Using Technology for Constructions

Learning Goal

Let’s use technology to construct a diagram.

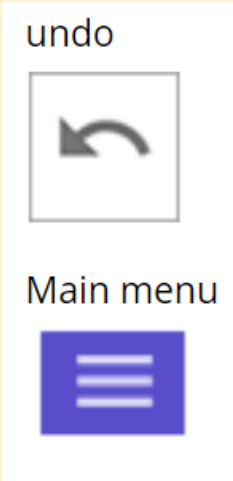
8.1 How Do Digital Construction Tools Work?

Work through the task and discuss with your partner.

Open the Constructions App in the Math Tools (or at ggbm.at/C9ACGzUx).

Try all the tools in the workspace.

1. Find the Undo button.
2. Click on the image of 3 stacked segments, the Main Menu, to save your work or go to a new page.
3. Which tools do the same work as a straightedge?



8.1 How Do Digital Construction Tools Work?

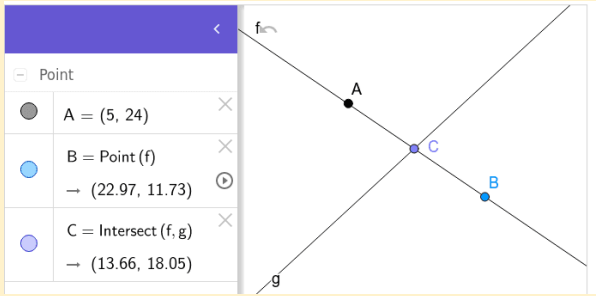
Work through the task and discuss with your partner.

4. The Constructions App has 3 tools to make a point. To learn about them, open the applet at www.geogebra.org/m/cuupdskkin this applet, all 3 point tools have been used.

a. Drag each point and each line around to see what happens in the Graphics View on the right.

b. Look at the way the points are defined in the Algebra View on the left.

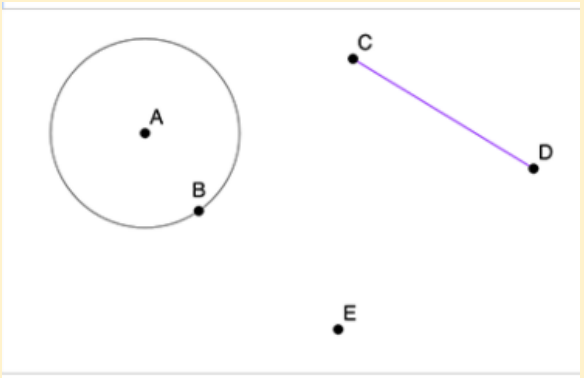
c. Explain how each definition is related to the behavior of the corresponding point .



8.1 How Do Digital Construction Tools Work?

Work through the task and discuss with your partner.

5. There are several ways to use the compass tool. First, set up a workspace that looks something like the image:
   A. Open a new blank page in the Constructions App.
   B. Draw circle A through point B.
   C. Draw segment CD not intersecting the circle centered at A.
   D. Draw point E not intersecting the circle centered at A or segment CD.



8.1 How Do Digital Construction Tools Work?

Work through the task and discuss with your partner.

Select the compass tool and then click on segment CD What happens?

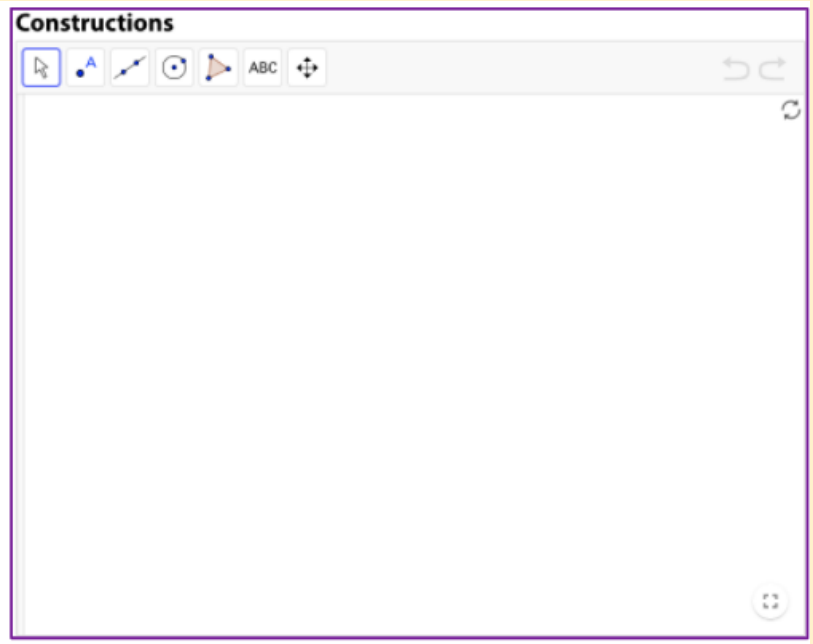
Now click on the point E What happens?

