THE Math Dogs

# Constructing Triangles

An inquiry into triangles, properties, and angles

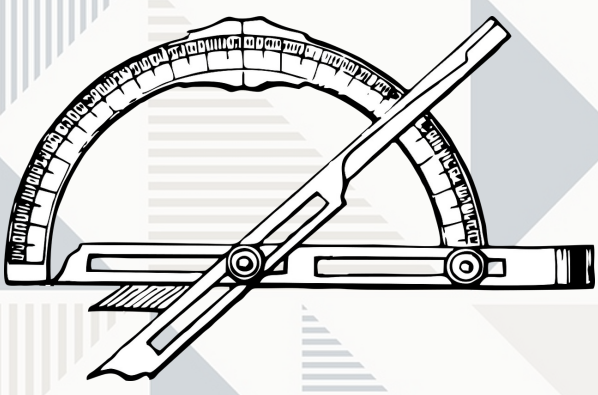
**Building triangles to observe their angles, properties, and relationships.**

**Scalene**

**Equilateral**

**Isosceles**

**Right**

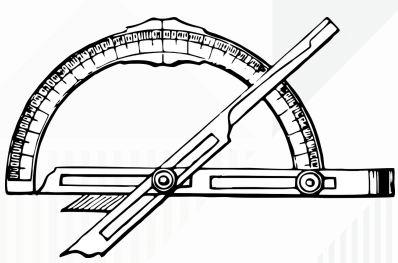


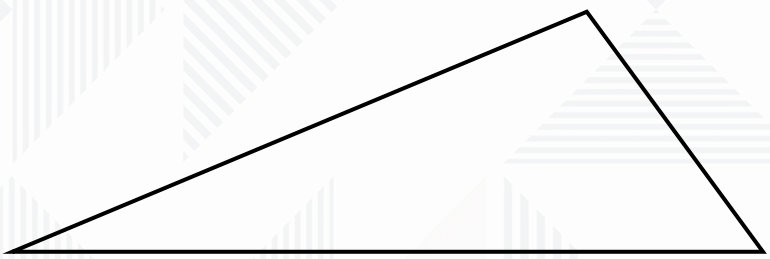
# Constructing Part 1

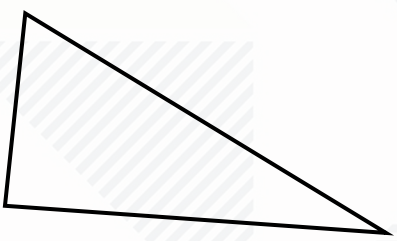
**Use cardboard, or even card stock, to create 6 different triangles. These triangles can be any size or shape you'd like. Try to make them as different and unique as possible!**

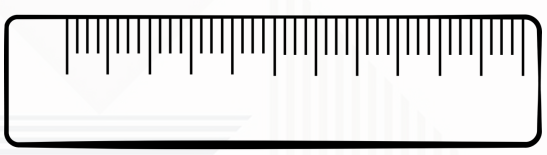
**Label each of your ten triangles with a letter (i.e., a-f)**

**After you are done, record the length of the triangles' sides as well as their interior angles.**









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# Guiding Questions Part 1

1. Can you identify any triangles that had one angle significantly larger or smaller than the others? How were the side lengths related in these cases?
2. Were there any triangles where all three angles were acute (less than 90 degrees)? How were the side lengths related in these triangles?
3. Did you notice any connection between the longest side of a triangle and the largest angle? Can you explain why this might be the case?
4. Were there any triangles where the sum of the lengths of two sides was almost equal to the length of the third side? How did these triangles compare to others you observed?
5. Can you identify any triangles that seemed to have angles close to being equal in size? How did this affect the side lengths?
6. Were there any triangles where the angles seemed to be evenly spread out (close to 60 degrees each)? How did this influence the side lengths?
7. Did you find any triangles where the angles were drastically different from each other? How were the side lengths affected in these cases?
8. Consider the triangle with the largest angle. Were the side lengths consistent with what you might expect based on its size?
9. Can you think of a real-world scenario where knowing the relationships between side lengths and angles in triangles could be useful?

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# Recording Observations

## Part 1

**After reading the guiding questions and discussing them with your groupmates, write your conclusions below. You can also sketch some of your observations and annotate them to better answer some of the guiding questions.**

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# ConstructingPart 2

Use cardboard, or even card stock, to create 6 specific triangles.

- 2 equalateral triangle- all sides with equal lengths
- 2 isosceles triangle- two sides with equal lengths
- 2 right triangle- 1 angle of 90°

*Make your equalaterals, isosceles, and right triangles different sizes

Label each of your triangles with their names, include the measurement of their lengths and interior angles.

# Guiding Questions

1. How did the angles in the equilateral triangles compare to each other? Did the length of each size make a difference?
2. How did the angles in the isosceles triangles compare to each other? Did the length of each size make a difference?
3. Why might the length of isosceles sides change angles, but the length of equilateral sides not?
4. If all the sides of a triangle equal, do you even need to use a protractor to determine each interior angle?
5. How many interior angles of an isosceles triangle do you need to measure in order to determine all three?

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# Recording Observations

## Part 2

**After reading the guiding questions and discussing them with with your groupmates, write your conclusions below. You can also sketch some of your observations and annotate them to better answer some of the guiding questions.**