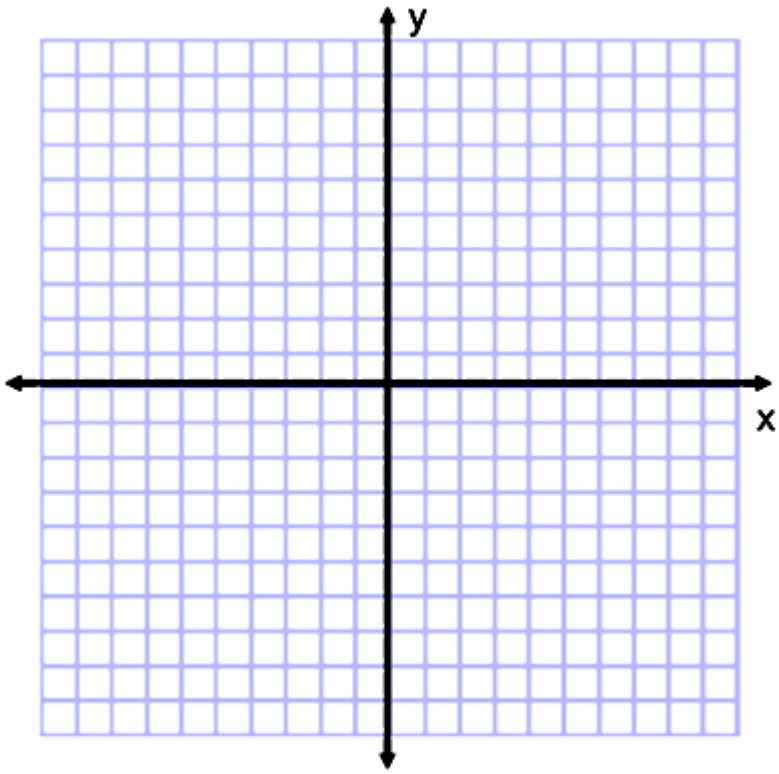
Before we conclude the first part of this module, we need to look into rotations and reflections more in-depth. So far we have rotated shapes about the _____ and have reflected shapes through the _____ and _____. How do we handle rotations about a different point? How do we reflect through lines that are not axes?

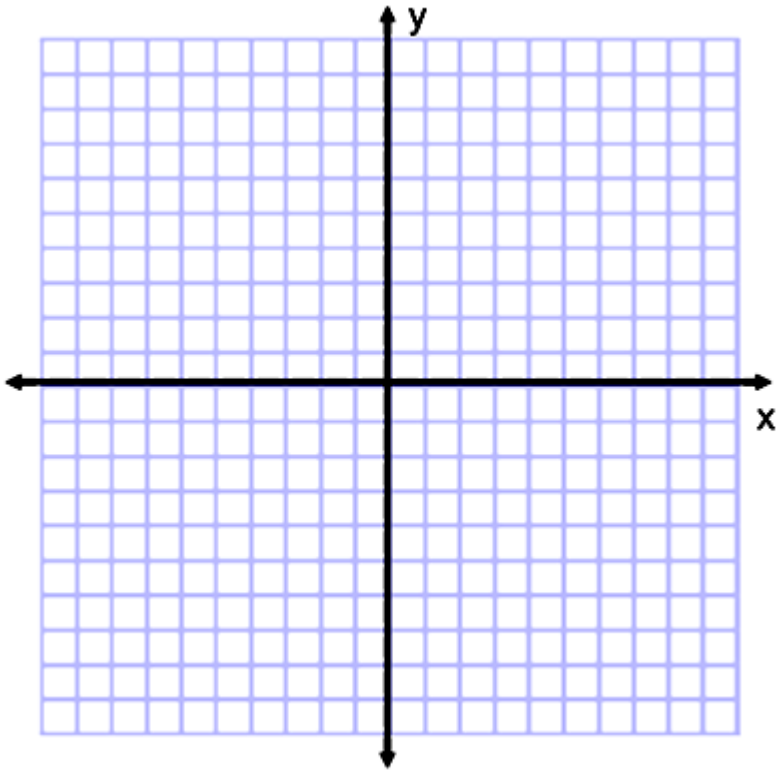
- Describe the process for rotating an object about a point on a "grid less" plane.

- Describe the process for rotating an object about the origin in the Cartesian plane.

- Describe the process for reflecting an object through a line.

Set 1 – Follow the instructions below.

A. Plot the points A(2, -8), B(6, -3) and C(9, -7). Connect the points to form triangle ABC. Rotate triangle ABC 90^0 about point (1, -4) and label the new image A'B'C'.	
B. Plot the points F(1, 3), G(1, 5), H(4 , 3) and I(4, 6). Connect the points to form quadrilateral FGHI. Rotate quadrilateral FGHI 90^0 about point (-2, 2) and label the new image F'G'H'I'.	

C. Plot the points S(0,3), T(4,0) and U(5,4). Connect the points to form triangle STU. Rotate triangle STU 180^0 about point (3, -2) and label the new image S'T'U'.	

Set 2 – Use the instructions below and the graphs from **Set 1** to complete this set.

