

Teacher Workbook for Elementary School

Academic State Standards Related to Lesson

Lesson One: Farm Fresh Foods

- 4.4.3. A Explain how agriculture meets the basic needs of humans
- 4.4.3. D Identify the technology used in agriculture
- 11.3 D Identify the foods to include specific food groups

Lesson Two: Life Cycle of the Apple

- 4.4.3 B Identify the role of sciences in Pennsylvania agriculture
- 4.4.3. D Identify technology used in agriculture
- 1.1.3. Describe pictures in details by using sentences

Lesson Three: What Is Grown on Pennsylvanian Farms?

- 4.4.3. B Identify the role of sciences in Pennsylvania agriculture

Lesson Four: Animal Byproducts

- 4.4.3. A Know the importance of agriculture to humans
- 4.4.3. B Identify the role of sciences in Pennsylvanian agriculture

Lesson Five: Identifying Beef & Dairy Cattle

- 15.2.2. Classify, Contrast, and Compare Objects
- 2.9. Name geometric shapes

Lesson Six: Measuring and Counting Horses

- 2.1. Demonstrate knowledge of basic addition and subtraction facts.
- 2.5. Solve addition & subtraction using concrete objects in everyday situations
- 2.3. Estimate and measure objects using nonstandard units.
- 2.3. Estimate and measure objects using standard units.

Follow Up Activities for Lesson Plans:

Lesson One: Farm Fresh Foods

What is MyPlate?

Purpose:

The purpose of this lesson is to introduce the USDA MyPlate and motivate the students to seek good nutrition.

Time:

One Forty-Five Minute Class Period

Objectives:

The learners will:

- Respond to *The Berenstain Bears and Too Much Junk Food*.
- Discuss prior knowledge about good nutrition.
- Identify food groups of the USDA MyPlate.
- Work cooperatively with the class to assemble a food pyramid puzzle.

Materials:

- The *Berenstain Bears and Too Much Junk Food* by Jan and Stan Berenstain
- A colored MyPlate printout (Figure 1)
- A black and white MyPlate printout for each student (Figure 2)
- Crayons/markers/colored pencils

Instructional Procedure(s):

Anticipatory Set:

Show students the book Berenstain Bears and Too Much Junk Food by Stan and Jan Berenstain. Ask them to tell you what junk food is. Find out what they already know about junk food. Ask the students to reflect on the question: "What if you ate too much junk food?" Read the book. After reading, discuss the lesson that the bears learned. Ask the students to raise their hands if they eat well. Ask the students to explain what is wrong with junk food.

- Put up a poster or drawing of MyPlate and tell the students that this is the daily food guide recommended by the USDA. The guide shows us what foods we need each day and in what proportions. Point out each section and have students identify the colors and labels of the sections.
- Instruct the students to color their plate one section at a time as you name each section. As they color, have them list and categorize the foods that

they consumed at the Farm Show. You can also have them cut out the Farm Show food pictures and paste them on their MyPlate.

- Explain the different food groups and call attention to the sizes of the sections of the food-guide pyramid. Help the students understand that the recommended amount to eat from each food group is represented by the amount of space it is given on the food pyramid. For example, the grain group takes up the entire bottom portion of the food pyramid because the recommended 6-11 servings is double the amount recommended of any of the other food groups.
- Emphasize that MyPlate is a guide that helps us make choices. Ask the students to recall choices they have made about eating that either had positive or negative consequences.
- Play a game called "name that food group." To play, divide the class into two teams. Have one person from each team come to the front of the room at a time. Place a bell between the two players. When you name a food, the first player to ring the bell names the food group to which the food belongs. If he/she cannot name the food group, the second team gets a chance to name the food group. The team whose player correctly names the food group receives a point. Play continues with new players until each child has had a turn. The team with the highest number of points wins the game.

