SECOND GRADE CURRICULUM

Tennessee Foundation for Agriculture in the Classroom
PO Box 313
Columbia, TN 38402

"Plant a Seed in Tennessee" Second Grade Curriculum
June 2010

PREFACE:
The Tennessee Foundation for Agriculture in the Classroom was established to promote "agricultural literacy", or a greater awareness, understanding, and appreciation of agriculture's influence on our lives, to students throughout the state of Tennessee. The "Plant a Seed in Tennessee" Second Grade Curriculum is just one of the educational resource materials that is available to educators through the Foundation. This material is designed to enhance classroom studies and presentations and to supplement the basic school curriculum. In addition to these materials, training workshops for teachers and other programs are available through the Tennessee Agriculture in the Classroom program.

ABOUT THIS MATERIAL:
The Second Grade "Plant a Seed in Tennessee" curriculum was published in 2010. These lessons contain an emphasis on all subject areas.

Each lesson plan has been correlated to meet Tennessee Department of Education Curriculum Standards. Standards correlations were updated in February 2023.

CONTACTS:
If you have any questions regarding this material or any other material or programs sponsored by the Tennessee Foundation for Agriculture in the Classroom, please contact:

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www.agclassroom.org/tn

PLANTS

Science:	2.LS1.1	**English Language Arts:**	
	2.LS1.2		2.FL.F.5
	2.LS1.3		2.RL.KID.1
	2.LS2.1		2.RL.KID.2
	2.LS2.2		2.RL.CS.5
Visual Art:	2.VA.Cr1.B		2.RL.CS.6
	2.VA.Cr2.A		
Health:	2.PCW.1		

BRIEF DESCRIPTION:
Plants are an important part of our everyday lives. We need them to make oxygen. They provide food to eat, fabric to wear, shelter, and even fuel for transportation. In some way, we use every part of the plant.

LEVEL:
Second Grade

SUBJECT:
Science, English Language Arts, Health, Visual Arts

SKILLS:
Describing, Investigating, Comparing, Identifying, Analyzing, Comprehending, Following Directions, Reasoning, Thinking Creatively

OBJECTIVES:
The student will:
- become acquainted with the new food pyramid.
- read books related to the subject matter.
- describe the benefits of eating a variety of nutritious foods.
- investigate plants and plant growth.
- determine which part of the plant we eat.
- identify the difference between a fruit and a vegetable.
- identify parts of a seed.

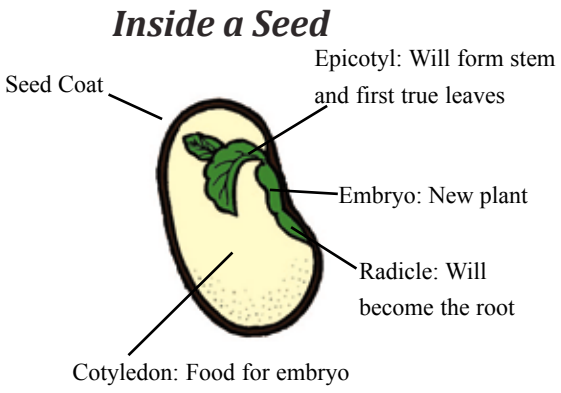
ESTIMATED TEACHING TIME:
60 minutes

Background:

Plants are an important part of our everyday lives. We need them to make oxygen, and they provide food and fabric so that we can have something to eat and something to wear. They also provide shelter and can even be used to make fuel for transportation. In some way, we use every part of the plant. We eat the root of some plants, the leaves of other plants, and we eat the fruit. It is seldom that we eat the entire mature plant. Usually when we eat plants, we call them either fruits or vegetables.

The botanical definition for a fruit is the part of a plant that develops from the flower. The fruit contains the seeds of the plant. It covers and protects the seeds. A fruit may have fleshy or dry tissue. The botanical definition of a vegetable is any edible part of a plant that does not contain the seed. Vegetables are usually the roots, stems, or leaves of the plant. These definitions vary greatly from the cultural definitions of fruits and vegetables. Cultural definitions are based upon whether the edible portion of the plant is sweet (fruit) or not sweet (vegetable).

What we consider vegetables are vegetative parts of plants. For example, lettuce is leaves, carrots and beets are roots, and broccoli and cauliflower are immature flowers. Other plant parts are more difficult to identify. Potatoes are not roots; rather, they are swollen underground stems (tubers). Onion bulbs are composed of modified stems and swollen leaves. The roots (which are not eaten) are attached at the base of the bulb.



Seeds are found inside a ripened ovary or the fruit of plants. Seeds develop when a flower is pollinated. A seed contains a hard outer coat (seed coat).

Inside a seed is a young plant (embryo) surrounded by its food supply (cotyledon). Sometimes we eat the seeds of a plant. Some examples include corn, peas and beans, rice, wheat, and nuts.

Seeds are important. They are the means by which plants reproduce. As a seed sprouts, the parts of the plant develop. The roots, the underground part of the plant, take up water and minerals (nutrients needed for growth). The stem supports the leaves and flowers. The leaves capture energy from the sun for the plant (photosynthesis) and contain tiny holes or pores that allow moisture and air in and out of the plant. Seeds come in a variety of sizes, shapes, and colors.

Source: Utah Agriculture in the Classroom

TOPS AND BOTTOMS

Activity 1 - Getting to Know Vegetables

Materials:
A variety of vegetables (i.e. carrots, radishes, broccoli, celery, corn, etc.)

Procedure:
1. Bring in samples of vegetables.
2. Display the vegetable samples.
3. Have students observe the vegetables.
4. Discuss the differences they observed using their senses. (Differences in shape, texture, color, taste, etc.)

Activity 2 - Read

Read Tops and Bottoms by Janet Stevens (ISBN 0152928510)

Activity 3 - Cause/Effect

Materials:
Cause/Effect worksheet

Procedure:
1. Have students list causes and effects from the story Tops and Bottoms.
2. Have students draw an illustration of one cause/effect.

Activity 4 - Compare/Contrast

Materials:
Compare/Contrast worksheet

Procedure:
1. Provide students with the "Compare/Contrast" worksheet.
2. Using the Venn diagram on the "Compare/Contrast" worksheet, compare Hare and Bear. How are they different? How are they alike?

Activity 5 - Idea Web

Materials:
Idea Web worksheet

Procedure:
1. Read 1/2 to 3/4 of the book.
2. Have students predict the end of the story using the "Idea Web" worksheet.
3. After reading the story, have students create a new ending to the story.

Activity 6 - Food Guide Pyramid

Materials:
Food Guide Pyramid

Procedure:
1. Using the Food Guide Pyramid, discuss what foods are good nutritionally and how often we should eat them.

Activity 7 - Eat Which Part?

Materials:
Eat Which Part? worksheet

Procedure:
1. Discuss the different parts of a vegetable we eat.
2. Have students complete the "Eat Which Part?" worksheet.

Activity 8 - Tops and Bottoms Fold up Garden

Materials:
Drawing paper
Crayons
Markers

Procedure:
1. Discuss the different vegetables grown in a garden.
2. Show the example of a fold up garden provided.
3. Have students fold their paper in half. Then, in half again. Unfold the paper.
4. Have students draw a picture of a vegetable garden in the two center sections. The center fold represents the ground level. Students should draw examples of vegetables that grow above and below the ground (i.e. corn, radish, carrots, broccoli, etc.)

5. After their pictures are complete, have students fold the top and bottom sections of their paper toward the pictures so that the top section covers the plants growing above the ground level and the bottom section covers the plants growing below the ground level.
6. Have students write "Tops" on the outside of the top flap and "Bottoms" on the outside of the bottom flap.

Activity 9 - Salad Preparation

Materials:
Various vegetables from Tops and Bottoms

Procedure:
1. Discuss practices for safe food preparation. Ex. wash hands, clean food preparation area, use clean utensils, wash vegetables, etc.
2. Prepare vegetables to make a salad.
3. Make salad, add dressing, serve to students.

Activity 10 - Mural of Vegetables

Materials:
Art supplies

Procedure:
1. Work with students to make a mural of vegetables.

Activity 11 - Cookbook

Materials:
Healthy recipes brought in from home

Procedure:
1. Make a class cookbook of healthy recipes that students have brought from home.

Activity 12 - Colorful Fruits and Vegetables

Materials:
Color Wheel worksheet
Food-related magazines (to cut out pictures of fruits and vegetables)

Procedure:
1. Provide students with magazines to cut out pictures of fruits and vegetables.
2. Discuss the variety of colors of fruits and vegetables and the health benefits of eating a variety of colors.
3. Glue the pictures into the appropriate area of the color wheel on the worksheet.

Activity 13 - Burger Snacks

Materials:
2 vanilla wafers
1 chocolate cookie
Red icing
Yellow icing
Green coconut

Procedure:

1. The vanilla wafers represent the hamburger buns.
2. The red and yellow icing represents ketchup and mustard. Simply put icing on each vanilla wafer.
3. Put the chocolate cookie on next in between the hamburger buns that now have icing on them. The chocolate cookie represents the hamburger.
4. Add green food coloring to coconut to represent lettuce. Add "lettuce" to the burger.

Activity 14 - Carrot Necklace

Materials:
Carrots
Knife
Heavy duty needle
Dental floss

Procedure:

1. Wash carrots and cut into 1/4-inch round slices.
2. Use the disks for mathematical demonstrations, such as counting, addition, subtraction, etc.
3. Thread a heavy duty needle with dental floss. Push the needle through the core of the slices.
4. Once you have strung several slices, tie the ends together to make a necklace.
5. Lay it on paper in a dark, well-ventilated place, making sure the slices don't touch each other.
6. As they dry, they turn into wrinkled beads. Drying takes a couple of weeks.
7. Have students write or draw a comparison of the necklaces before and after drying.

