

RESOURCE LIBRARY
ACTIVITY : 45 MINS

Measuring Distances on a Map

Students use a map scale to measure distance between cities and other places on a map of your state. They create and exchange quizzes and use an interactive map to check their answers.

GRADES

2 - 4

SUBJECTS

Geography

CONTENTS

3 Links, 4 Images, 1 PDF

OVERVIEW

Students use a map scale to measure distance between cities and other places on a map of your state. They create and exchange quizzes and use an interactive map to check their answers.

For the complete activity with media resources, visit:

<http://www.nationalgeographic.org/activity/measuring-distances-map/>

DIRECTIONS

1. Engage students with a riddle.

Ask: *Where can you find two whole cities in the space of an inch? (On a map!)*

2. Demonstrate use of the scale on your state map.

Project the map of your state using the MapMaker 1-Page maps, and provide each student with a printed version of the map that shows the cities. Have them use a ruler to measure the distance on the map between cities. Ask: *Do you see any two cities within an inch of each other?*

Demonstrate how to measure distance using the map scale. Line up a piece of plain paper so its edge is even with the map scale on the projected map. Mark in pencil the beginning and the end of the scale. Write the number of miles (or kilometers) that this distance represents. Explain that the measurement on the paper works anywhere on this map, but the scale will probably be different on another map. Find two places on the map that are about the distance of the map scale you just copied and point them out to students. Have students do the same task with paper, pencil, and their state maps. Ask: *Why is the length on your paper much shorter than mine, if we are looking at the same map?* (The projector makes the map much larger, so the map scale bar is larger too.)

3. Practice measuring distances that are shorter and longer than the scale.

Explain that the distance between two cities will not always be the exact length of the scale. Sometimes it will fall between the beginning and end of the scale, and you then estimate the distance. Find a distance that is about half of the scale's length, and ask students to estimate it.

For distances longer than the scale, demonstrate how you can extend the length of the scale by adding segments to your piece of paper. For the second segment, double the length. Add the length again for the third, and so on. Refer students to the provided photo gallery, *How to Extend a Map Scale*, as needed.

4. Show students how to measure using the interactive map.

Ask students if they have ever used or seen an adult use a computer, smartphone, or GPS to map the route and distance to a destination. Explain that interactive online maps have measurement capabilities that make it easy to find the distance from one place to another.

Project the National Geographic Mapmaker Interactive and zoom in to your state. Select the line tool from the drawing tool bar. Next, click on your starting point, such as your hometown, and then drag and double-click on another point. The tool will make a line with the distance labeled. You can also click and move the cursor several times to measure a curved distance.

5. Have students create measurement quizzes.

Have students work in pairs or independently to create a map measurement quiz using their state map. Have them write ten measurement questions. They can then use their paper scales to find the answers and create a separate answer key. Before exchanging the quizzes, have students go to computers and check their answers using the interactive map and its measurement tool. Once they exchange and complete their quizzes, have them return them and check the answers. Discuss how an answer is “correct”—in other words, how close does it need to be?

Tip

Brainstorm the various meanings of the word *scale*, for example, musical scales, scales for weighing things, and fish scales. Explain that maps also have scales.

Modification

For the Measuring Distances in the United States worksheet, Part 3, let students mark their hometown and start their route there if desired.

Informal Assessment

Check the scale bars that students draw for accuracy as they create them. Also, have students use the provided, simple United States Map as they complete the worksheet Measuring Distances in the United States to check their understanding. If time allows, have students check their answers using the MapMaker Interactive for additional practice measuring with the online map.

Extending the Learning

- Project the MapMaker Interactive and zoom in and out from neighborhood to state to country and back again. Ask students to watch how the map scale changes. Guide students to look for a pattern in the change of scale.
- Have students use the Mapmaker Interactive or a 1-Page map to plan a weekend family trip. Have them measure the distances they would need to travel. Or, have them use a U.S. map and plan a trip to a relative's home or a place of interest, figuring distances and stops along the way.
- Have students work in small groups and use a large sheet of paper, pencils, and rulers to make a classroom map that is to scale. Have them measure the length and width of the room. Then have them make a scale to help them draw the map, such as 1 inch = 5 feet. Measure items such as desks and the distances they are from wall to place on the map in the correct size and location. Talk about the challenges of such a project.

