

2-1

Mapping Research Sites

Welcome to Part 2 and Task 2-1. The team will now begin researching food and nutrition in your local community. To do this, the team will first need to identify the area where you would like to do your research about food. This will be the area where you will conduct experiments, make observations, and collect information. So think about a place you would like to know more about in your community.

For example, the boundaries of your research site(s) could include the place where your team meets and the surrounding area. It could also be very large and include your entire town, village, or city, and the homes of all your team members. Or it could be a smaller site that is more focused on a specific area. Your team will have to make these decisions together. You will also have to decide if you want more than one research site. These decisions are all up to you. It is also okay to change the size and number of research sites later as you collect more information.

Objective



In this task, the team will focus on collecting data on the following question from the question map in Task 1-10: **Where can we focus and map our research in the community?**

In this task, the team will determine the location and boundaries of the research site(s). Once decided, the team can begin developing a map of these site(s).

1. Go to the Task 2-1 folder and get the Mapping Research Sites instructions and examples. This task has only one version, but many choices that are up to you.



2. As a team, determine the following:

- How many research sites do we want for studying food?
- Where are good locations for our research site(s)?
- What will be the boundaries of our research site(s)?
- Will the research site(s) include all of the team members' homes?
- If we have more than one research site, which team members will be responsible for each site?

3. When the team has determined the locations and boundaries of your research site(s) to study food in the community, follow the task instructions to start making your map. Look at the examples.

4. Mark the boundaries of your research site(s) on your map. Measure and calculate the area of your research site(s). Use your math skills to help!



Research Tip

The Task folders can be found at: ssec.si.edu/food
When you see the blue arrow you should go to the task folders there. All of the additional resources will be there. Try it now!



Research Tip

This map will be used throughout your research, so keep it in a safe place. Other information will be added to this map as you learn more about the sites. So keep it safe!

Hooray! You completed Task 2-1. Check it off the task list. *Go to Task 2-2!*





Task 2-1. Mapping Research Sites

Maps are useful tools to visualize community food information and data. When doing your food research, you will use your map to define the boundaries or edges of the community you are studying. These boundaries can be based on many different social and physical elements contained within them. For example:

- Where people live
- Where businesses are located
- Roads
- Natural features

Maps show how the community fits within the larger context of its surroundings and how it has changed over time. Maps can also help reveal how communities have organized themselves economically, socially, or geographically. Throughout your food research, you will add different food-related information to the map you create in this task.

There are many existing sources of maps to save you time and get you started. However, you can always create your own map from scratch.




1. Obtain any maps of the community around where your team meets that may be useful to get you started.
 - Online: Use free online mapping programs, such as Google Maps or MapQuest, to download and/or print a map of the community.
 - Print: Good maps of the community are often published and available at:
 - Local libraries
 - Local government planning offices
 - Travel or road atlases or maps at gas stations, stores, or online
 - If you are unable to obtain any maps, you will need to create your map from scratch. Start with a blank piece of paper or grid paper.
2. Start by marking on your map the location where your team meets. You will work outward from this location to determine your research site boundaries.
3. Working out from your team's meeting location, determine the boundaries or edges of the area the team is interested in researching, and the reasons why. For example, you can set a boundary that might include:
 - Team housing boundaries: set a boundary that includes all the homes of the team members, the meeting place of the team, and the surrounding area
 - Natural boundaries: mountains, rivers, different land features
 - Political or administrative boundaries: city or county lines, school district lines, neighborhood lines
 - Physical infrastructure boundaries: roads, transportation networks, land use





- Social or cultural boundaries: neighborhoods separated by social or cultural groups
 - Other boundaries: determine your own reasons for a boundary
4. Mark or draw the boundaries of your research site on your map.
 5. Provide a rationale for why you selected these boundaries for your research site.
 6. On your map, use unique identifiers (colors, shapes, stickers, etc.) to mark any of the following elements you would like to include, such as:
 - Team meeting location
 - Team member home locations
 - Major streets or landmarks
 - Places that are important to the community, such as libraries, meeting places, community centers, hospitals or health clinics, places of worship
 7. Create a legend for your map to show what each identifier means on the map (You will be adding additional elements to your map and legend later in your research, so leave room to add more.)

