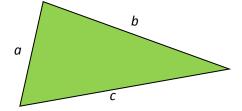# CS1020 Take-home Lab #0
Exercise #1: Area of Triangle
http://www.comp.nus.edu.sg/~cs1020/3_ca/labs.html

Objectives:
1. Input/output in Java
2. Using **Math** class
3. Writing user-defined methods

Task statement:

Write a program **AreaOfTriangle.java** to read 3 positive real numbers *a*, *b*, and *c* which are the lengths of a triangle, and compute the area of the triangle using the Heron's formula:

$$area = \sqrt{p(p-a)(p-b)(p-c)}$$

where *p* is half the perimeter, i.e. *p* = (*a* + *b* + *c*) / 2.

You are to use **double** type for the values. The output is the area displayed in 2 decimal places.

You may assume that the input data are positive values.

For modularity, you are to define a class method **area**(double, double, double) that takes in the lengths (positive values) and returns the computed area, and a class method **validTriangle**(double, double, double) that returns **true** if the 3 parameters can possibly represent the lengths of 3 sides of a triangle, or **false** if it is impossible (see the third sample run below), in which case the program should display "Invalid triangle!" in the output.

(How do you determine that given 3 lengths, they can form a triangle? Discuss this on the IVLE forum if you need help.)

Sample runs:
```
Enter 3 lengths: 12.5 7.8 19.2
Area = 30.68

Enter 3 lengths: 876.23 255.71 709.76
Area = 75953.81

Enter 3 lengths: 10 50 30
Invalid triangle!
```