

Global Probability

Procedure:

1. Show students the inflatable globe. Ask them to identify what the blue areas represent. (Oceans or Water). Discuss where continents are located relative to the oceans.
2. Divide students into pairs or groups. Explain to students that they will be tossing and catching the globe and record where their right thumb lands.
3. Have students make a prediction on which will receive more tally marks: Land or Ocean.
4. Distribute the data charts or have students create their own. Students should toss the globe then record where their right thumb lands using tally marks after every throw. At least 50 data points is a good sample.
5. Have students count up the total of each category. Discuss whether their predictions were correct. Discuss whether a larger sample would make a difference.

Assessment: Have students complete the worksheet to show what they have learned.

Teacher Extension: Students can also record which oceans and which continents their right thumb has landed on.

Discussion Topics:

- What is surface water? What types of surface water are there on Earth? (*Oceans, rivers, lakes, inland seas, glaciers and other ice.*)
- Does surface water give an accurate representation of the amount of water on Earth? Why or why not?
 - *Yes, but it is heavily biased with salt water. Ocean water makes up about 97% of all the water on Earth. All surface water accounts for over 99% of all the water on Earth. Fresh water makes up only 3.5% of Earth's water and most of that is frozen in glaciers.*
- Where else is water other than on the surface?
 - *Aquifers, underground rivers, soil moisture, atmosphere, and within living organisms.*

This sort of data collection is called random sampling. Discuss the pros and cons of random sampling and how improved results may be obtained. Random sampling does not give a full representation of water resources, but with enough data points, a better picture can be formed.

Guide students to understanding that a sample size of 10 is substantially less accurate than a sample size of 100 or 1,000.

Water	Land
Total:	Total:

Water	Land
Total:	Total:

Water		Land	
Atlantic Ocean		Africa	
	Total:		Total:
Arctic Ocean		Antarctica	
	Total:		Total:
Indian Ocean		Asia	
	Total:		Total:
Pacific Ocean		Australia	
	Total:		Total:
Other		Europe	
	Total:		Total:
		North America	
			Total:
		South America	
			Total: