

Balloon Globes

This activity gives students the opportunity to compare flat maps with round globes. As they experiment with lines and dots on inflated and deflated balloons, they'll notice differences, changes and distortions. These comparisons will help them to get a different perspective about geometry, mapmaking and navigation.

What You Need:

for each pair of students:

- at least three round balloons, one blown up and knotted; two un-inflated
- a magic marker
- a ruler

for the class:

- a globe of the Earth
- a flat world map
- extra balloons

To Get Ready:

You might save a lot of time and frustration by blowing up and tying off one balloon per student ahead of time.



To Start, Ask:

If you had to make a map of the world, how would you start?

Now, Try It:

- To start, pass around the flat map and round globe so that students can see the differences between the shapes and sizes of continents on the map and the globe. They'll probably notice more differences in land masses at the North and South poles.
- When students have paired off and received their materials, invite them to blow up one more balloon, *but do not tie off this balloon.*
- Ask students to draw two large dots (about 1/2 inch in diameter or so) at the North Pole on each of the inflated balloons.

- Encourage students to make a prediction about what they think will happen to the dots when one of the balloons is deflated. Now deflate one of the balloons and look at the dots. Measure them. Is the distance between the dots the same? How are the dots different on the two balloons? Why did that happen?
- Using the third balloon, have students draw one image on the un-inflated balloon and the same image on the inflated balloon. Then blow up the un-inflated balloon. How does the image get distorted? Is it different at the ends of the balloons from the center? Why do you think that's happening?
- Ask students to try to stretch their flat, deflated balloons so that the images look the same as they do on the round globe. As they do, they'll see how hard it is for mapmakers to try to represent a three-dimensional world on a two-dimensional surface.
- Pass out more balloons and encourage students to continue experimenting and comparing flat maps to globes.



Ask Students Again:

In what ways does the continent of Iceland look different on a globe and on a flat map? Were you surprised about what happened to the drawings on the balloons when they were inflated or deflated? Now that you have had this experience, if you had to make a map of the world, how would you start?



Scientist Spotlight:

Navigators, who help guide ships to their destinations use many of the skills which cartographers (mapmakers) use to chart their courses. Maps and globes, complicated electronic tools, and an understanding of geometry help them to know where they are in the ocean.

Assess What Happened

Using the Field Journal Entry sheet (on p. i), invite students to respond to the following statement:

When I deflated my balloon, the pictures I had drawn on it changed in these ways:

