

Ag in the Classroom

Summer Institute 2008

*From Play Dough to
Pumpkin Pie*

Cooking in the Classroom



Mary Ann Kelsey
Oklahoma Ag in the Classroom



Pumpkins by the Pound

Skills: Math, Science, Social Studies

Objective: Students will use pumpkins of various sizes to experiment with weight and perimeter.

Background

The pumpkin is a vegetable, but most pumpkins grown today are sold for decorating and carving. They come in all sizes and shapes, from minipumpkins, the size of apples, to giants ones, weighing over 200 pounds. Some pumpkins are gray or pale green, but most are yellow or orange. Some are even white.

Pumpkin flowers are large and yellow. Some kinds of pumpkins are grown for cattle to eat. Cucumbers, squash, melons and gourds are all related to the great pumpkin.

The pumpkin is one of only a few foods we still eat today that is native to North America. The Pilgrims and other early New England settlers liked to use pumpkins because uncut pumpkins would keep for several months, if stored in a cool, dry place. Pumpkins were a main part of the early settlers daily diet.

Pilgrims and other early American settlers made the first pumpkin pies by burying pumpkin in the ashes of their fires. After a pumpkin had cooked, they would cut off the top, scrape out the pulp and add honey or maple syrup. The pulp was then made into delicious pies and breads. Pumpkins were used for many different things. Dried pumpkin shells served as bowls or containers for storing grains and seeds. Pumpkin seeds were dried and roasted for a high-energy treat. The Pilgrims' dependence on pumpkins is reflected in this poem, from 1630. (Notice the Old English "undoon" for "undone.")

For pottage and puddings and custards and pies,
Our pumpkins and parsnips are common supplies,
We have pumpkins at morning and pumpkins at noon,
If it were not for pumpkins we should be undoon.

Math

1. Bring several pumpkins to class in assorted sizes.
 - Set the pumpkins out in random order.
 - Introduce the terms "weight" (a measure of the heaviness of an object) and "perimeter" (the measure of the whole outer boundary of a body or figure).
 - Students will lift the pumpkins one by one and estimate their weights.
 - Students will arrange the pumpkins according to their weights—from lightest to heaviest.
2. Pass out student worksheets.

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P.A.S.S.

GRADE 1

Math Process—1.1,2,3,5;
2.3,4; 3.2,3; 4.1,3; 5.1,2

Math Concept—2.1,2a,4;
5.1,2

Science Process—1.1;
2.1,2; 4.1,3

Physical Science—1.1,2

Social Studies—2.3

Physical Education—
1.1,3,4; 2.2,3; 3.1,2;
5.1,3,4; 6.1,2,3; 7.1,3

GRADE 2

Math Process—1.1,2,3,5;
2.3,4; 3.2,3; 4.1,3; 5.1,2

Math Concept—2.1a,3;
4.2ab; 5.1,2

Science Process—1.1,2;
2.1,2; 4.1,3

Social Studies—2.4

Physical Education—
1.1,2; 2.1,3; 3.1; 5.2,3;
6.1,2; 7.2

GRADE 3

Math Process—1.1,2,3,5;
2.3,4; 3.2,3; 4.1,3; 5.1,2

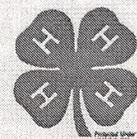
Math Concept—2.1a; 4.3;
5.1abc

Social Studies—2.2,3,4

Physical Education—1.1;
2.1; 3.3; 5.1,2,3; 6.2

Oklahoma Ag in the Classroom is a program of the Oklahoma Cooperative Extension Service, 4-H Youth Development, in cooperation with the Oklahoma Department of Agriculture, Food and Forestry and the Oklahoma State Department of Education.

Oklahoma Ag in the Classroom
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Materials

pumpkins in assorted sizes

string

scale

tape measure

1 large knife

(for each group)

1 pumpkin

3 sheets construction paper

tape

10 small cups (muffin cup,
bathroom cup, or nut cup)

2 large styrofoam cups

Roasted Pumpkin

Seeds

1. Wash pumpkin seeds.
2. Place seeds in a vegetable steamer with some water.
3. Cover and cook for 30 minutes.
4. Dry the seeds with a towel.
5. Spread seeds on a cookie sheet, brush with vegetable oil and sprinkle with salt.
6. Bake the seeds in a preheated 300-degree oven for 30 minutes, or until golden.

—Students will weigh the pumpkins and record their findings in pounds and kilograms.

3. Students will estimate the perimeter of each pumpkin by cutting lengths of string they think will reach around the pumpkin.

—Students will measure the pumpkins with a tape measure.

—Create a chalkboard graph with the words “too long,” “too short,” “same.”

—Students will tape the string estimates in the correct space on the chalkboard graph.

—Discuss the graph. Ask how many pieces of yarn were too long? Too short? The same? Most estimates were _____

—Students will draw a model of the graph in a journal or on a separate sheet of paper

4. Introduce the abbreviation for pounds (“lbs.”) and the pound symbol (“#”).

5. Students will estimate the number of seeds in a pumpkin.

—Divide class members into groups of four or five students.

—Provide one pumpkin for each group. Allow students to handle the pumpkins.

—Review the term “estimate.”

—Each group will estimate the number of seeds in their pumpkin.

—Write the group estimates on the chalkboard.

—Hand out three sheets of construction paper.

—Groups will tape the construction paper together in a row to create place value boards.

—One member of each group will write the place value terms:

“ones” across the top of the first sheet of construction paper,

“tens” across the top of the second sheet

“hundreds” across the top of the third sheet.

—Cut the top from each pumpkin.

—Give each group 10 small cups and two large styrofoam cups. Keep extra containers handy in case any of the pumpkins have unusually large numbers of seeds.

—Students scoop the seeds from the pumpkins with their hands and place them on the construction paper labeled “ones.”

—Students count the seeds into groups of ten and place them in the small cups.

—Students place the filled cups on the construction paper labeled “tens.”

—When students have counted ten groups of ten they dump those cups into the larger cups and place them on the construction paper labeled “hundreds.”

—Continue the activity until all the seeds have been counted.

—Students will write and read the exact number of seeds in their pumpkins.

—Students compare exact numbers with estimates.

Science

1. Students will guess whether the pumpkins will sink or float. Test guesses in a tub of water.

2. Use the recipe included with this lesson to make pumpkin pie in a bag.

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- Students will describe the pie ingredients before baking.
- Ask students to write what they think will happen after the ingredients are baked.
- Students will describe ingredients after they are baked.

Social Studies

1. Use pumpkins as globes to represent the Earth.
 - Students will draw latitude and longitude lines on their pumpkins at 10 degree increments.
 - Students will find north, south, east and west hemispheres.
 - Students will paint continents on their pumpkins with tempera paint.
 - After the continents have dried, students will paint bodies of water.

Visual Arts

1. Make pumpkin seed art.
 - Bake clean seeds in a 300-degree oven for 30 minutes, or until golden.
 - Let the seeds cool completely.
 - Provide students with tempera paint in autumn colors, and have them dip the pumpkin seeds in the paint.
 - Let the seeds dry.
 - Students draw tree trunks with branches and glue seeds to the branches to make beautiful full trees.
4. Students draw Jack-o-lanterns, color them and use different kinds of seeds to make their features.

Get Up and Move

1. Play Pumpkin Man:
 - Teach the following chant:

Pumpkin man, pumpkin man, catch a brownie if you can,
Yes I will, Yes I will, if the brownie will stand still.
 - Divide students into two groups—a Pumpkin group and a Brownie group.
 - Students form a circle, facing inward.
 - Pumpkins step forward and put their palms together to make "windows." (Don't weave fingers.)
 - Brownies go in and out of the windows at least twice as everyone says the chant.
 - When teacher says "stop," Pumpkins lower the "windows." All Brownies inside the circle become Pumpkins and join the Pumpkin circle.
 - Play twice so everyone who started as a Pumpkin gets to be a Brownie.

Extra Reading

- Gillis, Jennifer, *In a Pumpkin Shell: Over 20 Pumpkin Projects for Kids*, Storey, 1992.
- King, Elizabeth, *Pumpkin Patch*, Dutton 1990.

Vocabulary

carve—to cut with care or exactness

decorate—to make more attractive by adding something that is beautiful or becoming

gourd—any of a family of tendril-bearing vines (as the cucumber, melon, squash, and pumpkin)

Pilgrim—one of the English colonists who founded the first permanent settlement in New England at Plymouth in 1620

pulp—the soft juicy or fleshy part of a fruit or vegetable

pumpkin—the usually round orange fruit of a vine of the gourd family widely used as food

settler—a person who settles in a new region

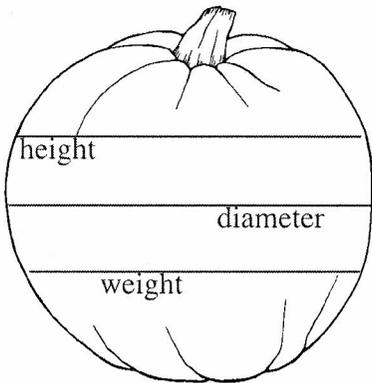
vegetable—a leafy plant (as the cabbage, bean, or potato) usually without woody tissue grown for an edible part that is usually eaten as part of a meal

Name _____

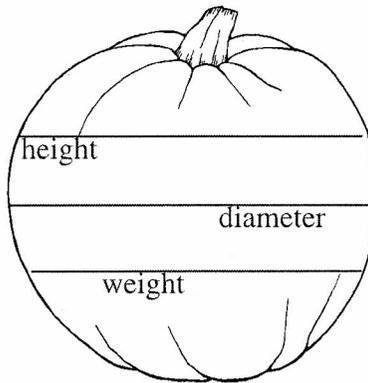
Pumpkins by the Pound

Measure and weigh several pumpkins. Record the facts below.

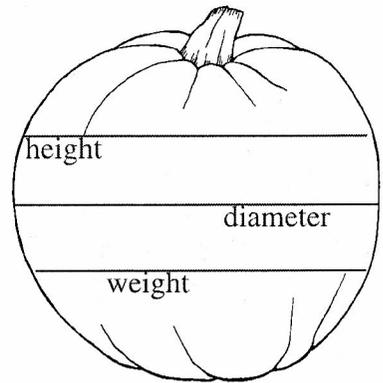
1.



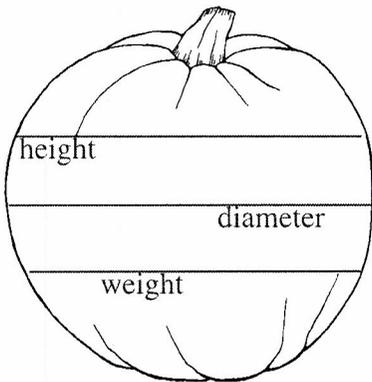
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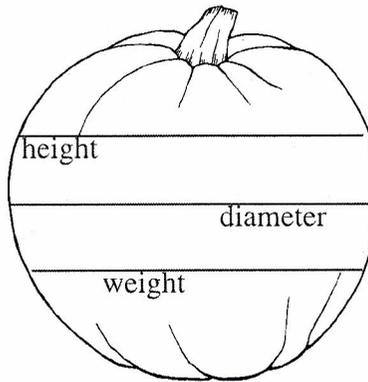
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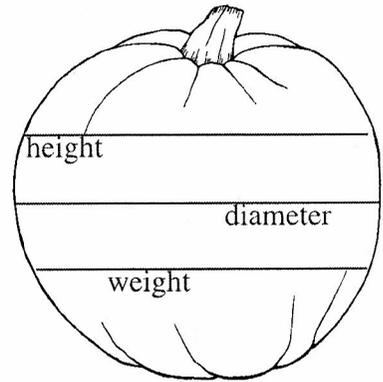
4.



5.



6.



1. Which pumpkin is biggest? _____
2. Which pumpkin weighs the most? _____
3. Does the biggest pumpkin weigh the most? _____
4. Does the smallest pumpkin weigh the least? _____
5. Which two pumpkins are closest in size? _____
6. Which two pumpkins are closest in weight? _____



Name _____

Pumpkin Pie in a Bag

per two students:

1/8 cup milk
2 T canned pumpkin (not pie filling)
dash cinnamon
dash ginger
1 T vanilla pudding mix
1 T graham cracker crumbs or two ginger snaps

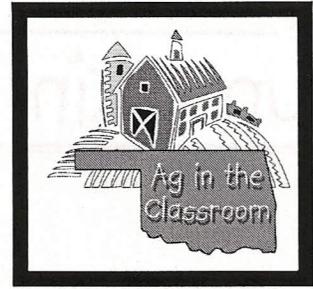
quart-size zip freezer bag

1. Combine the milk and instant pudding in the bag. The mix should have the consistency of pudding. If it is too runny, add pudding mix. If it is too thick, add milk.
2. Remove the air from the bag and seal it.
3. Squeeze and knead with hands until the mixture is blended—about one minute.
4. Add the pumpkin, cinnamon and ginger.
5. Remove the air and seal the bag.
6. Squeeze and knead with hands until blended—about two minutes.
7. Place 1/2 tablespoon of graham cracker crumbs or one ginger snap in the bottom of each cup.
8. Cut the corner of the freezer bag, and squeeze pie filling into the cups.
9. Garnish the cups with whipped topping.
10. Provide spoons. Enjoy.

Follow directions as above and squeeze mixture into tart-size premade graham cracker crusts, or place a ginger snap at the bottom of small cups to serve as crust.



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Pumpkin Man

Preparation: A large open area is required for the movement.

1. Teach the following song:

Pumpkin man, pumpkin man, catch a brownie if you can,

Yes I will, Yes I will, if the brownie will stand still.

2. Divide students into two groups - a pumpkin group and a brownie group.
3. Form a circle.
4. Have the pumpkins step forward and put their palms together to make "windows."
(Don't weave fingers.)
5. Have brownies go in and out of the windows at least twice.
6. When teachers says "stop," pumpkins should lower the "windows." All brownies inside the circle become pumpkins and join the circle.
7. Play two times so that everyone who started out as a pumpkin gets the opportunity to become a brownie.

Background: The pumpkin is a warm-season vegetable that can be grown throughout much of the United States. Besides being used as jack-o'-lanterns at Halloween, pumpkins are used to make pumpkin butter, pies, custard, bread, cookies and soup. Pumpkin is a very tender vegetable. The seeds do not germinate in cold soil, and the seedlings are injured by frost. Pumpkins can be harvested whenever they are a deep, solid color (orange for most varieties) and the rind is hard.

for 25 students)

- one gallon zip freezer bag
- 2 $\frac{2}{3}$ cup cold milk
- two packages (four serving size) instant vanilla pudding mix
- one can (15 ounces) solid-pack pure pumpkin
- one teaspoon ground cinnamon
- $\frac{1}{2}$ teaspoon ground ginger
- graham cracker crumbs
- 25 small cups
- scissors
- one can whipped topping
- 25 spoons

(for two students)

- quart-size zip freezer bags
- $\frac{1}{8}$ cup milk
- 2 T canned pumpkin
- dash cinnamon
- dash ginger
- 1 T pudding mix*
- tart-size premade graham cracker crusts or ginger snaps

* The mix should have the consistency of pudding. If it is too runny, add pudding mix. If it is too thick, add milk.

