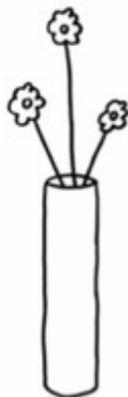# 8.G Flower Vases

Task

My sister's birthday is in a few weeks and I would like to buy her a new vase to keep fresh flowers in her house. She often forgets to water her flowers and needs a vase that holds a lot of water. In a catalog there are three vases available and I want to purchase the one that holds the most water. The first vase is a cylinder with diameter 10 cm and height 40 cm. The second vase is a cone with base diameter 16 cm and height 45 cm. The third vase is a sphere with diameter 18 cm.

Cylinder Vase
Show off your flowers in
this beautiful vase.
10cm X 40cm
$9.95
4KE09

Cone Vase
This vase holds your flowers
in place!
16cm X 45cm
$9.95
4KE08

Sphere Vase
Doesn't get any more
symmetric than this!
18cm X 18cm
$9.95
4KE07

a. Which vase should I purchase?

b. How much more water does the largest vase hold than the smallest vase?

c. Suppose the diameter of each vase decreases by 2 cm. Which vase would hold the most water?

d. The vase company designs a new vase that is shaped like a cylinder on bottom and a

cone on top. The catalog states that the width is 12 cm and the total height is 42 cm. What would the height of the cylinder part have to be in order for the total volume to be $1224\pi \ \mathrm{cm}^3$?

Pencil Vase
The perfect gift for your
math teacher!
12cm X 42cm
$9.95
4KE06

e. Design your own vase with composite shapes, determine the volume, and write an ad for the catalog.