Figure 1:

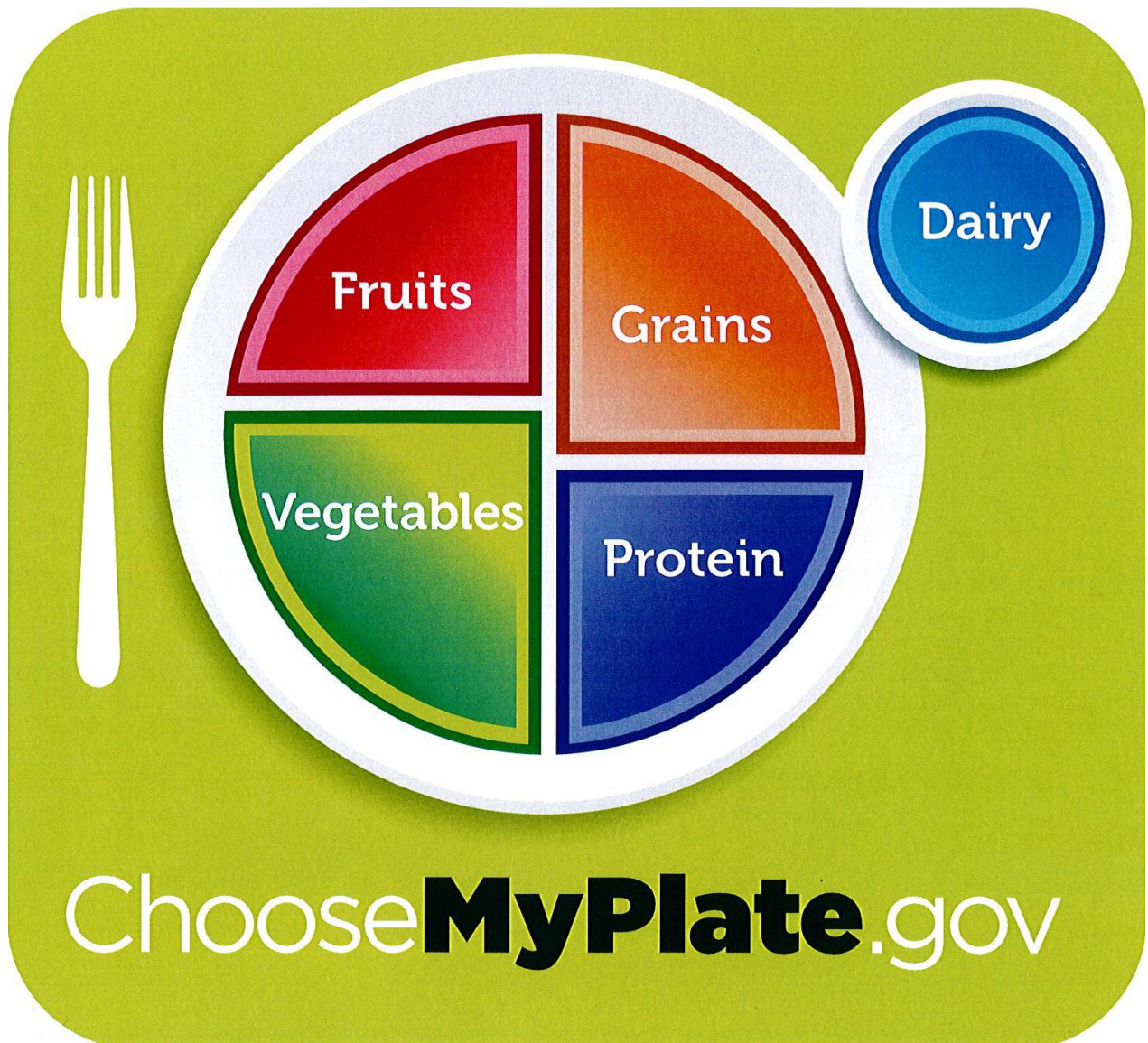