Activity 15 - Seed Match

Materials (per student or pair of students):
Peanuts (in the shell)
Small squash
Apple
Bell pepper
Strawberry
Kiwi
Wheat
Edamame pod, edible soybean, (found most often in the freezer section at local grocers). Do not cut them open until the students have made their preliminary seed predictions.
Paper towel
Paper plate
Seed Match worksheet

Procedure:

1. Give each student or pair of students a copy of "The Seed Match" worksheet.
2. Have them examine their fruits and grain. Ask them to predict what the seeds will look like on the inside. Some students will recognize that the strawberry and the wheat have seeds that are visible from the outside.
3. Have students color the pictures of the fruits and grain and draw a picture of the appearance of their "prediction" in the top right hand corner of the box.
4. Have them guess how many seeds are on the inside/outside of the fruit or grain. This question can be simplified for younger students by asking if there will be many or few seeds, or greater than or less than a certain number. The prediction number can be written either in the square or on a separate sheet of paper.
5. When the predictions are complete, have the students remove the seeds. Allow them to examine their findings and determine if their predictions were accurate. The seeds from their findings should be placed on the paper plate and labeled so that they can be dried.
6. When the seeds are dry, instruct students to paste them in the box of the fruit that matches the correct seed (The activity can be completed in one day if the instructor has already collected and dried enough seeds to be glued on the worksheet in advance).

Activity 16 - Where Do They Grow?

Materials:

Where Do They Grow worksheet
Crayons/Markers
Scissors
Glue

Procedure:

1. Have students color the crops on the "Where Do They Grow" worksheet.
2. Have them cut out the crops then glue them where they grow using the farmer's soil line as the marker for above and below the ground.

Activity 17 - Fruits and Vegetables

Materials:

Fruits and Vegetables pictures included on pages 21-23
Fruits and Vegetables worksheet

Procedure:

1. Have students color the pictures of the fruits and vegetables and separate them by cutting along the dotted lines.
2. Using the botanical definition of fruit and vegetable, (Fruit - the part of the plant that develops from the flower. The fruit contains the seed. Vegetable - any edible part of a plant that does not contain the seed.) classify each as a fruit or vegetable by gluing the pictures in the correct column on the "Fruits and Vegetables" worksheet.

Additional Activity - Grow a Garden

Information on gardens begins on page 24.

Name _____

Cause/Effect

List four cause/effect from the story Tops and Bottoms. Then, draw a picture of one of your cause/effect.

Cause	Effect

Draw a picture of your cause/effect.

Name Possible Cause/Effect

Cause/Effect

List four cause/effect from the story Tops and Bottoms. Then, draw a picture of one of your cause/effect.

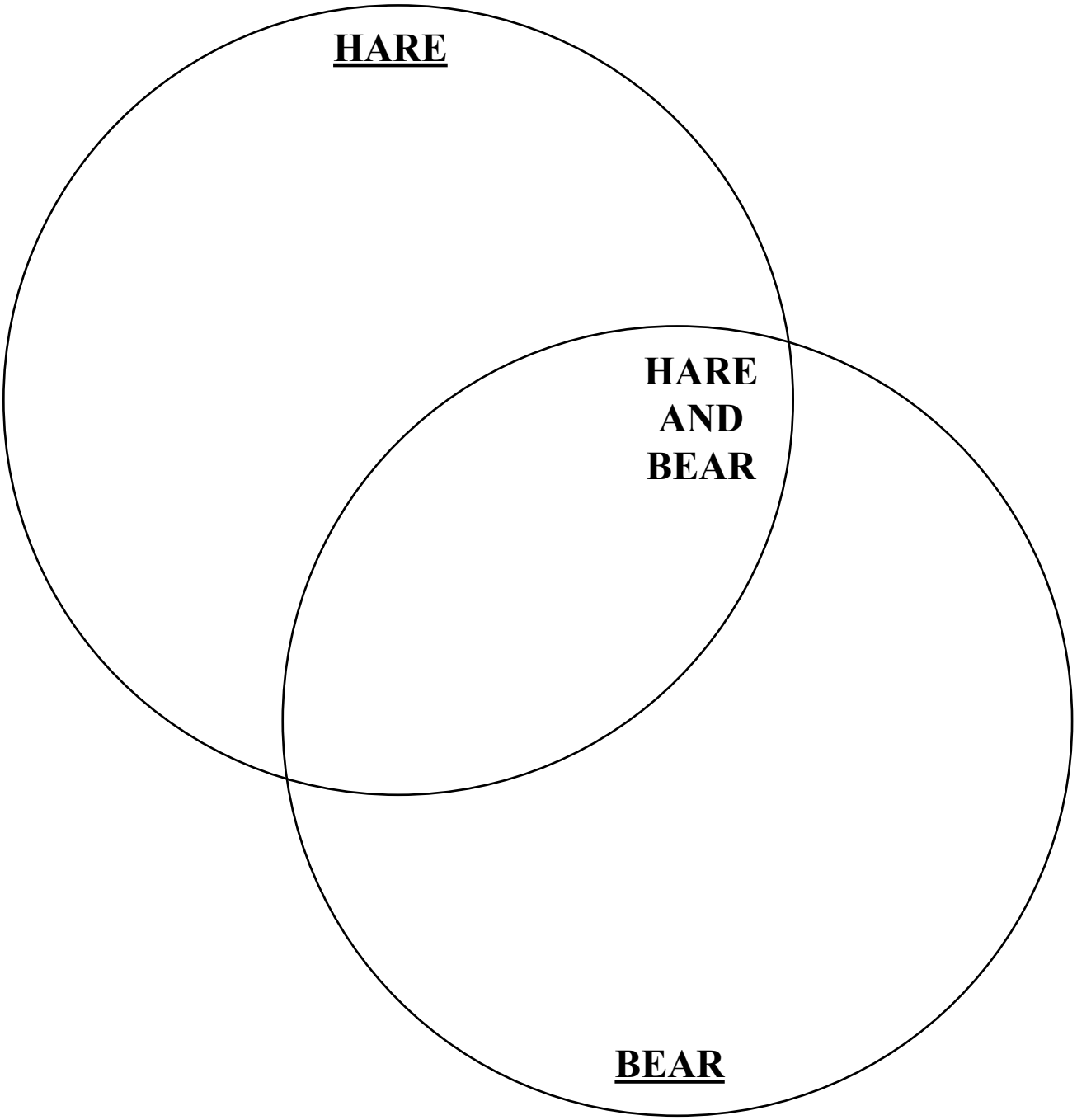
Cause	Effect
Hare had lost a risky bet with a tortoise.	Hare had to sell all of his land to Bear to pay off the debt.
Bear agreed to take the top part of the harvest, and Hare agreed to take the bottom part of the harvest.	Bear was outsmarted because Hare planted vegetables that grew underground.

Draw a picture of your cause/effect.

