

Apple Earth

Standards of Learning

Science 1.8, 3.7, 3.10, 4.8

Social Studies 2.9, 3.7

Objective

Students will:

- Identify that natural resources are limited
- Identify the types of soil suitable for plant growth
- Identify the effects of humans and weather on land

Materials

- An apple
- A knife

Background Knowledge

How much of the Earth's land is available to feed, clothe, and fuel the world's population? Explore this question as well as the importance of soil as a natural resource in "Apple Earth."

Farmers are keenly aware of the importance of soil and its value as a natural resource. Thus, they may adopt one or several ways to protect the soil. Examples include conservation tillage, wind breaks, contour farming, and crop rotation. Moreover, as the world's population grows the sliver of the apple that represents the farmland remains the same or shrinks.

An apple can also be a great way to demonstrate to your students the concept of fractions. For example, as you cut the apple it is important to point out that you are left with two halves and the halves make a whole. One half is $\frac{1}{2}$ of the whole apple and the same for the other half. Then when you cut the halves once you are left with 4 fourths of the apple. The 4 fourths make up the whole and a fourth can also be written as $\frac{1}{4}$. This cycle continues as you continue to cut the apple.

Procedure:

1. Cut the apple into four equal parts and do the following:
 - Remove three parts –
These three parts represent the portion of the earth covered by water.
Locate the Earth's oceans on a map.
 - The part that is left, one-fourth of the earth, represents land.
2. Cut the remaining portion (quarter) in half lengthwise and do the following:
 - Remove one part –
This half represents areas of Earth where plants we eat can't grow because the climate is too hot or cold.
What places are too hot? (identify major deserts)
What places are too cold? (identify the poles and places where the ground is frozen)
3. Cut the remaining portion crosswise into four equal parts and do the following:
 - Remove three parts –



These three parts represent land that is too rocky or steep, too marshy, or where something has already been built.

The fourth part – only 1/32 of the earth – represents the land that can be used for growing crops to sustain more than six billion people and all of the billions of animals in their care.

4. Ask students if we can grow plants all the way into the core of the earth. Once they have identified that this is not a possibility, discuss what part of the earth we do use for planting and growing crops (**topsoil on the crust of the earth**).
5. Peel the skin off of the remaining section and do the following:
 - Show the skin –
This tiny piece of the apple represents the topsoil – the part of the earth where plants grow.
This small amount of soil is important for growing all of the food needed to feed all of the people and animals on our planet.
6. Discuss the importance of soil conservation and ways that erosion can be prevented.

