On a Roll

Task Statement 1

1. What shape does a cup trace out when it is rolled on a flat surface? Use words and pictures to explain how you know.
2. How can you locate the center and calculate the area of the shape that is traced out?
3. Using one sheet of 8.5-inch-by-11-inch paper, how could you make a cup that would trace out the largest possible area?

On a Roll

Task Statement 2

Part 1:

What shape does a cup trace out when it is rolled on a flat surface? Explain or show your reasoning.

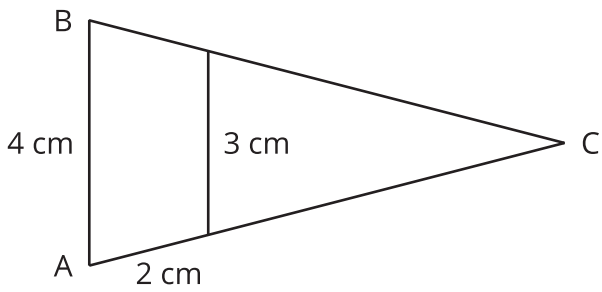
Pause for discussion.

Part 2:

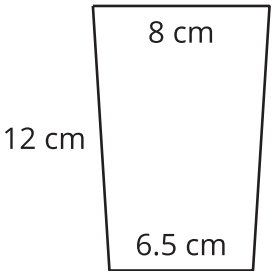
1. The outside of this ring has a radius of 55 cm. The inside of the ring has a radius of 38 cm. Find the area of the ring.



2. Triangle ABC is isosceles. Find the length of side AC, using the information given. The two vertical lines are parallel.



3. Here is the cross-section of a cup. It shows the width of the cup at the top and at the bottom, and the slant height of the cup. If we extend the sides of the cup downward until they meet at a point, we will make a triangle. What would be the slant height of that triangle?



4. Measure the widths of the top and the bottom of your cup, and measure its slant height. If you drew the cross-section of the cup and then extended the sides downward to make a triangle, what would be the slant height of the triangle?
5. If you rolled your cup in a circle to make a ring, what would be the area of the ring?
6. Give an example of a cup that would trace out a larger area than your cup would trace out.