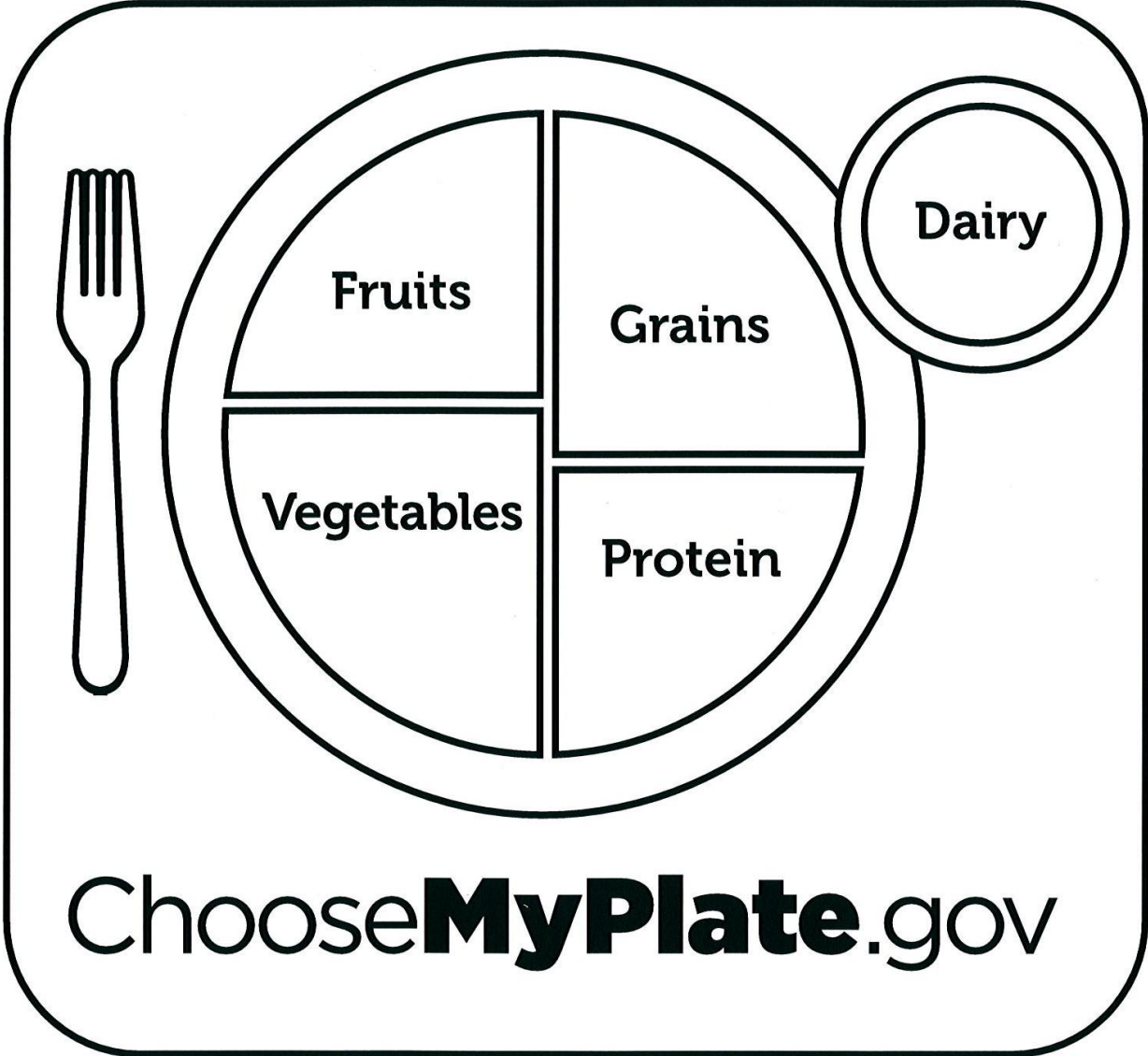