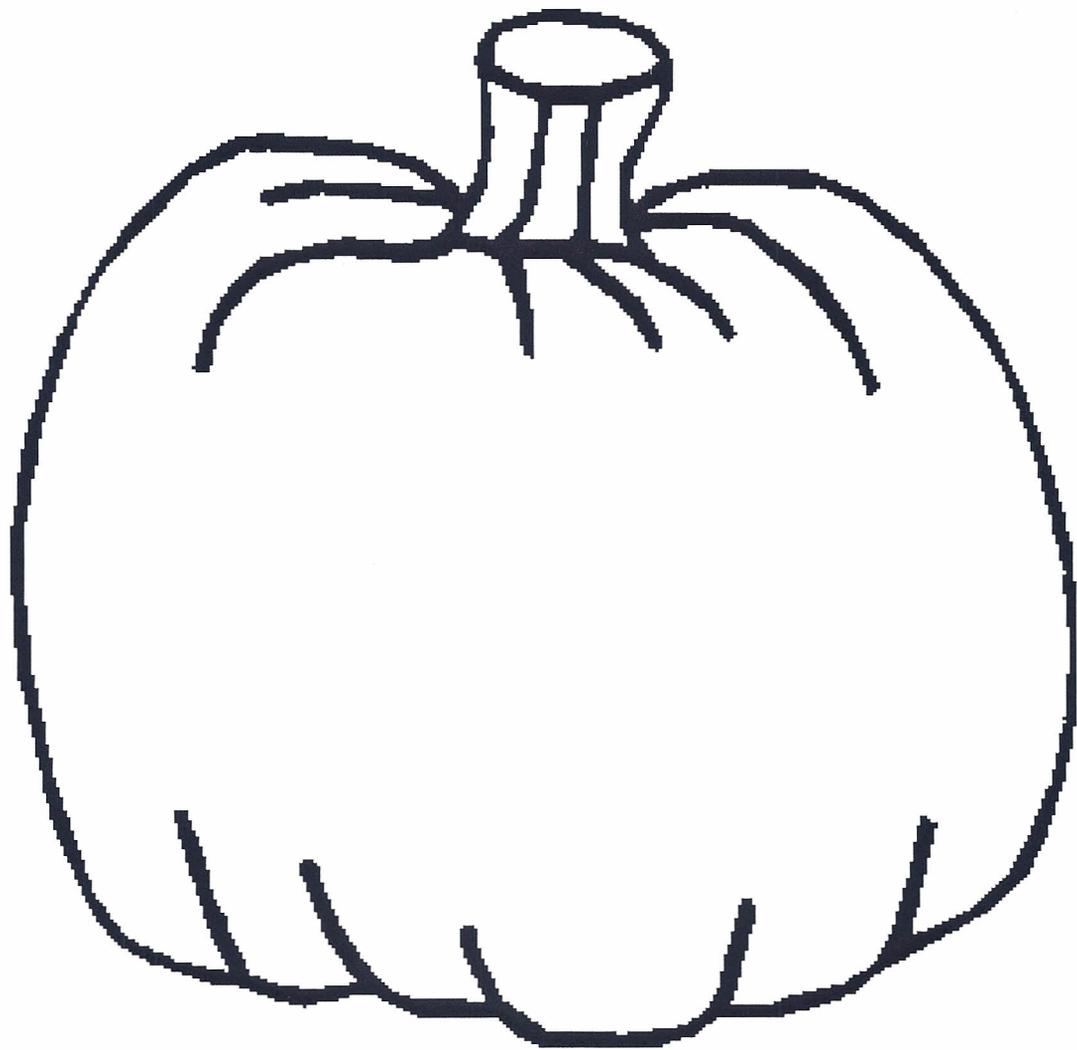


Pumpkin Pie in a Bag

1. Combine the milk and instant pudding in the bag.
2. Remove the air from the bag and seal it.
3. Squeeze and knead with hands until the mixture is blended—about one minute.
4. Add the pumpkin, cinnamon and ginger.
5. Remove the air, and seal the bag.
6. Squeeze and knead with hands until blended—about two minutes.
7. Place $\frac{1}{2}$ tablespoon of graham cracker crumbs in the bottom of the small cups.
8. Cut the corner of the gallon freezer bag, and squeeze pie filling into the cups.
9. Garnish the cups with whipped topping.
10. Provide spoons. Enjoy.

For individual servings follow directions as above and squeeze mixture into tart-size premade graham cracker crusts, or place a ginger snap at the bottom of small cups to serve as crust.

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A Purple Cow

Skills: Visual Arts, Science, Health

Objective: Students will learn to identify colors in nature and to observe objects under varying light conditions.

Background

You won't find a purple cow on an Oklahoma farm, but you will find other things in many shades of purple. Much of the hay that cows eat is made from alfalfa and clover which have purple flowers in the springtime. Purple vetch is a plant that is common in Oklahoma fields. Plums, grapes and eggplant are purple-colored fruits that can be found on some Oklahoma farms.

Grape-growing is one of our state's fastest-growing agricultural enterprises. Oklahoma grapes are grown for eating fresh and for wine and juice. People have been eating grapes since prehistoric times. Raisins are dried grapes. Grapes were probably first produced deliberately in Asia Minor by burying fresh grapes in the hot desert sand. The grapes used to make raisins are different from table grapes. Another kind of grape is used to make grape juice, and many different kinds of grapes are used to make wine. All kinds of grapes can be grown in Oklahoma. Grapes are rich in antioxidants, which help prevent some disease.

Nutrition experts tell us we should eat fruits and vegetables of all colors every day.

| Color | Fruit or Vegetable | Health Benefits |
|--------|--------------------|---|
| Red | apples, beets | May help fight some cancers; helps fight colds; helps keep the heart healthy; helps us see at night. |
| Orange | oranges, carrots | May help fight colds; aids in developing a healthy heart; may help prevent cataracts; cleans digestive system. |
| Yellow | lemons, squash | Aids in scrubbing out the body and may help prevent high blood pressure. |
| Green | lettuce, peppers | May help fight some cancers; helps prevent cramps of legs and arms; helps us see at night; cleans out digestive system. |
| Purple | eggplant, grapes | May help fight some cancers; helps in development of red, strong blood that carries oxygen from the lungs. |

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P.A.S.S.

PRE-K

Creative Skills—1.4

**Oral Language—1.1,2;
2.1,2**

Literacy—3.1,6; 7.3; 8.4,6

Writing—9.1,4

Math—1.1; 3.1; 5.2,3

Health—3.2,4

Science Process—1.1,4

Life Science—3.3

Physical Science—2.1

KINDERGARTEN

Creative Skills—1.2,3

**Reading—1.4; 4.1; 6.2,4;
7.2b**

**Oral Language—1.2,3;
2.1; 3.1**

Math—1.1; 3.1; 5.1,2

Health—1.3

Science Process—1.1,3

Physical Science—1.1

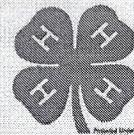
Life Science—2.1

Visual Arts—3.2,3; 4.1,2

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P.A.S.S (cont.)

GRADE 1

Visual Arts—3.2,4; 4.2,3

Health—2.4; 3.1; 6.2

Reading—4.1,2,3; 6.1ac

Oral Language—1.1,2; 2.1; 3.1,2

Visual Literacy—1.2

Math Process—1.1,2; 2.1; 4.4; 5.1,2

Math Content—1.1; 4.1ab; 5.1,2

Science Process—1.2; 2.1; 4.3

Physical Science—1.1,2

GRADE 2

Visual Arts—3.2,4; 4.2,3

Health—2.4; 3.1; 6.2

Reading—3.1; 5.1ac

Oral Language—1.1,2; 2.3; 3.1,2

Visual Literacy—2.1

Math Process—1.1,2; 2.1; 4.4; 5.1,2

Math Content—1.1; 4.1b; 5.1,2

Science Process—1.2; 2.1; 4.3

Physical Science—2.1

Resources Needed

prints or slides of artists' paintings, especially still life paintings of fruits and vegetables

fruits and vegetables in different colors

magazines or seed catalogs with pictures of fruits and vegetables for students to cut out

Purple Cow

Put one scoop of vanilla ice cream in a cup for each student. Pour grape juice over the ice cream.

Language Arts

1. Read and discuss background and vocabulary.
2. Read and discuss the following poem, by Gelett Burgess.

The Purple Cow

I never saw a purple cow,
I never hope to see one;
But I can tell you, anyhow,
I'd rather see than be one.

Visual Arts

1. Show the examples of artists' paintings.
—Students will name the colors found in the paintings.
—Discuss colors in nature.
2. Show the examples of fruits and vegetables.
—Students will name the colors.
3. Discuss why colors look different under different kinds of light.
4. Provide magazines and seed catalogs.
—Students will cut out colored photos of fruits and vegetables and paste them on the color wheel included in this lesson. See background for examples of fruits and vegetables in each color.

Health

1. Discuss the health benefits of eating the different colors of fruits and vegetables. (See background.)
2. Serve a rainbow salad with fruits and vegetables of different colors cut into bite-sized pieces.

Math

1. Students will vote on their favorite colors, fruits and vegetables.
—Students will graph the results of the votes.
2. Students will identify shapes in fruits and vegetables.
—Students will graph the shapes.

Extra Reading

Ada, Alma Flor, Subizarreta, Rosa, and Simon Silva, *Gathering the Sun: An Alphabet in Spanish and English*, Lothrop, 1997.

Clark, Emma Chichester, *I Never Saw a Purple Cow and Other Nonsense Rhymes*, Little, Brown, 1991.

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- Ehlert, Lois, *Eating the Alphabet: Fruits and Vegetables From A to Z*, Voyager, 1993.
- Hawkins, Linda J., *Alexander and the Giant Food Fight*, Turner, 2002.
- McMillan, Bruce, *Growing Colors*, HarperTrophy, 1994.
- Perez, L. King, and Robert Casilla, *First Day in Grapes*, Lee & Low, 2002.
- Venezia, Mike, *Da Vinci*, Children's, 1989.
- Venezia, Mike, *Monet*, Children's, 1990.
- Venezia, Mike, *Picasso*, Children's, 1988.
- Venezia, Mike, *Rembrandt*, Children's, 1988.

Vocabulary

agriculture—the science or occupation of cultivating the soil, producing crops, and raising livestock

alfalfa—a deep-rooted plant of the legume family with purple flowers and leaves like clover that is widely grown for hay and forage

color—an aspect of light (as red, brown, or gray) or sight that allows one to tell otherwise identical objects apart from each other

cow—the adult female of cattle or of any of various usually large animals

farm—a piece of land used for growing crops or raising livestock

fruit—a juicy plant part used chiefly as a dessert

grape—a smooth-skinned juicy light green or deep red to purplish black berry eaten dried or fresh as a fruit or fermented to produce wine

light—something that makes vision possible

shade—the darkness or lightness of a color

vegetable—a leafy plant (as the cabbage, bean, or potato) usually without woody tissue grown for an edible part that is usually eaten as part of a meal.



Purple Cow

Ingredients

- 1 scoop of vanilla ice cream
- $\frac{1}{2}$ cup or so of grape juice

Directions

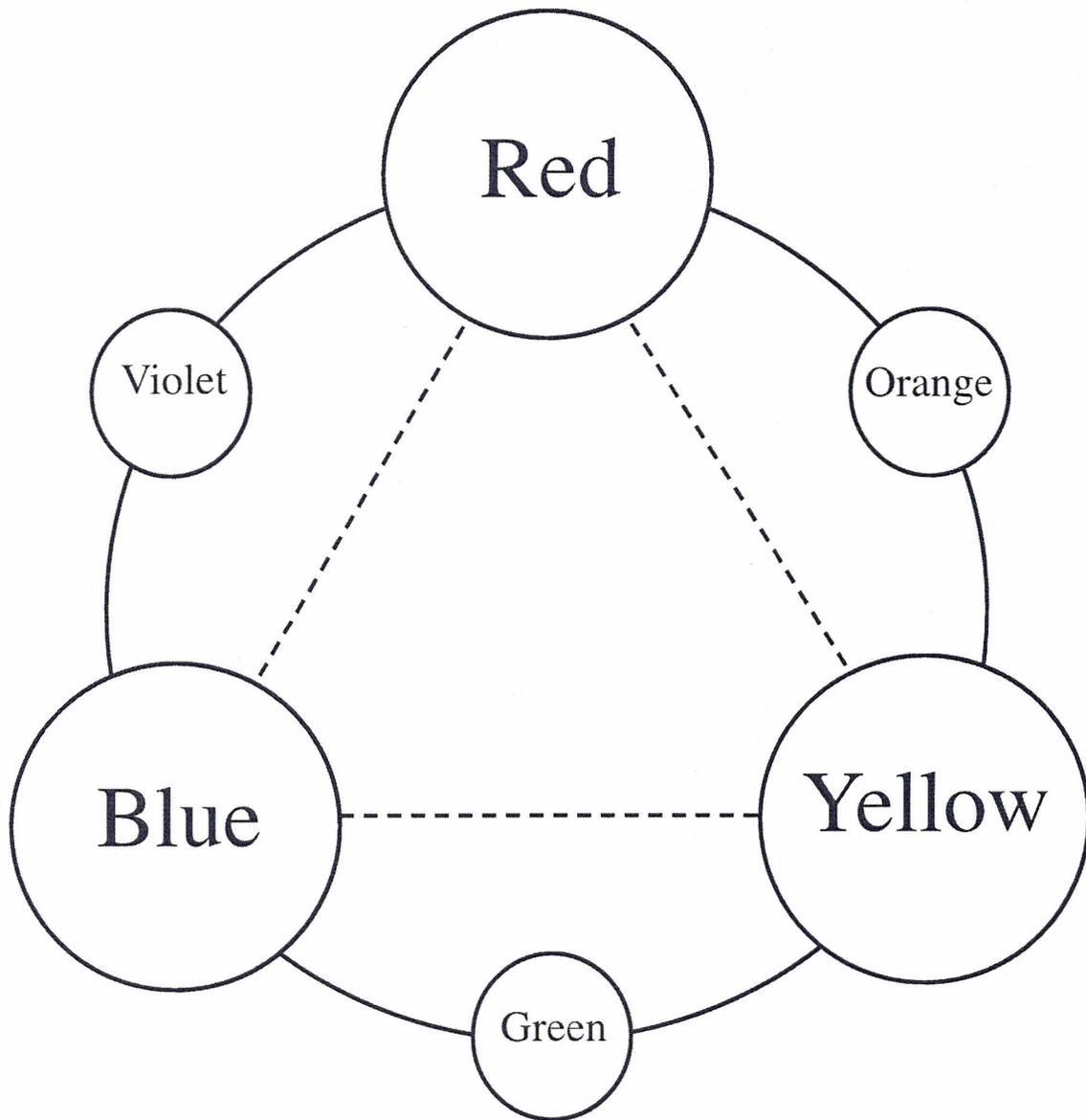
1. Put ice cream in a small cup
2. Pour grape juice over ice cream to fill up cup
3. Enjoy

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Name _____

Color Chart

Cut out colored pictures of fruits and vegetables from magazines. Paste the pictures in the correct circles on the color wheel.





