The Schilling School for Gifted Children Dr. Frank' class Applied Science and Engineering/Calculus

> Assignment given: 9/8/2008 Assignment due: 9/15/2008

METAL CAN DIMENSIONS

I looked in my pantry at home, and noticed that a majority of the cylindrical cans were one of three shapes: a short, fat tuna can; a tall, narrow Campbell's soup can; and a tall, fat Progresso soup can. I also found larger and smaller cans, but they had similar proportions, including soft drink cans, which use aluminum (exspensive) instead of iron.

Which can proportions are the most efficient, I wondered? (Geeks are like that...)

Your tasks:

- a) Draw a picture of a can, label the dimensions;
- b) Write equations for the area and volume of a can (circular cylinder);
- c) Write an equation for the efficiency of the can;
- d) Prepare a graph which quantitatively illustrates the efficiency of a cylindrical can vs. its dimensions;
- e) Assuming 12 oz for a soft drink, what would the best theoretical dimensions for a soft drink? Compare your theoretical value to the actual;
- f) Which can volume would be the most efficient?