

# By the Pound

## Objective

Students will conduct measurement activities using fruits and vegetables, and compare measuring tools, including standard and nonstandard.

## Background

Whether you are a student buying an apple for lunch or a farmer selling wheat, you have to have a way to measure whatever it is you are buying or selling. The cashier at the grocery store probably will weigh your apple to decide how much to charge you. The amount of money the farmer gets for his or her wheat will depend on how many bushels he or she has produced. Some products are sold according to weight, some according to volume and some by the piece.

The price of a beef steer depends on how much the steer weighs. When a steer is sold, it is weighed on a large livestock scale. The weight is then multiplied by the current market price. If the current market price is 87 cents per pound, and the steer weighs 763 pounds, the value of the steer would be \$663.81. Market prices are determined by how much of a product is available for sale, how much people are willing and able to pay for the product and other supply and demand factors. Other Oklahoma products sold by the pound include pecans, peanuts, cotton, peaches and mushrooms.

Wheat farmers sell the wheat they grow by the bushel. Like beef, the price of wheat per bushel depends on the current market value. Oats, barley, feed corn, rye and soybeans are also sold by the bushel. However, the seed the farmer purchases for replanting is priced by the pound. Garden seeds are sold by the ounce because most gardeners do not need large quantities. Herbs are measured in this way also.

Most of the produce you buy in the grocery store—apples, peaches, potatoes, tomatoes, squash—is sold by the pound. But if you go into the fields or buy the same produce from roadside stands or farmer’s markets, you probably will pay for it by the bushel or half-bushel. The grower measures the produce by filling a bushel or half-bushel basket. Smaller quantities are measured in quart or pint baskets. Oklahoma berries—strawberries, blueberries, blackberries—are usually sold by the pint or by the quart.

Some produce is sold by the piece. Watermelons, for example, may be priced \$2.50 per watermelon, no matter how big it happens to be. Corn on the cob usually is sold by the dozen. Pumpkins are sorted according to size—miniature, small, medium, large, jumbo. Each pumpkin in a category will cost the same.

## Standards

### GRADE 1

P.A.S.S.

Social Studies—1.1; 2.5; 5.2

COMMON CORE

Math Process—MP.1,2,3,4,6,7

Math Content—1.G.1,2,3;

1.OA.2,6; 1.NBT.5,6;

1.MD.2,4

### GRADE 2

P.A.S.S.

Social Studies—1.1; 4.2; 5.2,3

COMMON CORE

Math Process—MP.1,2,3,4,6,7

Math Content—2.OA.1;

2.NBT.5; 2.MD.1,9,5,10; 2.G.1

### GRADE 3

P.A.S.S.

Social Studies—1.1; 4.3; 5.2

COMMON CORE

Math Process—MP.1,2,3,4,6,7

Math Content—

3.MD.2,3,4,5; 3.G.1,2

### GRADE 4

P.A.S.S.

Social Studies—1.1

COMMON CORE

Math Process—MP.1,2,3,4,6,7

Math Content—4.OA.5;

4.NBT.4; 4.G.3; 4.MD.1,2,4,7

### GRADE 5

P.A.S.S.

Social Studies—1.1

COMMON CORE

Math Process—MP.1,2,3,4,6,7

Math Content—5.NBT.7;

5.MD.2

## Materials

assorted produce

grocery flyer

diet scale or kitchen scale

## Math Activities

1. Set up four or five work stations.
  - Supply each work station with a different kind of produce, a grocery flyer showing prices for each kind of produce and a small scale that registers ounces and pounds (diet scales or kitchen scales).
  - Divide the class into four or five groups, and assign each group to a work station.
  - Hand out student worksheets.
  - Review estimating, and discuss why it might be useful in a trip to the grocery store.
  - Read and discuss background.
  - Students will use the student worksheets to record their estimates of the weight and cost of the produce provided.
  - Students will weigh the produce and calculate the cost, based on prices listed in the grocery ads.
  - Groups will move from station to station until each group has visited each station.
  - Students will total the weight of all the produce.
  - Students will calculate the total cost of all the produce.
  - If all the totals are not the same, students will discuss possible reasons for the discrepancy (weights and costs may have been rounded up or down).
2. Discuss the difference between weight and volume.
  - Students will discuss whether it is more economical to buy produce by the pound, by the piece or according to volume.
  - Why would it be more convenient to measure field crops like wheat by the bushel instead of by the pound?
  - Why is produce usually sold by volume or by the piece in farmer's markets but by the pound in grocery stores?
3. Bring in an assortment of measuring tools—measuring cups, canning jars, a bushel basket.
  - Students will use the tools for measuring sand and water.
  - Students will discuss why some tools are better for measuring liquid than solids.
  - Students will find materials in the classroom that could be measured by the bushel?
5. Students will visit a grocery store as a homework assignment and find five products sold by the pound, five sold by the piece and five sold according to volume.
7. Bring a treat to class. Students will measure or weigh it before eating.
8. Divide students into pairs.
  - One student will hold his or her arms and hands straight out to the sides while the other one cuts a piece of string that stretches from the fingertips of the first student's right hand to the fingertips of his or her left hand.
  - The second student will put the end of the string on the floor and see if

the other end reaches the top of the first student's head.

—Students switch places and repeat the experiment. Discuss the results.

9. Students will compare the weights of different combinations of fruits or vegetables, using a balance scale. For example, how many grapes does it take to equal the weight of a peach? Do raisins and grapes weigh the same? Students will invent their own combinations, depending on the available produce and other materials.

## Social Studies Activities

1. Many of our measurements are based on methods people used before they had measuring devices like yardsticks and rulers. Horses were measured according to how many hands high they were. A yard of fabric was the length of the merchant's outstretched arm, from his or her nose to the tip of his or her thumb. A foot was the length of an average person's foot.  
—Students will research to find the origins of some of our more common measurements.
2. Discuss businesses that depend on scales. (Doctors weigh their patients to know how much medicine to prescribe. Greenhouses measure garden seeds. Pharmacists measure liquids and powders to create some types of medicines.)  
—List other businesses and determine whether they sell their products by weight or volume.

## Extra Reading

de Las Casas, Dianne, and Marita Gentry, *The Gigantic Sweet Potato*, Pelican, 2010.

Eclare, Melanie, *A Harvest of Color: Growing a Vegetable Garden*, Ragged Bears, 2002.

McClure, Nikki, *To Market, To Market*, Abrams, 2011.

McNamara, Margaret, and G. Brian Karas, *How Many Seeds in a Pumpkin?*, Schwartz and Wade, 2007.

Minden, Cecilia, *Grocery Shopping by the Numbers*, Cherry Lake, 2007.

Parks, Carmen, *Farmers Market*, Sandpiper, 2003.

Rendon, *Farmer's Market: Families Working Together*, Carolrhoda, 2001.

Scobey, Joan, *The Fannie Farmer Junior Cookbook*, Little, Brown, 2000.

Webster, Avril, *Off We Go to the Grocery Store*, Woodbine, 2011.

## Vocabulary

**beef steer**—castrated male beef animal used for meat purposes

**bushel**—a unit of volume or capacity in the U.S. Customary System, used in dry measure and equal to 4 pecks, 2,150.42 cubic inches, or 35.24 liters—about the size of a round laundry basket

**current market price**—the price at which a product can be bought and sold in a certain place at a certain time