Bugs on a Log

Ingredients

Celery cut in 4-inch sections
Peanut butter or Pimiento cheese
Raisins

Directions

1. Fill celery sticks with peanut butter or Pimiento cheese.
2. Press raisins here and there to represent bugs.
3. Enjoy.

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Bug Juice

Ingredients:

- 2 slices of strawberries
- $\frac{1}{4}$ cup lemonade
- $\frac{1}{2}$ cup sprite or ginger ale
- Several raisins
- 1 gummy worm

Directions:

1. Put the strawberries, lemonade and sprite/ginger ale in a quart sandwich baggie.
2. Squish with fingers until ingredients are mixed well.
3. Add raisins
4. Cut corner and pour into a small cup
5. Put gummy worm on side of cup
6. Enjoy!

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The Story of Milk

Skills: Language Arts

Objective: The student will learn where milk comes from and place the steps in sequence.

Background

Cows that are well cared for produce wholesome, healthy milk. The dairy farmer keeps the cows healthy by making sure they have plenty of green grass and hay to eat.

Every morning and evening the farmer milks the cows. Some farmers milk their cows by hand. Others use milking machines. The farmer will sell the cows' milk to a milk processing plant.

After the farmer milks the cow, he cools it and stores it in a stainless steel tank. The milk stays in the tank until it is time for it to go to the milk processing plant.

When it is time to take the milk to the processing plant, a stainless steel tank truck comes to the farm and pumps the milk from the cooling tank. The truck's tank acts like a huge thermos bottle and keep the milk cool during the trip to the processing plant.

When the milk arrives at the processing plant, workers take it and make it into many delicious, healthy things to eat. Some of the milk goes into the cartons your parents buy at the store. The rest is made into things like butter, cheese, ice cream and cottage cheese.

Language Arts

1. Read and discuss background.
2. Hand out the student worksheets.
3. Have students color, cut out pictures and glue them above the appropriate sentences.

Extra Reading

Hall, Donald, *The Milkman's Boy*, Walker, 1997.

Older, Jules, and Lyn Severance, *Cow*, Charlesbridge, 1997.

Ag in My Community

Visit a local dairy farm to observe the operations

P.A.S.S.

PRE-KINDERGARTEN

Oral Language—1.1,2

Literacy—7.2; 8.1,3,6

Small Motor—2.1

KINDERGARTEN

Reading—1.1; 6.1,4

Small Motor—1.1

GRADE 1

Reading—1.1; 6.3ac

GRADE 2

Reading—1.1; 5.1b,3a

Materials

Bring samples of dairy products for students to taste.

Vocabulary

butter—a solid yellow fatty food made by churning milk or cream

cheese—a food made from milk usually by separating out the curd and molding it

cottage cheese—a very soft cheese made from soured skim milk

cow—the adult female of cattle or of any of various usually large animals

dairy—a farm devoted to the production of milk

hay—herbs (as grasses) cut and dried for use as fodder

ice cream—a frozen food containing sweetened and flavored cream or butterfat

milk—a whitish liquid secreted by the mammary glands of female mammals as food for their young

processing—taking care of according to a routine

Name _____

The Story of Milk

1. Dairy cows on the farm give milk every day.

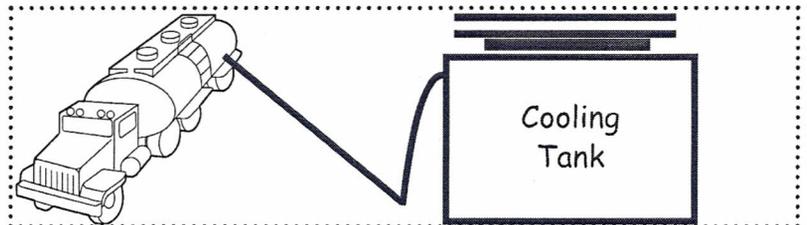
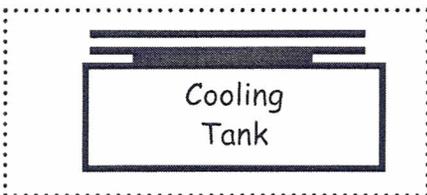
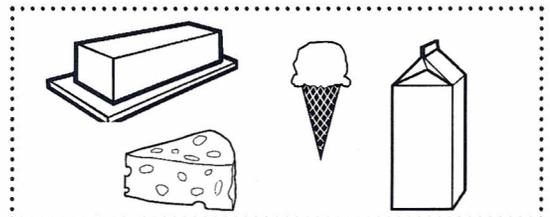
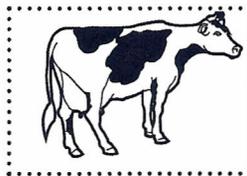
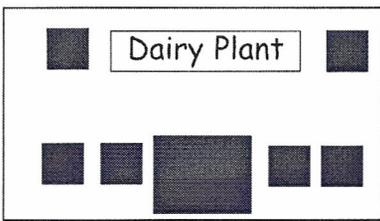
2. Milk is stored in a cooling tank on the farm.

3. Milk is pumped into a cooling tank on a truck and taken to the milk plant.

4. The dairy plant is where milk is made into things to eat or drink.

5. Many good things to eat and drink are made from milk.

Cut out the pictures and glue above the correct sentence.



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Materials: condiment cups
Whipping cream
Pretzels

Directions: 1/8 cup of cream in each condiment cup; shake until fat forms a clump - will still have liquid when butter is churned.

Making Butter Activities

Teaching Ideas:

- **observation and prediction**
cream is white; butter will be a shade of yellow because of the carotene in the grass the cow eats
- **states of matter**
starts as a liquid and most of it turns to a solid - the liquid left is skim milk, but will quickly begin to turn to buttermilk.
(Grandma made buttermilk from that skim milk)
- **poetry**
- **phonics**
- **listening**

Butter, butter, shake, shake, shake.
"Charlie's" waiting by the gate.
"Charlie's" waiting for his cake.
Butter, butter, shake, shake, shake.

Questions:

What kind of cake is Charlie waiting for?

Where is Charlie waiting?

What vowel is heard most often? (long a)

How many times is that vowel heard? (10 times unless student's name has a long a)

- **Social Studies/Science**

Dr. Louis Pasteur invented pasteurization. Pasteurization is heating a liquid to approximately 161 degrees Fahrenheit for at least 15 seconds and cooling it quickly. That process kills the most of the germs and bacteria, yet maintains the taste.

To homogenize the butter, just continue shaking until there is no liquid left.

Homogenization is the process of breaking up the fat globules in the cream to such a small size that they remain suspended evenly in the milk rather than separating out and floating to the surface.



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Oklaberrynana Smoothie

Recipe for one student:

2 medium slices banana
1/4 cup frozen berries
1/2 cup vanilla low-fat yogurt

Put ingredients in a sandwich baggie. Tightly zip and squish with fingers until berries and bananas are pureed with the yogurt. Pour into a cup and enjoy!

Recipe to make in a blender:

1 banana
1 cup frozen berries
1 cup plain yogurt

Puree until all the ingredients are blended. Serve in small cups.



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Puree until all the ingredients are blended. Serve in small cups.

Snowball Fight

Skills: Language Arts, Science, Visual Arts, Math, Music

Objective: Students will learn how snow helps crops grow and play a game using facts and words about snow.

Background

Weather is the condition of the air that surrounds the earth. The air that surrounds the earth is called the atmosphere. So weather is the condition of the atmosphere. The atmosphere contains the gases of nitrogen, oxygen and small amounts of other gases. The atmosphere also contains water vapor and particles of dust. The lowest layer of the atmosphere is called the troposphere. The troposphere is where most of the weather occurs. The troposphere begins at the surface of the earth and extends to 6-10 miles from the surface. The weather conditions in the troposphere and surface of the earth depend upon temperature, air pressure, wind and moisture.

Precipitation occurs when the cooling of the air causes moisture to fall in the form of rain, snow, sleet or hail. Rain will fall when the clouds formed by drops of water become so heavy that the air cannot hold it up any longer. Ice crystals form when the temperature of the clouds is below freezing. If the air temperature near the ground is about 37 degrees F., the ice crystals can turn to snow. The crystals will change to sleet if the air temperature is between 37 degrees F. and 39 degrees F.

Weather conditions have a huge impact on agriculture. Producers need clear weather to plant and harvest crops. The crops need sunlight and rain to grow. A frost or storm can damage and/or kill some of a crop. But some kinds of cold weather are good for certain kinds of crops. Snow can help protect the soil and plants from severe freezing and heaving (expansion that causes the soil to buckle and crack). In some cases, the gradual thawing of snow improves the soil's texture.

Oklahoma's number one crop is winter wheat. Winter wheat is planted in the fall and sprouts and grows until winter weather sets in. It lies dormant (stops growing) through the winter, matures in the spring, and is harvested early in the summer.

The weather can affect winter wheat in many ways. If the weather is too wet in the fall, farmers have trouble getting the wheat planted. Wet weather at flowering or harvest can also cause problems. Hail can beat the wheat down. But snow can be good for winter wheat. Snow helps protect winter wheat from a major enemy: fluctuating temperatures.

When the thermometer shifts above and below freezing, the ground expands and contracts, dislodging the roots from the soil. That won't happen

P.A.S.S.

GRADE 4

Reading—3.1,2d;3a

Oral Language—1.1,3

Music—2.1

Writing—1.1

Visual Arts—4.2,3

Science Process— 3.1,3

Math Process— 1.2; 3.3;
5.1,2

Math Content— 4.4b

GRADE 5

Reading—3.3a

Writing—1.1; 2.1

Visual Arts—4.2,3

Science Process—1.1,2;
4.3,4

Earth Science:—3.2

Math Process— 1.2; 3.3;
5.1,2

Math Content— 4.4

Materials

assorted books about snow

white paper

pencils

tape or CD player with appropriate music CD or audiotape for playing "Musical Chairs" type game

Food and Fun

On a snowy day, make snow ice cream. (Go to "Food and Fun" on the website)

Oklahoma Ag in the Classroom is a program of the Oklahoma Cooperative Extension Service, 4-H Youth Development, in cooperation with the Oklahoma Department of Agriculture, Food and Forestry and the Oklahoma State Department of Education.

Oklahoma Ag in the Classroom
Oklahoma 4-H Programs
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if there is a nice blanket of snow.

Some scientists also believe snow that falls late in the spring can help fertilize crops. Snow contains nitrogen and other nutrients plants need. It also has quite a bit of moisture. If it falls on ground that is not frozen, the nutrients and moisture in the snow can penetrate the soil.

Language Arts

1. Read and discuss background material and provide books about snow for students to read. Hand out white sheets of paper, and have each student write one word or fact about snow, either from the discussion of background or from their research.
2. Play "Snowball Fight."
 - Have student wad up their sheets of paper with facts about snow.
 - Turn on music, and have students toss (not throw) their paper wads from student to student, in no particular order.
 - After a few minutes, stop the music. Have each student smooth out the "snowball" he or she is holding, write another word or fact, and wad the paper up again.
 - Start the music, and repeat two or three times.
3. Have each student write a story, using all the words or facts on the last snowball caught, or have students work together in groups to write their stories.

Science

1. Use this experiment to show students how raindrops form: Pour just enough water into a quart jar to cover the bottom. Turn the jar lid upside down, and set it over the mouth of the jar. Place 3-4 ice cubes inside the lid. Have students observe the underside of the lid for 10 minutes. The lid will look wet, and finally water drops will form on the underside of the lid. That is because some of the liquid water in the bottom of the jar evaporates. The water vapor condenses and then changes back to a liquid when it hits the cool underside of the lid. As the amount of liquid increases, drops form on the underside of the lid. In nature, liquid water evaporates from open areas such as streams, lakes and oceans. This vapor rises and condenses as it hits the cooler upper air.
2. On a rainy day, have students collect raindrops in a bowl that contains about 1/2 cup of flour. The raindrops will form floured beads. Take the raindrops into the classroom and carefully spoon them onto a wire strainer. Very gently shake the strainer to remove loose flour from the droplets. The beads that are left are floured raindrops. Help the students record the size and shape of the drops on a piece of paper.
3. Fill a quart jar about half full with water. Place a strip of masking tape to mark the water level. Put the jar in the freezer overnight. Have students look at the jar and report their observations. (Note: If you are using a glass jar, make sure you do NOT cap it.)

<http://www.agclassroom.org/ok>

Visual Arts

1. Cut snowflakes from white paper and display them in the hallway.

Math

1. Is five centimeters of snow the same as five centimeters of rain? Ask students, and graph the results. Measure two inches from the bottom on a container and mark. Place snow in the container up to the mark. After the snow has melted, measure again.

Extra Reading

- Adoff, Arnold, and Jerry Pinkney, *In For Winter, Out For Spring*, Trumpet, 1997.
- Edom, Helen, and Moira Butterfield, *Science With Air*, Usborne, 1991.
- Hesse, Karen, and Jon J. Muth, *Come On, Rain!* Scholastic Trade, 1999.
- Johnson, Sylvia, *Wheat*, Lerner, 1990.
- Wick, Walter, *A Drop of Water: A Book of Science and Wonder*, Scholastic, 1998.

Vocabulary

air—the invisible mixture of odorless tasteless gases (as nitrogen and oxygen) that surrounds the earth

atmosphere—the whole mass of air surrounding the earth

dormant—having growth or other biological activity much reduced or suspended

nitrogen—a colorless tasteless odorless element that occurs as a gas which

makes up 78 percent of the atmosphere and that forms a part of all living tissues

oxygen—a colorless tasteless odorless gaseous element that constitutes 21

percent of the atmosphere and is found in water, in most rocks and minerals, and in numerous organic compounds

precipitation—water or the amount of water that falls to the earth as hail, mist, rain, sleet, or snow

rain—water falling in drops from clouds

snow—small white ice crystals formed directly from the water vapor of the air.

troposphere—the portion of the atmosphere which extends from the earth's surface to the bottom of the stratosphere and in which temperature generally decreases rapidly with altitude

weather—the state of the atmosphere in regard to heat or cold, wetness or dryness, calm or storm, clearness or cloudiness

Fish in a Bottle

Skills: Language Arts, Science

Objective: Students will build fish ecosystems, observe and write about changes they observe.

