

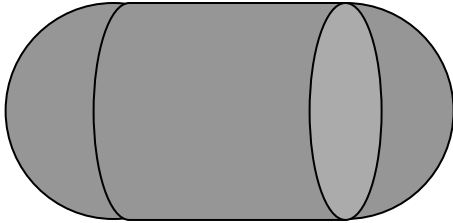
Guidelines for Solving Applied Minimum and Maximum Problems

1. Identify all given quantities and all quantities to be determined. **MAKE A SKETCH!!!**
2. Write a **primary equation** for the quantity that is to be maximized or minimized.
3. Reduce the primary equation to one having a single independent variable. You may need to use secondary equations relating the independent variables of the primary equation.
4. Determine the **feasible** domain of the primary equation.
5. Determine the desired maximum or minimum value using the techniques learned in 3.1-3.4.

1. Find two positive numbers that satisfy the following requirements:
The sum of the first number squared and the second is 27 and the product is a maximum.

2. A woman has two dogs that do not get along. She has a theory that if they are housed in kennels right next to each other, they'll get used to each other. She has 200 feet of fencing with which to enclose two adjacent rectangular kennels. What dimensions should be used so that the enclosed area will be a maximum?

3. A solid is formed by adjoining two hemispheres to the ends of a right circular cylinder. The total volume of the solid is 12 cubic centimeters. Find the radius of the cylinder that produces the minimum surface area.



4. Two factories are located at the coordinates $(-x, 0)$ and $(x, 0)$, with their power supply located at $(0, h)$. Find y such that the total length of power line is a minimum.

