

Globe Lesson 13 - When the Day Changes - Grade 6+

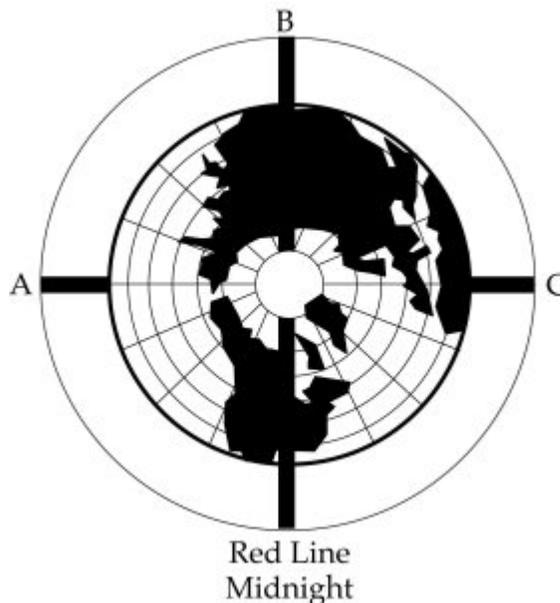
(This is a two part lesson)

Some Review - Part A

You will begin this lesson by reviewing the time scale that appears on the Horizon Ring. Find the red line on the ring. This is the midnight line (24). Noon is opposite midnight on the ring (12). Dawn, or sunrise, is halfway between midnight and noon (6). Dusk, or sunset, is halfway between noon and midnight (18).

This diagram looks down on the Horizon Ring (Or down on the North Pole of the Earth.) Just north of the Equator there are two arrows that show the direction of the Earth's rotation: 60°E and 105°W. Place the letter with the proper point in time.

1. _____ Sunrise
2. _____ Noon
3. _____ Sunset
4. Sunrise is _____°
from midnight
5. Sunrise is _____°
from midnight



The day and the date always change when midnight passes. This happens every 24 hours. Your location passes this point every night.

Find your location on the globe and mark it with a dot. Draw a line from the North Pole, through your location, to the Equator. To do this, turn the globe so the poles are even with the Horizon Ring. Keep the poles in this position and turn the globe until your location is also even with the Horizon Ring. Draw a line to the Equator that begins at the North Pole. This line should pass through your location.

Return your globe to a position where the Equator is even with the Horizon Ring, the North Pole pointing to the ceiling.

Locate the line you drew. From this line draw an arrow that points in the direction the Earths turns. This arrow points in which direction?

6. _____ East _____ West _____ South

Find the red line on the Horizon Ring. This is midnight. Midnight is the point in time when the day

and the date change. All hours and degrees begin on this red line.

Turn the cradle around and find the hour section that has 12 in the lower right corner and 180° in the upper right corner. Draw a line across the Horizon Ring where it says 12. This tells you that this position is 12 hours and 180° around the ring from midnight. This is the noon line. The Sun is directly overhead here.

Dawn, or sunrise, happens after noon and before midnight. Continue on around the Horizon Ring. Find the hour section that shows 90°. Draw a line across the Horizon Ring here. This is the dawn line.

Sunset, or dusk happens after noon and before midnight. Continue on around the Horizon Ring. Find the line where sunset will take place. Draw a line for the dusk line on the Horizon Ring.

On the left side of the red (midnight) line write **Mon.** This stands for Monday. On the right side of this line write **Tues.** for Tuesday.

Turn the globe so the North Pole is pointing toward the ceiling. With the North Pole on top, rotate the globe to the line you drew through your location so that this location is a little to the left of the red (midnight) line.

7. Your location is in what day of the week? _____

Rotate the globe to your right so your location passes the red (midnight) line. Looking down on the North Pole you turned the globe which direction?

8. Clockwise _____ counterclockwise _____

9. What day is your location now in? _____

A place 90°E of you is experiencing Tuesday sunrise. The exact opposite side of the Earth from your location is experiencing Tuesday noon. A place 90°W of you is going through sunset. How can all of these people be in Tuesday? You know it isn't Tuesday all around the world because your Horizon Ring shows where it is still Monday.

Where does Tuesday end? _____

The day not only changes at a point in time, midnight, but it also changes at a place on Earth. You will learn about that in part B.

