

Map Reading

Grades:	2, 3
Team Size:	1-2 competitors
Duration:	25 minutes (5 minute introduction, 20 minutes for questions)
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Summary Description

Students will test their map reading skills by answering geographical questions using maps of different kinds.

Changes from Previous Year

None.

Concepts Covered

- The 3rd grade students need to be familiar with many kinds of maps because their first task when reading a question is deciding what map is best for answering it. For example, a question will not say, "Using the Michigan road map, find the distance from Grand Rapids to Lansing." Instead, it might say something like, "How many miles is it from Grand Rapids, Michigan, to Lansing, Michigan, on Interstate 96?" The students would need to first conclude that a map of Michigan is needed, and that it should show roads. Then they need to find the cities either from memory/familiarity or, even better, from using the index.
- The second grade competition will involve a much simpler set of skills. The most difficult questions will involve determining distance between well-known and nearby Michigan cities. Most of the competition will focus on simple map skills (e.g. north/east/west/south direction, right, left, distance gauges, reading a legend to determine symbol meanings). A cartoonish map of a famous amusement park may be used in one instance and a map of Ann Arbor in another.
- When a student team is asked for the distance of one place to another, which is really a question loaded with many others:
 - Where are the places in the question? If they are in Michigan, we will need a map that shows the whole state and the cities in it -- probably a roadmap.
 - We need to find the cities on the map. Where is the index? What grid locations does it give for the places? Can we find the places on the map?
 - What is the distance in inches or centimeters on the map?
 - Can we translate that measurement to a real world distance using the scale? Where is the scale bar? We might need to do some math to get the answer.
- A successful Map Reading team will be familiar with different types of maps and the different ways that maps can be used to gather geographic information. The student participants will need to have a conceptual understanding of how maps represent selected parts of the real world at different scales. For example, Detroit could be a small dot on one map, and another map might show the city as a patch of color with a tangle of road lines. The students will need to have a variety of map reading skills, such as understanding a map legend and measuring real world distances. The students will need to have a basic

cartographic vocabulary so that they understand the questions and can concentrate on getting the correct answers from the maps.

The Map Reading event will involve a variety of maps from a variety of sources. They will likely range from world or continent-wide maps with very small scales, to large-scale maps. Maps might come from the National Geographic Society, state departments of transportation, the U.S. Geological Survey, or AAA.

Rules/Competition Format

- Following a 5-minute introduction by the event moderator, student teams will enter the testing area where they will have a selection of maps available. They will have 20 minutes to correctly answer as many questions as possible on their test sheet.
- All participants will have rulers, pencils, calculators and string available.
- There will be approximately ten maps of various kinds located in the testing area. Maps to be used by students will be selected according to grade level. All grades will see political maps, road maps, and a globe. They will see more easily understood maps, such as theme park maps as well.
- 2nd graders will be told which map to use in answering their questions. They will, however, need to find that map. They will need to follow directions around the test area to locate a specific map among the other event maps. The children must be able to follow step-by-step directions, determine north, south, east, and west from a direction rosette, and know which is right and left.
- 3rd graders will need to figure out which map to use in answering their questions.
- For 3rd graders each question will consist of two parts that can be answered by using the available maps:
 - Which is the best map to use when answering the question?
 - What is the specific answer to the question?
 - Credit for part #1 will be given only if part # 2 is attempted.
- At the end of the allotted time, the question and answer sheet will be collected from all teams.

Scoring

- 2nd grade teams will receive 5 points for each correct answer.
- Each 3rd grade team will receive 1 point for choosing the correct map and 4 points for a correct specific answer. The team attaining the highest score will be declared winner.

Tie Break Criteria

- 2nd graders: Each team will be asked to be sure to answer one distance measuring question. The team closest to the actual distance will win.
- 3rd graders: In the event of a tie, the team with the most correct responses to the specific questions (not type of map) will be declared the winner. If the teams are still tied, answers to a specified distance measuring question will be checked. The team closest to the actual distance will win.

