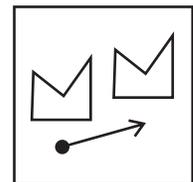
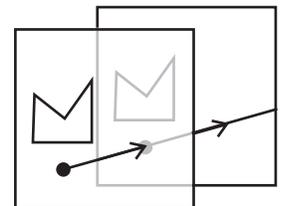
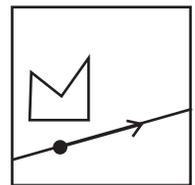
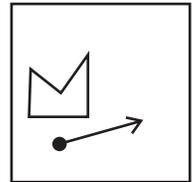
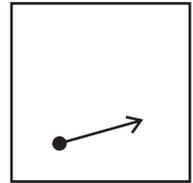


Translations, Reflections, and Rotations

Name _____

Complete the following steps for a translation:

1. Draw an arrow (vector) on one sheet of translucent paper. Use less than half the sheet to allow enough room for the translated figure. Make sure the point and the arrow are dark enough to be seen through a second sheet of paper.
2. Draw an original shape on the sheet of paper.
3. Place a second translucent sheet over the first sheet. On sheet 2, trace the endpoint of the arrow and draw a line that extends beyond the endpoint and head of the original arrow. Without moving sheet 2, trace the original figure.
4. Place the second sheet under the original sheet. Align the line on the second sheet and the arrow (vector) on the first sheet. Slide sheet 2 until the point you drew on the line is under the tip of the arrow.
5. Trace the image from sheet 2 onto sheet 1. Label the original figure and the translated figure.



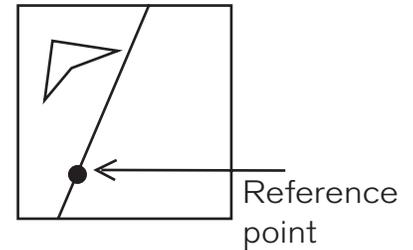
This activity has been adapted from the Shapes and Measurement Module (pp. 198–201), developed by the Reconceptualizing Mathematics Project, Center for Research in Mathematics and Science Education, San Diego State University.

Translations, Reflections, and Rotations (continued)

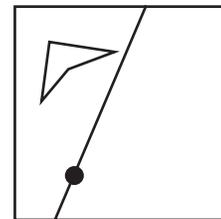
Name _____

Complete the following steps for a reflection:

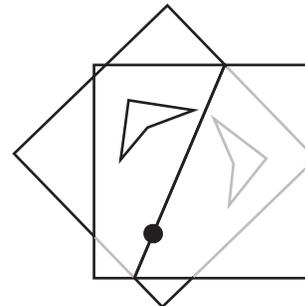
1. Draw a shape using less than half a sheet of translucent paper. Draw a line of reflection so that your paper is divided into two areas. Draw a heavy point on the line to use as a reference point.



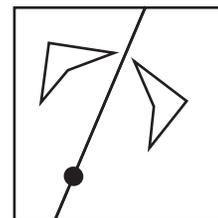
2. Place a second sheet of translucent paper on top of the original, and trace the figure, the line of reflection, and the reference point.



3. Flip sheet 2 over, and put it under the original sheet. Align the lines of reflection and the reference points.



4. Trace the image from sheet 2 onto the original sheet. Label the original figure and the reflected figure.



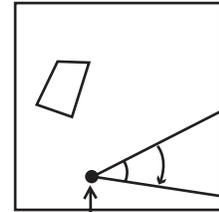
This activity has been adapted from Shapes and Measurement Module (pp. 198–201), developed by the Reconceptualizing Mathematics Project, Center for Research in Mathematics and Science Education, San Diego State University.

Translations, Reflections, and Rotations (continued)

Name _____

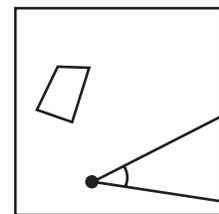
Complete the following steps for a rotation:

1. Draw a shape on less than half a sheet of translucent paper. On the other half of the paper, draw a point to serve as the center of rotation and draw the angle of the rotation, with the center of rotation as the vertex of the angle. Don't make the angle too large, or you will not have enough room on the paper to draw the rotated figure. A clockwise rotation is illustrated.



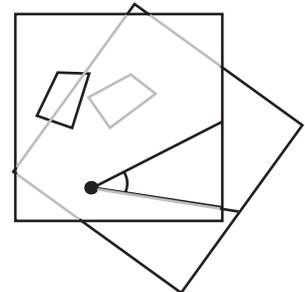
Center of rotation

2. Place a second sheet of translucent paper on top of the original. Trace the figure, the vertex (point) of the angle of reflection, and one ray of the angle, as indicated.

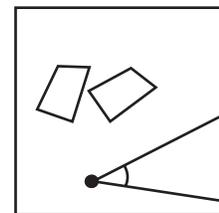


Trace this ray.

3. Place the second sheet under the original so that everything is aligned. Place your pencil tip on the vertex of the angle (the center of rotation). Turn sheet 2 until the ray is aligned with the other ray of the angle on sheet 1.



4. Trace the image onto the original sheet. Label the original figure and the rotated figure.



This activity has been adapted from Shapes and Measurement Module (pp. 198–201), developed by the Reconceptualizing Mathematics Project, Center for Research in Mathematics and Science Education, San Diego State University.