Name _____

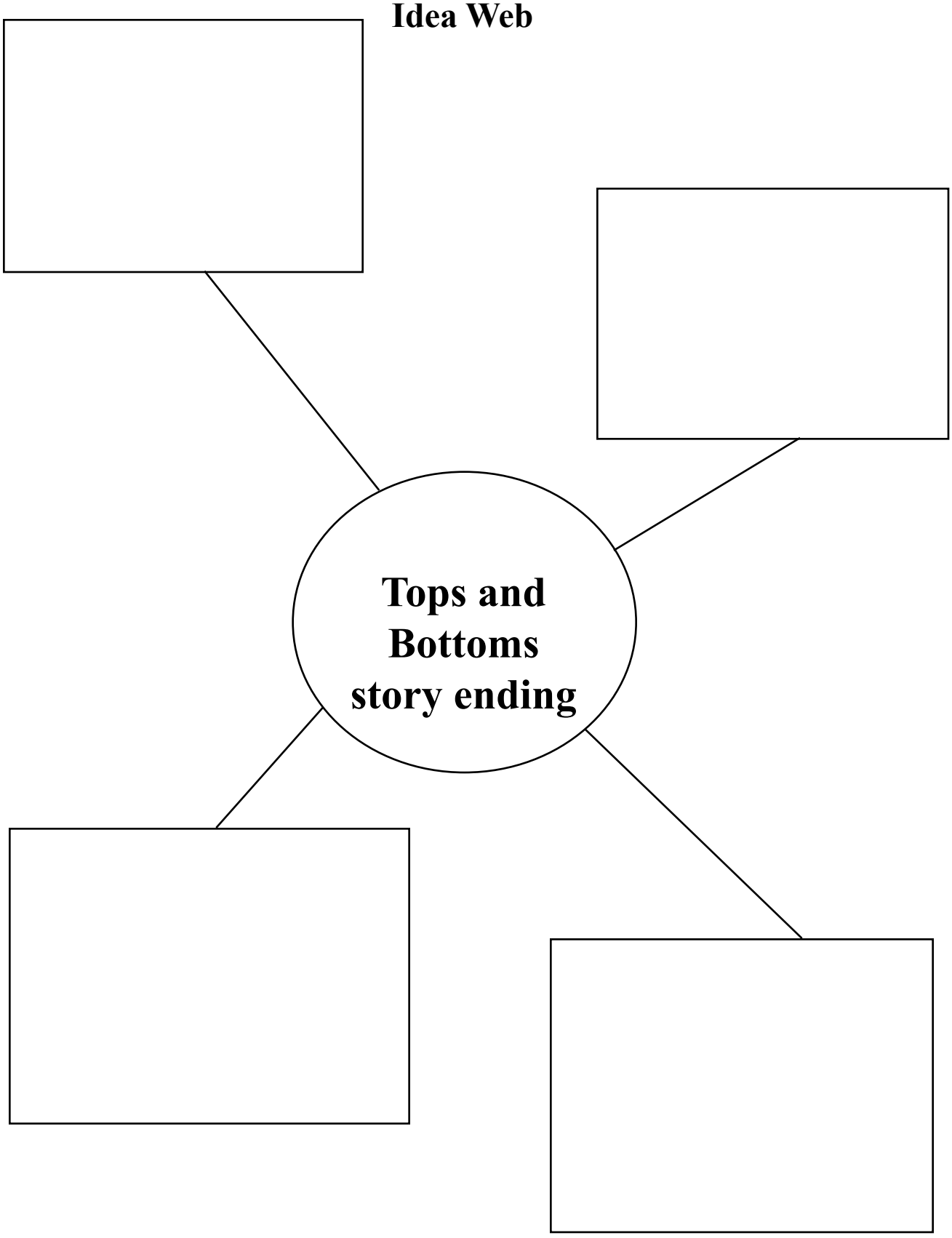
COMPARE/CONTRAST

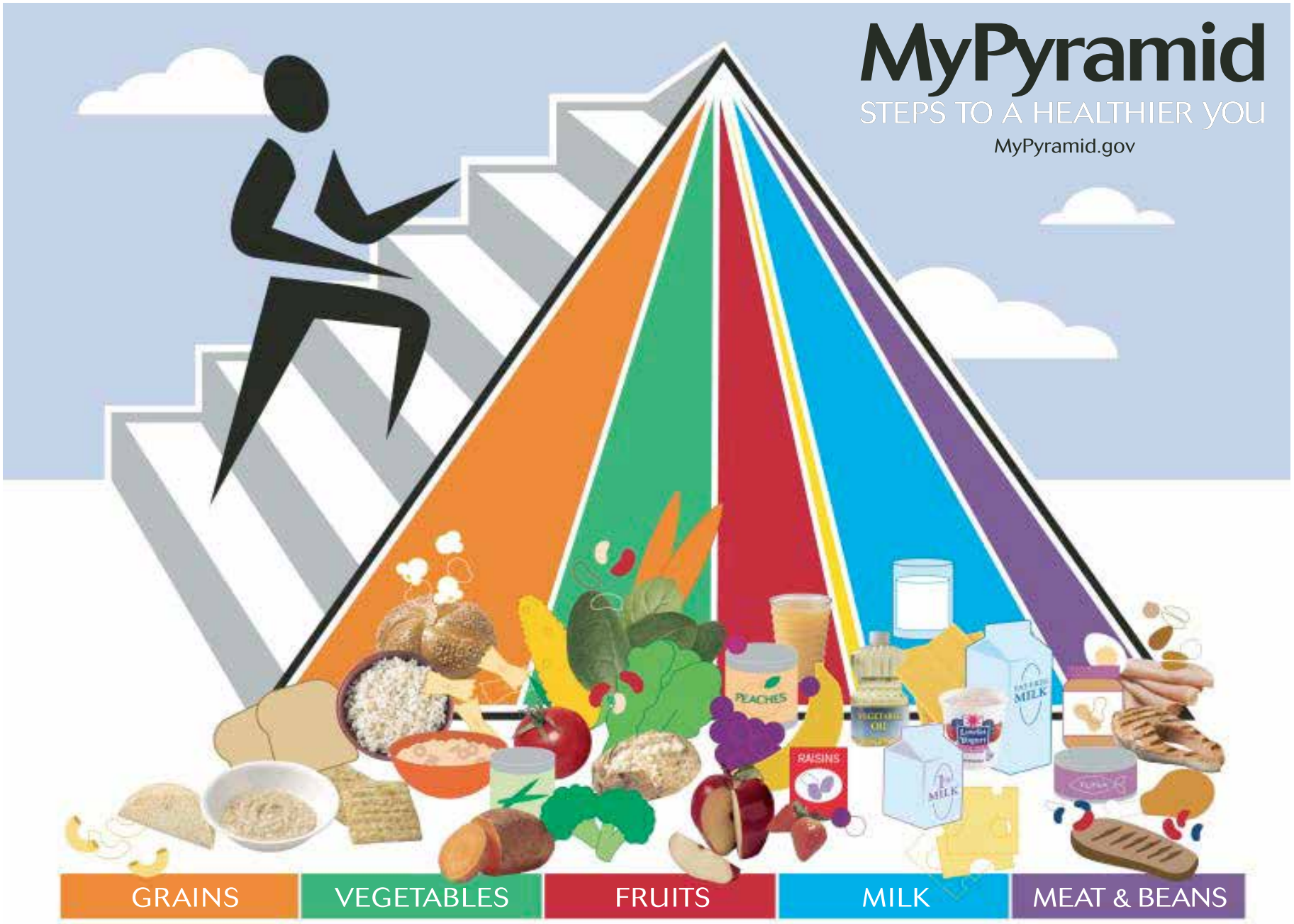
How are Hare and Bear different? How are Hare and Bear alike? Use the diagram below to record your comparisons.



Name _____

Idea Web





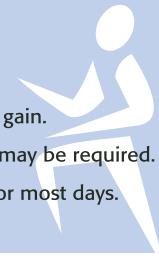
Source: www.mypyramid.gov

GRAINS Make half your grains whole	VEGETABLES Vary your veggies	FRUITS Focus on fruits	MILK Get your calcium-rich foods	MEAT & BEANS Go lean with protein
Eat at least 3 oz. of whole-grain cereals, breads, crackers, rice, or pasta every day 1 oz. is about 1 slice of bread, about 1 cup of breakfast cereal, or ½ cup of cooked rice, cereal, or pasta	Eat more dark-green veggies like broccoli, spinach, and other dark leafy greens Eat more orange vegetables like carrots and sweetpotatoes Eat more dry beans and peas like pinto beans, kidney beans, and lentils	Eat a variety of fruit Choose fresh, frozen, canned, or dried fruit Go easy on fruit juices	Go low-fat or fat-free when you choose milk, yogurt, and other milk products If you don't or can't consume milk, choose lactose-free products or other calcium sources such as fortified foods and beverages	Choose low-fat or lean meats and poultry Bake it, broil it, or grill it Vary your protein routine — choose more fish, beans, peas, nuts, and seeds
Eat 6 oz. every day	Eat 2½ cups every day	Eat 2 cups every day	Get 3 cups every day; for kids aged 2 to 8, it's 2	Eat 5½ oz. every day

For a 2,000-calorie diet, you need the amounts below from each food group. To find the amounts that are right for you, go to MyPyramid.gov.

Find your balance between food and physical activity

- Be sure to stay within your daily calorie needs.
- Be physically active for at least 30 minutes most days of the week.
- About 60 minutes a day of physical activity may be needed to prevent weight gain.
- For sustaining weight loss, at least 60 to 90 minutes a day of physical activity may be required.
- Children and teenagers should be physically active for 60 minutes every day, or most days.



Know the limits on fats, sugars, and salt (sodium)

- Make most of your fat sources from fish, nuts, and vegetable oils.
- Limit solid fats like butter, margarine, shortening, and lard, as well as foods that contain these.
- Check the Nutrition Facts label to keep saturated fats, *trans* fats, and sodium low.
- Choose food and beverages low in added sugars. Added sugars contribute calories with few, if any, nutrients.

MyPyramid.gov
STEPS TO A HEALTHIER YOU

U.S. Department of Agriculture
Center for Nutrition Policy and Promotion
April 2005
CNPP-15

USDA

Source: www.mypyramid.gov

Name _____

Eat Which Part?

Mark which part of the vegetable you eat.

	Radishes	Beets	Corn	Lettuce	Celery	Onions	Broccoli
You eat the top							
You eat the middle							
You eat the bottom							

Name Answer Key

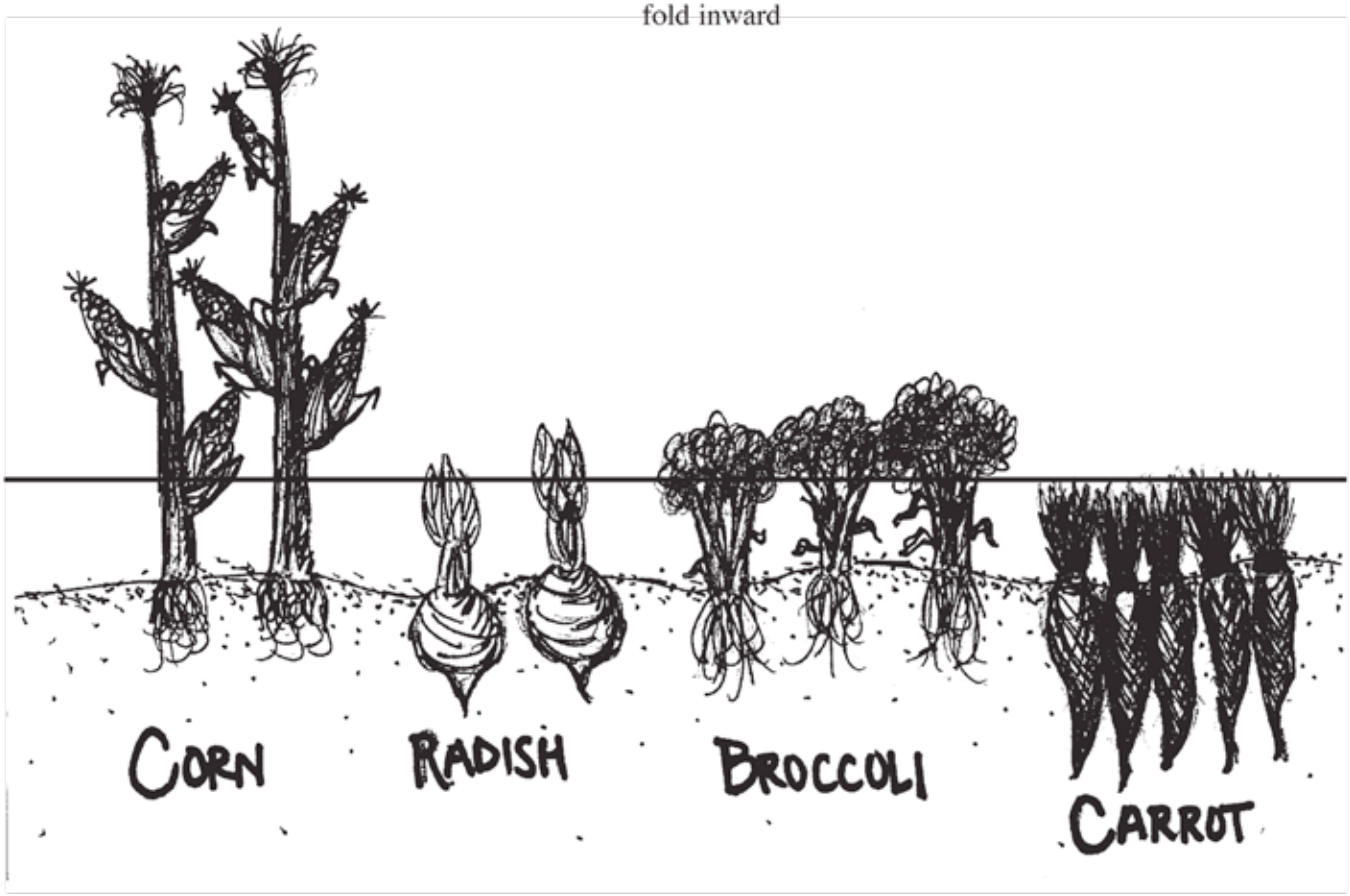
Eat Which Part?