Make a new segment EF that is the same length as CD.

Make a circle with the same radius as the circle centered at A.

Explain how the digital compass tool is the same and how it is different from a physical compass.

Activity Synthesis

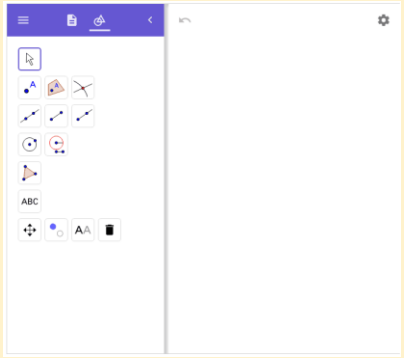


What did you learn about using the digital tools?

8.2 Digital Compass and Straightedge Construction

We will recreate these constructions using the digital tools.

Constructions Digital App

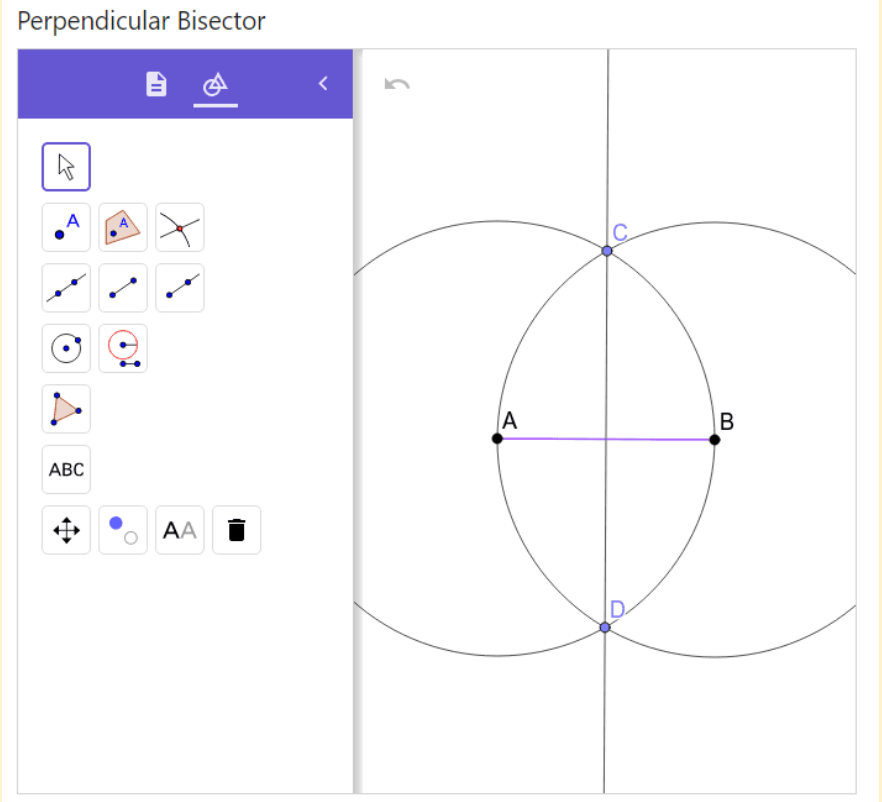


- a perpendicular bisector of line segment
- an equilateral triangle
- a regular hexagon
- a square
- a square inscribed in a circle
- two congruent, right triangles that do not share a side

In order for your construction to be successful, it has to be impossible to mess it up by dragging a point. Make sure to test your constructions.

Activity Synthesis

Let's look at the different constructions:



