Surface Area of a Cylinder

Student Activity

Name _____

Class _____

Problem 1 – Nets

Start the *Cabri Jr.* application by pressing the apps key and selecting **CabriJr**. Open the file *CYLINDER* by pressing y=, selecting **Open…**, and selecting the file. You are given a partial net of a right cylinder that models a glass jar 5" tall and 4" in diameter.

1. What changes occur to the net and the jar when point *H* is dragged?

2. What changes occur to the net and the jar when point *R* is dragged?

3. Record two sets of measurements of the net in the table. Move both points for a new set of measurements.

	Circle Radius	Rectangle Height	Rectangle Length
Set 1			
Set 2			

4. What is the result when you divide the Rectangle Length by the Circle Radius *R*?

5. Explain this result. Drag point *R* to confirm your conjecture.

Problem 2 – Surface Area

Next, you will calculate the surface area of the jar.

6. Record these measurements:

Circle Radius *R*: _____ Rectangle *L*: _____ Rectangle *H*: _____

Circle Area: _____ Rectangle Area: _____

7. What is the surface area *SA* of the entire jar?

8. Record the steps you performed to find the surface area of the jar:

(1)_____

(2)_____

9. Use your method from Question 8 to develop a formula for the surface area of a cylinder.

Extension/Homework

10. *Windy Colors Painting Company* is painting the smoke stack of a building. In order to know how much paint they need, they must know the surface area of the stack. The smoke stack has a radius of 1.5 feet and a height of 24 feet. What is the surface area of the smoke stack?

11. A tin can manufacturer is going to manufacture a new size can. The can is 4 inches tall and the radius is 3.5 inches. In order to order the correct amount of tin to make the new cans, they need to know how much tin is needed to make one can. What is the surface area of the can?

12. The same company wants to make sure that they are using the least amount of tin to hold the same amount of product. To the nearest tenth of an inch, what will the radius and the height of the can be that minimizes the surface area of the can while having the same volume as in the previous problem?