Mark which part of the vegetable you eat.

	Radishes	Beets	Corn	Lettuce	Celery	Onions	Broccoli
You eat the top			X (Seeds)	X (Leaves)			X (Flowers)
You eat the middle					X (Stems)		
You eat the bottom	X (Roots)	X (Roots)				X (Roots)	

Tops and Bottoms

fold inward

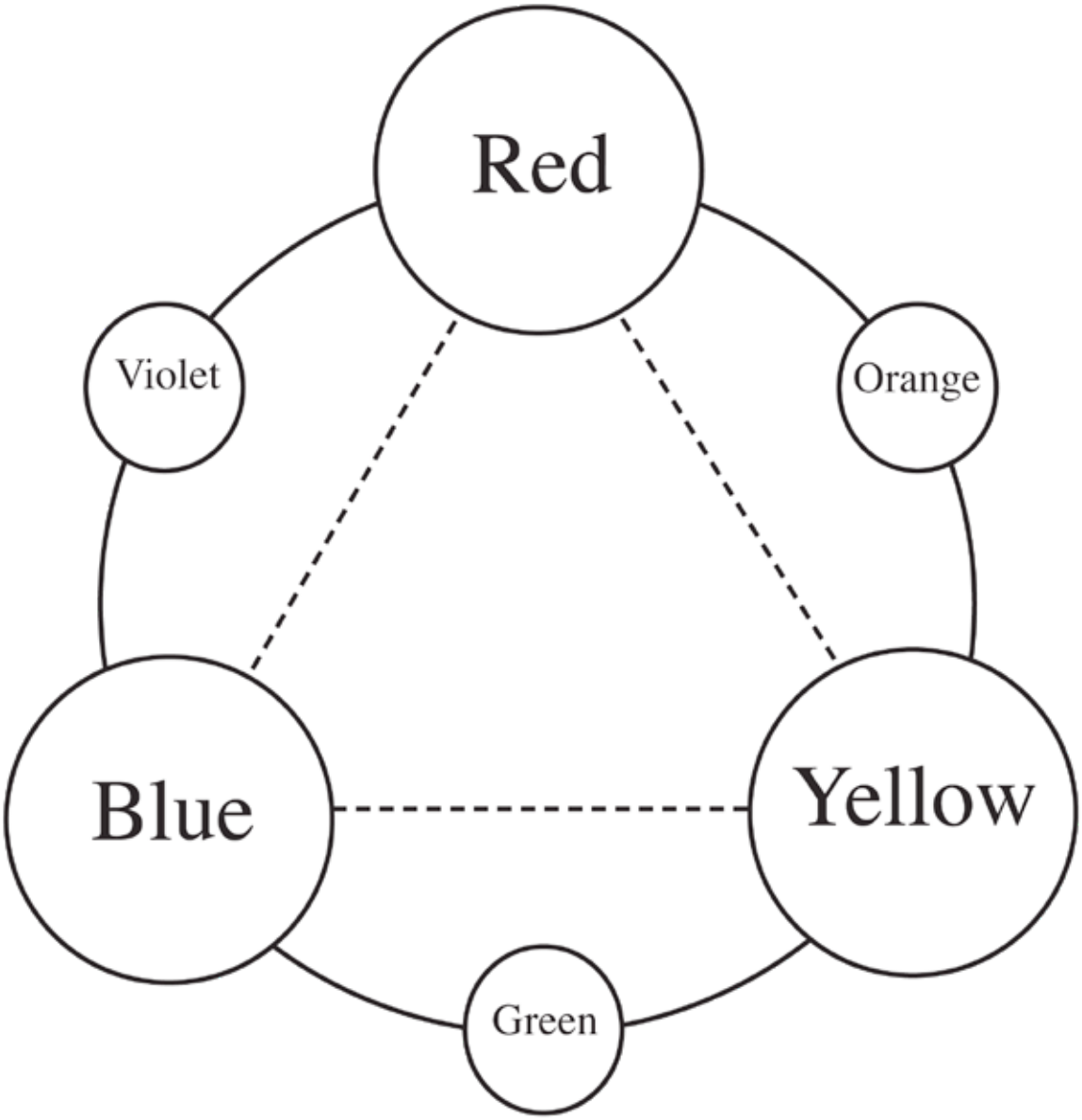


fold inward

Name_____

COLOR WHEEL

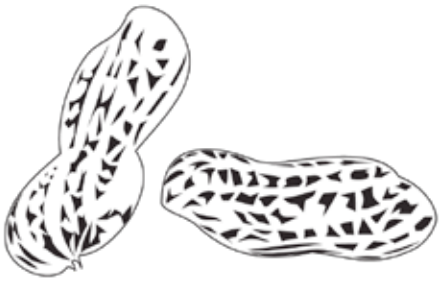
Cut out colored pictures of fruits and vegetables from magazines. Paste the pictures in the correct circles on the color wheel.



Name _____

The Seed Match

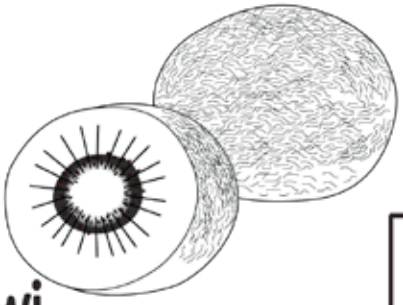
Use the chart to match the correct seed with the picture of the plant which produces that seed.



Peanut

Strawberry

Squash

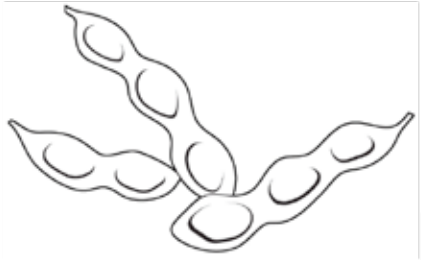


Kiwi

Apple

Wheat

Bell Pepper



Edamame

Name _____

Where Do They Grow?

Cut out the crops below and paste them where they grow using the farmer's soil line. Draw your favorite fruit or vegetable in the blank space and paste it where it belongs.

Cut Here ⇨

Onion

Peanut

Draw your favorite fruit or vegetable here

Potato

Celery

Lettuce

Name Answer Key

Where Do They Grow?

Cut out the crops below and paste them where they grow using the farmer's soil line. Draw your favorite fruit or vegetable in the blank space and paste it where it belongs.

Onion

Peanut

Potato

Celery

Lettuce

Cut Here ⇨

Onion

Peanut

Draw your favorite fruit or vegetable here

Potato

Celery

Lettuce

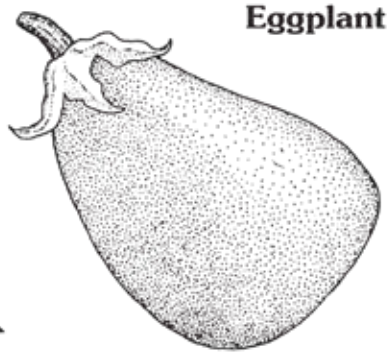
Name _____

Fruits and Vegetables

Glue the pictures of fruits and vegetables in the correct column.