Activity Synthesis

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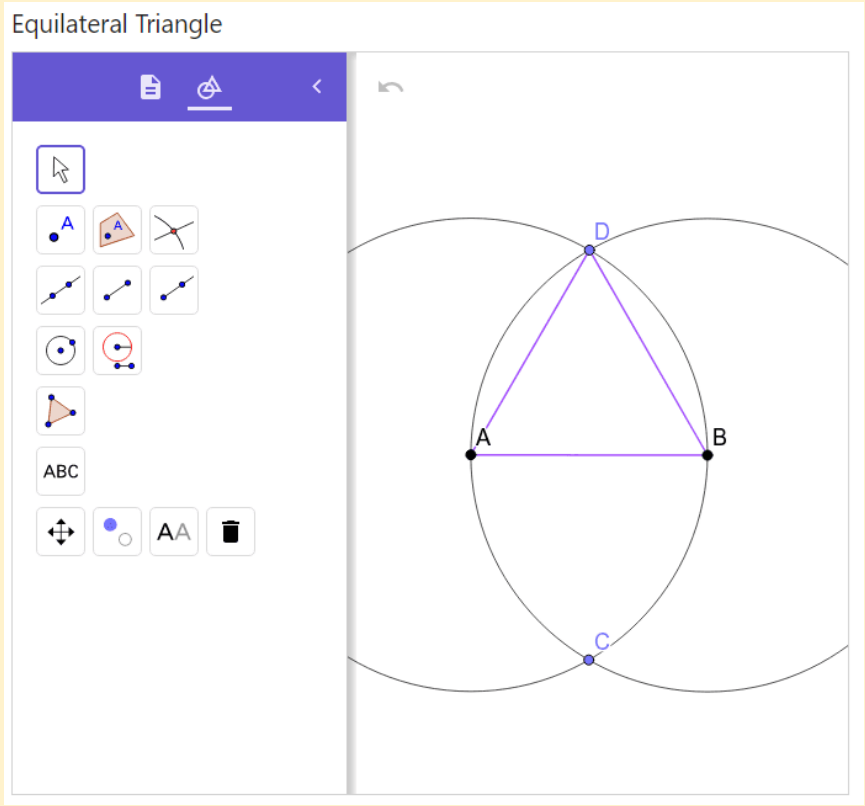

Activity Synthesis

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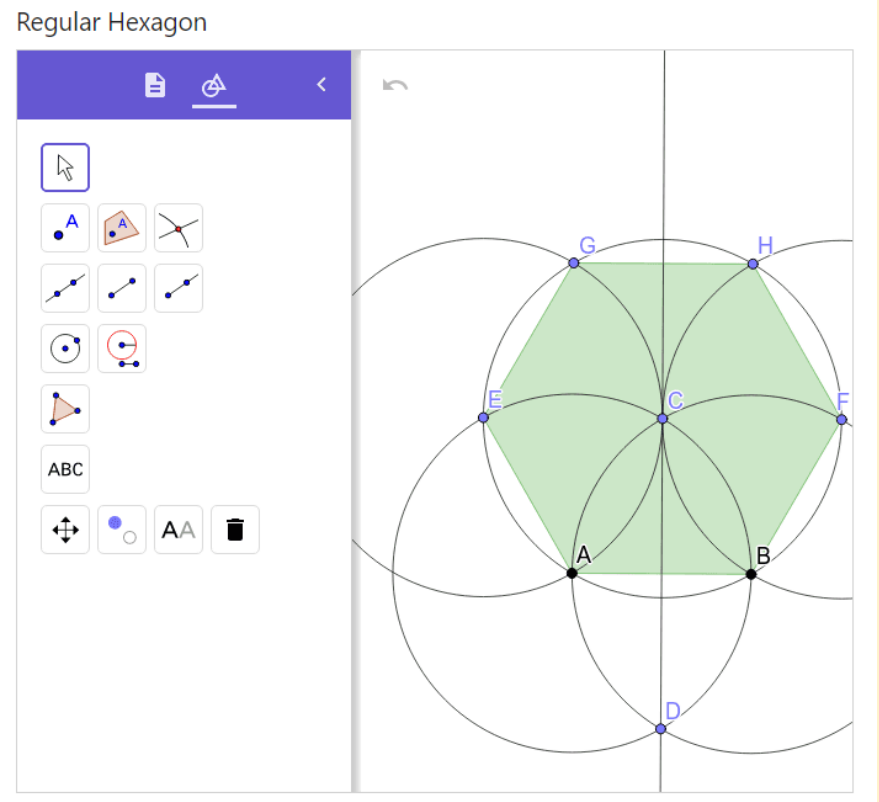

