

Name:
Teacher:

Date:
Period:

Latitude and Longitude Lab

Introduction: In order to navigate and study different places on Earth, a universal system is needed to allow people all over the world to locate their exact position on Earth's surface. The system created to locate and describe positions on Earth is latitude and longitude. This method is used by all nations.

Time zones are related directly to the Earth's longitude position. In a day there are 24 hours, during this time the Earth makes one full rotation on its axis or $15^\circ/\text{hour}$. The Earth is divided into 24 time zones of 15° of longitude each. When you cross from one time zone to another, the local time changes by one hour. If you are traveling east, you add one hour for each time zone you cross. If you are traveling west, you subtract one hour.

Objective: You will learn how to determine positions on Earth using the coordinate system of latitude and longitude.

Vocabulary:

Latitude-

Longitude-

Polaris-

Meridian-

Equator-

Coordinate System-

Parallel-

Procedure:

A. Surface Ocean Currents Map

1. How many degrees are there between adjacent meridians of longitude? _____

2. Draw dots to mark the following points on the enclosed map. Label each point with the appropriate letter.

Point A: $20^{\circ}\text{N}, 90^{\circ}\text{W}$

Point D: $40^{\circ}\text{S}, 30^{\circ}\text{E}$

Point B: $60^{\circ}\text{N}, 105^{\circ}\text{E}$

Point E: $30^{\circ}\text{S}, 75^{\circ}\text{W}$

Point C: $0^{\circ}, 120^{\circ}\text{E}$

Point F: $50^{\circ}\text{S}, 30^{\circ}\text{W}$

B. Tectonic Plates Map

1. Find the approximate latitude and longitude of the following spots:

Yellowstone Hot Spot: _____

Iceland Hot Spot: _____

Galapagos Hot Spot: _____

Canary Islands Hot Spot: _____

St. Helena Hot Spot: _____

C. Generalized Bedrock Geology of New York State Map

1. Draw dots on the enclosed map to mark the following latitude and longitudes. Label each point with the appropriate letter.

Point A: $42^{\circ}30'\text{N}, 75^{\circ}\text{W}$

Point C: $43^{\circ}\text{N}, 77^{\circ}45'\text{W}$

Point B: $44^{\circ}15'\text{N}, 74^{\circ}45'\text{W}$

Point D: $41^{\circ}\text{N}, 73^{\circ}30'\text{W}$

2. State the latitude and longitude of the following cities in degrees and minutes:

Ithaca: _____

Rochester: _____

Massena: _____

Kingston: _____

D. Using a Globe

1. Philadelphia is located at 40° North latitude. Name at least 2 other major cities on the same parallel.
2. Which continents does the equator pass through?
3. Which continents does the prime meridian pass through?
4. Denver, Colorado is located exactly on the 105° W meridian. Name two major cities that are located between 105° W and 125° W.
5. Which state in the United States is on the same latitude as Finland?

E. Time Zones (Show your work)

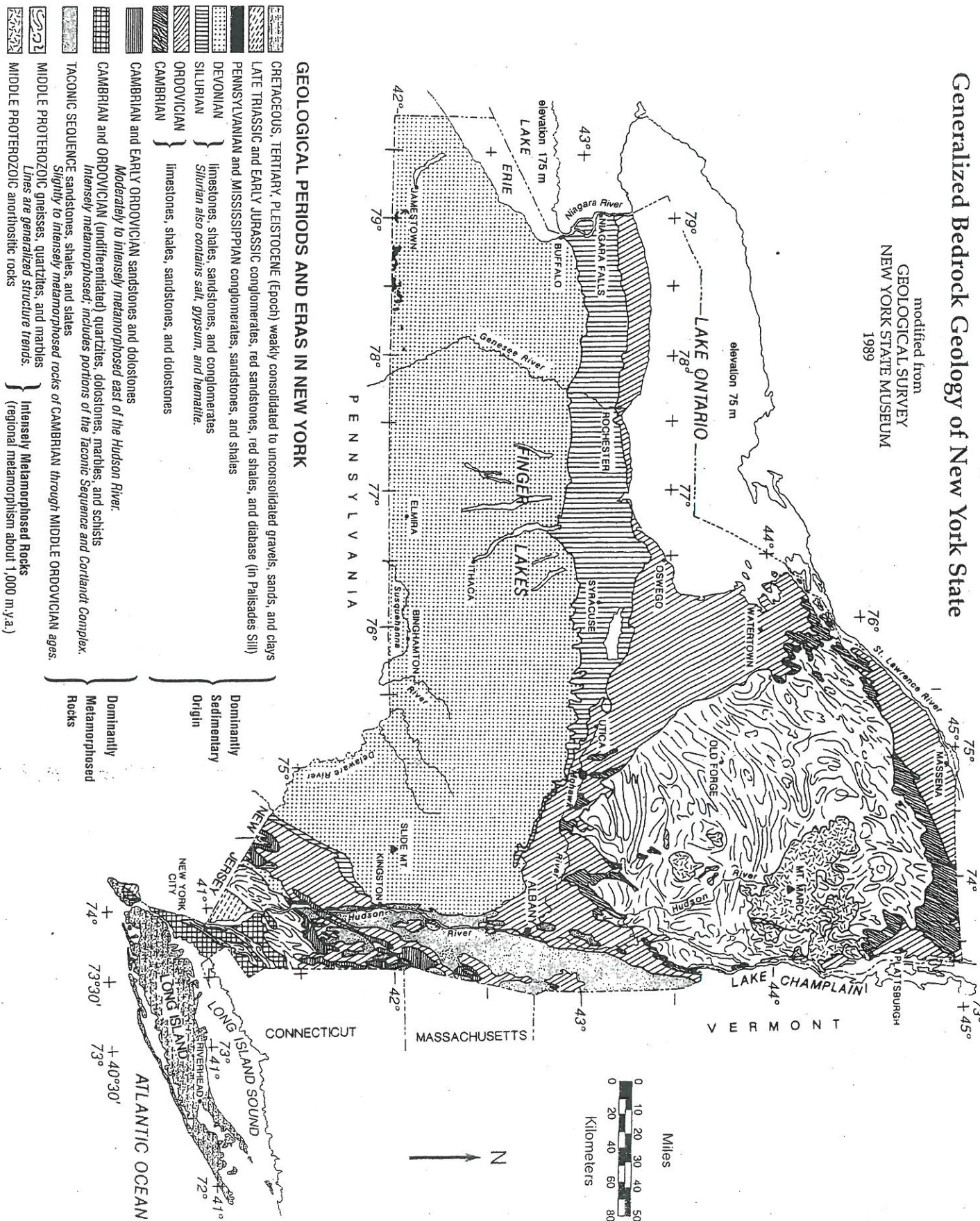
1. It is 10 am at the Prime Meridian and you are located at 90° E longitude. What time is it where you are?
2. It is 10 am at the Prime Meridian and you are located at 60° W longitude. What time is it where you are?
3. Your time is 9pm. At the Prime Meridian it is 2pm. What is your longitude?
4. Your time is 8am. At the Prime Meridian it is 3pm. What your longitude?

Discussion Questions: (Answer in Complete Sentences)

1. What is the maximum number of degrees latitude possible?
2. What is the maximum number of degrees longitude possible?
3. You are on a boat which is crossing the Prime Meridian. The altitude of Polaris is 50 degrees. Explain how you know the boat's location is 50 degrees North latitude and 0 degrees longitude.

Generalized Bedrock Geology of New York State

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Surface Ocean Currents

