ELEMENTARY

Street maps: How should we get there?

from the Esri GeoInquiries™ collection for Upper Elementary

Target audience – Upper Elementary **Time required – 15 minutes**

Activity	Students will explore street maps, measure distance, and calculate travel times as they direct their school bus to the zoo.
Standards	**CCSS.MATH.CONTENT.4.MDA.1.** Solve problems involving measurement and conversion of measurements. **NGSS:D2.Geo.1.3-5.** Construct maps and other graphic representations of both familiar and unfamiliar places. **CCSS.MATH.CONTENT.5.NBT.B.7.** Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.
Learning Outcomes	• Students will measure distances on a street map. • Students will compute walk time to school using the distance formula.

Map URL: http://esriurl.com/fourgeoinquiry3

Engage

What are all those lines on a road map?

→ Open the map URL link above, or type it into your Internet browser.

→ Click the six colorful arrows to identify each feature on the street map.

? How does each feature support transportation? *[Roads, rivers, and rails support different types of vehicles, travel times, and passenger counts.]*

→ Click the button, Show Contents of Map. Hint: Look in the upper left corner, below the Details button.

Explore

How far is it really?

→ Click the checkbox in front of the layer name, Places.

→ Click the button, Bookmarks. Select the Home-School-Park bookmark.

→ Click each of the three symbols to familiarize students with the map.

→ Click the button, Measure. Using the Distance tool, trace over the red line from Home to School.

– Hint: Learn to use the Measure tool in tool tips at the bottom of page 2."

? How far is it from Home to School? *[It is approximately .45 miles.]*

→ Measure the distance from School to the Children's Pool at Kidd Springs Park and also from the Children's Pool to Home.

? What are the distances between these locations? *[It is approximately .75 miles to the Children's Pool from School and .65 miles from the Children's Pool to Home.]*

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Explain

What time do I have to wake up to get to school on time?

? If a student can walk 2 miles per hour, how long will it take to walk from home to school? *[About .225 hours. The formula is distance = rate x time (or .45 miles = 2 mph x hours). Note: To convert to miles per minute, multiply the answer by 60 (so .225 x 60 = 13.5 minutes).]*

→ As time allows, do the same calculation from School to Kidd Springs Park, and from Kidd Springs Park to Home.

Elaborate

What's the shortest distance to the zoo?

→ Click the button, Bookmarks. Select School To Zoo.

→ Show students the zoo entrance and the two places that the bus can pass under the highway to get to the zoo (represented by the X's in yellow squares).

→ Using the Measure tool, find the shortest distance from School to the zoo entrance—making sure to go under the freeway only where there is a yellow X.

? What is the shortest distance you could find? *[There are several routes, but the shortest is approximately 2.5 miles.]*

BOOKMARK

- Click the button, Bookmarks.
- Select a bookmark name to zoom to its map location and scale.

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 choose a unit of measurement.
- On the map, click once to start the measurement. Click again to change direction. Double-click to stop measuring.

Next Steps

DID YOU KNOW? ArcGIS Online is a mapping platform freely available to public, private, and home 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.esri.com/schools..

THEN TRY THIS...

- Using a free ArcGIS Online organization subscription for schools (see http://connected.esri.com), have students modify the map used in this activity, save it to their accounts, and share it with classmates.
- In a school ArcGIS Online organization, create Drive-Time Areas that can be reached within a specified drive time, drive distance, walking distance, and so on.

TEXT REFERENCES

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

- *Building a Nation by Scott Foresman — Chapter 15*
- *Math by MacMillan/McGraw-Hill — Chapter 14*

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