



Yarning" About Latitude and Longitude

Subjects

- Science
- Social Studies
- Geography

Grades

- 3 - 5
- 6 - 8

Brief Description

This activity offers students a hands-on introduction to longitude, latitude, and absolute location.

Objectives

Students will

- learn the concepts of latitude and longitude.
- identify the locations of the equator, the Tropics of Cancer and Capricorn, the Arctic and Antarctic Circles, the North Pole and South Pole, and the Prime Meridian and International Date Line.

Keywords

longitude, latitude, globe, map, equator, north pole, south pole, map, geography

Materials Needed

- yarn in a variety of colors
- place cards labeled *North, South, East, West, Equator, Tropic of Cancer, Tropic of Capricorn, Arctic Circle, Antarctic Circle, North Pole, South Pole, Prime Meridian, and International Date Line*

Lesson Plan

Start the lesson by holding up blank round sphere (a rubber or Styrofoam ball, for example). Toss the ball in the air and catch it a couple of times to get students' attention. Hold up the ball, point to a spot, and put a sticky dot on that spot. Call a student's name, lob the ball to him or her, and say, "Describe the marked spot without using the phrase 'right there!'" At some point, the student likely will use the words top, bottom, side, and other "locator words." Emphasize to students that without a reference point, it is impossible to describe a particular location; so early mapmakers developed a grid system to assist them in locating known places.

Establish direction in the classroom by hanging place cards marked *North*, *South*, *East*, and *West* on appropriate walls in the room. Have students form a circle in the room. (At this point, you might help older students understand the difference between a circle and a sphere.)

Inform students that they are going to create a "human globe." Produce a ball of red yarn and tell students they are going to use the yarn to mark the equator on their human globe. Have students use the place cards on the four walls to determine where the equator will fall on the human globe. Ask, "Which students should hold the yarn that marks the location of the equator?" (Two students opposite each other on the east and west sides of the circle hold opposite ends of the yarn.) Mark the center of the equator with the place card labeled *Equator*.

After the equator is in place, ask students whether their place in the human globe is located in the Northern or Southern Hemisphere. (All students sitting north of the "equator" are in the Northern Hemisphere; all those south of the "equator" are in the Southern Hemisphere.)

Next, produce a ball of yellow yarn and have students establish on the human globe the locations of the Tropic of Cancer and the Tropic of Capricorn. Use the yellow yarn to mark those locations and label each of those features.

Produce a ball of blue yarn and have students use it to mark the locations of the Arctic and Antarctic Circles. Label those circles.

Produce black yarn and have students use it to begin to mark some additional parallels of latitude. Make sure students realize the latitude lines are parallel with the equator, hence the reason they are sometimes referred to as *parallels*.

Introduce the Prime Meridian, established through Greenwich, England, as the arbitrary point of zero degrees longitude. Produce a ball of white yarn. Cut a double length of white yarn and have students stretch the doubled-over yarn from pole to pole to represent the Prime Meridian. Label its location.

At this point in the lesson, share the following idea to help students remember the difference between longitude and latitude:

- It's a *long* way from the ground to the top of the Empire State Building. The Empire State Building runs up and down, just like lines of *long*-itude do.
- Add an *f* to the start of the word *latitude* and you have a new word, *flatitude*. It's not a word, but it might help some students remember that lines of latitude are the flat lines that go across the globe.

Remind students that lines that run from the North Pole to the South Pole (up and down like the Empire State Building) are established points of longitude. Label on your human globe the North Pole and South Pole.

Next, use the black yarn to add additional lines of longitude. Leave a few feet of extra black yarn on either end of those lines. (Students holding those lines can let the extra yarn fall into their laps.) Instruct the students holding the longitude or latitude lines with extra yarn to loosen their grip on the yarn. Go into the center of the circle and pull up and out on those lines to create the bowed effect you see on a globe (or sphere).

Now that you have re-introduced the idea of a sphere, lift the white yarn (the Prime Meridian in the same way to help explain how the Prime Meridian runs along the zero degree longitude line. The longitude line on the opposite side of the globe from the Prime Meridian (represented by the white yarn that remains on the floor and actually runs bowed out in the opposite direction on the globe) is called the International Date Line.

Have students carefully lay all yarn on the floor and return to their seats for a follow-up activity in which they use balloons to create their own globes.

Assessment

Observe students as they participate in activity and re-teach any area in which students seem to be having trouble.

Lesson Plan Source

Credit for this lesson goes to Brian Sullivan, an 8th grade teacher at Echols Middle School, in Tuscaloosa, Alabama, who presented the lesson at an Alabama Geographic Alliance workshop.

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Alternative Approach for Smaller Groups: by Michael Wallace, 4-H Youth Development

Use a large beach ball, and tape

Divide the ball in half with a line of **longitude** and determine if the spot is on the “top half or bottom half.” Designate the line as the **equator**.

Since that may not be enough information, divide the ball with a line of **latitude** from top to bottom. Describe this line as the “**Prime Meridian**” and “starting place.”

Once the group determines a **North and South pole** you can discuss the quadrants and **hemispheres** and attempt to discern where the dot is. (Crack an atlas.)

Work cooperatively to attach two more lines of latitude and longitude equally spaced on the globe.

The southern line of latitude is known as the **Tropic of Capricorn**

The northern line of latitude is known as the **Tropic of Cancer**.

Where is your dot?

Follow up questions:

Where is the prime meridian located?

Why aren't there “Tropics of Latitude” like there are Tropics in longitude?

When was this system of marking the globe devised? By who? Why?

Source:
http://www.education-world.com/a_tsl/archives/02-1/lesson043.shtml