

Rotating Shapes Around a Pencil

Materials: Three pencils with shapes taped to them (rectangle, circle, triangle)

In your group, complete the following:

Part 1: Rotate a rectangle around a pencil.

Hold on to the eraser with your thumb and index finger such that the pencil is resting on its tip. Rotate the rectangle by holding on to the eraser and spinning the pencil. As the rectangle rotates about the pencil, the image of a three-dimensional solid is formed.

a. Which of these solids most closely resembles the image formed by the rotating rectangle?

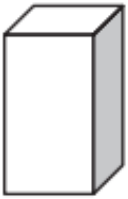


Figure 1

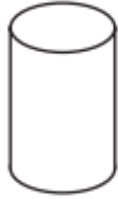


Figure 2



Figure 3

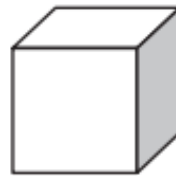
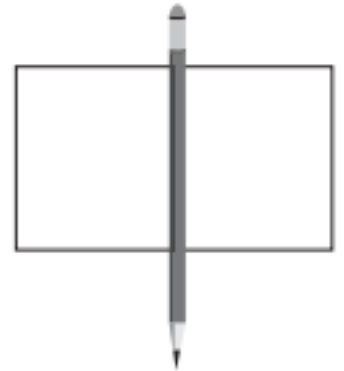


Figure 4

b. Name the solid formed by rotating the rectangle about the pencil.

c. Relate the dimensions of the rectangle to the dimensions of this solid.



Part 2: Now rotate a circle around a pencil.

a. Which of these solids most closely resembles the image formed by the rotating circle?

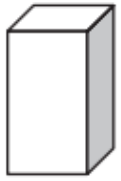


Figure 1

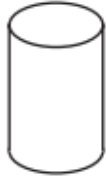


Figure 2



Figure 3

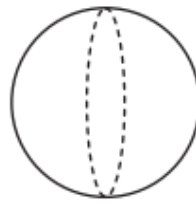
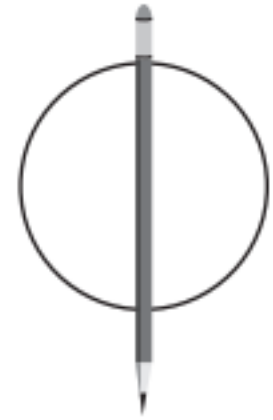


Figure 4



b. Name the solid formed by rotating the circle about the pencil.

c. Relate the dimensions of the circle to the dimensions of this solid.

Part 3: Now rotate a triangle around a pencil.

a. Which of these solids most closely resembles the image formed by the rotating triangle?

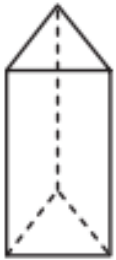


Figure 1



Figure 2



Figure 3



Figure 4



b. Name the solid formed by rotating the triangle about the pencil.

c. Relate the dimensions of the triangle to the dimensions of this solid.