Name: _____ Date: _____
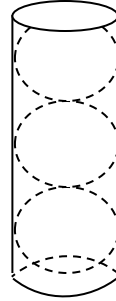
Golf Balls

A cylindrical can is being designed to hold golf balls. The golf balls will touch the top, bottom and sides of the can. The radius of one ball is 4.3 *cm*.

The company is looking at options that hold 2, 3 or 4 golf balls but wants to minimize the percentage of the can that is empty space.

1. Find the volume of one golf ball. Use 3.14 for π. Round to the nearest tenth.

2. If the company goes with the three golf ball can, what is the volume of the remaining space inside the cylinder once the golf balls are placed in the can? Use 3.14 for π. Round to the nearest tenth.

3. What percentage of the three golf ball can is empty?

4. Knowing that the company wants to minimize the percentage of space that is empty in the can, determine which can (2, 3 or 4 balls) they should choose to produce. Show all work to justify your answer.

5. Would a golf ball container fitting the company's design description but holding a different number of golf balls have a lower percentage of empty space? Explain your reasoning.

Golf Balls		Rubric

The core elements of performance required by this task are: • Use volume formulas for cylinders and spheres to solve problems Based on these, credit for specific aspects of performance should be assigned as follows.	points	section points
1. Gives correct answers: **332.9 *cm*³**	1	1
2. Gives correct answer: **499.3 *cm*³**	1	1
3 Gives correct answer: **33.$\overline{3}$%**	1	1
4. Gives correct answer: **2, 3, or 4 balls** Gives correct explanation such as: Each can would leave the same amount of empty space. Shows work to justify answer.	1 1 1	3
5. Gives correct answer: **No** Gives correct explanation such as: Adding additional golf balls will not change the percentage of empty space in the container.	1 1	2
Total Points		**8**