Q1. The class circleType provides the basic properties of a circle. (Add the function print to this class to output the radius, area, and circumference of a circle.) Now every cylinder has a base and height, where the base is a circle. Design a class cylinderType that can capture the properties of a cylinder and perform the usual operations on the cylinder. Derive this class from the class circleType. Some of the operations that can be performed on a cylinder are as follows: calculate and print the volume, calculate and print the surface area, set the height, set the radius of the base, and set the center of the base. Also, write a program to test various operations on a cylinder.

Q2. Amanda and Tyler opened a business that specializes in shipping liquids, such as milk, juice, and water, in cylindrical containers. The shipping charges depend on the amount of the liquid in the container. (For simplicity, you may assume that the container is filled to the top.) They also provide the option to paint the outside of the container for a reasonable amount. Write a program that does the following:

a. Prompts the user to input the dimensions (in feet) of the container (radius of the base and the height).

b. Prompts the user to input the shipping cost per liter.

c. Prompts the user to input the paint cost per square foot. (Assume that the entire container including the top and bottom needs to be painted.)

d. Separately outputs the shipping cost and the cost of painting. Your program must use the class cylinderType to store the radius of the base and the height of the container. (Note that 1 cubic feet 5 28.32 liters or 1 liter 5 0.353146667 cubic feet.)