Google Earth Lesson-Year 4

Teacher Resource- Maths

Subject Area-Maths

Strand –Measurement

- **Understand units and direct measure: Direct measure**
- **Estimate**

Concepts used:

- Measurement
- Estimation
- Data analysis

Year level: 4

Learning Objectives

- Draw standard measurements from a familiar landmark.
- Estimate and check measures between familiar landmarks.

Lesson time – 60 minutes

Lesson resources

- Computer (share 1 between 2)
- Internet connection
- Google Earth software
- Estimating Distance example (attached)
- Student handout sheet (distance entry table)

Source –Realworldmaths.org Based on work by Thomas J. Petra. Realworldmaths.org - http://www.realworldmath.org/Real_World_Math/Estimating_Distance.html

Link to next lesson- calculate the time (in quarter hours) it would take to travel the distance measured between the two chosen points.

Description

The ability to judge distance is learned by example. Students can find their home or school using Google Earth, a good activity for them would be plotting paths of standard distances. Have them use the ruler tool to find the distance between landmarks known to them, and then match the distance with a drawn path. They may have good idea of how far a kilometre is, but how about a mile?

The example file below demonstrates how distances of 1, 10, and 100 kilometres can be drawn from a single location. These are matched by distances of 1, 10, and 100 miles. This file is intended only as an example, as each student's personal creation will be more meaningful to him or herself. Using these measures as a gauge, follow up questions can ask students to estimate distances between known locations. Using the ruler tool they can check their estimates.

Additionally, students can learn how to use the "Path" setting of the ruler tool to measure indirect distances such as their route to school or the shopping centre.

To ensure student understanding, demonstrate on interactive whiteboard while students follow with laptop computers.

Example file – Estimate Measurements.

Estimating Distance_1.kmz

How big is my world?

Student handout sheet. 1

Realworldmaths.org. (2011)

Image 1

Image 2 (*Around GELessons.com 2008*)

Overview

Every day people travel many miles or kilometres to get to work or school. Australia is a vast country where the distance between most major cities and towns is many hundreds of kilometres, in some places the neighbouring property can be many hours drive away.

Perth is the world's most isolated city. The distance between Perth and Melbourne (between two points) is 2,771 kilometers.

In this activity you need to estimate the distance between the major cities in Australia, then plot your route and discover the actual distance in kilometers and miles.

Discussion questions

Some children in underdeveloped countries have to travel many miles to get to school as there is limited or no public transport.

How far is it?

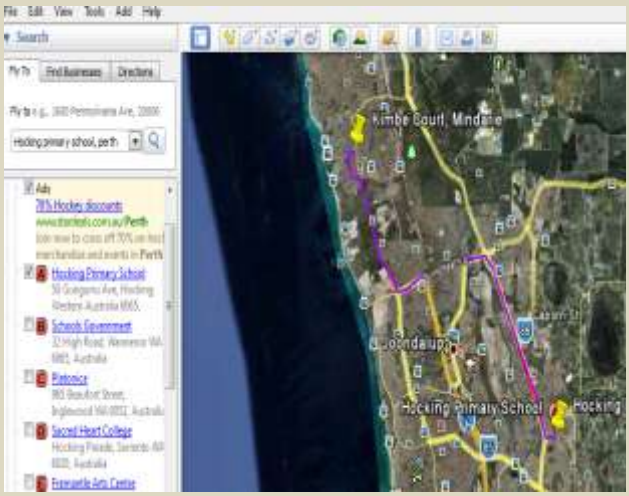
- How far is it from Sydney to Los Angeles?
- What is the distance between Adelaide and Canberra?
- Compare the distance between two cities using miles. Now compare the results with the answer in kilometers- what do you notice?
- What else do you notice measuring distance between two points?

How do you get to school?

- In your group, think of the different ways people travel to school, what was the most popular way?
- How long would it take you to walk to school each day?
- What would happen if a law was passed stopping people from using cars, buses and trains and planes?

Student handout sheet 2

Image 3.
The daily route I travel to and from work.



Instructions

Working with a partner you are going to map a route from Perth to all major cities in Australia, including Tasmania. (image 1). In your group, using the table provided estimate the distance between Perth and all major cities, then follow the steps below to find the **actual** distance- in a straight line **and** along a set route.

Step 1.Click on the **pinpoint** icon. Find Perth, Western Australia and double click to insert pin icon. Do the same with another major city.

Step 2. Click on the **path** icon. Plot a route between these two cities. (you will need to use the toggle icon on the right of the screen to navigate or use arrow keys,-image 2)

Step 3. Click on the **ruler** icon. Insert the unit of measurement you wish to use (**remember, you must use kilometres and then choose one other**). Follow the route from Perth to major city, once you have the distance you can save it in your file, click **save.**

Once you have the results of the distances you need to enter this data into the table below.

In your group, think about and discuss the questions- **How far is it?**
Using the same steps as before, you need to choose at least 3 other distances to measure.
I have included an example (image 3) of the daily route I travel to and from work. I have plotted a path and then measured the distance I travel along this route. (red line) .
In your group think of other distances you would like to measure.
In your group, think about and discuss the questions- **How long would it take you to walk to school?**

Student handout 3
Estimated distance between two points and actual distance measured.

- Insert your **estimated** distance from **Perth** to the name the major city
- Measure the distance on Google Earth using the ruler and path tools
- Insert the **actual** distance as measured using kilometres and then another unit of measurement
- Choose two other places to measure the distance from , include your estimation and then actual

Name of city.	**Melbourne**		**Sydney**	**Adelaide**	**Canberra**	**Hobart**	**Darwin**	**Cairns**
Estimated distance from Perth in kilometers								
Actual distance from Perth in kilometers								
Choose your own focus points-eg, distance between school and home.								
Estimated distance from..								
Actual distance from..								
Estimated distance from..								
Actual distance from..								
Estimated distance from..								
Actual distance from..								