



Discovering map scale

Target audience – Grade 4

Time required – 15 minutes

Activity

Compare map scales using a satellite image.

Standards

NGSS.D2.Geo.3.3-5. Use maps of different scales to describe the locations of cultural and environmental characteristics.

NGSS.D2.Geo.2.3-5. Use maps, satellite images, photographs, and other representations to explain relationships between the locations of places and regions and their environmental characteristics.

Learning Outcomes

- Students will recognize differences between large-scale and small-scale maps.

Map URL: <http://esriurl.com/fourgeo inquiry7>



Engage

What is map scale?

- To start the map, click the map URL link above or type it into your Internet browser.
- ? What is map scale? *[The distance on a map between two locations that represents an actual distance on the earth between the same two points.]*
- ? What is a large map scale? *[A map with more detail covering a small area—such as a schoolyard map with great detail.]*
- ? What is a small map scale? *[A map with less detail covering a large area—such as a map of the United States where only state borders are visible.]*



Explore

How do features change at different map scales?

- Press the home button on the map.
- Using the scale bar in the bottom left of the map, read the scale. *[Answers will vary depending on map extent and position. The scale may read 1 inch is equal to 2,000 to 600 miles.]*
- ? What is visible in this image? *[Answers will vary.]*
- Zoom in to view the United States.
- ? What new features are visible now that were not visible in the worldview? *[Answers will vary.]*
- Continue to zoom in to the following locations:
 - Your state
 - Your county
 - Your town
 - Your school
- ? What new features are visible in each image? *[Answers will vary.]*

Explain

How do we determine large scale versus small scale?

- ? At what scale did the state borders appear? [*1 inch to 600 miles*]
- ? At what scale are buildings and houses visible on the map? [*Approximately 1 inch to .4 mile*]
- ? Would a scale of 1 inch to 1 mile be considered a small-scale or large-scale map? [*It would be a large-scale map.*]

Elaborate

How are maps measured?

- ? Is a map showing directions from school to the nearest town center a large-scale map or a small-scale map? [*It would be a large-scale map. Zoom in to street view for students to see the detail.*]
- ? Is a map of rivers that drain into the Mississippi River a large-scale map or a small-scale map? [*It would be a small-scale map. Zoom out to see the entire Mississippi River.*]
- Click the button, Measure. Select the Distance button, and from the drop-down list, choose Miles.
- ? What is the distance between Cincinnati and Washington, D.C.? [*Approximately 402 miles*]
- ? Does the measured distance (using the Measure tool) match the distance when using the scale bar? [*Yes, although not exactly. It is close to the same distance. Hint: Zoom out and use a piece of paper to compare city distance to the scale bar.*]

USE THE MEASURE TOOL

- Position the area of interest on the map so that it is not obscured by the Measure window.
- Click the button, Measure.
- Select the Distance button, and from the drop-down list, choose a unit of measurement.
- On the map, click to start measuring, click again to change direction, and double-click to stop measuring.

TURN A MAP LAYER ON AND OFF

- Make sure that the Details pane is selected, and click Show Map Contents.
- To show individual map layers, select the check boxes next to the layer names. Hint: If a map layer name is light gray, zoom in or out on the map until the layer name is black. The layer can now be turned on.

Next Steps

DID YOU KNOW? ArcGIS Online is a mapping platform freely available to U.S. public, private, and home schools as a part of the White House ConnectED Initiative. A school subscription provides additional security, privacy, and content features. Learn more about ArcGIS Online and how to get a school subscription at <http://connected.esri.com>.

THEN TRY THIS...

- Explore a large-scale map of Washington, D.C., comparing present day to 1851. See the story map at <http://esriurl.com/Geo41112>.
- Explore where people live with a small-scale map of the world. See the map at <http://esriurl.com/Geo41113>.



TEXT REFERENCES

This GIS map has been cross-referenced to material in sections of chapters from these texts

- *Our Country's Regions* by Macmillan/McGraw-Hill — Chapter 3
- *Social Studies: Communities* by Scott Foresman — Chapter 1