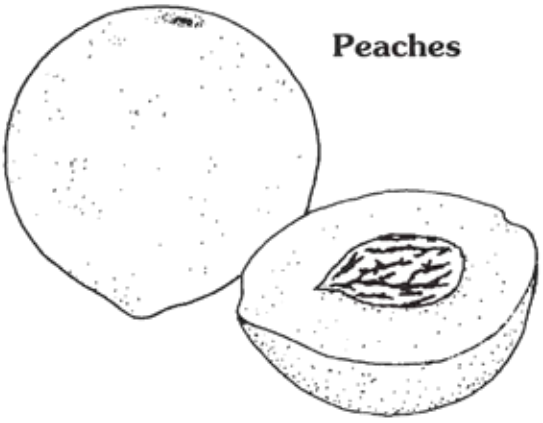
Fruits	Vegetables

FRUITS

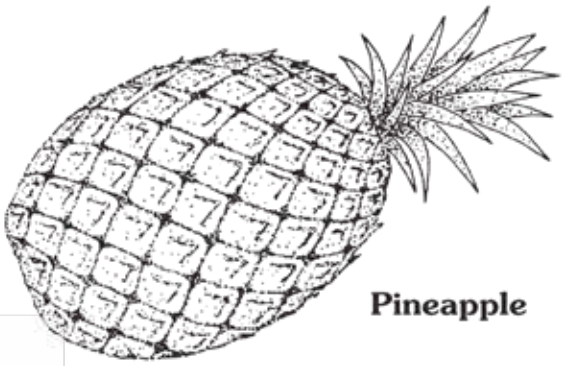


Eggplant

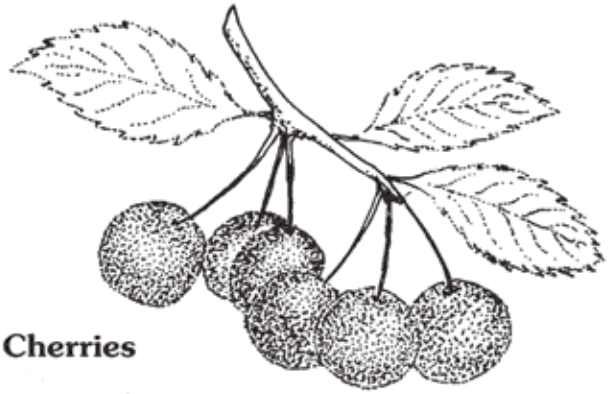
Strawberries



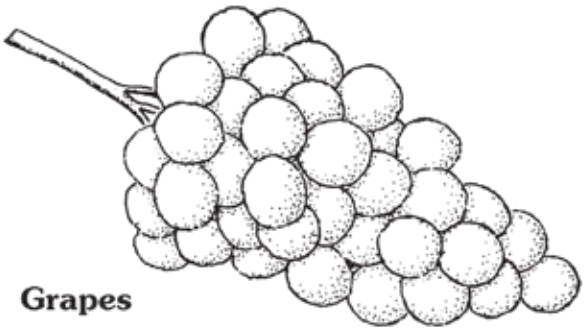
Peaches



Pineapple

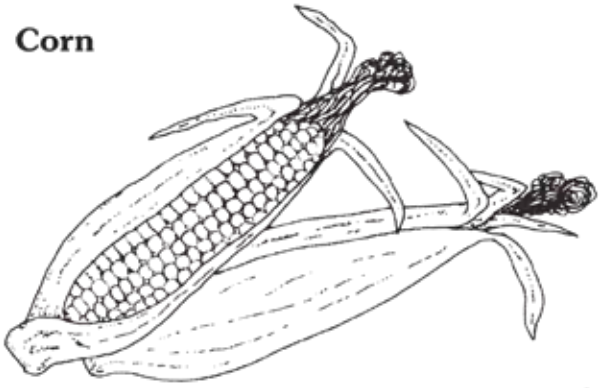


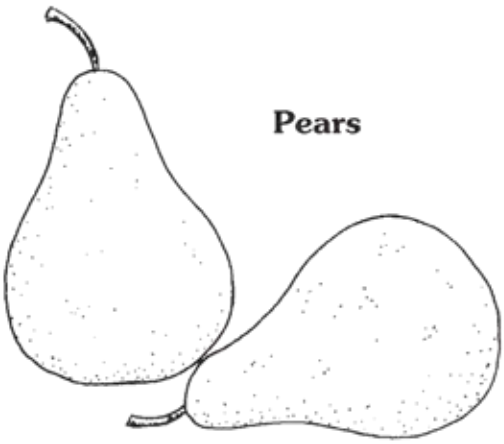
Cherries



Grapes

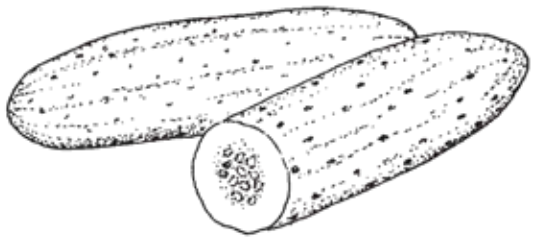
Corn





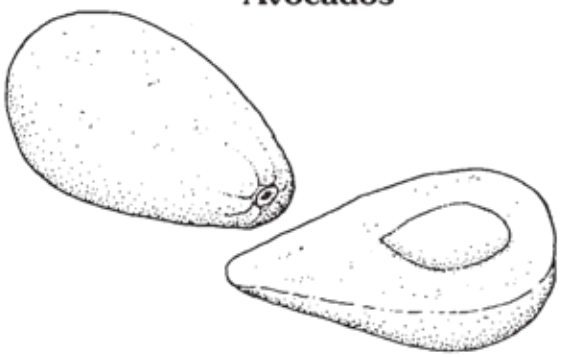
Pears

FRUITS

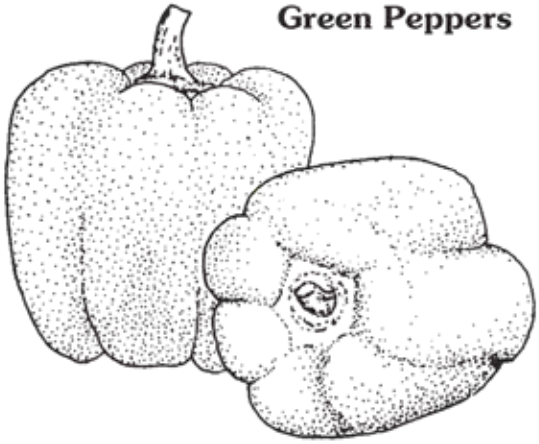


Cucumbers

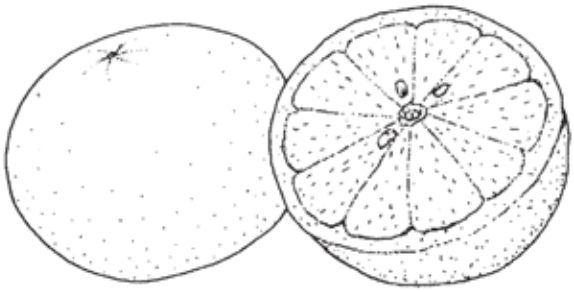
Avocados



Green Peppers

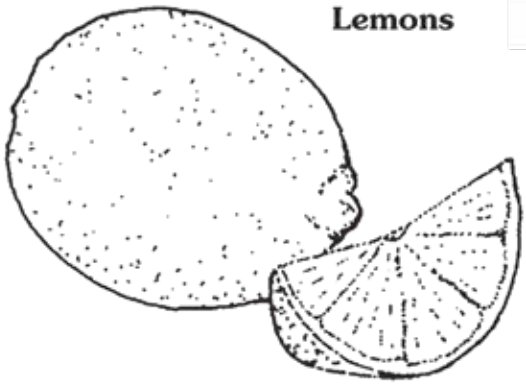


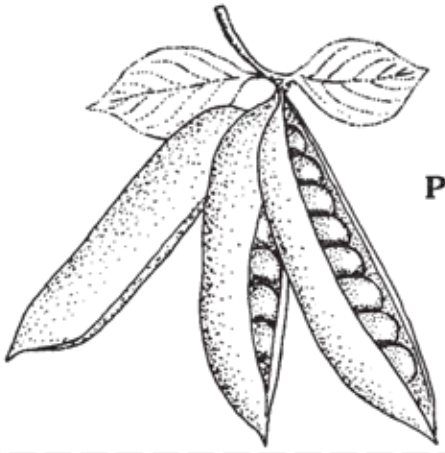
Oranges



Almonds

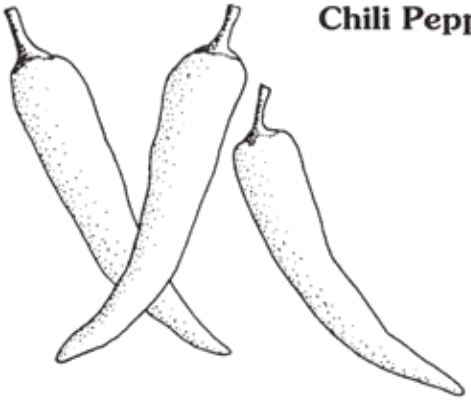
Lemons





Peas

Chili Peppers



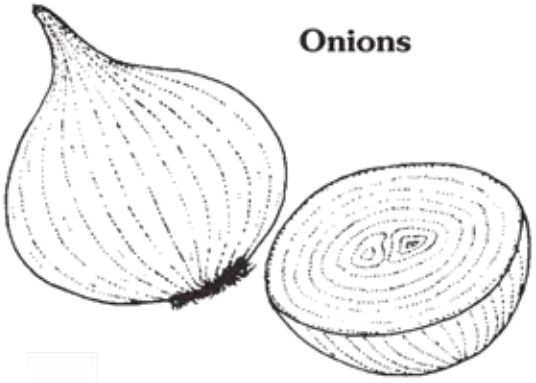
VEGETABLES

Broccoli

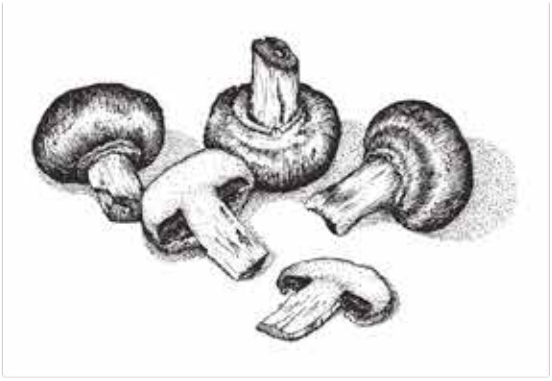
Spinach

Lettuce

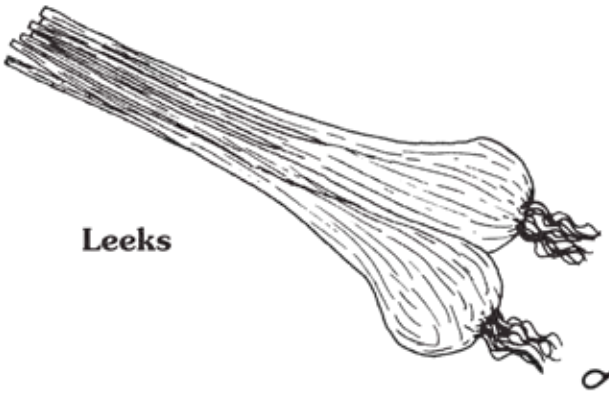
Onions



Mushrooms

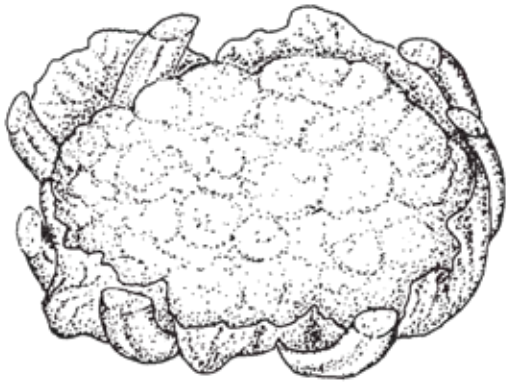


Potatoes



Leeks

Cauliflower



All subject areas can be integrated into school gardens. Gardens are also an excellent hands-on learning tool for students. The Tennessee Foundation for Agriculture in the Classroom has an Outdoor Classroom Garden Grant program to help schools who want to start and continue a school garden.