Figure 2:



Lesson Two: Life Cycle of the Apple

Purpose:

The purpose of this lesson is to learn the sequence of events in the life cycle of the apple.

Time:

Thirty-five minute class period

Objectives:

The learners will:

- Respond to the book *Apples*.
- Identify the stages of the apple life cycle
-

Materials:

- *Apples* by Gail Gibbons
- Sequencing handout: The Story of an Apple's Life.
- Crayons/markers/colored pencils
- Scissors

Instructional Procedure(s):

1. Read *Apples* to the class. Be sure to point out the stages the apple goes through before it is picked.
2. Pass out the sequencing handout to each student.
3. Have students cut strips out and rearrange them in correct order.
4. Glue each strip on a different piece of construction paper.
5. Have students illustrate the pages according to the stage on the strip.
6. Staple or tie the pages together to make a book.

Students may use the book to create a timeline of events that happen to take place after the apple is picked such as making applesauce or apple juice.

Sequencing Handout: The Story of an Apple's Life

Apple blossoms bloom.

Apple is picked and eaten.

Seedling grows into adult tree.

Bees pollinate blossoms.

Apple seed is planted.

Apple grows and ripens.

Blossom dies.

Apples start to appear on the tree.

Lesson Three: What is Grown on PA Farms?

Purpose:

The purpose of this lesson is to learn what products are derived from agriculture and grown in Pennsylvania.

Time:

Thirty-five minute class period

Objectives:

The learners will:

- Consider all things in the classroom that come from agriculture and Pennsylvania agriculture.

Materials:

- Handout: Identify products from agriculture
- PA Preferred logo labels

Background:

When you think of what we get from agriculture you probably think of food, but agriculture is much more. Look around your classroom and you will see many things made from products grown on farms.

The wood on your pencil may be made from cedar grown on a tree farm. You may also have a ruler made from wood. Your paper is probably from the pulp of trees.

Cotton is used to make high quality paper for some documents and in money. Feathers and eggshells from the poultry industry and peanut shells are used to make some kinds of paper too.

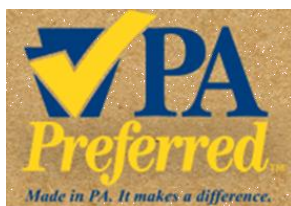
The covers of hard back books may be made from cotton. Cotton fibers are also used to make cellophane tape. The ink in your textbooks could be soy ink, made from the oil of soybeans. Ink may also be made from the oil of cottonseed, corn and sunflower seeds or from the fat of beef and cows. Your crayons may be made from soybean oil or from the fat of a pig or cow. Hogs and pigs ranked number three. The chalk your teacher uses may be from the bones of cows or pigs. Paint brushes may be made from the hair of a pig or from the hair in a cow's tail. Glue and other adhesives are made from other parts of cows and pigs.

The concrete on your playground could be reinforced with wheat. Many agricultural products can be used to make plastic. These include corn, soybeans, cotton, peanut shells and chicken feathers. Plastic made from agricultural products is biodegradable, which means it is better for the environment than plastics made from petroleum products. Corn has many nonfood uses. Cornstarch serves as an electrical conductor in batteries. Corn is also used in some paper and as an adhesive for wallpaper.

Agricultural products can even be found on the walls and floor of your classroom. Beef products are used in the production of linoleum flooring, insulation and wallpaper. Soybean products can be found in caulking compounds, electrical insulation, plywood and wallboard. Peanut shells are used in wallboard. Cotton and wool is used to make curtains, rugs and carpets. Peanut oil is used to make paints and varnishes. Wheat is used in roofing tiles, insulation and soundproofing materials. Beef, soybeans, peanut oil and cottonseed products also help keep your classroom clean with detergents and other cleaning products.