Background

There are many kinds of fish. Some have bones, but others have only cartilage. Some fish can only live in oceans (salt water), and some can only live in fresh water. In Oklahoma we have no bodies of salt water but we have plenty of fresh water lakes and rivers. In fact, Oklahoma has more man-made lakes than any other state. We have over 1 million surface acres of water and 2,000 more miles of shoreline than the Atlantic and Gulf coasts combined.

Most fish grow in natural conditions like rivers and lakes, but in some places there are actually fish farms. Fish farming is called "aquaculture." The increasing cost of fishing natural waters and the rising demand for fish has contributed to an interest in aquaculture. It is one of the fastest growing segments of US agriculture.

Aquaculture has been around for centuries. It may have been practiced in China as early as 2000 BC. The Romans built fish ponds during the 1st Century AD and during the Middle Ages fish pond building, by religious men, was widespread throughout Europe.

The channel catfish is the primary species of farm-raised fish in the US. The top commercial catfish-producing states are Mississippi, Arkansas, Alabama, and Louisiana. Catfish farming is a very small part of total agricultural production in Oklahoma, even though the grandparents of most of the channel catfish raised in the US are probably from Oklahoma.

Any body of water that can be confined or controlled is a potential fish farm. Some land that is unsuitable for other food production purposes may be adaptable to fish farming.

Channel catfish can be classified in one of four groups while at the farm: brood fish—the fish that produce offspring; fry—the newly hatched fish; fingerlings—young catfish; and marketable fish. Catfish are usually marketed when they are about 18 months old, after they have reached between 1 and 1 1/2 pounds.

The life of a farm-raised catfish begins with the careful selection and mating of two genetically superior catfish. Once eggs are laid and fertilized they are placed in controlled hatching tanks. Their water and food are monitored around the clock.

After 18 days the baby catfish are strong enough to be transferred to the outdoor ponds. Varying in size from five to 20 acres, these ponds are four to

P.A.S.S.

GRADE 1

Writing—4.1,3; 6.3c

Science Process—3.2; 4.3

GRADE 2

Reading—3.1

Science Process—3.2; 4.3

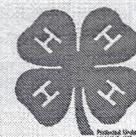
GRADE 3

Science Process—3.2; 4.3

Life Science—2.1,2

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Materials

red pencils

blue pencils

(for each group)

two 2-liter soda bottles

dechlorinated water

goldfish or guppies

aquatic plants—elodea,
duckweed

water snails

sand

Edible Aquarium

Make blueberry gelatin by adding 1 1/4 cups of cold water with ice cubes to a package of powdered mixture. Stir until thickened, and add gummy fish and fruit cocktail. Serve in individual clear cups.

Community

Involvement

Visit a fish hatchery, if you have one in your area.

five feet deep and are fed by a flow of cool water.

The young fish are fed twice daily. Their food is made from soybeans, corn, wheat and fish meal.

When they are ready for harvest, the catfish are seined out of ponds (caught with nets) and placed in aerated tank trucks for live shipment to the processing plant.

The channel catfish does not have scales. Its color depends on the color of the water where it lives. In clear water it may look almost black. In muddy water it may be a light yellow.

Catfish move around mostly at night— just after sunset and just before sunrise. During the daytime they hide. Like other animals, channel catfish need oxygen to live. They use oxygen for energy production and to help build all the various parts of the body. In water there is only about 25 percent as much oxygen as there is in the air. To get oxygen, fish must use more energy than those of us who breathe air. For this reason, fish have well-developed breathing organs called gills. Gills work kind of like our lungs. They take oxygen from the external environment and get rid of toxic gaseous waste—carbon dioxide. Water passes over the gill surface where oxygen diffuses into the blood and carbon dioxide diffuses out. Fish that are stressed or are pursued by a predator need more oxygen than fish at rest.

Like other food animals, fish provide us with protein, which our bodies need.

Language Arts

1. Read and discuss background.
 - Ask students to share what they know about catfish.
 - Have students use their red pencils to cluster this information.
 - As you share background information, write some statements containing new information on the chalkboard, and have students cluster this information with the blue pencils.
2. Discuss vocabulary words, and have students work the crossword puzzle included with this lesson. Answers: Down—1.farm; 6. crawfish; 7. gills; 8. eggs. Across—1.fin; 2.mother; 3.school; 4.scales; 5.fry.
3. Using chalk, crayons or colored pencils, have students draw pictures of the fish ecosystem in the aquarium and write about the activity. Possible subjects include:
 - Did the fish live or die?
 - Did the plants live, die or change color?
 - Did the fish eat the plants?
 - What kinds of fish lived in the ecosystem?
 - What kinds of food did the fish eat?

Science

1. Hand out Student Worksheet A, and have students fill in the blanks to identify the parts of a catfish.
2. Divide students into groups of four or five. Enlist the help of parents or

older students to help each group build a fish ecosystem.

—Cut the top off one pop bottle at the shoulder (where it tapers).

—Cut the base off another bottle, and score it with holes. This is the cover.

—Pour sand two inches deep into the bottom of the first bottle. Slowly add water (to minimize sand displacement).

—Root three elodea stalks in the sand, and sprinkle a small amount of duckweed onto the water's surface.

—Let the sand settle overnight. Next day, add two guppies and two snails.

—Over the period of a week, have students record daily what they see. Has there been any population change? Plant growth? Color or changes in the water?

—At the end of the week, have the groups report on changes in their ecosystems.

3. If you have a classroom aquarium, add a catfish (if you don't already have one). Give the catfish a few days to adjust to its new environment, and then have students observe and record its behavior and movements.

Have students answer the following questions:

Does the catfish swim alone or with other fish?

Does the catfish eat alone or with other fish?

Does the catfish move around or stay in one place?

If it stays in one place, where does it like to stay?

4. Ask students to name characteristics of fish that make them different from humans and some that make them the same. Write the answers on the chalkboard. Have students make Venn diagrams showing the similarities and differences.
5. Produce algae, and study its growth.
- Fill a clean, well-rinsed jar with water from a river or pond.
 - Cover the jar by carefully taping black paper with a one-inch square hole cut in it or paint it black, leaving a one-inch square hole.
 - Leave the jar in bright sunlight or shine a bright light on the side with the open space.
 - In 2-3 days remove the algae that has grown toward the light using an eye dropper and examine it under a microscope.
6. Create a simple indoor water garden in a large plastic container or galvanized tub (or anything that will hold water).
- Place the water garden in a sunny area, and purchase aquatic plants from a garden center.
 - You will need grasses under the surface, floating plants on the surface, fish and aquatic snails, which work as a cleaning crew to remove algae from the water.
 - To keep algae growth down, make sure 70 percent of the water is covered by plants, which deprive algae of the sunlight it needs to grow.
 - Place concrete blocks or bricks in the bottom of the container to raise aquatic plants to the correct height.
 - Add water.

Vocabulary

aerate—to expose to or supply or fill to the limit with air

aquaculture—the cultivation of living things (as fish or shellfish) naturally occurring in water

aquatic—growing or living in or often found in water

bone—a hard material which is largely calcium phosphate and of which the skeleton of most vertebrate animals is formed

brood fish—young fish, hatched or cared for at one time

cartilage—an elastic tissue which composes most of the skeleton of the vertebrate embryo and much of which is changed to bone later in life

fingerling—a small fish especially up to one year of age

fry—recently hatched fish,

gill—an organ (as of a fish) of thin plates or threadlike processes for obtaining oxygen from water

import—to bring (as goods) into a country from another country usually for selling

oxygen—a reactive element that is found in water, rocks, and free as a colorless tasteless odorless gas which forms about 21 percent of the atmosphere, that is capable of combining with almost all elements, and that is necessary for life

Vocabulary (Cont.)

seine—a large fishing net kept hanging in the water by weights and floats

stock—to provide with livestock (or fish)

- Before adding plants, allow the water to stand overnight so the chlorine will dissipate.
- Set plants, in their pots, on the bricks so the tops of their containers are under the surface of the water.
- Add submerged grasses after placing the container plants.
- Once the pond has mellowed for a week, add snails and a few fish.
- Keep the water level topped off.
- If the miniature ecosystem is working properly, there should be no need to remove the water for cleaning.
- Have students observe the water garden and record their observations.
- Try different variables to see what happens (changes in light, adding or removing fish, plants, etc.)

Extra Reading

Ehlert, Lois, *Fish Eyes: A Book You Can Count On*, Harcourt Brace, 2001.

Ling, Mary, and Jerry Young, *Amazing Fish* (Eyewitness Juniors, No. 11), Knopf, 1991.

Littledale, Freya, and Winslow Pinney Pels, *Magic Fish*, Econo-Clad, 1999.

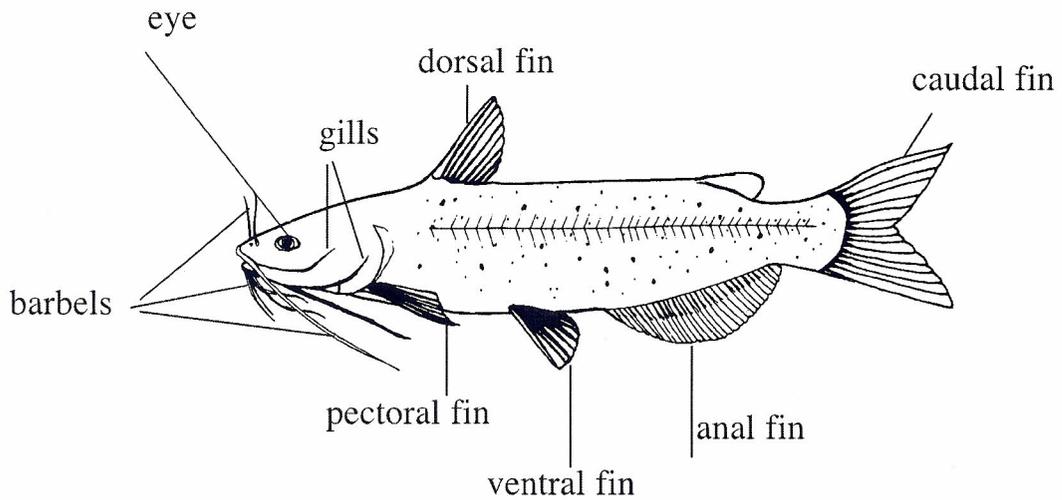
Pfister, Marcus Pfister, and J. Alison James, *The Rainbow Fish*, North South, 1996.

Wright, Catherine, and Howard Fine, *Steamboat Annie and the Thousand-Pound Catfish*, Philomel, 2001.

Name _____

Fish in a Bottle

Catfish Anatomy



Fill in the blanks.

p _ _ c _ _ _ a _ _ fins

1. Sight organs located on the head.

_ y _ _ _

6. Each of the paired fins on the lower side of the body, near the head.

v _ _ _ _ a _ _ fins

2. Slender, whiskerlike sensory organs on the head.

b _ r _ _ _ _ s

7. The tail fin.

c _ _ _ d _ _ _ fin

3. The fin on the upper side of the body.

d _ _ _ s _ _ _ fin

8. Fin on the lower side of the body, near the tail.

_ n _ _ _ fin

4. Fleshy organs used for breathing.

_ _ _ l _ _ _

5. Each of the paired fins on either side of the body, near the head.

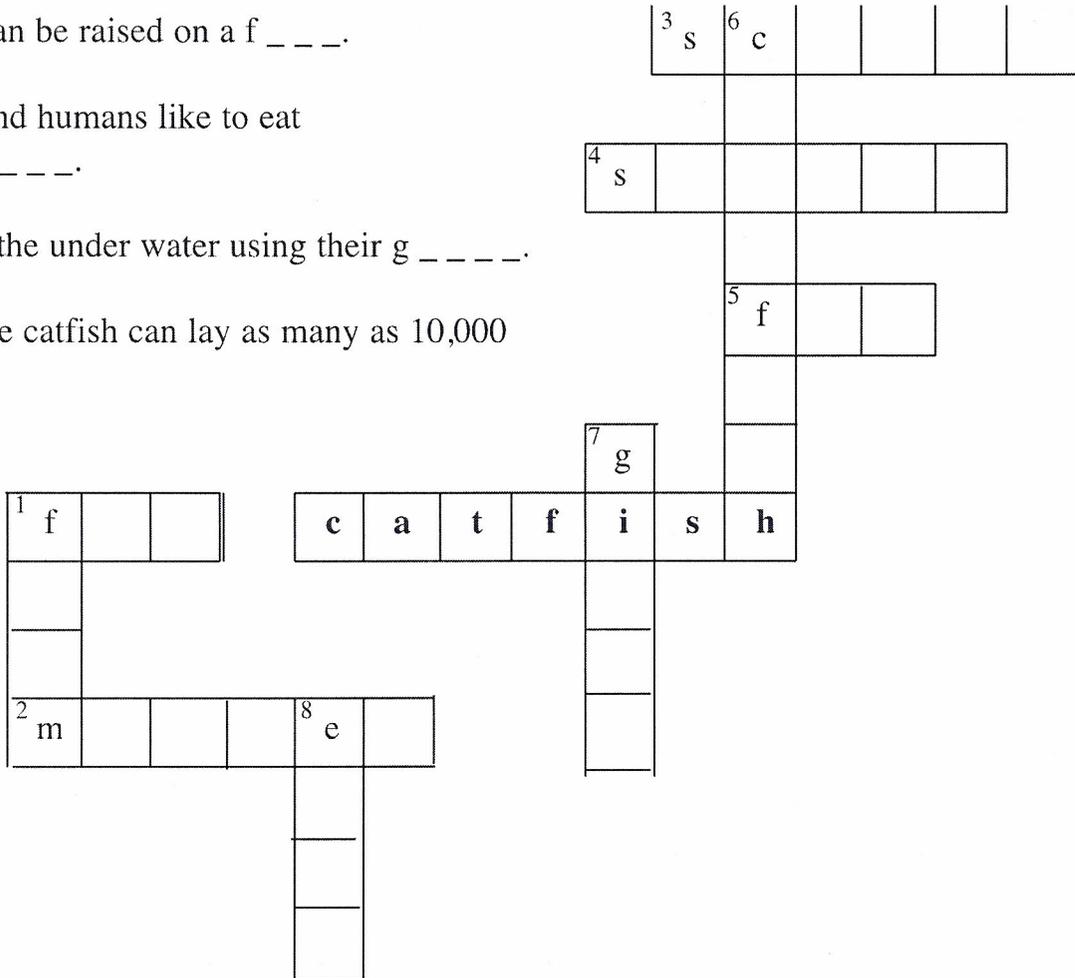


Name _____

Fish in a Bottle

Down

1. Catfish can be raised on a f ____.
6. Catfish and humans like to eat c _____.
7. Fish breathe under water using their g _____.
8. the female catfish can lay as many as 10,000 e ____.