Activity Synthesis

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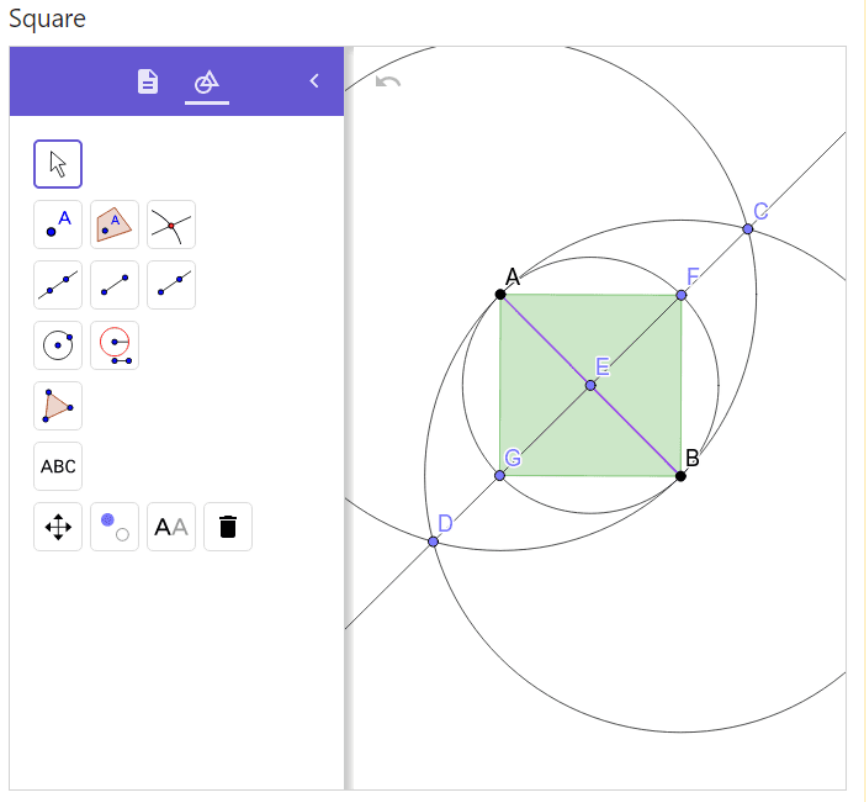
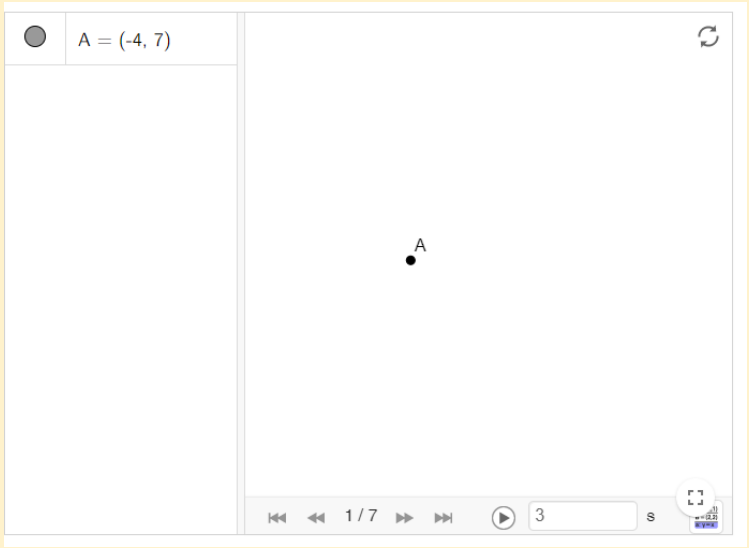


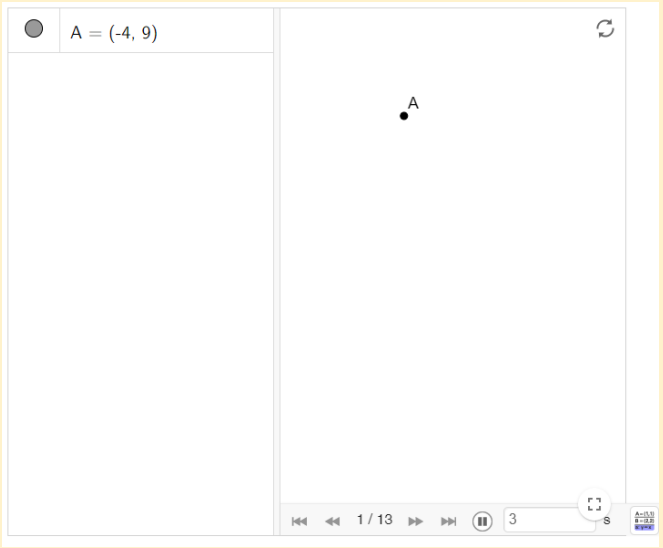
8.3 More Helpful Digital Tools

How many steps would it take to construct perpendicular or parallel lines using only the digital tools that mimic a pencil, compass, and straightedge?

Perpendicular Line Construction- Applet



Parallel Lines Construction 2- Applet



Lesson Synthesis

- How do you construct a circle using technology?
- What are some advantages of using technology to make geometric constructions?
- When do you think it is appropriate to use technology to make geometric constructions?