Legend example:

Legend	
	Team meeting location
	Team member home locations
	Library
Leave room to add more to your legend in the future	

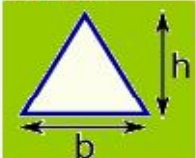
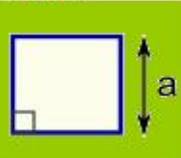
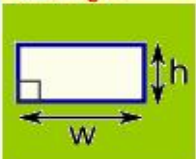
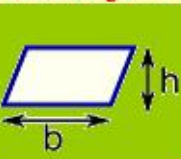
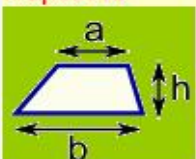

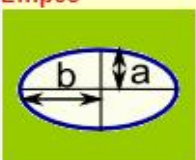

9. Determine which direction is north on the map. Add a compass rose to mark this direction. A compass rose looks like this. Rotate it on your map to show the correct direction of north.





Math Connection

Use your math skills or technology to determine the approximate area of your research site. Use the following formulas for different shapes to help determine ways to calculate the area.

Shape	Formula	Shape	Formula
Triangle 	$\text{Area} = \frac{1}{2}b \times h$ b = base h = height	Square 	$\text{Area} = a^2$ a = length of side
Rectangle 	$\text{Area} = w \times h$ w = width h = height	Parallelogram 	$\text{Area} = b \times h$ b = base h = vertical height
Trapezoid 	$\text{Area} = \frac{1}{2}(a+b) \times h$ h = vertical height a, b are the parallel sides	Circle 	$\text{Area} = \pi r^2$ r = radius
Ellipse 	$\text{Area} = \pi ab$ a = half of minor axis b = half of major axis	Sector 	$\text{Area} = \frac{1}{2}r^2\theta$ r = radius theta = angle in radians

If you do not have access to technology to measure lengths and calculate the area on your map, use the following method to measure them in the real world and do the appropriate calculations, then add them to the map.

How to Calculate Your Step and Stride Length to Measure Long Distances

You can do this measurement inside or outside. You will need something to mark the start and finish point (chalk, cone, rock) and a tape measure or a measuring stick.

1. Using the tape measure or measuring stick and the markers, measure and mark off the start and end points of a specific distance, such as 5 or 10 meters.
2. Start walking about 3 meters before the start marker to get up to the speed of your natural walk.





3. When you reach the start marker, start counting your steps, Stop your count when you reach the end marker.
4. Divide the number of meters in your measured distance by the number of steps you took from the first mark to the second. **Distance in meters ÷ number of steps = step length.** For example, if it took you 25 steps to cover 10 meters, your step length would be 0.4 meters ($10 \div 25 = 0.4$).
5. Now that you know your step length, you can use it to measure long distances.
6. Simply count the number of steps it takes you to walk a certain distance. Then multiply the total step count by your step length. For example, 1,248 steps x 0.4 meters (step length) = 499.2 meters, or approximately 500 meters.
7. Use this method to measure long distances, and the shape formulas above to determine the approximate area of your research site.

Adding a Map Scale to Your Research Site Map

Many digital maps provide the scale of the map you are working with. Use that scale and add it to any physical versions of the maps you are using in your research.

If you do not have access to the kind of map that tells you the scale or technology to measure lengths and calculate the scale on your map, use the following method to measure them in the real world and do the appropriate calculations, then add them to the map.

1. First, calculate your step and stride length to measure long distances, using the technique above.
2. Next, calculate the scale of your map.
 - a. Identify a relatively straight length on your map, such as a distance you could walk between two locations.
 - b. Mark a start and finish location on your map.
 - c. Using a ruler, measure the distance between the start and finish location on the map. Note the units of your measurement, such as millimeters or centimeters.
 - d. Go to the start location in the physical world that you marked on your map.
 - e. Counting your steps, walk from the start location to the finish location you marked on your map.



- f. Count the total number of steps it took you to walk the distance. This will be your step count.
 - g. Multiply the total step count to walk the distance by your step length. For example, 1,248 steps, x 0.4 meters (step length) = 499.2 meters, or approximately 500 meters.
 - h. Divide this actual distance measurement by the measurement of that distance on your map. For example, suppose the distance between the start and finish points on the map is 16 centimeters. You already know the distance in the real world is 500 meters. $500 \div 16 = 31.25$. The scale would be 1 centimeter (on your map) is equal to 31.25 meters (in the real world).
3. Use this method to calculate the scale of your research site map. Add this information to your map.



Examples of hand-drawn maps