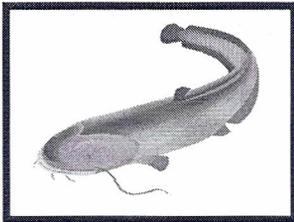


Across

1. The f _ _ sticks out of the fish's body. It helps the fish swim.
2. The m _ _ _ _ _ catfish protects the eggs from danger.
3. Young catfish swim together in a s _ _ _ _ _.
4. Fish s _ _ _ _ _ are hard, thin, overlapping structures that do not cover the body of the catfish.
5. Young catfish are called f _ _.



Edible Aquarium



Supplies:

jelly beans
powdered blueberry gelatin
gummy fish
parsley (optional)
clear plastic cups
ice cubes
tap water

Directions:

1. Make blueberry gelatin by adding water with ice cubes to the powdered mix.
2. Stir until thickened
3. Place jelly beans in the bottom of the goldfish bowl or cups to look like gravel. Pour the gelatin mixture over a knife to keep from disturbing the gravel in the cups or goldfish bowl.
4. Add the gummy fish

If desired, place parsley into the "gravel" to represent aquatic plants.

Play Dough

Materials: (for 15 students)

- 1 cup flour
- 1 tablespoon oil
- 1 cup water
- 1/4 cup salt
- a few drops peppermint flavoring
- food coloring
- 2 t cream of tartar

Directions

1. Cook all ingredients over medium heat until the mixture pulls away from the side of the pan and reaches the consistency of play dough. (I use an electric skillet in the classroom). Pour out onto wax paper.
2. Knead until cool.
3. Store in an air tight container.

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Have You the Time of Day?

Skills: Math, Language Arts

Objective: Students will read a story about a day in the life of a farmer and gain practice reading and writing time.

Background

Farmers work hard. Many farmers have to get up very early to care for their animals or do other chores. On the dairy farm, the farmer's work day begins and ends with milking. On other farms, the farmer may begin working in the field at first light, take a break during the heat of the day, then go back to the field in the late afternoon.

Language Arts

1. Read aloud to your class the short story included with this lesson.
2. Provide students with a copy of Worksheet A, included with this lesson. The student will scan the story for the information, then put the hand in the correct position on the clock face.
3. Have each student write a picture story about his or her day. As students write their stories, have them draw clock faces showing what time of day each of the events occurred.

Math

1. Provide students with copies of Worksheet B. The student will draw the hands correctly on the clock face, rewrite the time, then write a.m. or p.m., whichever is correct.
2. Provide students with copies of Worksheet C. The student will fill in the clock faces to reflect his or her daily schedule, for example:
Wake up 6:30 a.m.
Recess 10:00 a.m.
3. Post a daily schedule somewhere in the classroom. Include all the important times (bathroom breaks, recess, etc.) Draw clocks with the hands in positions corresponding to the times you have posted.

Extra Reading

Lillie, Patricia, *When the Rooster Crowed*, Greenwillow, 1991.
Tresselt, Alvin, *Sun Up*, Lothrop, Lee & Sheperd, 1991.
Tresselt, Alvin, *Wake Up Farm!* Lothrop, Lee & Sheperd, 1991.

P.A.S.S.
KINDERGARTEN
Math—4.5

GRADE 1
Math—4.2a
Reading—6.1a

GRADE 2
Math—4.3a
Reading—5.1a,2a,4a; 7.1e

GRADE 3
Math—4.4

Materials

paper
pencils
crayons or markers

Name _____

Have You the Time of Day?



Read the story. Use the facts to complete the clock problems.

The day begins early on the farm. Farmer Smith is helping out this week at his neighbor's dairy. Farmer Brown's son usually helps with the milking, but he is away for a short vacation. While Farmer Brown's son is away the cows must still be milked.

Farmer Smith will get up at 4:30 a.m. He will be at the dairy and ready to milk by 5:30 a.m. The milk truck will come at 8:00 a.m. They must be finished milking and cleaning by then. After that Mr. Smith takes care of chores on his own farm. At 11:00 am, he eats lunch.

Mr. Smith got a new tractor last year. It has a cab with an air-conditioner, so Mr. Smith can work during the heat of the day. At 2:00 p.m., when the sun is hot, Farmer Smith goes out to bale hay.

Farmer Smith will stop at 4:30 p.m. to go help Farmer Brown milk. He will eat dinner at 7:00 p.m. with his wife, then go back to the hay field. The Smiths will be in bed early tonight, probably by 9:30 p.m. It has been a long day, and the new day will begin early on the farm.



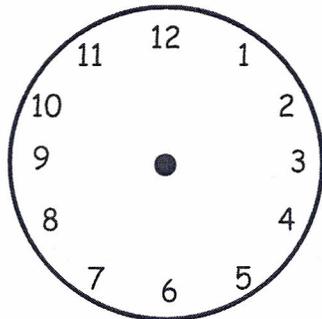
Name _____

Have You the Time of Day?

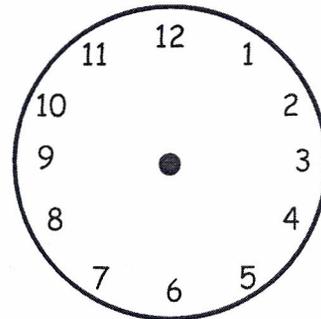
A

Draw the hands on the clock, using the story as a guide.

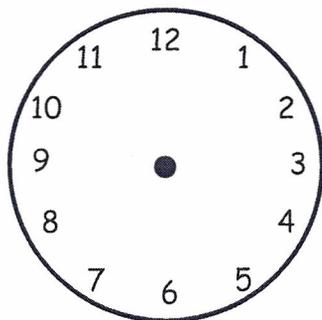
What time did Farmer Smith get up?



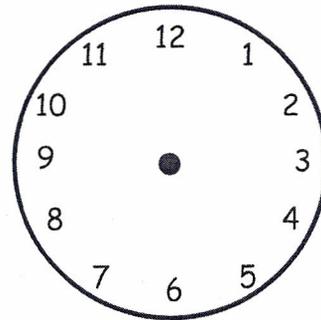
When did milking begin at the dairy?



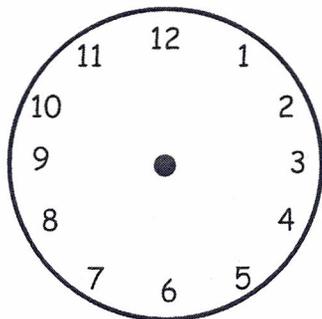
What time did the milk truck come?



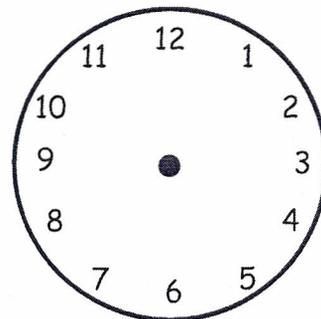
When did Mr. Smith eat lunch?



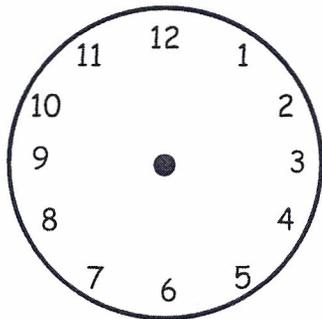
What time does Farmer Smith go out to bale hay?



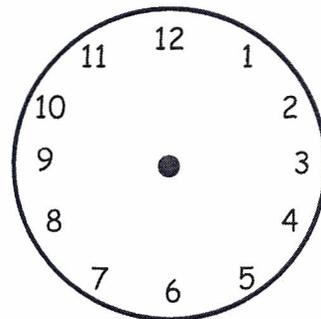
What time does Farmer Smith stop to help Farmer Brown milk?



What time did the Smith family eat dinner?



When did the Smith family go to bed?



Name _____

Have You the Time of Day?

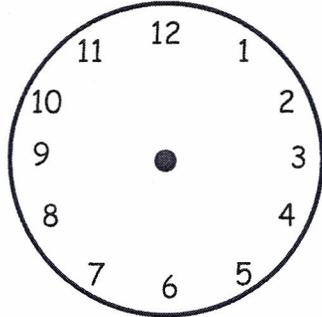
B

Draw the hands on the clocks. Write the times.

Get up.

4:30 a.m.

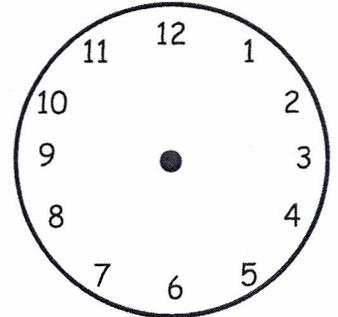
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Milk.

5:30 a.m.

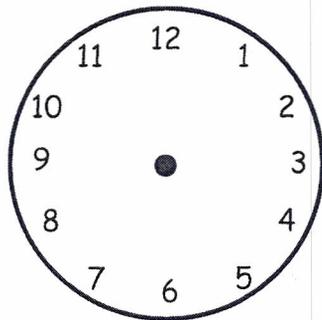
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Meet milk truck.

8:00 a.m.

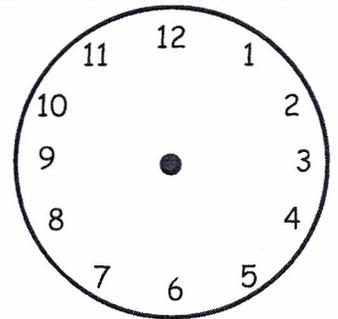
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Eat lunch.

11:00 a.m.

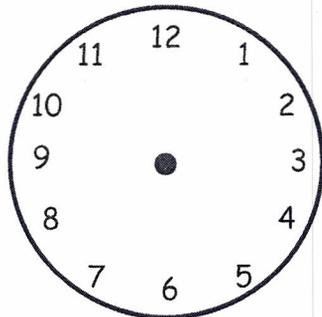
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Bale hay.

2:00 p.m.

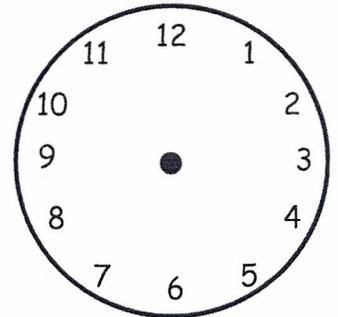
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Milk.

4:30 p.m.

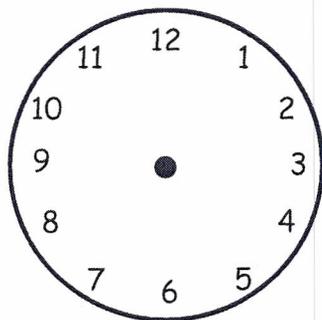
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Eat dinner.

7:00 p.m.

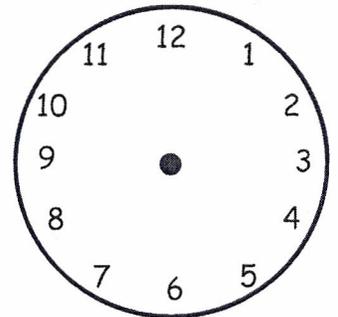
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Go to bed.

9:30 p.m.

____:____



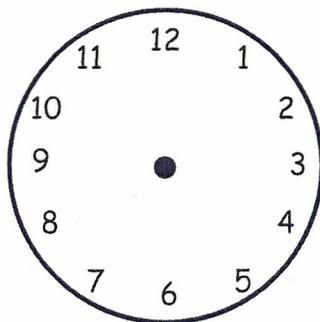
Name _____

Have You the Time of Day C

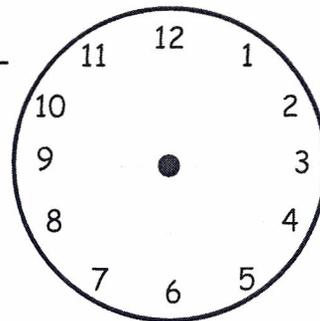
Write the times you do things in your day. Draw the hands on the clocks, then write the times.

Wake up.

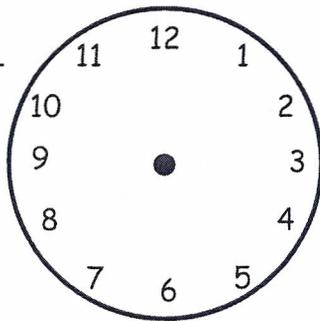
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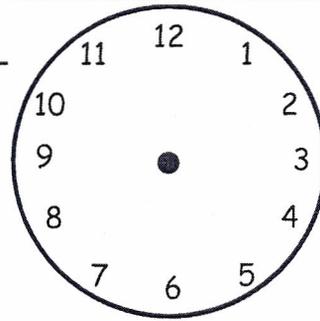
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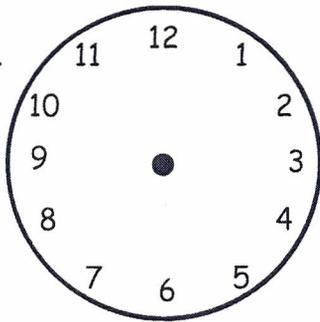
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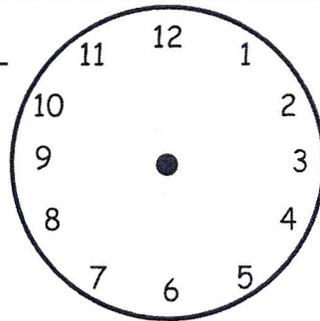
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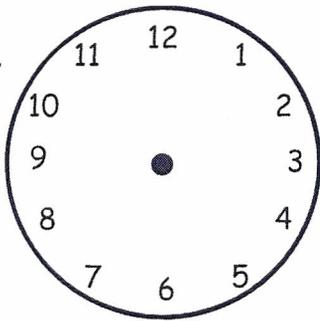
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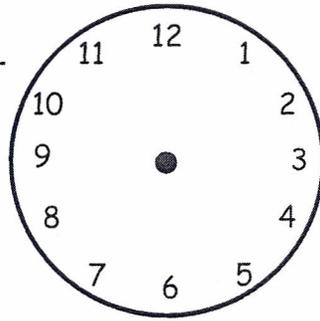
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____ : ____



____ : ____



Have You the Time of Day?

The day begins early on the farm. Farmer Brown is helping out this week at his neighbor's dairy. Farmer Smith's son usually helps with the milking, but he is away for a short vacation. While Farmer Smith's son is away the cows must still be milked.

Farmer Brown will get up at 4:30 a.m. He will be at the dairy and ready to milk by 5:30 a.m. The milk truck will come at 8:00 a.m. They must be finished milking and cleaning by then. After that Mr. Brown takes care of chores on his own farm. At 11:00 a.m., he eats lunch.

