

Reading a Map

Students are presented with the problem of identifying the location of cities on a map and determining the distances between cities. To solve this problem, students will apply the concepts they have learned about latitude and longitude and map scales.

◆ Expected Outcome

Students should be able to identify the four cities by observing the lines of latitude and longitude on a map. They should be able to determine the distance between cities by making measurements with their rulers and then using the map scale to find distances.

◆ Content Assessed

This activity assesses students' knowledge of maps, map projections, latitude and longitude, scales, and topographic maps.

◆ Skills Assessed

observing, interpreting maps, measuring, calculating

◆ Materials

- ◆ Each student will need a map of the United States. Make sure the map is a Mercator projection and that it includes lines of latitude and longitude. The scale on the map should be metric.
- ◆ Each student will also need a metric ruler.

◆ Advance Preparation

- ◆ Gather enough maps for each student a day in advance. These maps can be photocopies of a map in an atlas or textbook.
- ◆ Make sure the maps include Los Angeles, Indianapolis, Boston, and Atlanta. If photocopying a map, you might highlight the cities with a dark pencil on one copy, and then use that copy for making other copies.

◆ Time

20 minutes

◆ Monitoring the Task

- ◆ Tell students they can use scrap paper to make their calculations of distances between cities. Remind them that the distances should be in metric units.



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In assessing students' performance, use the following rubric.

	4	3	2	1
Reading the Map	The student correctly identifies all four cities by latitude and longitude and uses the scale to accurately find all four distances between cities.	The student correctly identifies three cities by latitude and longitude and uses the scale to accurately find three distances between cities.	The student correctly identifies two cities by latitude and longitude and uses the scale to accurately find two distances between cities.	The student correctly identifies only one city by latitude and longitude and uses the scale to accurately find one distance between cities.
Concept Understanding	The student demonstrates a mastery of the concepts related to maps and latitude and longitude.	The student demonstrates an adequate understanding of the concepts related to maps and latitude and longitude.	The student demonstrates only a partial understanding of the concepts related to maps and latitude and longitude.	The student demonstrates little understanding of the concepts related to maps and latitude and longitude.



PERFORMANCE ASSESSMENT

Reading a Map

◆ Problem

How can you determine the location of cities on a map, and how can you find the distance between these cities?

◆ Materials

U.S. map with latitude and longitude lines
metric ruler

◆ Devise a Plan

1. Study the materials and think of a way you can use them to identify the location on the map of these four cities: **a.** Los Angeles, **b.** Indianapolis, **c.** Boston, and **d.** Atlanta.
2. Think of a way to find distances between cities. Then find these four distances: **a.** Los Angeles to Indianapolis, **b.** Indianapolis to Boston, **c.** Boston to Atlanta, and **d.** Atlanta to Los Angeles.

◆ Analyze and Conclude

On a separate sheet of paper, respond to the items that follow.

1. What are the latitude and longitude locations of the four cities?
2. Which hemisphere(s) are these cities in? Explain how you know.
3. What is the scale on this map, and what does the scale tell you?
4. What are the four distances between the cities?
5. Are the lines of latitude and longitude on this map all straight, or are some of them curved? Which type of map projection—Mercator or equal-area—does the map projection used for this map resemble?
6. Could contour lines be used to show topography on a map of this scale? Explain why or why not.