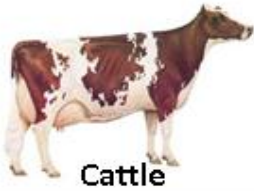

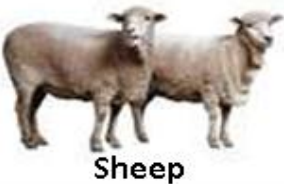
Instructional Procedure(s):

1. Discuss what "agriculture" means
2. Have students look up the word agriculture in the dictionary
 - a. What page is it on?
 - b. What column?
 - c. How many syllables are in the word?
 - d. Use it in a sentence
3. Identify agriculture versus non agriculture products
 - a. Walk around the classroom and pick up different objects that are made from agriculture or not made from agriculture
 - b. Have students do the same and place items in separate piles
4. Identify agriculture products possibly grown in Pennsylvania
 - a. To find PA agriculture statistics visit:
http://www.nass.usda.gov/Statistics_by_State/Pennsylvania/index.asp
 - b. Check out the PA Preferred website for PA grown products:
<http://papreferred.com/>
 - c. Place the PA Preferred logo on all products that are Pennsylvania grown.
5. Use the worksheet to identify products and classify them.



Identify Products from Agriculture

Directions: Write a list of items that come from each agriculture product.

 <p>Trees</p>	 <p>Wheat</p>	 <p>Corn</p>	 <p>Chicken/Eggs</p>
 <p>Soybeans</p>	 <p>Cattle</p>	 <p>Pigs</p>	 <p>Sheep</p>

Lesson Four: Animal Byproduct

Objectives: The students will describe the changes observed when liquids become solids and solids become liquids and explain the movement of heat energy and its effect on ice cream.

Time: 1 hour

Materials:

1 tablespoon sugar

1/2 cup milk

1/4 teaspoon vanilla

6 tablespoons rock salt

2 pint-size plastic food storage bag (e.g., Ziploc)

1 gallon-size plastic food storage bag

Ice cubes

Activity:

Start the investigation after asking, "How does milk change from a liquid to a solid?" "How does ice cream work?"

Teachers measure the milk, vanilla, and sugar into a pint size plastic bag. Be sure to get as much air out of the bag as possible before sealing. Put that bag inside of another pint sized bag to minimize the salt leaking into the milk mixture. Again, be sure to get as much air out of the bag before sealing. Fill the big freezer bag with ice. Put the small bag into the big freezer bag and then sprinkle the salt on top of the ice. Using a hand towel or gloves, mix and shake the bag for approximately 5 minutes, making sure the ice surrounds the milk mixture. While students shake the bags, facilitate discussion about observations in changes in the milk mixture and ice. A 1/2 cup milk will make about 1 scoop of ice cream

Anticipated responses:

The milk mixture is becoming a solid and has less liquid. The ice and salt are melting as time passes. After 5 minutes, the milk mixture should be ice cream!

Pass out spoons, wipe off the small bags with a paper towel or napkin, and let students enjoy their finished product!

HOW DOES THIS HAPPEN?

Milk can change from a liquid to a solid with the help of ice and salt. It involves the exchange of heat. Cold does not exist by itself. It is simply the absence of heat. For example, a cold room is cold because some of its heat energy has escaped. Heat energy goes from places with more heat energy to places with less. The milk mixture has more heat energy than the salt and ice does. Therefore, heat energy went from the milk mixture to the ice and salt. The milk mixture lost heat energy, which caused it to cool and freeze, eventually becoming ice cream, a solid. The ice gained heat energy, which caused it to melt, eventually becoming salt water, a liquid. The addition of salt lowers the freezing temperature, which caused the ice cream to freeze faster.

Lesson Five: Identifying Beef & Dairy Cattle

Purpose:

The purpose of this lesson is to have students understand the differences between beef and dairy cattle.

Time:

One forty-five minute class period

Objectives:

The learners will:

- Distinguish between beef and dairy cattle.
- Learn basic shapes
- Understand how to use Venn diagrams in identifying similarities and differences between beef and dairy cattle.
- Create booklets to reinforce learning. (Booklet Handout)

Background:

Meat comes from beef cattle and milk comes from dairy cattle. All female cattle breeds produce milk and both male and female cattle produce meat. Some breeds are better at providing meat and others are better at providing milk. Since we get milk from dairy cows, they usually have very large udders. For that reason their basic shapes are different from beef cows. The basic shape of a beef cow is a rectangle. The basic shape of a dairy cow is a trapezoid.