Materials Distributed by WESO

None

Additional Materials useful for practices

- Map Reading team training should cover the following information (also, see skills section at the end of this document).
 - Understanding and applying the meaning of different sizes, shapes, and colors for line, and area symbols.
 - A typical question might be something like, "What park is at the west end of Kenny Street in Timbuktu?" The student will need to figure out which map shows the streets of Timbuktu. The student will then need to use the index to find Kenny Street, and then use knowledge of directions and perhaps the north arrow to figure out which end is west. She/he then writes the name of the park that is seen on the map.
 - They should be encouraged to be thorough, neat, and careful with spelling, although spelling & grammar errors will not count against their score.
- WESO Map Reading Workshop video (only info pertaining to 2nd and 3rd grade)
 - <https://www.youtube.com/watch?v=kCmlnbQtgu8&t=783s>

Materials to be brought to competition

None

Additional Resources/References

Definitions:

- Legend: A directory or list showing meaning of different symbols on the map. Three-way connections between legend, map symbols, and the real world.
- Places: using labels & boundary lines; country, state, county, township, city
- Scale: using the scale bar. Understanding scale bar, measuring real world distances, calculating areas in square miles or acres
- Topography: Reading elevation contour lines, interpreting shaded relief
- Coordinate systems - using grid lines. Using longitude & latitude (degrees, minutes, seconds, meridians & parallels)

- Way finding: Finding routes to connect a series of locations
- Directions: using the north arrow
- North, south, east, west, northeast, northwest, southeast, and southwest
- Marginalia: Using the reference material on maps (often on the margins) to understand how to use the map (for example, who made the map, how old is the map, township & range labels, distance charts)
- Symbolization using the legend
- Different kinds of maps:
 - Road maps
 - Weather
 - Political maps -- country, state, or region
 - Thematic -- has some sort of theme or story to tell
 - Globes
- Different kinds of symbols on maps
 - Dots for cities and other places
 - "Little pictures" - for example, an airplane symbol for an airport
 - Line - different style, thickness, color
 - Political boundaries
 - Streams
 - Roads
 - Forest, swamp
 - Railroads

Skills:

- Scale: measuring distances in the real world using lengths on maps. Definitely will be question(s) on this. Need to understand scale (ratio of units on map to units in real world). Need to be able to use the scale bar or the given ratio to estimate distance. Rulers will be provided.
- Using the index to find things on the maps. No one (students or adults) is expected to memorize all the items on a map. The index lets us find geographic features among the hundreds or thousands of items shown on a map. Student will need to know how to use the location grid, too. If index says a hospital is at A3, she/he needs to know what A3 means.
- Understanding what different symbols mean on maps. Using the legend. Interpreting the legend. The student must be able to differentiate among different, often overlapping, symbols on a map. This goes back to the absolute basics of point, line, and area symbols. These are things we take for granted, but a young student might need to make more of an effort. The main idea is to find the legend (key), understand it, and use it.
- Understanding different types of maps and the fact that different maps show different information. A physical map isn't a good road map. A road map usually doesn't show much in the way of landforms. A world political map won't help you find a park on a

street in Timbuktu. This could be a big part of the student's effort in the competition -- hunting around for the right map. But there will not be an overwhelming number of maps -- probably about seven or eight.

- Longitude & latitude -- understanding the basics of geographic coordinates.
- Direction - which way is north, south, east, or west? Southeast, southwest, northeast, northwest?
- Basic geographic vocabulary -- When they see words like "continent", "state", "capital", "city", "lake", or "ocean", they are expected to know exactly what is being discussed.

Some maps used in recent WESO map reading events:

- National Geographic North America Before Columbus thematic map
- AAA world political map
- Globe
- Weather map of United States from USA Today newspaper
- U.S. Geological Survey Map of Isle Royal National Park
- National Geographic thematic map of the Middle East
- AAA Road Map of Michigan
- Rand McNally Map of the World
- Rand McNally Map of the United States

Example Questions

1. What is the name of the large desert near the southern end of Africa?
2. What is the name of the large ridge southeast of India and under the Indian Ocean?
3. Why is it called that?
4. What is the name of the latitude line at 0 degrees?
5. What is the name of the underwater mountain range in the middle of the Atlantic Ocean?
6. How many miles is Ann Arbor from Jackson, Michigan?
7. What kind of plants do you think you would see a lot of around Mio, Michigan?
8. What was the estimated high temperature in Lincoln, Nebraska, yesterday?
9. What is the body of water between the South Shetland Islands in Antarctica and Cape Horn in Argentina?
10. What park is on Dasher Avenue in the City of Allen Park, Michigan?
11. What is the vertical distance between adjacent elevation contour lines on the Bright Angel Point, Arizona, topographic map?

12. On the attached map of the United States, write the names of these states inside the correct state boundaries: a) Ohio, b) Indiana, c) California.