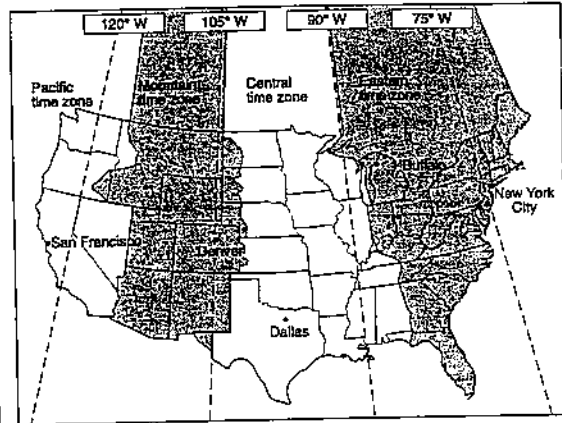


6 United States Time Zones

Often when watching television we see a show starting at 9 o'clock eastern, 8 central. We've heard it so much, we don't even pay attention to it. When our eastern sports teams play on the west coast, we see it is daylight out on the televisions while it's night time here.

The United States is an expansive country with states and territories spanning the planet. The eastern most town in the contiguous United States is Lebec, Maine with the terrestrial coordinates of 45° N and 67° W. The western most town is Ozette, Washington with terrestrial coordinates of 48° N 124° W. Key West, Florida claims many landmarks to be the southern-most point in the United States. When Hawaii, Alaska, and the territories are included, we can cross the International Date Line. Amundsen-Scott South Pole Station is a research station with United States jurisdiction in Antarctica. It's terrestrial coordinates are $89^{\circ} 99'$ S and $0^{\circ} 0'$ E.



Objective:

The objective of this investigation is to illustrate why we have time zones in the United States and to find the extremes of the United States as well as within New York State.

Essential Question:

Hypothesis:

Variables:

Independent: _____

Dependent: _____

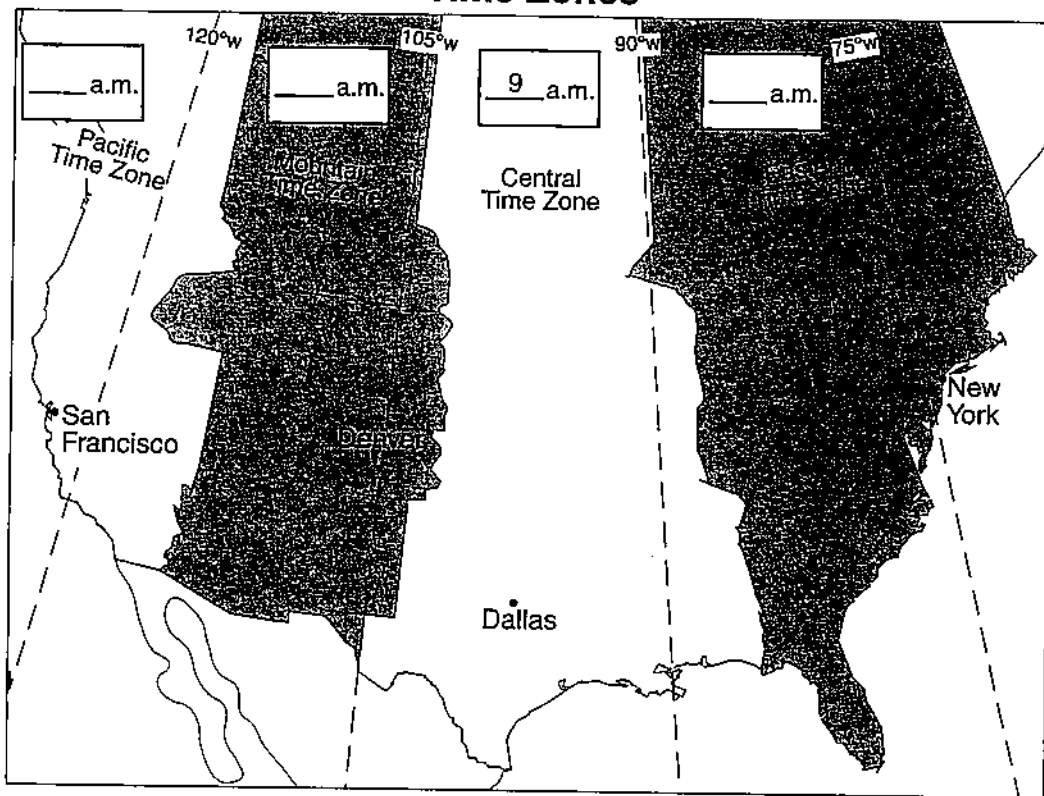
Materials: • Calculator • Maps • Globe • External Protractor

Pre-lab: Locate the cities on the map below. Record the cities time zones in the spaces provided.

City	Latitude & Longitude	Time Zone
New York, New York	40° 43' N 74° 00' W	
Dallas, Texas	32° 78' N 98° 80' W	
Denver, Colorado	39° 44' N 104° 59' W	
San Francisco, California	37° 46' N 122° 26' W	

Assuming it is 9:00 a.m., in the central time zone, fill in the correct time for the remaining time zones.

Time Zones



Observations:

1. Which is the northern most city of the four listed above? _____
2. Approximately, about how far apart are the four cities by longitude? _____
3. The Texas Rangers are playing the San Francisco Giants in California with a starting time of 8:00 p.m.. What time would residents in Dallas expect to see the game begin on their televisions?

Directions:

Using your globe, take a piece of masking tape and place it on the Equator starting at 150°W and, going from left to right, continue to 50°W.

