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## Funsize Cans

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The volume of a cylinder is  
 $V = \pi r^2 h$

The surface area of a cylinder is  
 $S = 2\pi r^2 + 2\pi r h$

The Fresha Drink Company is marketing a new soft drink.

The drink will be sold in a 'Fun Size' cylindrical can which holds  $200 \text{ cm}^3$ .

Here are two suggestions for the radius of the cylindrical can.



I'm designing a can with radius 2 cm.

My can has a radius of 5 cm.



1. Each of these cans holds  $200 \text{ cm}^3$ . Find the heights of these two cans.

Are the dimensions of the cans suitable? Explain your answer.

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2. Find the surface area of the two cans. Show your work

3. In order to keep costs low, the Fresha Drink Company wants to sell the drink in cylindrical cans that use the smallest amount of aluminum.

Find the approximate radius and height of a can that holds  $200 \text{ cm}^3$  and uses the smallest amount of aluminum. Show clearly how you figured out the size of the can.

Make your dimensions correct to the nearest 0.5 centimeter.  
*(You may find it helpful to use graph paper.)*