This activity consists of four programming exercises.

Basic Difficulty

**Area and circumference of circle**

Write a program that calculates both the area and the circumference of a circle given the radius ***r***. Assume that ***r*** is greater than zero, but not necessarily an integer. Use these formulas.

**Volume of a hemisphere**  
Write a program that calculates the volume of a hemisphere given the length of the radius. Assume that the radius is not negative.

Intermediate Difficulty

**Area of triangle given the length of the sides**  
Write a program that calculates the area of a triangle given the length of the three sides. Use Heron's formula, below. Sides are designated ***a***, ***b***, and ***c***. ***p*** is half the circumference. Assume that the length of every side is an integer greater than zero.

Advanced Difficulty

**Solving a quadratic equation**  
Write a program that solves a quadratic equation. The formula is given below. The coefficients for the terms are ***a*** , ***b***, and ***c***. Assume that the coefficients are non-negative integers, that is, a coefficient could be zero. Also note that the term under the square root symbol will not give a valid answer for this problem if it is negative. (You cannot take the square root of a negative number … we are not using imaginary numbers.). Also, note that many solutions will not work.