End Part A

Part B - When the Day Changes

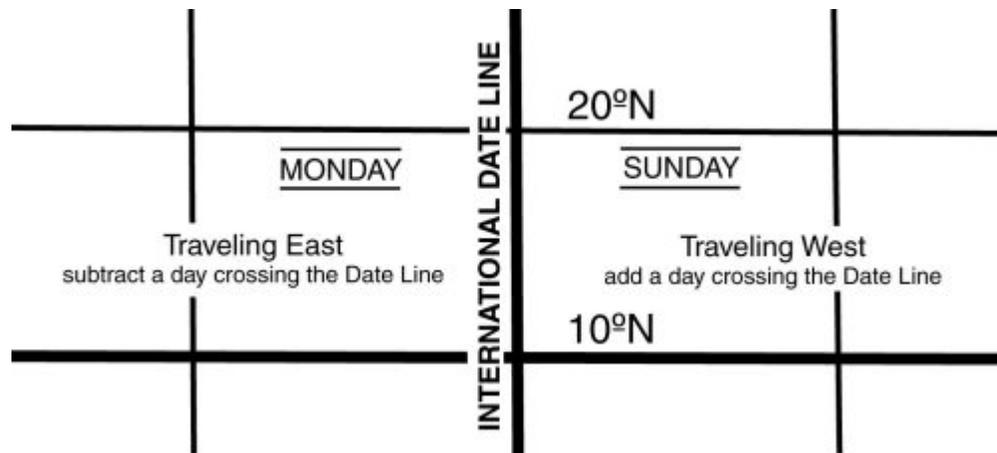
A day actually begins, or is born, at a location on the Earth. A day is born and changes at the International Date Line. This is the line of longitude that runs from the North to the South Pole in the Pacific Ocean. It is 180° from the Prime Meridian or half the way around the world from it. A day begins on Earth when the International Date Line passes the time point of midnight.

On your globe you will see this red line in the Pacific Ocean. This line is not straight but changes direction to keep parts of some nations in the same day.

Note that the red lines show where the day and date change. There is one on the Horizon Ring at midnight. There is one on the globe at the International Date Line. Day and date change at these two points.

Draw a straight line from the North Pole to the South Pole along this line. A straight line is necessary for this lesson.

Note the word Sunday on the right, or east side, of the International Date Line. The word Monday appears on the west or left side.



Place the globe in the cradle with the North Pole at the top. Rotate the globe so the 180th meridian is in line with the Midnight (red) Line. Now, both the point in time and place on Earth where the day changes are together. This is the actual beginning of a new day. At this one time, only, the entire Earth is experiencing the same day. With the globe in this position, it is Sunday all over the world.

Your globe shows blue meridians every 15° east and west of the Prime Meridian. In addition to showing longitude, the spaces between each of these lines represent one hour of time. The numbers for these meridians are shown on the Equator. The number for the International Date Line is 180.

Rotate the globe so one hour has passed. The meridian 165° E should be even with the Midnight (red) line. The new day, Monday, is now one hour old. It is 1:00 AM on the International Date Line - or one hour past mid-night

Rotate the globe so it is noon on the International Date Line. You have rotated the globe 12 hours since midnight.

10. What important meridian is experiencing midnight? _____

What Day Is It?

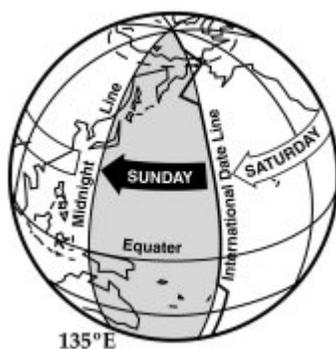
At this position, half of the Earth is in Sunday and half is experiencing Monday. Place a check beside the following locations that are experiencing Monday.

- | | |
|-------------------------------------|----------------------------------|
| 11. _____ San Francisco, California | 12. _____ Sydney, Australia |
| 13. _____ Capetown, South Africa | 14. _____ Rio de Janeiro, Brazil |
| 15. _____ Madrid, Spain | 16. _____ Moscow, Russia |

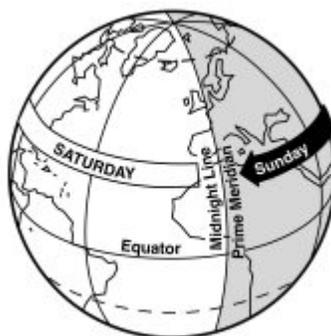
Answer These Questions

These three pictures show the Earth at three different time points. Answer the questions about each of these depictions. Use the globe to find the answers.

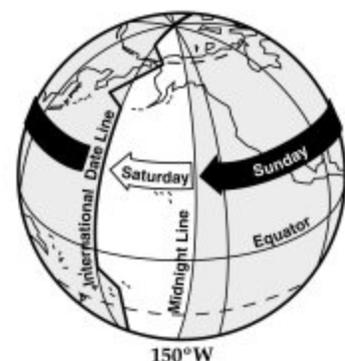
17.



18.



19.



