



## 7<sup>TH</sup> GRADE TI-73 ACTIVITY 17: TRIANGULATE

### ACTIVITY OVERVIEW:

In this activity we will

- Investigate the properties of triangle lengths
- Test to see if triangles are right, acute or obtuse.

Could we build a triangle from any three lengths of wood? From some study of triangles, you might know that three sides will form a triangle only if the sum of the two smaller sides is bigger than the third side.

How likely is it that any three randomly selected numbers will form a triangle? We will investigate this and then see what type of triangles we can make.

On your TI-73, press the **[MATH]** key and press the right arrow key until you reach the PRB menu. Arrow down to 2: randInt( and press **[ENTER]**. On your home screen, finish the command as it is written on the right. This will generate three random integers from 1 to 20.

```
randInt(1,20,3)
```

Press **[ENTER]**. The output will be 3 integers between 1 and 20. Since this is done randomly for each number, you could receive 3 of the same number.

To see if you can make a triangle, mentally add the two smaller numbers. If they are larger than the remaining number, you can construct a triangle. This can be done even if the two largest numbers are the same.

When you find a set that qualifies as a triangle, then test it for its type. IF the sum of the squares of the two smaller sides is equal to the square of the larger side, we would have a right triangle. In the example to the right, the sum of the squares of the two smaller sides is less than the square of the larger side. This will be an obtuse triangle

```
randInt(1,20,3)
(8 3 10)
32+82      73
102        100
```

In order to execute the random integer function again, arrow up to the randint function and press **ENTER** to select it.

Try this for 20 triangles to see how likely creating a triangle might be.