OBJECTIVES

Subjects & Disciplines

Geography

Learning Objectives

Students will:

- explain the purpose of a map scale
- identify the two kinds of measurement used on a map scale
- use a map scale to measure distances between places

Teaching Approach

- Learning-for-use

Teaching Methods

- Discussions
- Visual instruction

Skills Summary

This activity targets the following skills:

- 21st Century Student Outcomes
 - Information, Media, and Technology Skills
 - Information, Communications, and Technology Literacy
 - Learning and Innovation Skills
 - Communication and Collaboration
- Critical Thinking Skills
 - Applying
 - Understanding
- Geographic Skills
 - Acquiring Geographic Information
 - Asking Geographic Questions

National Standards, Principles, and Practices

NATIONAL COUNCIL FOR SOCIAL STUDIES CURRICULUM STANDARDS

- Theme 3:

People, Places, and Environments

NATIONAL GEOGRAPHY STANDARDS

- Standard 1:

How to use maps and other geographic representations, geospatial technologies, and spatial thinking to understand and communicate information

COMMON CORE STATE STANDARDS FOR ENGLISH LANGUAGE ARTS & LITERACY

- Reading Standards for Informational Text K-5:

Integration of Knowledge and Ideas, RI.3.7

- **Reading Standards for Informational Text K-5:**

Integration of Knowledge and Ideas, RI.4.7

- **Reading Standards for Informational Text K-5:**

Integration of Knowledge and Ideas, RI.5.7

THE COLLEGE, CAREER & CIVIC LIFE (C3) FRAMEWORK FOR SOCIAL STUDIES STATE STANDARDS

- **Geographic Representations: Spatial Views of the World: D2.Geo.1.3-5:**

Construct maps and other graphic representations of both familiar and unfamiliar places.

Preparation

What You'll Need

MATERIALS YOU PROVIDE

- Pencils
- Plain paper
- Rulers

REQUIRED TECHNOLOGY

- Internet Access: Required
- Tech Setup: 1 computer per classroom, Projector

PHYSICAL SPACE

- Classroom

GROUPING

- Large-group instruction

OTHER NOTES

Before conducting this activity, print a copy of your state map with city labels for each student.

BACKGROUND & VOCABULARY

Background Information

The ability to use a map scale is one of the most basic and important map skills. Students will use this skill throughout their lives for purposes ranging from planning a road trip to purchasing furniture based on a floor plan. Students who understand that map scale represents real distances on Earth, and can use map scales to calculate distances, will also better understand the world in spatial terms.

Prior Knowledge

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Recommended Prior Activities

- None

Vocabulary

Term	Part of Speech	Definition
distance	<i>noun</i>	measurable space between two or more objects.
map scale	<i>noun</i>	relationship between distance on a map and distance on the ground.
map skills	<i>noun</i>	skills for reading and interpreting maps, from learning basic map conventions to analyzing and comprehending maps to address higher-order goals.
measurement	<i>noun</i>	process of determining length, width, mass (weight), volume, distance or some other quality or size.

For Further Exploration

Books

- [Sobel, David. *Mapmaking With Children: Sense of Place Education for the Elementary Years*. Portsmouth, NH: Heinemann, 1998.](#)
- [McClintock, Barbara. *Adele and Simon in America*. New York: Farrar, Straus and Giroux, 2008.](#)
- [Hopkinson, D. and N. Carpenter. *Apples to Oregon*. New York: Atheneum, 2004.](#)
- [Flocq, Brian. *Locomotive*. New York: Atheneum, 2013.](#)

Interactives

- [Scale of the Universe 2](#)



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