If it is 3:00 AM, Sunday at the _____ If it is 12:00 Noon, Sunday at _____ If it is 10:00 PM, Sunday at _____

International Date Line,
what time and day is it at:

A. 75° W

B. 15° E

the International Date Line,
what time and day is it at:

A. 75° W

B. 15° E

the International Date Line,
what time and day is it at:

A. 75° W

B. 15° E

Set the globe for 8:00 AM Monday in Osaka, Japan or 135° E. With the globe at this time, write the approximate time and the day in the following places.

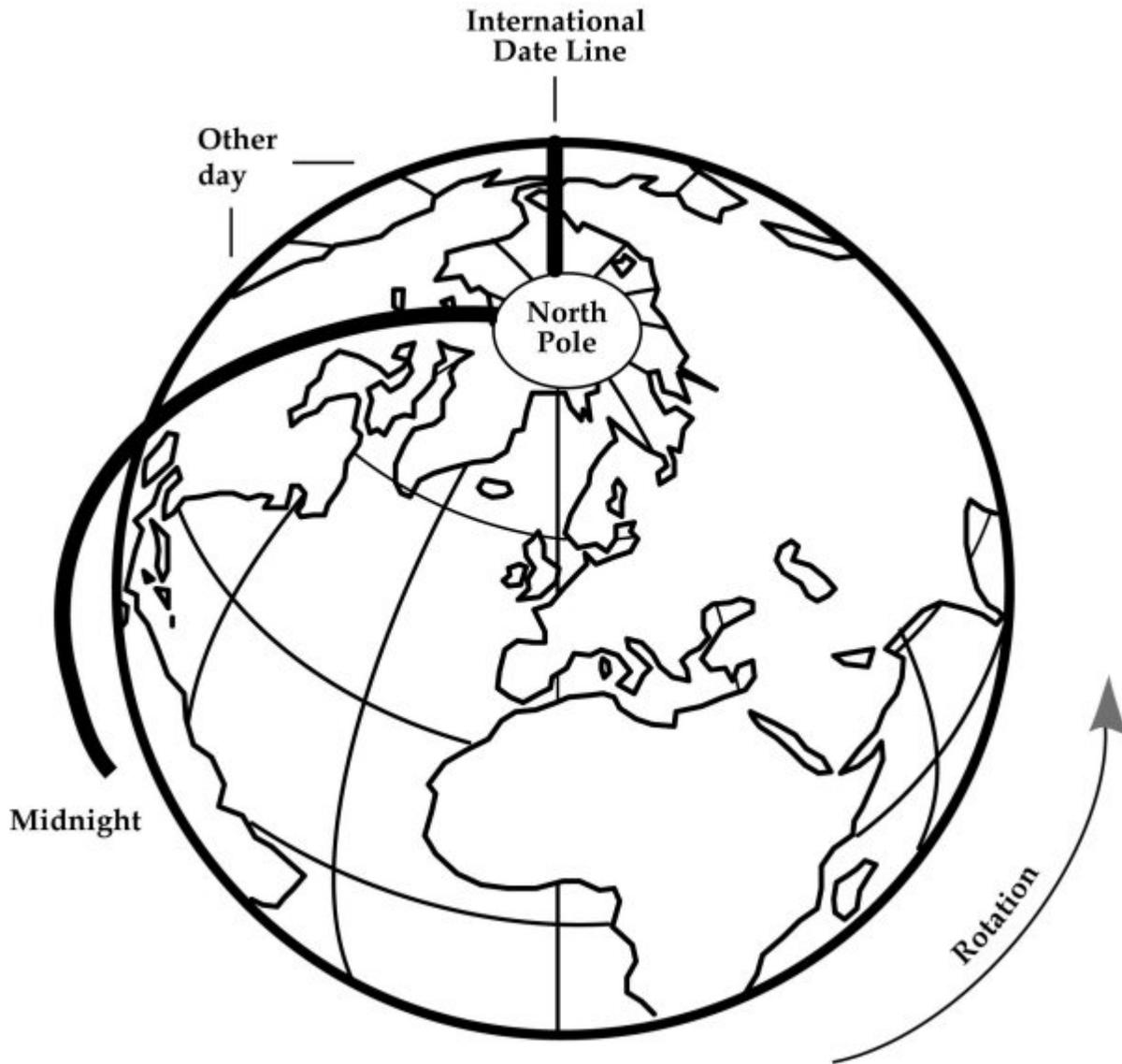
20. Anchorage, Alaska

22. Philadelphia, Pennsylvania

21. San Francisco, California

23. Alexandria, Egypt

A Quiz



24. The "Other Day" part of the world is Tuesday, June 23rd. What day and date is the rest of the world experiencing?

25. If most of the world is experiencing Monday, July 29th, what is the day and date in the area of the "Other Day"?