Mr. Brown got a new tractor last year. It doesn't have a cab with an air-conditioner, so Mr. Brown cannot work during the heat of the day. At 2:00 p.m., when the sun is hot, Farmer Brown takes a nap.

Farmer Brown will wake up at 4:30 p.m. to go help Farmer Smith milk. He will eat dinner at 7:00 p.m. with his wife, then go to the hay field. The Browns will be in bed early tonight, probably by 9:30 p.m. It has been a long day, and the new day will begin early on the farm.

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Mr. Smith got a new pickup last year. It has a cab with an air-conditioner, so Mr. Smith can work during the heat of the day. At 2:00 p.m., when the sun is hot, Farmer Smith goes out to drive his pickup.

Farmer Smith will stop at 4:30 p.m. to go help Farmer Brown milk. He will eat dinner at 7:00 p.m. with his wife, then go to the hay field. The Smiths will be in bed early tonight, probably by 9:00 p.m. It has been a long day, and the new day will begin early on the farm.

Hit the Trail

Skills: Social Studies, Language Arts, Information Literacy, Instructional Technology

Objective: The student will draw three cattle trails that passed through Indian Territory, using a written description of the trails.

Background

The great cattle drives began in 1866, following the Civil War. Herds of longhorn cattle were driven north from Texas and Mexico to Nebraska, Kansas, the Dakotas, Wyoming and Montana. There the stock could be fattened on open range. The cattle were then driven to railroad towns in Kansas and shipped east to St. Louis, Chicago or Cincinnati. In some cases, cattlemen rented or leased the right-of-way across Indian land or ranches to safeguard their herds. Some Indians allowed passage; others did not.

Between 25 and 30 thousand cowboys took part in the cattle drives. Many really were just boys. Few were grown men. Usually the oldest people on any drive were the trail boss and the cook, whose average ages were 30. The cowboys worked an exhausting schedule—eighteen hours in the saddle, sleeping on the ground, with nothing more than a bed roll for comfort. They endured snake bites, wild river crossings, driving hail storms and deadly stampedes. Many young men were drawn to this lifestyle because they yearned for excitement and wanted to prove to their families that they could make it on their own. For many, working a trail drive brought in more money than they had ever seen in their lives—an average \$30 a month.

The Shawnee Trail, also known to early settlers and merchants as the “Texas Road,” was the first cattle trail in Oklahoma. The trail entered Oklahoma just south of the present-day city of Durant and meandered north, past Muskogee and Fort Gibson, to the Kansas border. The East Shawnee Trail had fine grass and an abundant supply of water, but it was expensive, because the Chickasaw and Choctaw governments charged for its use. As the railroads progressed westward, a western branch of the Shawnee Trail was developed. This route connected the main trail with Wichita, Kansas, after departing the Texas Road at the Boggy Depot stage station.

The most famous trail during this period was the Chisholm Trail. Named for the Cherokee Indian trader Jesse Chisholm, the trail entered Oklahoma from Texas at the Red River Station and proceeded almost due north to Kansas. Most cattlemen preferred the Chisholm Trail or the Great Western Trail because these trails were the shortest. However, the Great Western, or Dodge City Trail was dangerous because of hostile Indians.

The range cattle industry lasted only a short period of time—about 23

P.A.S.S.

GRADE 4

Reading—1.4b; 3.1b;
5.1a,2cd

Writing—2.4d,6

Oral Language—1.1,2,3;
2.1; 3.3

Social Studies—4.1; 5.2
Information Literacy—
1.4; 4.1

**Instructional
Technology**—3.2; 4.1

Materials

colored map pencils

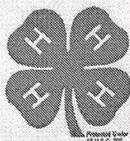
Oklahoma road maps

Ag in Your Community

Invite a cattle broker, rancher or modern day cowboy to speak to the class. Ask the speaker to discuss his or her daily routine and compare it to the practices of yesteryear. Have students brainstorm questions to ask before the speaker arrives.

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Oklahoma Ag in the Classroom
Oklahoma 4-H Programs
205 4-H Youth Development
Oklahoma State University
Stillwater, OK 74078
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years. Settlers began to put up barbed wire fences around their farms, making the movement of cattle difficult, and railroads in Oklahoma provided a safer and less expensive method of moving cattle. By 1889, there was little unfenced range left. Only scattered evidence remains today of these great trails.

Language Arts

1. Ask students what comes to mind when you say the terms “wild west” and “cattle drive.” List all reasonable responses on the chalkboard.
2. Read and discuss background material.
3. Hand out Student Worksheet B.
 - Read the directions with your class.
 - Have students complete the record books.
 - Ask for volunteers to read aloud from the created trail records.
4. Divide students into groups, and assign each a historical trail to research (Trail of Tears, Pony Express, Overland Mail, Santa Fe, Mormon, Oregon, etc.), using a variety of resources.
 - Have the groups share the information they have gathered through maps and multimedia class presentations.
 - Have groups recreate the period dress of the people who followed the trails they have researched.
 - Have groups write short scripts and role-play events that may have taken place on the trail they have researched.
5. Read some poetry created by cowboy poets like Baxter Black, Waddie Mitchell and Oklahoma’s own Fred “Sky” Schivers. Make a list of terms used in the cowboy poetry that are not familiar to students. Assign different students to find the meanings of the terms and share them with the class.
6. Follow the instructions on the reading pages that follow to play “The Real Reader.”

Social Studies

1. Hand out Student Worksheet A.
 - Review the directions with students, and study the map carefully so that students understand all the information presented.
 - Explain to students that the maps only show the parts of the cattle trails passing through Oklahoma. Explain that most of the trails started in Texas and ended in cattle market towns in Kansas, Missouri and Nebraska.
 - Have students label the cattle trails, based on the information provided.
 - Caution students to follow the instructions carefully and not be tempted to simply connect the towns.
2. Lead a discussion in which you ask students the following questions:
 - How many of the towns on the map are located on rivers?
 - Which towns were stage coach stations (Enid Stage Stand, Dover

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Stage Stand)

—Divide students into groups of four or five, and provide each group with an Oklahoma road map.

—Have students compare the cattle trail maps with current road maps by answering the following questions:

Which of the towns on the cattle trail map are towns or cities today?

What, if any, major highways follow the old trails?

3. Have students research the impact of the changes in transportation on the development and growth of towns in Oklahoma.

—Which Oklahoma towns were formed because they were located on rivers? Along the cattle trails? Near railway stations? Interstate highways?

—Have students research to find out why some of the towns survived while others did not?

Extra Reading

Granfield, Linda, *Cowboys*, Ticknor and Fields, 1994.

Johnson, Neil, *Jack Creek Cowboy*, Dial, 1993.

Miller, Robert, *Cowboys*, Silver Burdett, 1991.

Vocabulary

cattle drive—Moving cattle on foot from one place to another.

cattle trail—One of several routes on which cattle were driven for long distances in the US in the late 19th and early 20th centuries.

longhorn cattle—The descendants of cattle with long curving horns which the Spanish explorer Coronado originally brought to the North American continent.

open range—Extensive range area which has not been fenced into pastures.

right-of-way—Privilege to travel across a given piece of land which may be purchased or granted by a landowner.

Name _____

Hit the Trail

Most of the great cattle trails went through Indian Territory on their way from Texas to open range in Kansas, Nebraska, Wyoming, Montana and the Dakotas. From there they were driven to railroad towns in Kansas where they were shipped back East. On the map below, use different colored pencils to draw the routes following by these cattle trails as they passed through what is now Oklahoma.

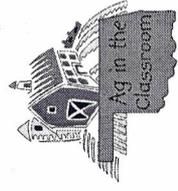
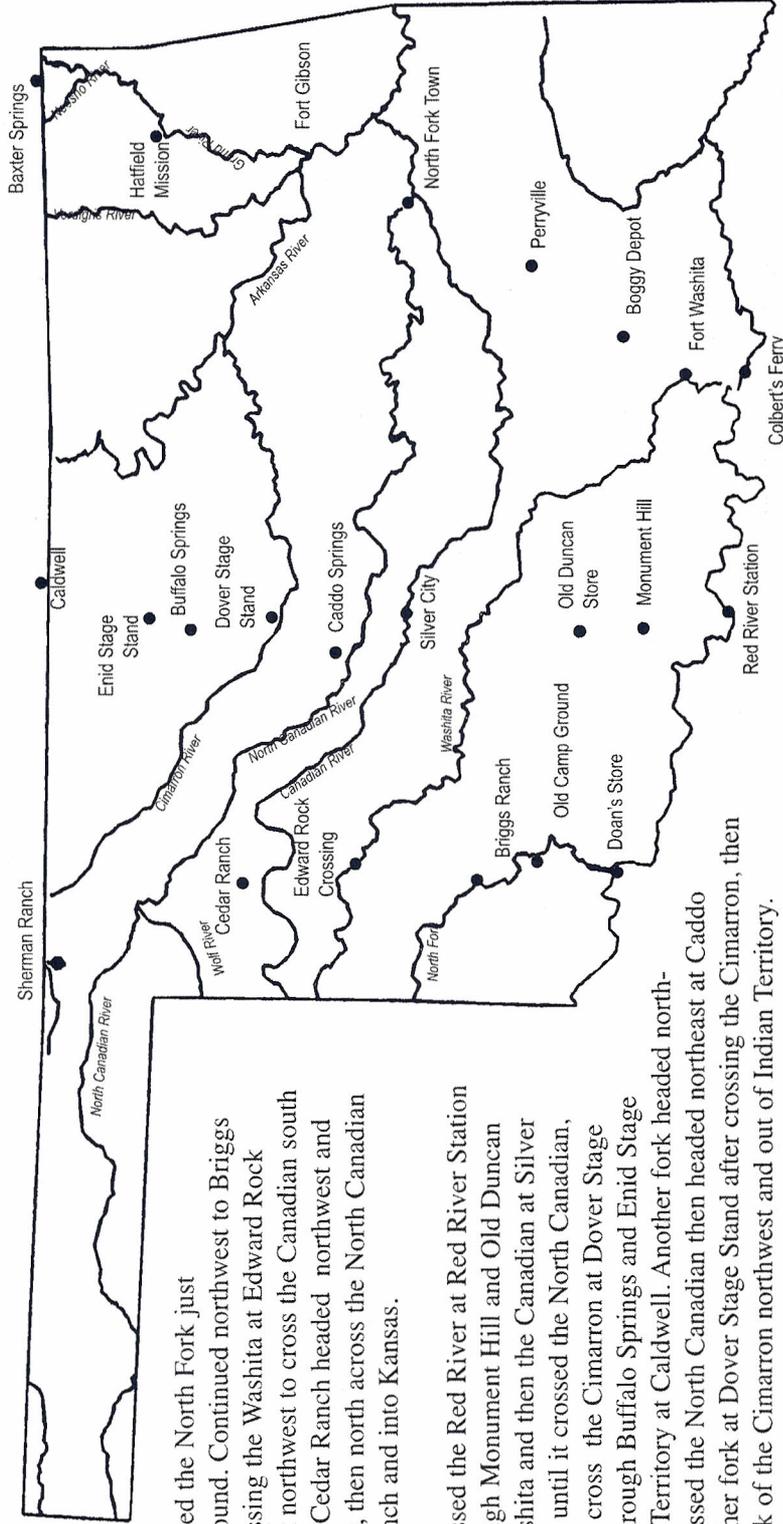
Great Western Trail

—Crossed the Red River on the west side of the North Fork at

Doan's Store and crossed the North Fork just north of Old Camp Ground. Continued northwest to Briggs Ranch, then north, crossing the Washita at Edward Rock Crossing. Headed back northwest to cross the Canadian south of Cedar Ranch. From Cedar Ranch headed northwest and crossed the Wolf River, then north across the North Canadian and on to Sherman Ranch and into Kansas.

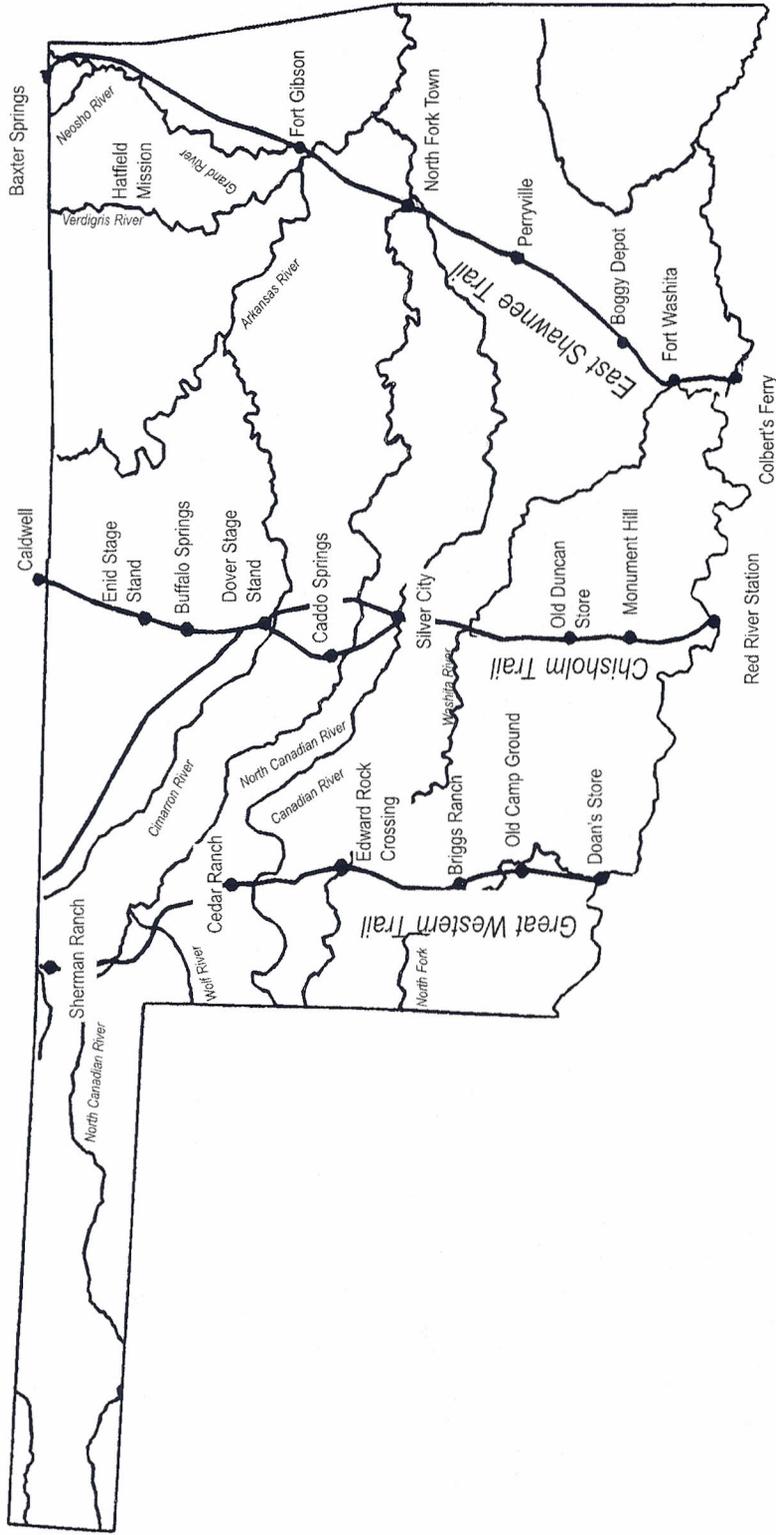
Chisholm Trail—Crossed the Red River at Red River Station and headed north through Monument Hill and Old Duncan Store, crossing the Washita and then the Canadian at Silver City. Headed northeast until it crossed the North Canadian, then back northwest to cross the Cimarron at Dover Stage Stand. Headed north through Buffalo Springs and Enid Stage Stand, then left Indian Territory at Caldwell. Another fork headed northwest at Silver City, crossed the North Canadian then headed northeast at Caddo Springs and met the other fork at Dover Stage Stand after crossing the Cimarron, then followed the north bank of the Cimarron northwest and out of Indian Territory.

