

Constructing Triangles

Your teacher will explain how to use the compass tool and the parallel line tool in GeoGebra. Make sure you understand how they work.

1. Launch GeoGebra. Draw a line segment. Make a point not on the line segment. Construct a circle centered at this point with the length of the line segment as its radius.
2. How do you move the circle? Why?
3. How do you change the circle's size? Why?
4. Delete the point. What happens to the circle? Why?

Triangles from Sides

5. Open the file **making-triangles.ggb**. Play around with the segments and angles to get a sense of what can and cannot be dragged.
6. Use the compass tool to construct a triangle with sides a , b , c . Save the construction under the name SSS.
7. Drag a so it is 3 cm, and b so it is 5 cm. What values of c make the triangle
 - a. isosceles?
 - b. equilateral?
 - c. right?
 - d. disappear? (careful: there's more than one answer here)

If a , b , c are given, notice that if it exists, the triangle you constructed is *rigid*: it has a given shape and size that cannot be changed.

More Triangles

Once again, open the file **making-triangles.ggb**. You will make a bunch of constructions, each time saving them under a new name, and re-opening this file to do the next problem.

Construct triangles satisfying these constraints. (Hint: You can copy angles by using the parallel line tool.)

1. SSS (Use the compass tool. No need to re-do this if you saved it last time.)
2. SAS
3. ASA
4. Challenge: AAS
5. AA: Construct two *non-congruent* triangles that satisfy AA.
6. SSA: Construct two *non-congruent* triangles that satisfy SSA. (Hint: start by copying the angle.)