2. Please find the following locations on the globe:

- | | |
|---------------------------|------------------------------------|
| A. Barrow, AK 71°N 156°W | D. Wake Island 19°N 166°E |
| B. NW Angle, MN 49°N 95°W | E. Lubec, ME 44°N 66°W |
| C. Ka Lae, HI 18°N 155°W | F. Amatignak Island, AK 51°N 179°W |
| D. Key West, FL 24°N 81°W | G. Ozette, WA 48°N 124°W |

3. When these points are located, trace with your finger the longitude line southward to the Equator.

4. Write the letters representing each city on the tape on the appropriate longitude.

Example: A. represents Barrow AK. It would be written on the tape closest to 156°W.

5. Use an external protractor to complete the following

Observations:

1. Using your external protractor, what is the difference in longitude between Wake Island and Ke Lae, HI? What is the time difference?

2. Look at Barrow, AK and Ka Lae, HI. What is the difference in time zones?

3. What is the time difference between Ozette, WA and Amitignak Island, AK?

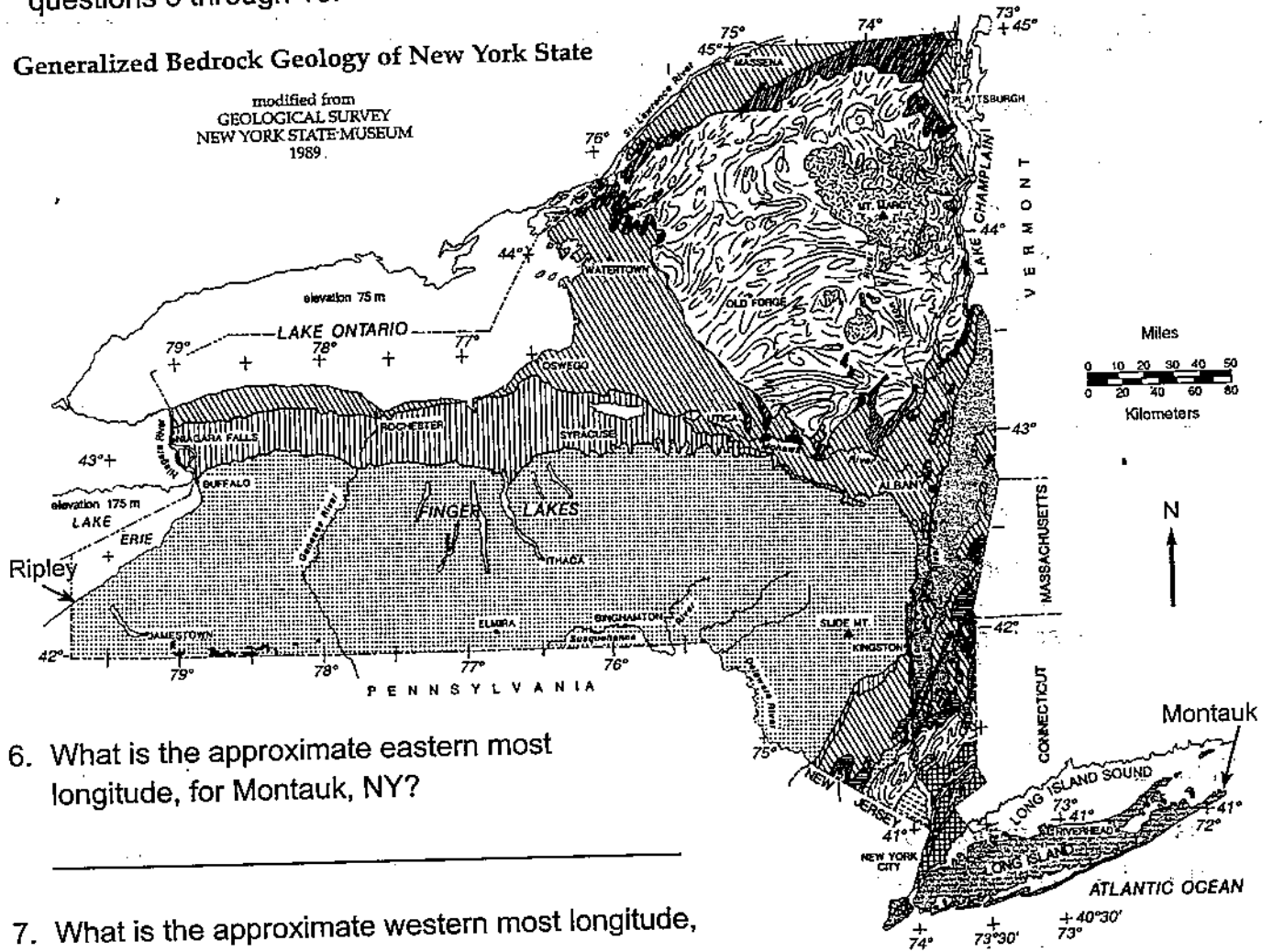
4. What is the difference between the longitude from Lubec, ME and Key West, FL?

5. It is Thanksgiving Day in Lubec, ME and your clock strikes noon. What is the time difference when residents of Key West, FL hear their own noon chimes?

Directions: Refer to Generalized Bedrock Geology of New York State map below to answer questions 6 through 10.

Generalized Bedrock Geology of New York State

modified from
GEOLOGICAL SURVEY
NEW YORK STATE MUSEUM
1989



6. What is the approximate eastern most longitude, for Montauk, NY?

7. What is the approximate western most longitude, for Ripley, NY?

8. What is the approximate difference in degrees (in longitude) between these two points?

9. Which city will see the sunrise first and how much time will pass before the second city sees the sunrise?

10. Students in both Ripley and Montauk will be taking the Earth Science Regents exam in June at 9:15 am. Explain why they both should be present and ready to take the exam at 9:15 am.