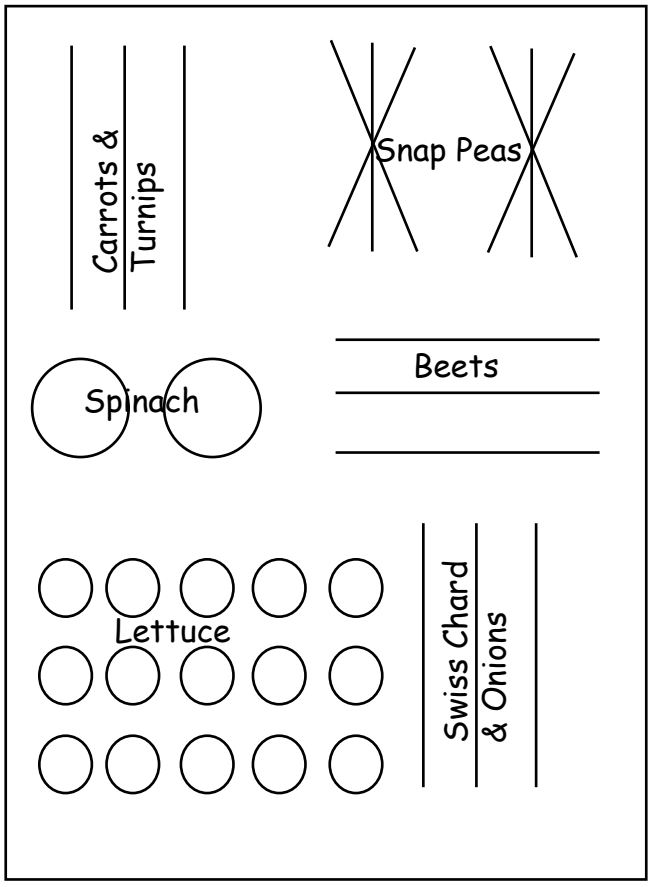
Raised Garden Beds

A great garden literally starts from the ground up. Instead of trying to improve difficult school soil, just grow vegetables in topsoil.

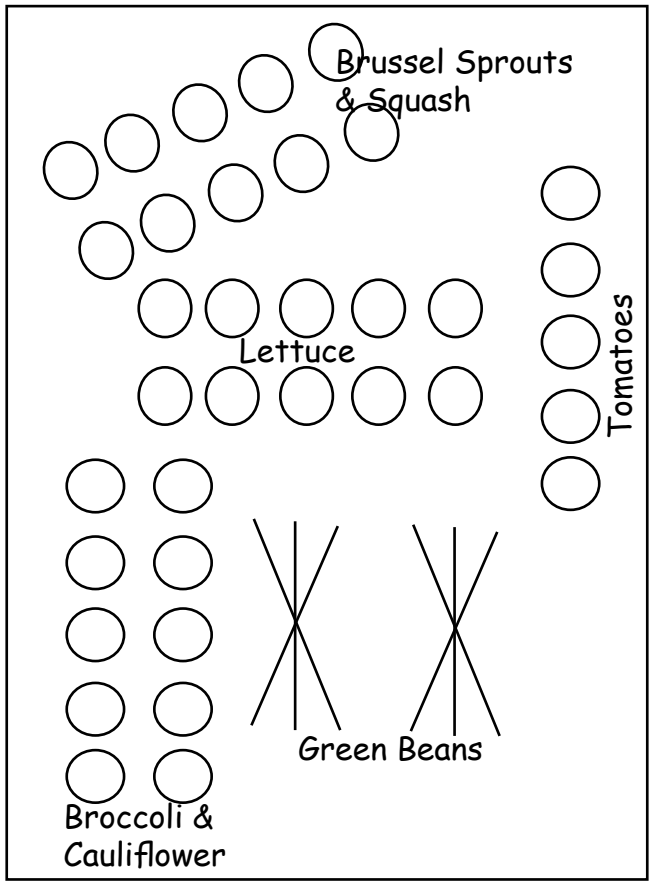
Procedure to building a raised garden bed:

1. Build raised beds using railroad ties or other boundary setting instrument.
2. Make a simple frame no wider than what the students can reach across (3'-4').
3. Stack rails up to waist high. As an alternative cinder block or landscape blocks will work.
4. Add good soil. Fill beds with topsoil or black dirt. Bagged soil is slightly more expensive than bulk soil, but hauling bags rather than wheelbarrows can be more practical, especially for smaller beds. NOTE: When you make raised beds, be sure the space between them are wide enough for a lawnmower to get through between the beds.

Spring Garden Sample



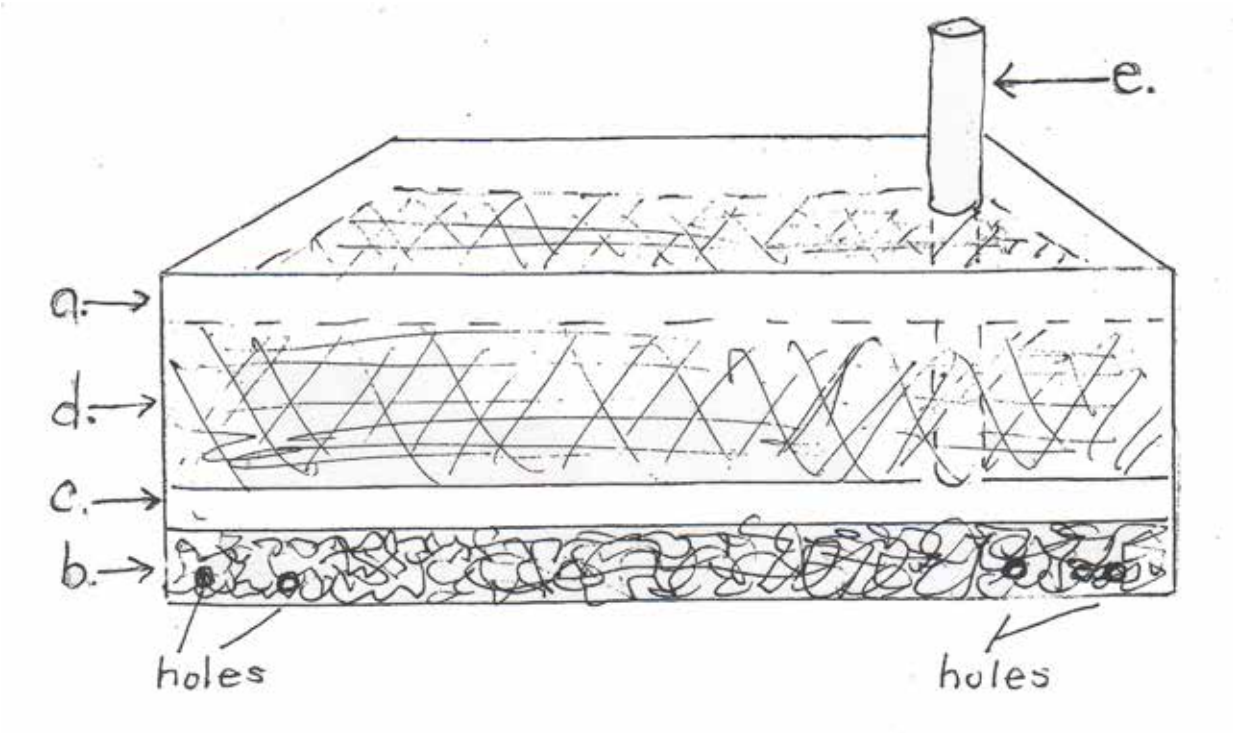
Fall Garden Sample



Self-Contained Garden Tub

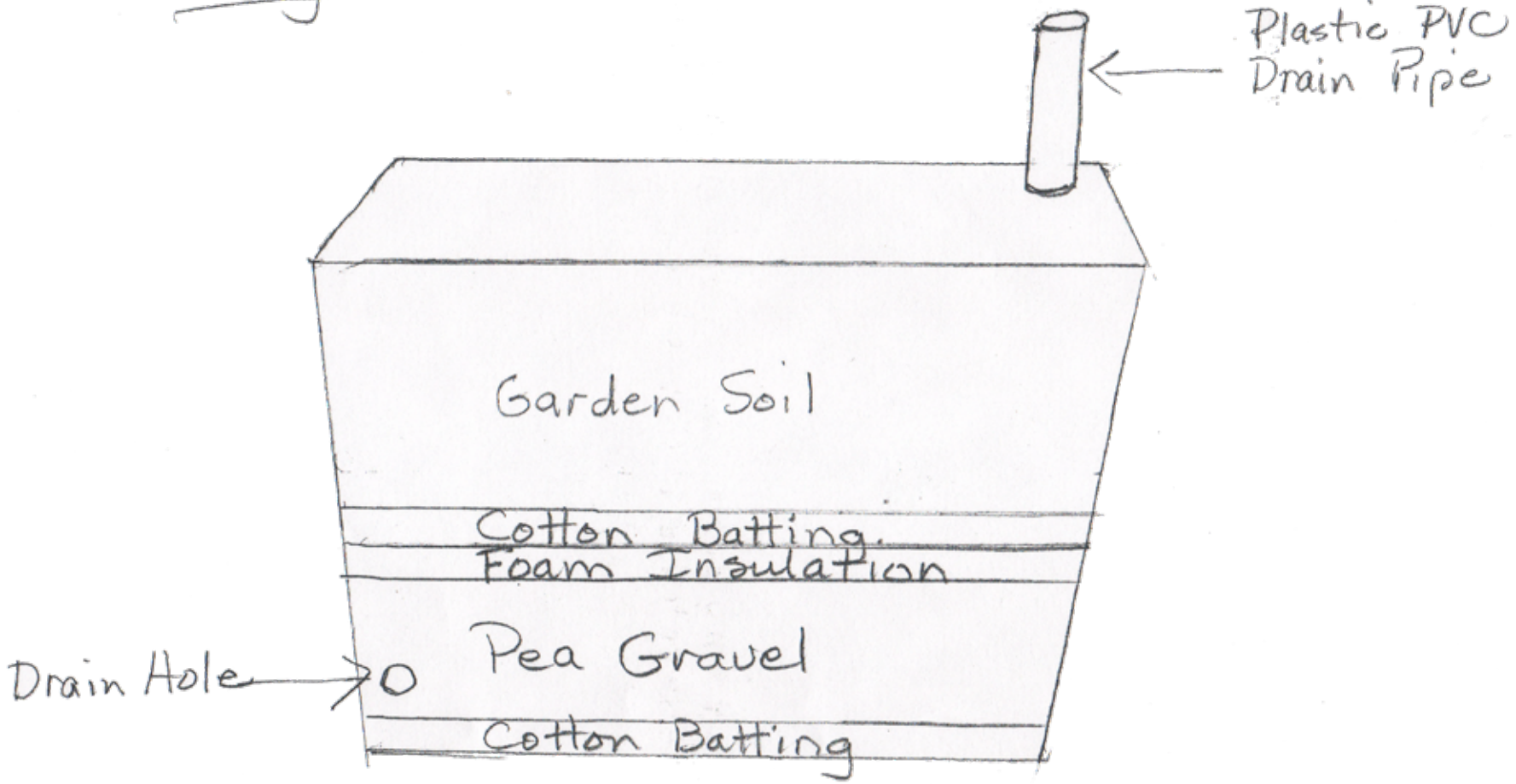
Procedure to making a container garden:

a. Find a container (any size storage tub with a lid). Drill a few holes at the bottom of the gravel level around the tub.
b. Add pea gravel (about 2-3 inches).
c. Add a layer of foam insulation and cotton batting. You can find styrofoam construction board insulation at a building supply store and wrap in natural cotton batting found at a fabric store.
d. Add garden soil (about 8-12 inches).
e. Add a PVC pipe through the soil to the cotton batting. This will allow you to add water without disturbing the plants.



