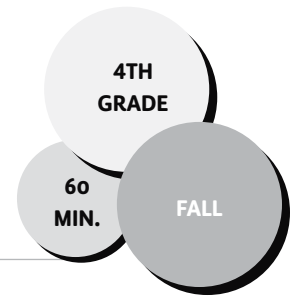


The World Travels of Food

THEME: EXPLORING THE ECOLOGY OF FOOD



ESSENTIAL QUESTIONS

How does what we eat influence the environment?

Where does our food come from?

LEARNING OBJECTIVES

- ✓ Students will be able to calculate food miles for various apple-pie ingredients.
- ✓ Students will be able to create a scaled representation of the distance food travels.

CONCEPTS

decimals energy food miles scale

ENGAGING THE CLASSROOM TEACHER

- Prior to the lesson, ask the teacher about students' level of familiarity with decimals and dividing large numbers. Together you can determine whether it'd be appropriate for the students to calculate the scale.
- Ask the teacher to co-teach or lead Action Step 4 in which you explain how to create the scale.
- During Action Step 5, suggest that the teacher support groups as they calculate the scale and measure their length of yarn.

LESSON DESCRIPTION

In this lesson, students explore the concept of food miles through reading a book about a journey around the world to source ingredients. They then calculate a scaled representation of the food miles for the various ingredients and create a human graph to compare mileage.

MATERIALS

- Local fruit to have as a snack (optional)
- *How to Make an Apple Pie and See the World* by Marjorie Priceman
- Globe or map to project
- Calculators (optional)
- 5–6 balls of yarn or string
- 5–6 pairs of scissors
- Measuring sticks
- Half-sheet copy of the Food Miles Chart for each student (p. 448)

PREPARATION

- › Prepare local fruit for tasting, if using
- › Determine the number of miles from Vermont to your program site to add that information to the chart.
- › Photocopy the Food Miles Chart from *How to Make an Apple Pie and See the World*.

ACTION STEPS

- 1. Engage:** Ask, *What is your favorite fruit to*

have as a snack? Take answers, and follow up by asking if students know where those fruits are grown. Introduce the concept of food miles. Explain, *The United States gets most of its bananas from Latin America. That means that when you eat a banana, it's traveled thousands of miles to get to you.* (Of course, you should modify this example to make sense for your region, especially if you live in Hawaii!) Ask students, *How do you think the food traveled that far? What's involved in shipping food?* Get to the idea of using energy—the gas used for the vehicle transporting the food, the electricity used for refrigeration, and the resources used to package the food. Ask students if they know of fruits that are grown in their town or region. Pass out a snack of a local fruit, and share with students where you got it. **(5 min.)**

2. Reading: Explain that you're going to read a book called *How to Make an Apple Pie and See the World*. During the read-aloud, have students make a list of the places the main character visited to gather ingredients. If you have a document camera, display a world map to point to each location. **(10 min.)**

3. Discussing: Ask students what they thought of the main character's journey. Ask, *What was realistic about it?* Discuss how it's true that we get a lot of our food from around the world, but that it's usually shipped to grocery stores. Ask, *What ingredients do you think she traveled too far to get?* Discuss how perhaps the eggs, butter, and wheat could have come from a local farm. **(5 min.)**

4. Calculating Food Miles: Provide students with the Food Miles Chart with the distance

in miles for each ingredient in the apple pie. Tell them you're going to use a scale to make a representation of how far the ingredients would have traveled. Explain that they'll need to divide their number of miles by 100 to figure out how many feet long to make their string. Model for students that that means they move the decimal point two places. Say several random large numbers, and have them turn and talk to a neighbor to practice figuring it out. If students are familiar with rounding, have them round up to the nearest foot. Otherwise, tell them not to worry about the numbers after the decimal. **(10 min.)**

FOOD MILE SCALE

4,567. miles $\sim$ 45.67 $\sim$ 46 feet

Move the decimal two places to divide by 100

round up!

5. Measuring Feet: Put students in groups, and assign each group one ingredient. Provide string, scissors, and measuring sticks, and have them measure a length of string to represent the food mileage of their ingredient. You might choose to have one group at a time go out into the hallway to measure their lengths or already be outside for this step. **(10 min.)**

6. Field Graph: Walk students to the school's field, blacktop, or gymnasium. Explain to students that they'll be making a human bar graph to compare the distances each ingredient had traveled. Have each group stretch out their yarn from the same starting point. For example, you could have students tie them to a stake in the ground. Have group members take turns holding the string and walking around to see

the other group's mileage. To get to the idea of all the energy used, have the class travel the length of each piece of yarn, either skipping or hopping or some other activity that exerts energy. **(15–20 min.)**

REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

Social and emotional learning

- *What were successes and good strategies for working in your groups? What can you continue to work on?*
- *Ask yourself: How well did I work to support my group members*

Check for understanding

- *How did seeing the field graph affect your thinking about food miles?*
- *Why do we have to purchase certain food staples from other countries?*
- *Why should we care where our food comes from? What impact do food miles have on the environment?*

ADAPTATIONS

Technology: If your students have access to computers, you can have them research and calculate the food miles of each ingredient in a typical school lunch, using the website www.foodmiles.com. In addition, you can have them research local farms, finding local alternatives.

Physical: Set up three different obstacle courses on the field, ranging in length. Have each obstacle course represent a fruit. For example, the short course could represent an apple or other fruit grown locally, the medium course could represent

an orange grown in the United States, and the long course could represent a banana grown in South America. This would vary, depending on your location.

Cooking Extension: Have students prepare a simple snack and calculate the food miles in each ingredient. For example, students could make the honey seed snacks in the lesson Sunny Honey Seed Snacks or the yogurt parfaits in Perfect Parfait. Alternatively, create something with all local ingredients and compare the food miles to that of the book's apple pie.

ACADEMIC CONNECTIONS

English Language Arts Common Core State Standards

CCSS.ELA-LITERACY.RL.5.7

Analyze how visual and multimedia elements contribute to the meaning, tone, or beauty of a text (e.g., graphic novel, multimedia presentation of fiction, folktale, myth, poem).

Next Generation Science Standards,
Disciplinary Core Idea

NGSS ESS.3.C

Human Impacts on Earth Systems – Human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space. But individuals and communities are doing things to help protect Earth's resources.

Math Common Core State Standards

CCSS.MATH.CONTENT.5.NBT.A.1

Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.

CCSS.MATH.CONTENT.5.NBT.A.2

Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.

Measuring Food Miles

Directions: The chart below shows the food miles for each ingredient in the book *How to Make an Apple Pie and See the World* by Marjorie Priceman.
Convert the miles into feet using the following scale: 1 foot equals 100 miles

Example: To calculate, add a decimal at the end of the number, and move it two places to the left. *4,567 miles ~ 45.67 ~ 46 feet*

Ingredient	Location	Miles	Scale in Feet	Local Alternative?
Wheat	Italy	4,484		
Chicken eggs	France	3,831		
Cinnamon	Sri Lanka	8,941		
Butter from cow's milk	England	3,666		
Sugar	Jamaica	1,444		
Apples	Vermont			