

Sec: _____ Name: _____

Experiment: Time Zones (E. Science 9-6-2c)

Purpose: To plan a trip that will take you across several time zones, to use distance, speed, and time zones to determine local arrival time, and to use the international date line to determine arrival date.

Materials: meter stick
world map showing longitude and time zones

Methods:

Part A: Latitude & Longitude (Review)

1. Locate Washington, DC and Wake Island (in the Pacific Ocean) on the globe or maps and record their latitude and longitude.
2. More to look up in discussion number 4.

Part B: Time Zones

1. In our scenario you will fly west from Washington, DC. to Wake Island in the Pacific Ocean. You will leave Washington, DC at 8 A.M., Monday, January 1.
2. Locate Washington, DC on the world map. Record its longitude in the table. (Include East or West).
3. Locate Wake Island and record its longitude.
4. Measure the map distance between Washington, DC, and Wake Island in centimeters. Record this measurement and the map scale in the table.
5. Calculate the degrees of longitude crossed.
6. Record the number of time zones you cross.

$$\text{Number of times zones} = \frac{\text{longitude}}{15^\circ} \text{ (don't round up)}$$

Results:

Part A: Latitude & Longitude (Review)

Berrien Springs, MI: _____ Sri Lanka: _____

Part B: Time Zones

2. Washington, D. C. _____ (longitude) 3. Wake Island _____ (longitude)
4. Map distance between Washington, D.C. and Wake Island _____ cm
Map scale _____
5. Degrees of longitude crossed _____
6. Number of time zones crossed _____

Conclusions:

1. Calculate the distance from Washington, DC, to Wake Island. (Show work)
Distance = map scale x map distance between Washington & Wake Island
Distance = _____ x _____ cm
= _____ miles

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- Convert the distance from miles to kilometers. (See appendix in back of textbook)
= conversion factor x miles
= _____ x _____ miles = _____ km
- If your plane travels at a speed of 1127 km/h. Calculate the number of hours you will be flying. (Include units, then cancel units appropriately)
time = $\frac{\text{distance}}{\text{velocity}}$ = _____ = _____ hr.
- Calculate the local time and date of your arrival at Wake Island. (Look under methods for beginning time, remember time zones.)
- How many degrees of longitude did you cover in your flight?
- Did the sun set during your flight? Explain.
- If you did not change your watch as you passed through each time zone, what time would your watch read when you arrived at Wake Island?

Discussion:

- Why are time zones necessary?
- What is the purpose of the international date line?
- This is to review the metric system to keep it fresh in our mind. Convert the following metric measurements to the indicated units (Remember King, Henry, Died, Monday, Drinking, Chocolate, Milk):
2.5 m = _____ km = _____ dm = _____ cm = _____ mm = _____ dam
37 g = _____ kg = _____ dg = _____ cg = _____ mg = _____ dag
.2 L = _____ kL = _____ dL = _____ cL = _____ mL = _____ daL
2.4 ml = _____ cm³
- Use the globe or world maps to find the approximate latitude and longitude of the following locations.
Berrien Springs, MI: _____ Sri Lanka: _____
Tokyo, Japan: _____ Falkland Islands: _____
- Time is an important element in our lives and in history. Time is mentioned 723 times in the Bible. How does God want us to spend 24 hours of our time on the seventh day of the week (Ex. 20: 8 - 11)?
- Time is also an important element in his prophecies. What does Gal. 4:4 tell us about the timing of God sending his Son to Earth?