Some common dairy cattle have markings that make them easy to recognize. Holstein cattle are probably the easiest to recognize because they are white with black spots. But dairy cattle, like beef cattle, come in many different colors. Because they must be milked every day, dairy cattle usually stay close to the dairy barn. Beef cattle do not have to stay so close to home and are sometimes moved around from pasture to pasture. Sometimes the fields are many miles away from the farm or ranch house. For that reason the cattle you see in fields along the side of the road are more likely to be beef cattle.

Materials:

- *A Field Guide to Cows* (John Pukite, Scholastic, 1998): A good review for students to see different types of cows and learn the differences between beef and dairy cattle.
- Handout: Make a Beef & Dairy Breed Booklet

Instructional Procedure(s):



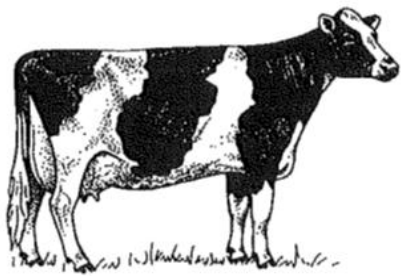
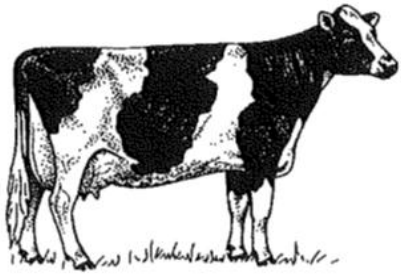
Display the book A Field Guide to Cows by John Pukite.



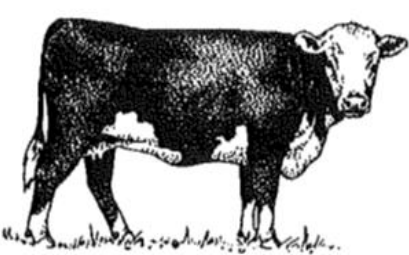
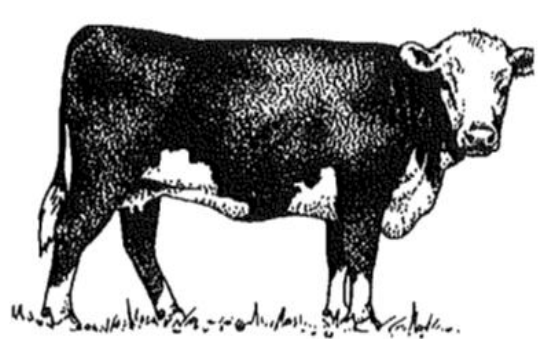
- Review A Field Guide to Cows and have the students discuss the differences in beef and dairy cattle, make sure to include shapes in your discussion.

- Review the types of cattle they saw at the PA Farm Show. Review the differences in breeds listed in the book. Review the shapes of the cattle that were seen.
- Draw a variety of basic shapes on the chalkboard- square, rectangle, circle, triangle, oval, etc. Provide several common items representing these shapes, and have students match them as closely as possible with the basic shapes you have drawn on the chalkboard.
 - Ask students to help you draw a cow on the chalkboard by telling you which basic shapes to use. Remind students of the different shapes of beef and dairy cattle. (See Background) Have students use the different shapes to draw one of each.
- Use a Venn diagram to chart the similarities and differences between beef and dairy cattle.
- Bring beef and dairy snacks, and have students sort them before eating them.
- Bring products made from beef and dairy cattle to class and have students sort them to create beef and dairy product tables.

