

## Lab 2.5 - Triangles of All Kinds

In this lab, you will use Boolean operators to determine what sort of triangle a user is describing.

### Big Ideas

#### Personal design interests require the evaluation and refinement of skills

As you start to create more interesting programs, and as you eventually start to create programs of your own design, you will have to start evaluating and refining your skills. In this lab you are asked to use Boolean operators in your program as a way of adding logic and decision making to your software. Think carefully about whether or not you know enough about Boolean operators and how to implement them in SNAP. If you don't review the lesson on Boolean operators or ask for help from your teacher or classmate.

It's important to always evaluate and refine the skills needed in your projects so that you can create some great stuff!

### Is that even possible!?

1. Write a SNAP program that asks the user for the lengths of all three sides of a triangle. Store each length in a variable. Then say the perimeter of the triangle with those three side lengths
2. Add code to your program to check whether or not the three side lengths can form a real triangle. Remember that, in any real triangle, the sum of the lengths of any two sides is greater than the length of the third side. So, if the triangle has side lengths  $a$ ,  $b$ , and  $c$ , then all of the following must be true:

$$a+b > c$$

$$a+c > b$$

$$b+c > a$$

If the sides given cannot make a real triangle, say so instead of saying the perimeter.

### What kind of triangle?

1. Add code to your program to determine and say whether or not the triangle described is a right triangle. If the triangle has side lengths  $a$ ,  $b$ , and  $c$ , then the triangle is a right triangle if the following is true:

$$a^2 + b^2 = c^2$$

2. Add code to your program to determine which type of triangle has the side lengths given. A triangle can be one of the following three types:

Triangle type	Description
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## Introduction to Computer Science

Triangle type	Description
Equilateral	All three side lengths equal
Isosceles	Two side lengths equal, one different
Scalene	All three side lengths different

## Grading Scheme/Rubric

Lab 2.5 Criteria	
1.2 Computes perimeter or says invalid	1.0 points
2.1 Identifies right	0.25 points
Section 2.2	
Identifies equilateral	0.25 points
Identifies isosceles	0.25 points
Identifies scalene	0.25 points
<b>PROJECT TOTAL</b>	<b>2.0 points</b>



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