

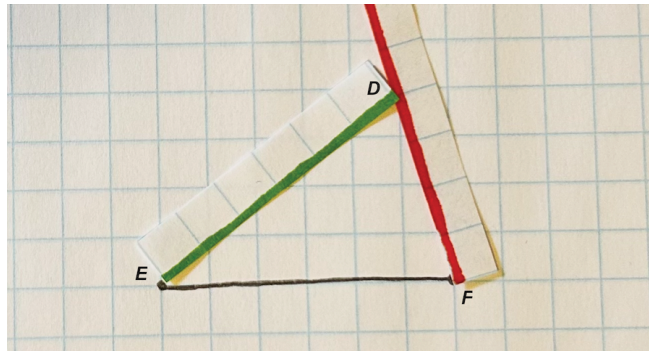
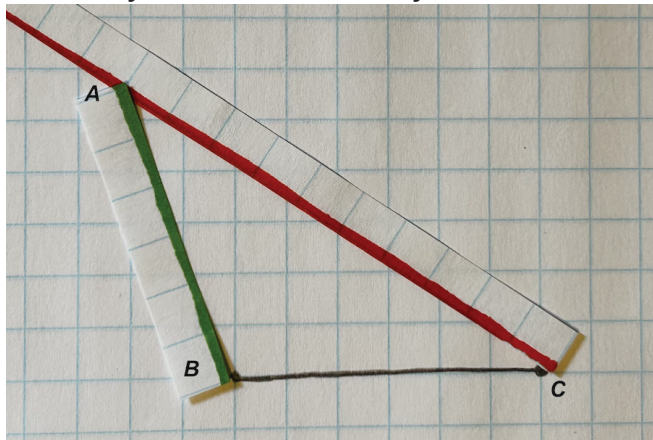


# What's Up, Triangle?

Let's make observations about triangles.

## 1.1 Notice and Wonder: Triangles

What do you notice? What do you wonder?



## 1.2 More Triangles

Let's investigate triangles.

- Record the length of your short grid strip as the length of segment  $AC$ . Then choose a number between 4 and 10 to record as the length of segment  $BC$ . The values you choose for  $AC$  and  $BC$  can be the same, but no one in your group should have the same values as you do for  $AC$  and  $BC$ . Once you have chosen your value for  $BC$ , draw that length on your graph paper.
  - $AC =$
  - $BC =$
- Use your long grid strip to measure different possible lengths for  $AB$  so that  $AB$  and your fixed lengths make a triangle. Include at least one of each of the following, recording your findings below.
  - obtuse triangle

- b. acute triangle
- c. right triangle

length $AC$	length $BC$	length $AB$

3. Compare your list of side lengths with those of your group. What observations can you make about the length of  $AB$ ?

### Are you ready for more?

In this activity the lengths of  $BC$  and  $AC$  were fixed, and you explored some possible lengths of  $AB$ . Now imagine if the points  $B$  and  $C$  remain fixed where they are, so the length of  $BC$  doesn't change. Is it possible to find a location for point  $A$  that is a lattice point (a point where the grid lines on the graph meet) and that makes the lengths of both  $AB$  and  $AC$  integers? If it is possible, list some possible side lengths.

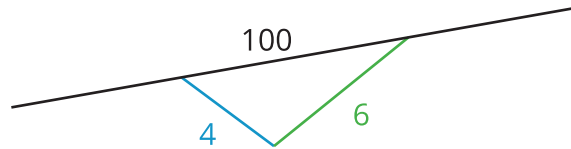
## 1.3 Is It a Triangle?

1. Use the available tools to figure out if each set of three side lengths could make a triangle.
  - a. 4, 6, 7
  - b. 4, 6, 100
  - c. 4, 6, 6
  - d. 4, 6, 10
  - e. 4, 6, 0.5
  - f. 4, 6, 2
2. A triangle has two sides that measure 7 and 12.
  - a. What is a length for the third side that is too long?
  - b. What is a length for the third side that is too short?

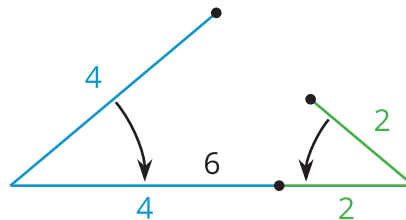
c. What is a length for the third side that would create a triangle?

## Lesson 1 Summary

Triangles are made up of three sides, but can those side lengths be any values? Can a triangle have side lengths 4, 6, and 100 units? No, because 4 and 6 aren't long enough to reach the endpoints of a side with 100 as a length.



Another example is 4, 6, and 2 units. To meet at the endpoints, lengths 4, 6 and 2 would form a line segment.



But the side lengths 4, 6, and 8 units will form a triangle.

