Geographic Educators of Nebraska
Advocating geographic education for all Nebraskans

Nebraska's Place in the World

Students will use lines of latitude and longitude to locate cities within the state and to recognize Nebraska's place in the world.

Author	Karen Graff, Ed. D.
Grade Level	4th
Class Period(s)	2 (40 – 50 minutes)

Nebraska Social Studies Standards	Nebraska Science Standards	Nebraska Language Arts Standards	Nebraska Math Standards
SS 4.3.1 Explore where (spatial) and why people, places, and environments are organized in the state and around the world. SS 4.3.1.a Use local and state maps and atlases to locate physical and human features in Nebraska. SS 4.3.1.b Apply map skills to analyze physical/political maps of the state. SS 4.3.1.d Differentiate between classifications of bodies of water, cities, and land masses.		**LA 4.1.5 Vocabulary: Students will build and use conversational, academic, and content-specific grade-level vocabulary.** LA 4.1.5.c Acquire new academic and content-specific grade-level vocabulary, relate to prior knowledge, and apply in new situations.	**MA 5.3.2 Coordinate Geometry: Students will determine location, orientation, and relationships on the coordinate plane.** MA 5.3.2.a Identify the origin, x axis, and y axis of the coordinate plane. MA 5.3.2.b Graph and name points in the first quadrant of the coordinate plane using ordered pairs of whole numbers. ***NOTE:** These indicators are for grade 5 so mastery is not expected at this level.

Overview

Students will use a simple coordinate grid to locate places (similar to the board game Battleship). Then they will transfer that skill to lines of latitude and longitude on the world map and finally zoom in on the map of Nebraska.

Purpose

This lesson will help students understand how using lines of latitude and longitude helps us locate places quickly and accurately.

Key Vocabulary

Latitude-The measurement of distance north or south of the Equator. It is measured with imaginary lines that form circles around the Earth east-west, parallel to the Equator (also known as a parallel).
Longitude-The measurement east or west of the prime meridian. Longitude is measured by imaginary lines that run around the Earth vertically (up and down) and meet at the North and South Poles (also known as a meridian).
Equator-An imaginary line around the middle of Earth. It is halfway between the North Pole and the South Pole, at 0 degrees latitude.
Prime Meridian-The line of 0 longitude, the starting point for measuring distance both east and west around the Earth.
Degree-A unit of measurement for distance from the Equator or Prime Meridian.

Source: http://nationalgeographic.org/glossary

Materials

- Student Atlas of Nebraska (1 copy for each student)
- Treasure Hunt Grid Sheet (1 per student)
- Grid Assessment

Objectives

The student will be able to:
- Locate cities in Nebraska when given coordinates for lines of latitude and longitude.
- Determine the coordinates for lines of latitude and longitude when given a city in Nebraska.

Procedures

First Session /Day 1
1. Distribute a Student Atlas of Nebraska to each student and have them look at the world map on page 3.
- Briefly review cardinal directions using the compass rose and point out the Equator and Prime Meridian. Remind students that those special lines divide the Earth into hemispheres. Identify the four hemispheres and the two where we live (Northern and Western because we are north of the Equator and west of the Prime Meridian).
- Note that the Equator and Prime Meridian are each labeled 0° because they are the starting points in finding distance and location just as 0 on a number line is a starting point. Be sure students understand the meaning of "degree" in this context so they don't confuse it with temperature.
- Define latitude and longitude and point out other examples on the map. **Note:** Using lines of latitude and longitude can be confusing for students when they see the cardinal directions that label the coordinates. Since lines of latitude (parallels) go west-east, *students often expect to see them labeled as °E or °W.* It is important that they understand they are measuring **distance from the Equator** (how far north or south of the Equator-i.e., °N or °S). Likewise, lines of longitude are labeled °E or °W.

