

STEM Activities for Grades 6–8

Unit 1: Inquiry and Exploration

Challenge 2: How are communities engineered? (continued)

Shifting Gears: STEM Challenge! **45 mins.**

4. Before kids begin drawing, discuss the idea that all maps need scale. Scale is a tool that mapmakers use to make sure the objects they place on the map are the correct size. Make sure that students understand that the size of items on a map relates to the size of the items in real life.
5. Explain that scale is determined by making a comparison called a *ratio*. For mapmaking, ratios compare the measurements of a real place to the measurements on a map. For example, if the width of a drawn map is 6 inches and the width of a Google map is 3 inches then the ratio is 2/1, or 2:1. That means if students are drawing a map with a ratio of 2:1, the objects they draw on their map would be two times the size of the ones on the Google map.
6. Tell groups that they will work together to choose the scale for their map grids. Have students use rulers to measure the width of each grid square on the Google map printout. Then measure the width of the map area on the activity sheet. If kids are using graph paper, they will measure the width of the sheet of graph paper. They will then compare the width of their graph paper to the width of the area on the Google map.
7. After they've determined the scale for the maps, they should each use the same scale to calculate the size of map objects, such as streets or buildings, that will be included in their grid. For example, if their scale is 2:1, a building that is 2 inches wide on the Google map should be 4 inches, or twice as wide, on the maps they draw. Give students time to draw their map grids. When done, teams will piece together their grid squares and attach them to poster board to make a completed neighborhood map. After they finish their map, give teams time to reflect and make adjustments as necessary.

Example:
$$\frac{\text{Drawn Map Width}}{\text{Google Map Width}} = \frac{6 \text{ inches}}{3 \text{ inches}} = \frac{2}{1} \text{ or } 2:1$$

Explain that as groups are working to agree on the scale they will use to draw their map grids, they should simplify the scale to make it usable.





NAME: _____

Map It

You may know your community like the back of your hand, but this activity will give you an urban planner's-eye view of it.

Instructions: Use the map printout of the community where your school is located to draw the map one grid at a time. As you work, don't forget to draw everything to scale. This will ensure that each grid aligns with the other sections of the map.

When done, tape together each map grid to make a completed neighborhood map. Do the streets match up? Did you and your teammate use the same scale? Don't be afraid to make changes if needed.