Credit: Louise Crowell, Franklin County, 2008 Tennessee Foundation for Agriculture in the Classroom Excellence in Teaching About Agriculture Award Winner

Diagram of Tub Garden



Credit: Carole Willis, Coffee Co., AITC Consutant

SEEDS & GERMINATION

Science:	2.LS2.1	**English Language Arts:**	2.RI.KID.2
	2.LS2.2		2.RI.KID.3
Math:	2.MD.D.10		2.RI.KID.5
	2.MD.A.1		
	2.MD.A.2		
	2.MD.A.3		
	2.MD.A.4		

BRIEF DESCRIPTION:
Gathering and charting data on root and shoot growth is fun with these quick and easy seed germinators. Students will learn about germination by sprouting beans.

LEVEL:
Second Grade

SUBJECT:
Science, English Language Arts, Math

SKILLS:
Describing, Investigating, Comparing, Identifying, Analyzing, Comprehending, Measuring, Developing, Following Directions, Reasoning, Thinking Creatively

OBJECTIVES:
The student will:
- learn about germination.
- determine the measurement of plants' roots.
- graph measurements.
- demonstrate germination.

ESTIMATED TEACHING TIME:
30 minutes

Background:

When a seed gets warmth, air and water, it starts to change. The stem and the root emerge from the seed. This is called germination. Germination occurs if the seed is in a warm place. We plant seeds in the spring, when the ground is warming up. The seed is the food for the baby plant until it can grow its own root system. A seed is germinated when it can grow without the food stored in the seed.

Activity 1 - Seed Germination

Materials:

CD cases
Ruler
Marker
Lima bean seeds
Topsoil
Water

Procedure:

1. Using an old CD case, fill it with topsoil and three lima bean seeds. Make sure the soil is damp.
2. Each day measure the plants' roots in centimeters.
3. Using a bar graph, graph each day's growth.

Activity 2 - Sequence

Materials:

A Bean Is A Seed worksheet

Procedure:

1. Give each student the "A Bean Is A Seed" worksheet.
2. Have students number each picture in sequential order of bean growth, beginning with the seed and ending with the bean.
3. Have students cut apart the pictures and staple them in order to make a booklet.
4. **Activity extension:** complete the foldable booklet on

page 30 and have students describe their bean plant in the space provided.

Activity 3 - Read

Read From Seed to Plant by Gail Gibbons (ISBN 978-0823410255)

Activity 4 - Garden in a Glove

Materials:

Clear plastic gloves (can be found at a food service supply company)
Cotton balls
5 types of seeds, 3-4 seeds of each (Ex. lettuce, carrot, cucumber, tomato, broccoli, etc.)
Water
Marker

Procedure:

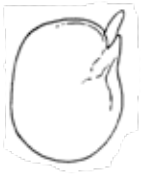
1. Give each student a clear plastic glove. Have them write their name on the palm of the glove and the names of the seeds on the fingers of the glove.
2. Wet five cotton balls (wring out excess water).
3. Place 3 to 4 seeds on each cotton ball and place one in each finger of the glove. Be sure to place the seeds and cotton ball in the finger labeled with the correct seeds.
4. Have students puff some air into the glove and close with a twist tie.
5. Tape the completed gloves to a window (for warmth from the sun) or place in a warm area of the room.
6. The seeds will germinate in 3 to 5 days (you can check seed packets for germination period). Have students keep a plant diary of their observations each day.
7. Once seeds have germinated (1 1/2 to 2 weeks), transplant them into soil by cutting the tips of the fingers off the glove. Transplant the cotton ball and plant into the soil. Provide them with the things they need to grow into strong plants!
8. Continue to have students record their observations as the plant progresses through its various life cycle phases.

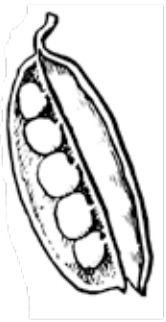
Adapted from: Exploratorium's Teacher Institute, Illinois Agriculture in the Classroom, Oklahoma Agriculture in the Classroom, and Virginia Agriculture in the Classroom

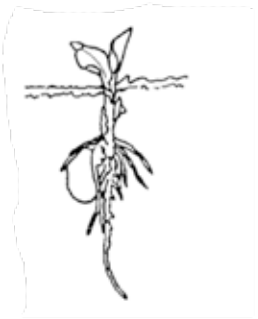
Name _____

A Bean is a Seed

Cut out these pictures and put them in the correct order. Number them from one to six.







Glue or staple the pictures in order to make a book.

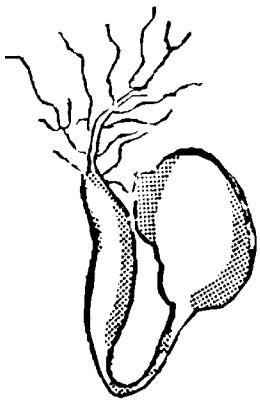
Bean plants grow from seeds.

Write three words that describe a bean plant.

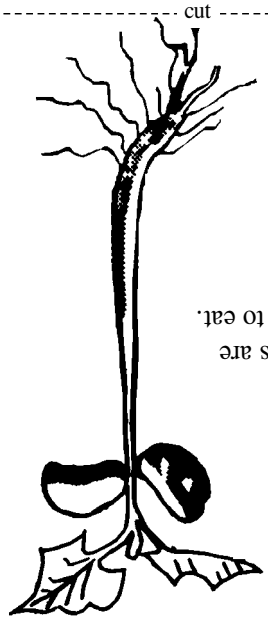
1. _____

2. _____

3. _____



Seeds need sun, soil, water and air.



Beans are good to eat.

Beans can be green, red, yellow, purple, brown or black.

cut

fold

Garden in a Glove

Name: _____

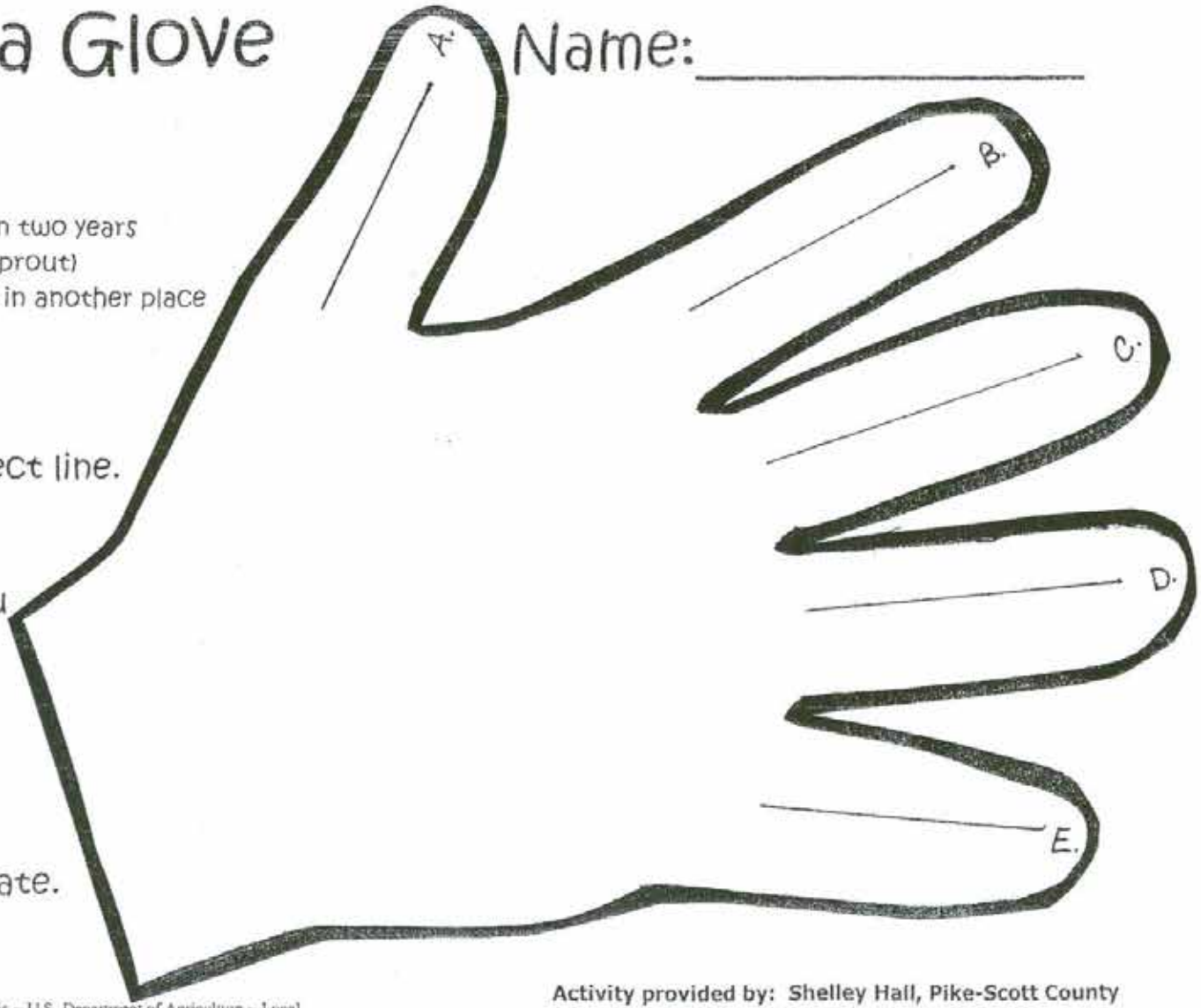
VOCABULARY
Annual – life cycle of one year
Perennial – life cycle of more than two years
Germination – to begin to grow (sprout)
Transplant – to remove and plant in another place

What seeds did you plant in each finger? Write them on the correct line.

