

Nourishing the Planet in the 21st Century

Excerpt from Lesson 5

“The Big Apple”

Grade Level: 7th to 12th

Common Core: Includes Mathematics/Fractions

This activity uses an apple as a model of Earth. Students discuss the various ways people use land and make predictions about what percentage of Earth’s land is needed to grow our food.

1. Explain to the class that this activity is concerned with how we as a society use land. The amount of land on Earth stays the same, so as the world’s population gets larger, it becomes even more important that we make wise decisions about how it is used.

2. Explain that land is used for many different reasons. Ask, “What are some of the most important uses for land?” Write students’ responses on the board or on chart paper.

Students’ responses may include the following:

- Farming.
- Homes.
- Industries or places where we work.
- Pastures or land for livestock.
- Parks, sports, and recreation.
- Wildlife habitat (wetlands, mountain ranges, forests, deserts, beaches, and tundra).

If a student does not mention one of these uses, ask guiding questions to encourage this line of thought. A student may point out that some land such as a desert has no use. Of course, any land that is not being used by humans can be considered a habitat for wildlife and provides a variety of other economic services for people. For example, wetlands help remove nutrient pollution from rivers, lakes and estuaries.

3. Call attention to the apple and the knife. Explain that the apple represents Earth. Ask, “How much of the total Earth’s surface do you think is devoted to farming?”

Students’ responses will vary. Some may remember that about 70 percent of the surface is water.

4. Use the knife to cut the apple into 4 equal parts. Set 3 parts aside and hold up 1 part. Explain that the surface of the world is about 70 percent water, so this 1 piece represents that part of the surface that is land. Remind students of the many different uses for this relatively small amount of land.

5. Use the knife to cut the $\frac{1}{4}$ piece of apple in half 3 more times, each time discarding $\frac{1}{2}$. Finally, hold up 1 of the smallest pieces and explain that it represents $\frac{1}{32}$ of the surface of Earth or $\frac{1}{8}$ the land where we live. This is the amount of land available for farming. Point out that the skin on this small piece of apple represents the tiny layer of topsoil that we depend on to grow food.

6. Explain that because we put land to so many different uses, the amount devoted to farming has hardly changed during the past 50 years. Scientists are worried about how we will feed the world’s growing population in the next 50 years.