2. Display a Treasure Hunt Grid Sheet with a document projector or as a transparency. Tell students they will play a treasure hunt game using a grid similar to the world map. (Most students have played Battleship or a similar game and will have a general idea of procedures.) The major difference is the labels for the grid lines. Model how to correctly read the labels and practice reading them in unison. Choose a student to face away from the screen while you mark 3 locations at intersecting lines with dots and the student does the same on his sheet. Ask the student to guess a location of your "treasure" as you demonstrate how to mark your grid with his guesses and you mark your "Opponent's Grid" with your guesses.

3. Distribute Treasure Hunt Grid Sheets and allow time for play/practice.

Second Session/Day 2
1. Once again, refer to "Nebraska's Place in the World" on page 3 of the *Student Atlas of Nebraska*. Give students examples of possible coordinates to locate the continents.
30° N, 90° W   North America
30° S, 120° E   Australia
60° N, 90° E   Asia
30° S, 60° W   South America
60° N. 30° E   Europe
30° S, 30° E   Africa

2. Remind students that the coordinates for locations in North America will always be _____° N, _____°W since we are in the Northern and Western hemispheres. Refer to the "Latitude and Longitude" map on page 5 and note the difference in intervals on the Nebraska map and the world map since we are "zooming in" on Nebraska (1° vs. 30°). Explain that even though we are using 1° intervals, we still cannot precisely identify the coordinates for many cities on the map. Students will learn more precise measurements (using minutes and seconds) in upper grades but for now will use the closest grid lines. Ask them to find a city that does have fairly precise coordinates (**Mullen** 42° N, 101° W). Now find a city that might have the least precise coordinates of those on the map (**Stapleton** 41° N, 101° W because it is about halfway between the grid lines). Provide coordinates for several other cities on the map. Then ask students to work in pairs to identify coordinates for the remaining cities.

Chadron 43° N, 103° W
Plattsmouth 41° N, 96° W
McCook 40° N, 101° W
Wayne 42° N, 97° W
Kimball 41° N, 104° W
Omaha 41° N, 96° W
Grand Island 41° N, 98° W
Lincoln 41° N, 97° W

Turn to page 10 and discuss the meaning of the 100th Meridian sign in Cozad.

OPTIONAL CHALLENGE: Look at the map of "Cities and Villages" on page 47. Using the locations of the cities listed above (from page 5) as well as the outline of the state, find the approximate location of these cities on the "Latitude and Longitude" map. Then estimate the coordinates for each city.

Valentine 43° N, 100°/101° W
Columbus 41° N, 97° W
North Platte 41° N, 101° W
Kearney 41° N, 99° W
Cozad 41° N, 100° W

Assessment

Give students the Grid Assessment. This is meant to be a formative assessment only.

Extensions

Latitude can be used to find distance (assuming a direct north-south route) as well as location. Longitude can be used as well but the distance between lines of longitude (meridians) decreases toward the Poles so it is more complicated.

One degree of latitude equals approximately 69 miles. Based on the approximate latitude of their community, ask students to compute the distance from the equator.

40° N = 69 x 40 = 2760 miles
41° N = 69 x 41 = 2829 miles
42° N = 69 x 42 = 2898 miles
43° N = 69 x 43 = 2967 miles

How could you easily find the distance at the 41st, 42nd, and 43rd parallels? (Add 69 miles to the previous computation.)

What is the distance from the southern border of Nebraska to the northern border? (2967 – 2760 = 207 miles OR 69 x 3 = 207)

How far is it from the northern border of Nebraska to the border with Canada? Students will need to research or locate Canada on a map to see that the 49th parallel forms the border between the US (along North Dakota) and Canada. So,
49-43=6   69 x 6 = 414 miles

Sources

http://nationalgeographic.org/glossary

Support for these lessons was provided by:
Geographic Educators of Nebraska
(GEON) a member of the National
Geographic Geography Alliances
and
Nebraska Department of Education
(NDE) Social Studies Department