Balloon Globe

Overview:

Students use a balloon to diagram and label key features found on the globe, mark where they live, and draw where the aurora oval is found.

Objective:

The student will:

- diagram the equator, prime meridian, international date line, Arctic Circle, Antarctic Circle, and magnetic north;
- identify and mark where they live on Earth; and
- diagram the location of the northern and southern aurora ovals.

Materials:

- White, round balloons
- Globe
- Permanent markers (fine point)
- STUDENT WORKSHEET: "Balloon Globe"

Activity Procedure:

1. Hand out balloons, markers and the STUDENT WORKSHEET: "Balloon Globe." Make the globe available for student use.
2. Ask students to complete the activity on the worksheet. They will draw the equator, prime meridian, International Date Line, Arctic Circle, Antarctic Circle and the North and South Magnetic Poles on their balloons. They will identify and mark where they live, and the position of the aurora oval on their balloons.
3. After students have completed their balloon globes, ask them to answer the questions at the bottom of the worksheet. Discuss the location of the aurora ovals.

Background Information: The aurora occurs in ovals around Earth's North and South Magnetic Poles. The northern aurora is referred to as the "aurora borealis" meaning northern dawn. Galileo first used this term in 1619 to suggest the likeness of the northern lights to an early dawn in the northern sky. The southern aurora is referred to as the "aurora australis" meaning southern dawn.

Interestingly, the large-scale northern and southern auroras are near mirror images of each other. This means that if you stand in the northern hemisphere and look at an aurora display at least 100 kilometers across, your friend could stand in the southern hemisphere and witness a nearly identical aurora display dancing and swirling in the opposite direction. Scientists believe this is because Earth's magnetic field lines in the auroral zone are nearly symmetrical, and because an approximately equal number of particles from the solar wind are attracted to both regions. Explain to students that they will use a round balloon to represent Earth. Using markers, they will draw and label key features on the balloon globe, mark where they live, and where the aurora ovals are found. Explain that the aurora occurs in ovals around the magnetic North and South Poles. The northern aurora is the aurora borealis and the southern aurora is the aurora australis.

Answers to Student Worksheet:

1. *Aurora ovals should be sketched near 60 degrees latitude in the north and south.*
2. *aurora australis—the southern aurora*
   aurora borealis—the northern aurora

Name: _____ **Student Worksheet**

Balloon Globe

Directions: Follow the steps below to create a balloon globe, then answer the questions at the bottom of the page.

Step 1: Blow up the balloon and tie it off so that it doesn't lose air. The side where you tied it off will be the South Pole.

Step 2: Using a marker, write an N at the top of the balloon to indicate the geographic North Pole. Write an S next to the balloon tie to indicate the geographic South Pole.

Step 3: Draw lines on the balloon where each of the following would be located (refer to the map below):

- Equator
- Prime Meridian
- International Date Line
- Arctic Circle
- Antarctic Circle

Step 4: Using the lines you have drawn as a reference, carefully mark the location of the magnetic North Pole with an MN. Mark the location of the magnetic South Pole with an MS. You may need to look at a globe.

Step 5: Put an X at the location where you are. Try to make this as close as possible to your exact location. Look at the Arctic Circle, North Pole and International Date Line.

Step 6: The aurora occurs in ovals around Earth's magnetic poles. Use different colored markers to draw the aurora ovals on your balloon globe.

1. Draw and label the aurora ovals on the globe at right.

2. Draw a line connecting each term to its definition.

aurora australis	the northern aurora
aurora borealis	the southern aurora