East Shawnee Trail—Crossed the Red River at Colbert's Ferry, turning northeast at Fort Washita through Boggy Depot and Perryville. Crossed the Canadian and then the North Canadian at North Fork Town and continued northeast. Crossed the Arkansas at Fort Gibson and followed the east bank of the Grand River before crossing the river at the northeast corner of Indian Territory and heading northwest to Baxter Springs.



Hit the Trail (answers)

Most of the great cattle trails went through Indian Territory on their way from Texas to open range in Kansas, Nebraska, Wyoming, Montana and the Dakotas. From there they were driven to railroad towns in Kansas where they were shipped back East. On the map below, use different colored pencils to draw the routes following by these cattle trails as they passed through what is now Oklahoma.



Name _____

The Real Reader

1. Choose three students to serve as “Real Readers” of the following stories. All three stories are the same, but subtle changes have been made in specific facts in the two marked “not real.”
2. Hand out copies of the “real” story to the class, and instruct students to read it.
3. Have the assigned “Real Readers” come in one at a time and say, “I am the Real Reader.”
4. Divide the class into groups of two or three students, and have each group ask the three “Real Readers” questions to determine which one has the correct story.

THE COWBOY'S LIFE (REAL)

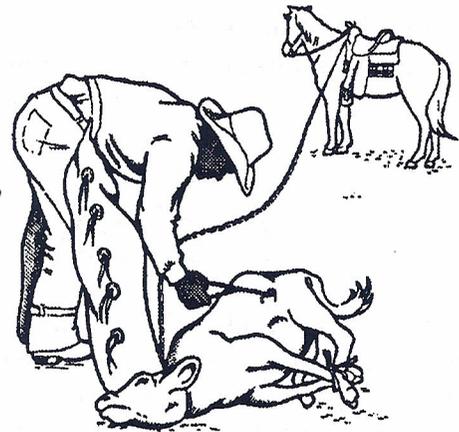
Between 1865 and 1887, millions of longhorn cattle walked from Texas, through Oklahoma, to Kansas and Missouri. They were led by 25-30 thousand cowboys.

Most of the cowboys were teenagers. Usually the oldest people on any drive were the trail boss and the cook, and their average age was 30. The young cowboy worked an exhausting schedule. He spent about 18 hours in the saddle every day for 3-4 months at a time. At night he rolled out his bed roll and slept on the bare ground.

The cowboy had to stop stampedes of nervous cattle. He had to round up strays. He had to outwit cattle rustlers. He had to watch out for poisonous snakes, cross wild rivers and keep riding even in hail storms. Sometimes he went for two or three days without water.

The chuck wagon was the kitchen of the cattle drive. It was also the compass. Before going to sleep, the cook pointed the wagon's hitching pole toward the North Star. The next morning, it showed the cowhands the way to go.

Young men chose to be cowboys because they thought it would be exciting. They wanted to prove to their families they could make it on their own. For many, working a trail drive brought in more money than they had ever seen in their lives—an average \$30 a month.



Name _____

The Real Reader

THE COWBOY'S LIFE (NOT REAL)

Between 1865 and 1887, millions of longhorn cattle walked from Texas, through Oklahoma, to Kansas and Missouri. Twenty-five to thirty thousand cowboys went on the trail drives.

Most of the cowboys were old men. Usually the youngest people on any drive were the trail boss and the cook, and their average age was 30. The cowboy worked an exhausting schedule. He spent about 18 hours in the saddle every day for 3-4 months at a time. At night he rolled out his bedroll and slept on the bare ground.

The cowboy had to stop stampedes of nervous cattle. He had to round up strays. He had to outwit cattle rustlers. He had to watch out for poisonous snakes, cross wild rivers and keep riding, even in hailstorms. Sometimes he went for 2-3 days without water.

The chuck wagon was the kitchen of the cattle drive. It was also the compass. Before going to sleep, the cook pointed the wagon's hitching pole toward the North Star. The next morning, it showed the cowhands which way was north.

Men chose to be cowboys because they thought it would be exciting. They wanted to prove to their families they could make a lot of money. For many, working a trail drive brought in more money than they had ever seen in their lives—an average \$30 a month.



THE COWBOY'S LIFE (NOT REAL)

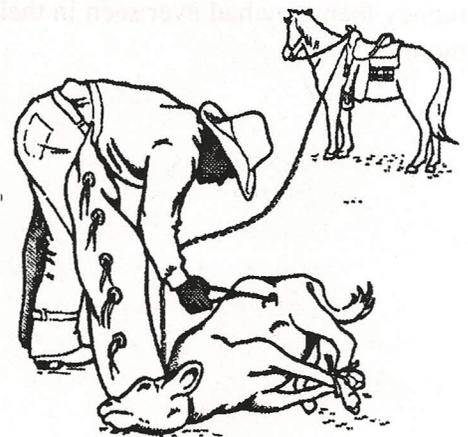
Between 1865 and 1887, millions of longhorn cattle walked from Texas, through Oklahoma, to Kansas and Missouri. Twenty-five to thirty thousand cowboys went on the trail drives.

Most of the cowboys were teenagers. Usually the youngest people on any drive were the trail boss and the cook, and their average age was 30. The young cowboy worked an exhausting schedule. He spent about 12 hours in the saddle every day for 5-6 months at a time. At night he rolled out his bedroll and slept on the bare ground.

The cowboy had to stop stampedes of nervous cattle. He had to round up strays. He had to outwit cattle rustlers. He had to watch out for poisonous snakes, cross wild rivers and keep riding, even in hailstorms. Sometimes he went for 2-3 days without food.

The chuck wagon was the kitchen of the cattle drive. It was also the compass. Before going to sleep, the cook pointed the wagon's hitching pole toward the Big Dipper. The next morning, it showed the cowhands which way to go.

Men chose to be cowboys because they thought it would be exciting. They wanted to prove to their families they could make it on their own. For many, working a trail drive brought in more money than they had ever seen in their lives—an average \$100 a month.



Plant Parts We Eat

Skills: Science, Art, Language Arts, Math

Objective: Students will be introduced to an assortment of vegetables and will learn to locate the parts humans use for food.

Background

Which parts of the plant do we usually eat? The seed? The fruit? When we eat celery, we are eating the stem of the plant. When we eat spinach or lettuce, we are eating the plant's leaves. We eat the fruit of squash, cucumber and tomato plants. When we eat corn or peas we are eating seeds, and when we eat radish or carrot, we are eating roots. Cauliflower and broccoli plants produce flowers we like to eat.

With some plants we eat more than one part. The root of the beet plant is what most people like to eat, but the leaves are also good to eat—in salads, when the leaves are young and tender, and cooked when they get bigger. We eat the root of the onion plant but can also eat the stems, for a milder flavor.

Some of the plants we eat are poisonous—if we eat the wrong part. The leaves of tomato plants are poisonous. For many years people would not even eat tomatoes, because they thought the entire plant was poisonous. Now we know that the fruit of the tomato plant has vitamins that are very good for us. They are also delicious—sliced or chopped fresh into salads, cooked into spaghetti sauce or processed into ketchup.

Science

1. Bring an assortment of root, stem, fruit and seed vegetables to class. (See list on Page 2.) Ask students to identify the vegetables them one by one. Ask if anyone has ever eaten any of the vegetables. Which ones are their favorites? Ask students to sort the veggies in piles according to which part we eat, the root, the seed, the stem or the leaves.
2. Hand out Student Worksheet A. Read the worksheet with your class, and discuss the different plant parts. Help students identify the plant parts we eat.
3. Hand out Student Worksheet B, and have students draw lines from the plants pictured to the correct words, using Student Worksheet A as a guide.
4. Bring samples of some vegetables students might not ordinarily eat,

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P.A.S.S.

Pre-K

Creative Skills—1.2,4
Oral Language—1.1,2
Life Science—3.1,2,3
Visual Art—1.2; 3.2
Math—3.1; 4.1; 5.2

Kindergarten

Science Process—1.1
Life Science—2.1,2
Language Arts—1.1; 6.4
Math—4.1; 5.2

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Oklahoma Ag in the Classroom
Oklahoma 4-H Programs
205 4-H Youth Development
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Stillwater, OK 74078
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Materials Needed

assorted examples of fresh vegetables that are roots, leaves, stems, seeds and flowers

stems: asparagus, celery

flowers: cauliflower, broccoli

root: radish, beet, carrot, parsnip

seeds: peas or beans in pod, corn on the cob

fruit: eggplant, squash, tomatoes, cucumber

leaves: lettuce, cabbage, spinach, mustard greens, beet greens

e.g., turnips, kale, mustard greens, etc., and invite students to taste them and guess which part of the plant they came from.

5. Take a trip to the produce section of a grocery store, and have students identify vegetables and designate which part of the plant is eaten.
6. Early in the fall or spring, help students plant some fast-growing cool weather vegetables (radishes, lettuce, spinach, peas, beets, etc.) to harvest and eat.
7. Write the cafeteria menu on the chalkboard. Look at the vegetable of the day, and have students say whether it is a stem, seed, flower, etc. Write the vegetable of the day on the chalk board for several days, and have students place it in the correct category.

Art

1. Discuss the colors of the plant parts we eat. Have students color the pictures on their worksheets.
2. Have students use an assortment of vegetables to make vegetable prints with tempera paint.
3. Have students create their own plants using common materials such as straws, buttons, strings, balloons, etc. Make sure the fantastical plants have roots, stems, leaves, flowers, fruit and seeds.

Language Arts

1. Read the story *Stone Soup* to your students. As you read the story, have students identify the vegetable ingredients as root, fruit, etc. Bring a crock pot to class, and use assorted plant parts to make your own classroom stone soup.
2. Have students write detailed descriptions of one or more of the vegetables you have brought to class, using all five senses.
3. Provide copies of the reading page, and have students answer the questions at the end.

Math

1. Use a gram scale to weigh each of the vegetables.
2. Have students measure the circumference, length, etc., of the vegetables and create fraction problems using their measurements.
3. Bring vegetable dip, and have students sample the vegetables you have brought. Have students vote on which vegetables they like best—root, stem or flower. Graph the results.
4. Bring grocery ads to class, and have students find the price for one pound of roots, one pound of stems, one pound of fruit and one pound of flowers. Have students create math problems using the prices.

Additional Reading

Brown, Marcia, *Stone Soup*, Aladdin, 1997.

Ehlert, Lois, *Eating the Alphabet: Fruits and Vegetables: From A to Z*, Harcourt, Brace Jovanovich.

Martin, Jacqueline Briggs, and Alec Gillman, *The Green Truck Garden Giveaway: A Neighborhood Story and Almanac*, Simon and Schuster, 1996.

Stevens, Janet, *Tops and Bottoms*, Harcourt Brace, 1995.

Plant Parts We Eat

A

Color the vegetables. Make them look good enough to eat.

You eat our roots.



beets



carrots



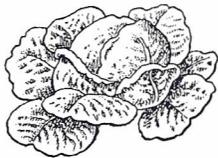
radishes

You eat my stems.



celery

You eat our leaves.



cabbage



lettuce

You eat our fruit.



pepper



tomato

You eat our seeds.



corn



peas

You eat my flowers.



cauliflower



Plant Parts We Eat

B

Match the plants to the parts we eat.



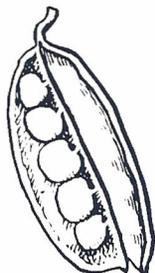
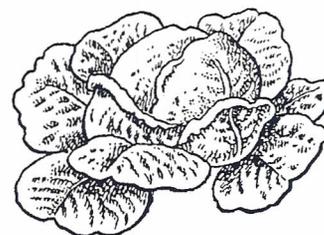
roots

stems

leaves

seeds

flowers

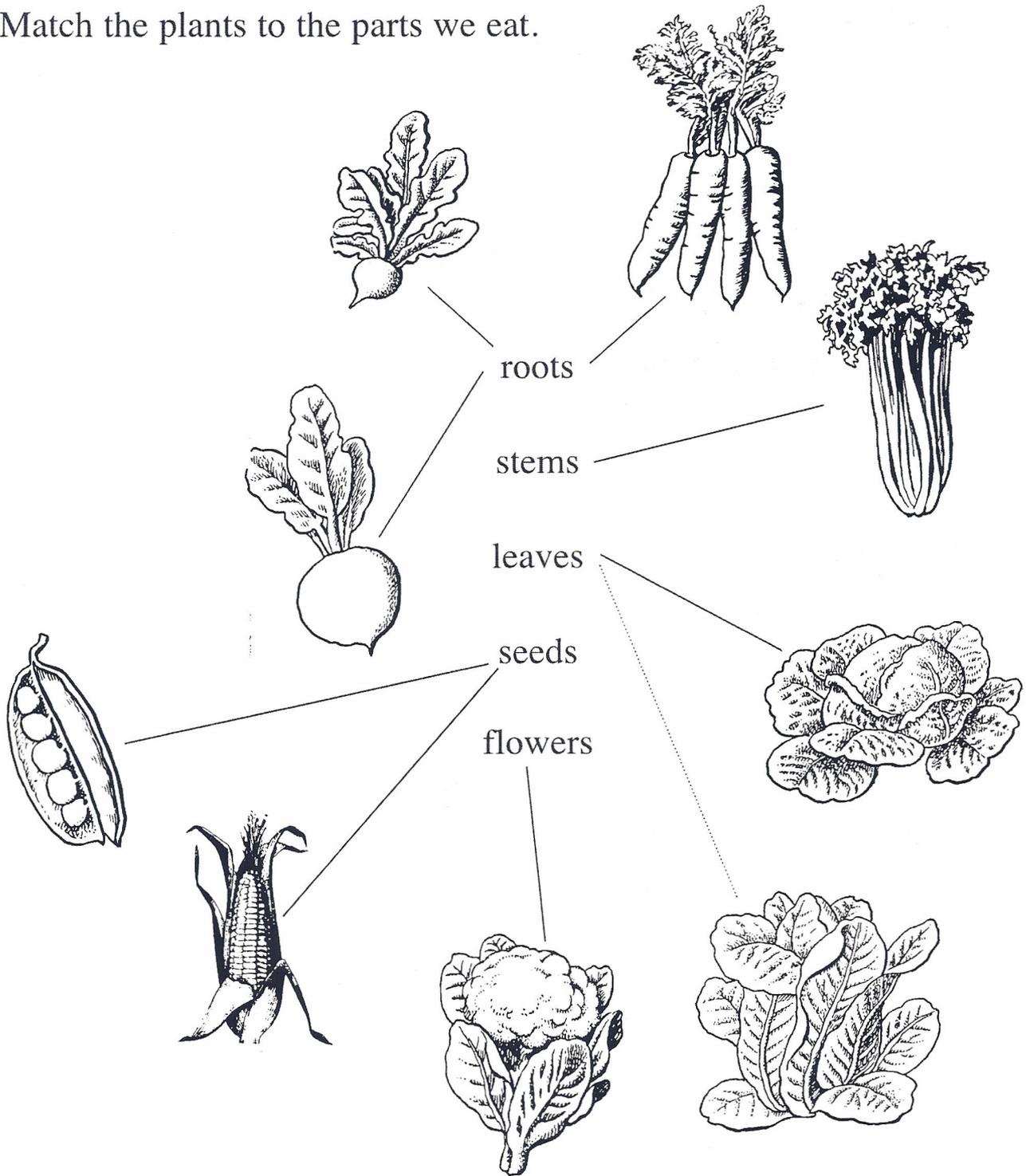


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Plant Parts We Eat (answers)

Match the plants to the parts we eat.