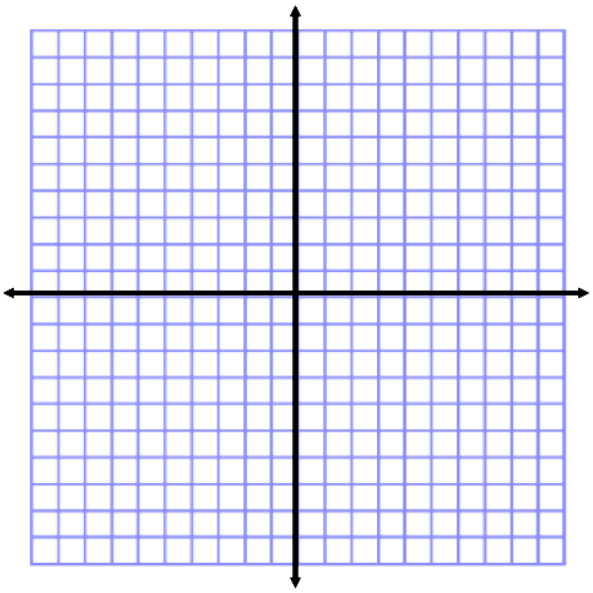
For Set 1 – A	**For Set 1 – B**	**For Set 1 – C**
• Draw a vertical, dotted line that passes through the point (-1, 0). • Reflect triangle A'B'C' through the dotted vertical line and label the image appropriately.	• Draw a horizontal, dotted line that passes through the point (0, -2). • Reflect quadrilateral F'G'H'I' through the dotted horizontal line and label the image appropriately.	• Draw a vertical, dotted line through point T'. • Reflect triangle triangle S'T'U' through the vertical line. Label both images appropriately.

Questions for discussion

1. Refer back to Module 2-Lesson 6. Is there a single transformation that can undo a sequencing of two translations? Explain.

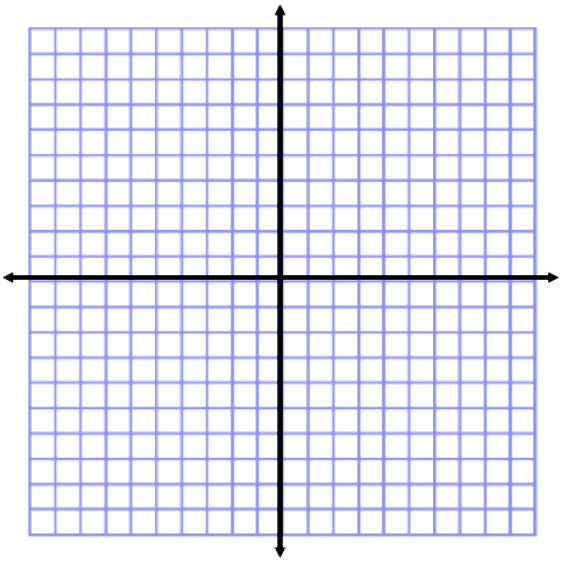
2. Refer back to Module 2-Lesson 7. Is there a single transformation that can undo a sequencing of a translation and a reflection? Explain.

3. Refer to this lesson. Is there a single transformation that can undo a rotation and a reflection? Explain.



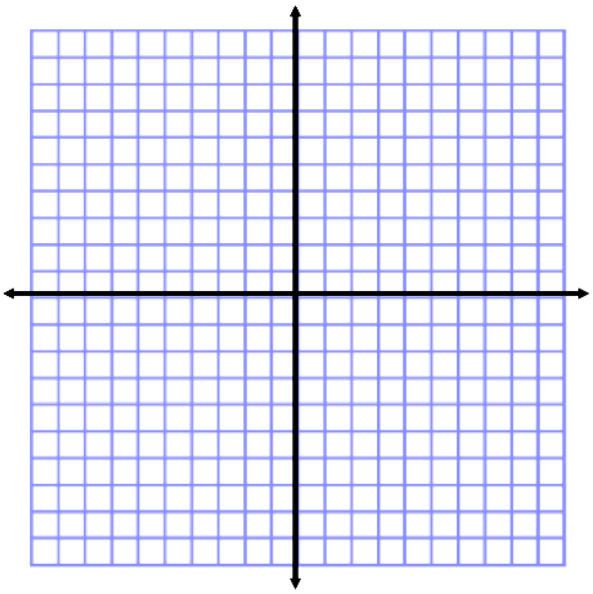
R#1

Label the axes. Plot the following points, connect the points to form triangle DEF: D(-4, -1) , E (-1, -1) , F(-2, -6). Rotate DEF -90^0 about the origin and label the new image D'E'F'. Then, reflect D'E'F' over the vertical line that pass through the point (2, 3). Label the new image D"E"F".



R#2

Label the axes. Plot the following points, connect the points to form triangle XYZ: X(5, -2) , Y (2, 0) ,Z(1, -6). Reflect XYZ over the vertical line that passes through the point X and label it X'Y'Z'. Then rotate the triangle about the point (1, 2) 180^0 and label the new image X"Y"Z".



R#3

Label the axes. Plot the following points, connect the points to form quadrilateral ABCD: A(2, 2) , B(6, 2) , C(8, 6) , D(2, 6). Reflect quadrilateral ABCD over the horizontal line that passes through the point (-5, -2). Label the new image A'B'C'D'. Then, rotate A'B'C'D' about the point (0, -5) at an angle of 180^0 and label the new image A"B"C"D".