Handout: Make a Beef & Dairy Breed Booklet

Directions: Read the sentences. Color the pictures. Then fold and cut to the make the beef or dairy book

<p>cut</p> <p>Guernsey cows have orange bodies with white markings and white tail.</p>  <p>cut</p>	<p>cut</p> <p>Jersey cows have tan bodies and brown feet. The tips of their tails are white.</p>  <p>cut</p>
<p>3</p> <p>fold</p>  <p>cut</p> <p>Holstein cows are some of the top producers of milk. A Holstein cow is black and white.</p> <p>cut</p>	<p>2</p> <p>fold</p> <p>1</p> <h1>Dairy Cattle</h1> <p>by _____</p>  <p>fold</p> <p>cut</p>
<p>4</p> <p>cut</p>	

<p style="text-align: center;">-cut</p> <p style="text-align: center;">Bragus cows are black and saggy.</p>  <p style="text-align: center;">cut</p>	<p style="text-align: center;">cut</p> <p style="text-align: center;">Charolais cows are creamy white with a pink nose</p>  <p style="text-align: center;">cut</p>
<p style="text-align: center;">fold</p> <p style="text-align: center;">8</p>  <p style="text-align: center;">cut</p> <p style="text-align: center;">Hereford cattle have reddish bodies and white faces.</p> <p style="text-align: center;">cut</p>	<p style="text-align: center;">9</p> <p style="text-align: center;">fold</p> <p style="text-align: center;">5</p> <h1 style="text-align: center;">Beef Cattle</h1> <p style="text-align: center;">by _____</p>  <p style="text-align: center;">cut</p> <p style="text-align: center;">cut</p>

Answers:

Beef Cattle Breeds

- A. Hereford
- B. Angus
- C. White Park
- D. Limousin
- E. Texas Longhorn

Dairy Cattle Breeds

- F. Ayrshire
- G. Guernsey
- H. Holstein
- I. Jersey
- J. Brown Swiss



A.



B.



C.



D.



E.



F.



G.



H.



I.



J.

Lesson Six: Measuring and Counting Horses

Purpose:

The purpose of this lesson is to have the students learn math with horses.

Time:

One forty-five minute class period

Objectives:

The learners will:

- Learn how to measure
- Learn how to convert "hands" to inches
- Be able to do basic math

Background:

Horses are measured in units called "hands." One hand represents 4 inches. The origin of measuring a horse this way is very old, but easy to understand.

Years ago, people did not have the common measuring devices like tape measures. To measure a horse, they used what was available. At various times in history and in different locales, a "hand" was defined as the width of a person's hand using the fingers only, the width of a person's hand using the fingers and the thumb, the height of a clenched fist, and possibly many others.

Somewhere along the way, the measuring unit of a hand was standardized to mean four inches. Though the origins are ancient, a hand is still the unit of measurement for horses that modern horse owners use today. This activity will allow students to convert horse heights into feet and inches and practice reading a ruler.

Materials:

- *Measuring tape/stick or rulers*
- *Paper*
- *Scissors*
- *Handout: Counting Horses*

Instructional Procedure(s):

- Have the students complete the counting horses worksheet before starting the activity.
 - Answers to Counting Horses:
 1. 3 gallons
 2. 13 horses
 3. Answer will vary
 4. Rachel has more horses
 5. 1 horse
 6. 5 feet tall
 - $15 \text{ hands} \times 4 \text{ inches} = 60 \text{ inches}$

- 60 inches / 12 inches = 5 feet tall at the withers
 - 7. 3 feet 6 inches tall
 - 11 hands x 4 inches = 44 inches
 - 44 inches / 12 inches = 3 feet 6 inches tall
 - 8. Yes. Horse's foot is 3.5 inches. Horseshoe is 4 inches
- Create a wall display that marks the standard heights for different breeds of horses and ponies.
 - Clydesdale: 17-18 hands
 - American Quarter horse: 15-16 hands
 - Standardbred horse: 14- 16 hands
 - Tennessee Walking horse: 16 hands
 - Percheron: 17 hands
 - Appaloosa: 14-16 hands
 - Shetland pony: 11 hands
 - As a class, figure out what each measurement is in feet and inches and then mark them with a cut out of a horse.
 - After the horses' heights are marked, students could make their own sign and put it on the wall. Students will be able to compare their height with the horses' height.
 - You could even measure students at the beginning of the year and then at the end to see how much they have grown.

