Discovering Map Scale

Audience: Year 6-10 Social Studies,Mathematics, Level 1 Geography *Time Required:* 15 minutes

Activity: Compare map scales using a satellite image.

Standards: Some possible links to NZ Curriculum in this inquiry
Geography AS91009 Apply concepts and basic geographic skills to demonstrate understanding of a given environment
NZ Mathematics: AO elaboration and other teaching resources

- GM4-1: Use appropriate scales, devices, and metric units for length.
- GM4-4: Interpret and use scales, timetables, and charts.
- GM4-7: Communicate and interpret locations using distance

Learning Outcomes: Students will recognise differences between large-scale and small-scale maps**.**

Map URL: http:/arcg.is/rKeq0

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 1cm equals 500km

? What is visible in this image? *[Answers will vary.]*

- Zoom in to view New Zealand.

? What new features are visible now that were not visible in the worldview? *[Answers will vary.]*

Author: Anne Olsen

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- Continue to zoom in to the following locations:
    - Your Region
    - 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 Region boundaries? *[1 cm to 50km]*

? At what scale are buildings and houses clearly visible on the map? *[Approximately 1cm to .1km (100m)]*

? Would a scale of 1 cm to 1 km 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 centre 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 Waikato River system a large-scale map or a small-scale map? *[It would be a small-scale map. Zoom out to see the entire Waikato River.]*

- Click the button, Measure. Select the Distance button, and from the drop-down list, choose kilometres.

? What is the straight-line distance between Auckland and Wellington? *[Approximately 493.2km]*

? 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.]*

Key Skills

Use Measure Tool

- Position the area of interest on the map so that it is not obscured by the Measure window.
- Click the Measure button.
- 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 New Zealand public and private schools. A school subscription provides additional security, privacy, and content features. Learn more about ArcGIS Online and how to get a school subscription at http://www.eagle.co.nz/gis-schools.

THEN TRY THIS…

- Explore where people live with a small-scale map of the world. See the map at http://esriurl.com/Geo41113.
- Zoom to your home region. Explore this large-scale map

Text References

- Evans, Jane and Osborne, Cheryl. Geography 1.4 Workbook Level 1 Year 11. Pearson
- Peat, Justin, Geography Skills for NCEA Level One. Cenage 2016
- NZ Mathematics: See a Math mapping activity at https://nzmaths.co.nz/resource/map-it

NEW ZEALAND GEOINQUIRIES

http://arcg.is/1GPDXe