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Plant Parts We Eat



Which parts of a plant do we usually eat? The seed? The fruit? When we eat celery, we are eating the stem of the plant. When we eat spinach or lettuce, we are eating the plant's leaves. We eat the fruit of squash, cucumber and tomato plants. When we eat corn or peas we are eating seeds, and when we eat radish or carrot, we are eating roots. Cauliflower and broccoli plants produce flowers we like to eat.

With some plants we eat more than one part. The root of the beet plant is what most people like to eat, but the leaves are also good to eat. We can eat beet leaves in salads when the leaves are young and tender. When they get bigger, they taste better cooked. We usually eat the root of the onion plant. The stems taste good too, when they are young and tender.

Some of the plants we eat are poisonous if we eat the wrong part. The leaves of tomato plants are poisonous. For many years people would not even eat tomatoes, because they thought the entire plant was poisonous. Now we know the fruit of the tomato plant has vitamins that are very good for us. Tomatoes are also delicious.

1. Which part of the plant do we eat? (Circle all the correct answers.)

- a. stem b. leaves c. fruit d. seeds e. flowers

2. We eat more than one part of which plants? (Circle one.)

- a. spinach and lettuce b. okra and tomatoes
c. beets and onions d. radish and carrot



3. Beet leaves taste better cooked when they get _____ ,

4. The fruit of this plant is delicious, but the leaves are poisonous.

Answers: 1. all are correct; 2. c. beets and onions; 3. older; 4. tomato



Ag Soup

1 pkg pre-cooked beef tips w/gravy or 1 large can chunk chicken
(If using chicken, add 1 can chicken broth)

1 can diced potatoes

1 can corn

1 can sliced carrots

1 can petite-diced tomatoes

1 small can mushroom pieces

1 can pinto beans

Minced onion to taste

Garlic powder to taste

1 small yellow squash, diced

1 pkg REAL bacon bits

Do not drain the vegetables. Add squash and bacon bits about 5 minutes before serving. Will serve 20-25 students an approximately $\frac{1}{2}$ cup serving.

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- Beef has ZIP, zinc, iron and protein.
- Potatoes are tubers.
- Corn is grown in most home gardens. We eat the seed.
- The carrot we eat is a taproot.
- Tomatoes are a vegetable according to the U.S.D.A. We eat the fruit of the tomato.
- Mushroom is a fungus.
- Beans are legumes.
- Onions are bulbs.
- Garlic is a bulb with several cloves.
- Squash is grown on a vine and is a bushy plant.
- Pork has B12, B6, thiamin, niacin, and riboflavin.

Cornbread in a Bag

Ingredients:

- 1 c cornmeal
- 2 T brown sugar
- 1/2 c whole-wheat flour
- 2 eggs, beaten
- 1/2 c all-purpose flour
- 1 c milk
- 4 t baking powder
- 1/4 c oil
- 1/2 t salt
- gallon size plastic bag

For Four Students:

- 1/4 c cornmeal
- 2 t brown sugar
- 1/8 c whole wheat flour
- 1/2 of one egg
- 1/8 c all-purpose flour
- 1/4 c milk
- 1 t baking powder
- 1 T oil
- pinch of salt
- quart size baggie

9- X 9-inch pan

Directions:

1. Combine the dry ingredients in the plastic bag.
2. Close the bag
3. Mix well by working bag with fingers until the ingredients are completely blended.
4. Add the eggs, milk and oil.
5. Mix well by working the bag with fingers.
6. Open the bag and pour the mixture into a 9- X 9-inch pan OR
7. Cut a corner of the bag and squeeze onto griddle for pancakes.

Bake at 400 degrees for 25 minutes in the 9 x 9 inch pan

Cook on 400 degrees on griddle until sides begin to look firm, then turn over for just a little while.

Tortilla in a Bag

Skills: Science (changes in matter, measuring), Language Arts (reading, writing, oral language), Social Studies (geography, world culture, natural resources)

Objective: Students will follow instructions to make tortillas in a bag and learn about breads around the world.

Background

Bread may be the ancestor of all prepared foods. The first bread was made in Neolithic times, nearly 12,000 years ago. It was probably made by crushing grain and mixing it with water. The dough was then baked in the sun or laid on heated stones and covered with hot ashes. The Hopi of New Mexico still make a traditional bread, called "piki bread," by mixing juniper ash with cornmeal and spreading it on a hot stone. Then they lift the paper-thin layer from the stone by rolling it like a jelly roll.

Bread can be unleavened or leavened with yeast. When flour comes in contact with water and remains idle for a period of time, it begins to rise. In modern processes, yeast is added to aid in the rising, but even without yeast, dough will begin to ferment, and the resulting gases will cause the dough to rise. The Egyptians were the first to discover that this process would produce a light, expanded loaf. The Egyptians also invented a closed oven in which to bake the bread.

The ancient Hebrews were in such a hurry to get away from their Egyptian captors that they made their bread without leavening. Today Jewish people celebrate Passover, their escape from the Egyptians, with unleavened bread—matzo. Bread without leavening also represents truth in Jewish tradition, because bread that is unleavened retains the true flavor of the grain from which it is made.

Traditionally, people made bread from whatever grain grew best in the area where they lived. Wheat, rye, corn, barley, millet, kamut and spelt are some of the grains used around the world. Wheat flour is preferred because of its gluten content. Gluten is what gives bread its elastic quality.

Bread is such a powerful food that ancient Egyptian governments controlled its production and distribution as a means of controlling the populace. In France the shortage of bread helped start the French Revolution.

Wheat originated in the Middle East and came to our continent with European settlers. Before that, maize was the grain used for bread-making in the Americas. Maize is what we now call corn, but the word "corn" actually means any kind of grain. For centuries, maize was used to make a flat bread

P.A.S.S

Grade 4

Reading—1.4; 3.2,3; 5.2

Writing—1.5,6; 2

Oral Language—1.1,2,3;
2.1,2,5; 3.1,2

Math—4.4;5.1

Science Process—1.1,2;
3.1,2,3; 4.3,4; 5.2,4

Social Studies—1.1; 2.1,2;
3.2; 4.2

Materials

assorted breads, especially flat breads like tortillas, pita bread and any others you can find in the grocery store

assorted grains and flour made from different kinds of grains

dictionaries

world map

ingredients for tortillas (See recipe—storage bags flour, baking powder*, shortening, hot tap water, salt)

Oklahoma Ag in the Classroom is a program of the Oklahoma Cooperative Extension Service, 4-H Youth Development, in cooperation with the Oklahoma Department of Agriculture, Food and Forestry and the Oklahoma State Department of Education.

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that we know as tortillas. According to Mayan legend, tortillas were invented by a peasant for his hungry king. The first tortillas were made over 12,000 years ago. Today they are also made with wheat.

Among native Mexicans, tortillas are commonly used as eating utensils. In the Old West, cowpokes realized the versatility of tortillas and used tortillas filled with meat or other foods as a convenient way to eat around the campfire.

The average American eats 199 tortillas each year. In 2000, Americans consumed about 85 billion tortillas (not including tortilla chips).

Flour tortillas are a low-fat food and contain iron along with other B vitamins. They have about 115 calories with 2-3 grams of fat per serving. Corn tortillas are a low-fat, low-sodium food and contain calcium, potassium and fiber. An average serving contains about 60 calories with 1 gram of fat.

Science

1. Bring a variety of leavened and unleavened breads to class, and have students compare and contrast. Ask if anyone knows what makes flat (unleavened) breads different from leavened breads. Experiment with leavening. Mix one batch of dough using water, flour and yeast and another batch using flour and water only. Have students hypothesize what will happen with each batch, then observe them over several hours and record their observations.
2. Make Tortillas in a Bag (See recipe on Student Worksheet B).
3. The tortilla recipe included with this lesson calls for baking powder, which provides a small amount of leavening. Have some of your students make the tortillas with leavening and some make them without. Compare texture, flavor, appearance, etc.
4. Substitute whole wheat flour for white flour in the tortilla recipe, and have students compare flavor, texture, appearance, etc.

Social Studies

1. Read and discuss background and ask students to list some of the reasons people in different parts of the world eat different kinds of food. Why do people in different families eat different kinds of foods?
2. Hand out the student worksheet, "Breads Around the World," and have students work in groups or individually to complete it.
3. On a map of the world, have students place map pins showing where the different breads described on the worksheet originated.
4. Have students research to find the origins of the following grains used in bread making: wheat (Middle East), rye (southwestern Asia), corn (Americas), barley (Ethiopia), millet (Africa or Asia), kamut (Egypt or Asia Minor) and spelt (Middle East).

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Language Arts

1. Brainstorm the different kinds of bread, and have students name their favorites. Write the kinds of bread on the chalkboard.
2. Show students some of the different kinds of breads and grains you have brought to class, and ask students to name them if they can.
3. Have students write instructions for making tortillas to share with their parents or another class or have them share the instructions orally.
4. Have students write invitations to parents for a multicultural night, and serve a variety of breads from around the world. Assign students to report on the origins of the different kinds of breads.

Extra Reading

- Albyn, Carole Lisa, *The Multicultural Cookbook for Students*, Oryx, 1993.
- Paulsen, Gary, *The Tortilla Factory*, Harcourt, Brace, 1995.
- Brooks, Felicity, Bond, Shirley, Cook, Janet, Evans, Cheryl, Gower, Teri, Smith, Guy, Lyon, Chris Lyon, *Living Long Ago: Food and Eating*, Usborne (Grades K-3).
- Morris, Ann, and Ken Heyman, *Bread, Bread, Bread*; HarperTrophy; 1993.

Vocabulary

barley— a cereal grass with flowers in dense spikes; also : its seed used especially in foods (as soups and cereals), or as feed for livestock

bread—a baked food made of flour or meal

fiber— mostly indigestible material in food that stimulates the intestine to move its contents along

gluten—a tough elastic protein substance in flour especially from wheat that holds together dough and makes it sticky

kamut—an ancient relative of durum wheat

leavened— raised (dough) with a leaven, or material (as baking powder) used to produce a gas that makes dough or batter rise and become light

maize—Indian corn

rye—a hardy annual cereal grass widely grown for grain and as a cover crop

spelt—a kind of wheat

tortilla—a thin round of unleavened cornmeal or wheat flour bread

unleavened—made without leavening.

wheat—a cereal grain that can be made into a fine white flour used mostly in breads, baked goods (as cakes and crackers), and pasta as (as macaroni or spaghetti) and that is used in animal feeds

yeast—a one-celled fungus that produces alcohol during the process of fermentation; a commercial product containing living yeast cells that is used mostly as a leaven especially in baking bread

Name _____

Tortillas in a Bag

Ingredients (for four tortillas)

1-qt storage bag
1 1/2 c flour
1 t baking powder
3 T shortening
1/2 c hot tap water
1/4 t salt (or to taste)

1. Place flour, salt and baking powder in bag. Close and shake just a few shakes to mix.
2. Add shortening and reclose the bag. Work bag with hands until the mixture looks crumbly and there are no large pieces of shortening visible.
3. Open the bag, and add the hot tap water. knead in the bag until the dough is one large piece and the sides of the bag come clean.
4. Take the dough out of the bag, and divide into four pieces. Put the pieces of dough on the table, and lay the bag on top of them. Let the dough rest for 15 minutes.
5. After resting time, roll or pat the dough into eight- to 10-inch circles. If dough is too sticky you may add a little more flour. Place the circles on a griddle or frying pan heated to medium or medium high, and cook until dark brown spots appear.
Turn and cook on the other side until brown.
6. Fill tortillas with ground beef, beans, salsa, cheese and lettuce to make burritos, if desired, or spread with butter or peanut butter.



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Name _____

Breads Around the World

Write the name of the bread in the space provided next to its description. Use a dictionary if you need one.

pita
wonton
bagel
tortilla
pizza crust
fry bread
croissant
lefse
scones
chapati

1. _____

Asian noodle dough dumplings filled with spiced meat. They are boiled in soup or fried and eaten as a side dish.

2. _____

Corn or wheat dough patted into thin, flat rounds and fried on a hot griddle. They are daily bread in a country on the same continent as the US.

3. _____

Chewy baked rolls with a hole. They are often eaten with cream cheese or other tasty toppings. Polish immigrants brought them to the US.

4. _____

Pocket breads from the Middle East that are round, flat and hollow on the inside.

5. _____

Flaky, tender, crescent-shaped rolls from the land of the Eiffel Tower.

6. _____

Popular Italian pie that began as a leftover created from extra bread dough.

7. _____

Small round breads fried in hot oil. They are made by the thousands for powwows.

8. _____

Flat, chewy rounds of bread served with curries or with peanut butter and honey, cheese and tomato, or just butter. From the country of the Taj Mahal.

9. _____

Like biscuits, but cut into big, thick triangles and baked. Great with tea. From a country on the island of Great Britain.

10. _____

Flat bread made from mashed potatoes, flour and liquid. Fried on a griddle and great with brown sugar and butter rolled inside. Scandinavians created it.

