1145-J1-1015   **Sharon S. Emerson-Stonnell***, emersonstonnellss@longwood.edu. *Modeling the Unit Circle in Precalculus.*

The sine and cosine functions are defined based on the unit circle. Students can then use their understanding of the unit circle to build most of the material needed in trigonometry. In this activity students create a unit circle using patty paper or tracing paper, a ruler, and a compass. Using paper folding, students create the x and y axes. They then use the compass to create a circle centered at the origin. Knowing that the circle has radius one, they can index the axes. This is the first activity that continues as the students investigate different trigonometric topics. Each topic activity builds on the previous circle. Circle symmetry: Students use reflections across axes to determine relationship between points and the angles made with the x-axis. Special angles: Students study unit circle points of special angles using paper folding, protractors, and algebra. Graphs of sine and cosine: Students use unit circle to examine the periodic nature of the sine and cosine functions. Right triangles: Students use unit circle and inscribed right angles to demonstrate similar triangles and relationships with trigonometric functions. Identities: Students use unit circle to examine Pythagorean, even-odd, and cofunction identities. (Received September 18, 2018)