Write the date when you see the first sprout.

_____

Number each finger in the order they germinate.



Activity provided by: Shelley Hall, Pike-Scott County
Agricultural Literacy Coordinator
1301 E. Washington, Pittsfield, IL 62363
Ph. 217.285.5543 Email smhall@uiuc.edu

FARM ANIMALS

English Language Arts:
2.RI.IKI.8
2.RI.CS.4
2.RI.CS.5
2.RI.KID.1
2.RI.KID.3

Math: 2.MD.D.10

Science:
2.LS1.3
2.LS2.1
2.LS2.2
2.LS3.1

Social Studies:
SSP.01
SSP.02
SSP.03
SSP.06

BRIEF DESCRIPTION:
Animals are an integral part of agriculture. Not only do animals provide meat and milk, but also provide many other by-products.

LEVEL:
Second Grade

SUBJECT:
Science, English Language Arts, Math, Social Studies

SKILLS:
Graphing, Communicating, Listening, Describing, Investigating, Comparing, Identifying, Analyzing, Comprehending, Developing, Following Directions, Reasoning

OBJECTIVES:
The student will:
- create graphs.
- interpret graphs.
- distinguish between different farm animals.
- investigate relationships between animals and their environment.

ESTIMATED TEACHING TIME:
45 minutes

Background:

Cows, pigs, sheep, and chickens provide us with meat products, but they also provide us with numerous non-food by-products to benefit us in our everyday lives. For example, beef by-products include china, shoes, cosmetics, etc. Pig by-products include floor wax, medicines, fertilizers, etc. Sheep provide wool, fertilizer, insulation, etc. Chickens provide us with feathers and waste for fertilizer.

Farmers provide food, water, shelter, and medical care for their animals. Cattle and sheep typically graze outside with little need for a barn for shelter. Pigs and chickens are housed in a climate-controlled barn for protection from weather, predators, and disease.

Just like humans, animals have certain dietary needs so that they grow strong and healthy. Farmers meet the dietary needs of their animals through proper feed mixtures.

Activity 1 - Graphing

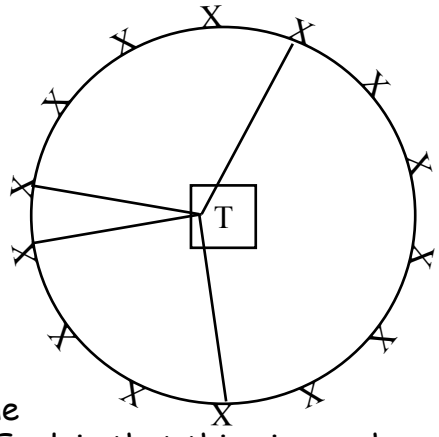
Materials:
A picture of a cow, a pig, a sheep, and a chicken
A book of each of the above farm animals
Index cards
4 hula hoops
Yarn

Procedure:
1. Place a picture of a farm animal in the four corners of the classroom.
2. Have students go to the corner where their favorite farm animal is displayed.
3. Have students pair with a partner and share why he/she chose that animal as his/her favorite farm animal.
4. Have a student from each group read the book representing their favorite farm animal out loud to the group.

5. Have each student write facts on an index card from the book about their favorite farm animal.
6. (Venn diagram): place two sets of hula hoops in the center of the room to form two Venn diagrams. Each hula hoop will be labeled as one of the four farm animals from the corners of the room.
7. Have students place their fact cards in the Venn diagram with the appropriate animal.
8. Within their groups have students work together to determine any facts that are the same for the two animals depicted in the Venn diagram.
9. (Bar graph): Using the same animal groups, have one student in each group hold that group's favorite animal picture.
10. Have the other students in the group form a line behind the student holding the animal picture. Explain that students have created a bar graph, and a graph represents facts.

X	X	X	X
X	X	X	
X	X	X	
X	X		
	X		
	X		
Sheep	Cow	Pig	Chick

11. (Line graph): Give the student holding the picture in the first row, the end of a piece of yarn.
12. With the student in the first row still holding the end of the yarn, pass the yarn to the next row, then the third row, and end with the student holding the picture in the fourth row. Explain that students have now formed a line graph and that the line graph and bar graph represent the same information.
13. (Pie/Circle graph): Have students in each line join hands.
14. Form a circle beginning with the students in the first line. As the students form a circle, the students in each line take the hand of the last person in the line ahead of them.
15. Once all four groups (lines) are in a circle, have the students drop their hands. Like groups should still be standing next to each other. Have the student holding the picture place the picture on the floor in the center of their group so that everyone can see the favorite animal.
16. As the teacher, stand in the center of the circle with four pieces of yarn.
17. Have the first student of each group take the end of one piece of yarn and return to his/her place in the circle. Explain that this pie graph represents the same information as the above.



Activity 2 - Name that animal

Materials:

Strips of paper in two different colors
Farm Babies worksheet

Procedure:

1. Read Farm Animals by Marc Gave and Grace Goldberg (ISBN 978-1562938987).
2. Discuss the mother, father, and baby names for animals.
3. Write the names of mother and father animals on strips of paper in one color and the names of baby animals on strips of paper in another color.
4. Divide the class in half and distribute the mother/father strips to one half and the baby strips to the other half.
5. Have students scatter throughout the room. Designate one area of the room as the barn.
6. The object of the game is for all animals to safely make it to the barn. To safely make it to the barn, students must say their mother/father or baby name correctly and match their baby name with the correct mother/father name.
7. On the "Farm Babies" worksheet, have students match the baby with the correct mother and father.

Activity 3 - Virtual Farm Tour

Visit Virginia Cooperative Extension Service (http://sites.ext.vt.edu/virtualfarm/) for a virtual farm tour to help students discover why farming is a part of their lives. Students can explore horse, fish, cattle, dairy, chicken, and wheat farms.

Source: USDA Agriculture in the Classroom

Farm Babies

	Father's name	Mother's name	Baby's name	Avg. # of babies born at one time	Avg. age at which mother first gives birth
bison	bull	cow	calf	1	2 years
cattle	bull	cow	calf	1	2 years
chicken	rooster	hen	chick	12-18 eggs	6-7 months
goat	billy	nanny	kid	1-3	8 months
goose	gander	goose	gosling	8-10 eggs	2 years
horse	stallion	mare	foal	1	3 years
llama	male	female	cria	1	2 years
rabbit	buck	doe	bunny	6-10	6 months
sheep	ram	ewe	lamb	1-2	1 year
swan	cob	pen	cygnet	2-10 eggs	3 years
swine	boar	sow	pig	4-14	10 mo.-1 year
turkey	tom	hen	poult	2-10 eggs	6-7 months

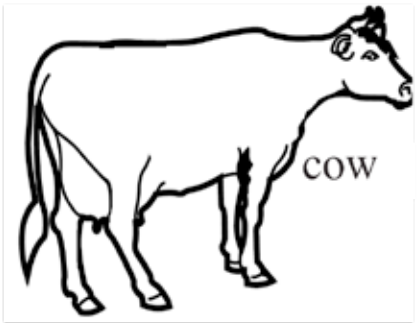
Name_____

Farm Babies

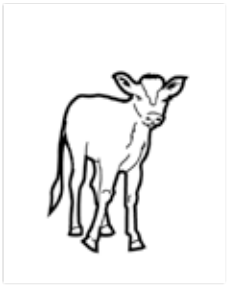
Draw lines to match the fathers, babies and mothers.

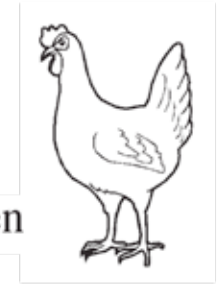

ram

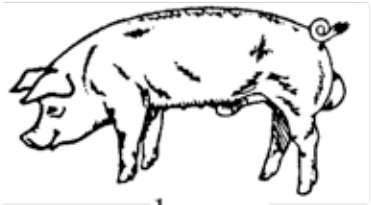

lamb


cow

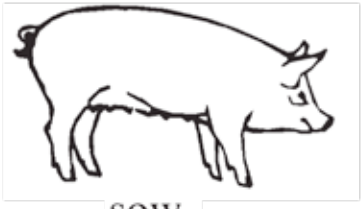

gander


calf


hen

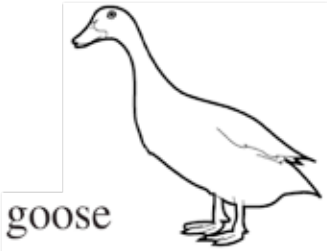

boar


chick

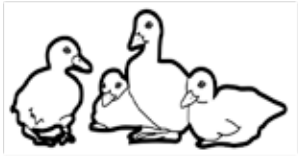

sow

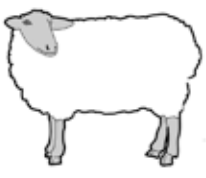

rooster


pigs


goose


bull


goslings


ewe

CHARLOTTE'S WEB

Science:
2.LS1.1
2.LS1.2
2.LS1.3
2.LS2.1
2.LS2.2

English Language Arts:
2.RL.RRTC.10
2.SL.CC.1
2.SL.CC.2
2.SL.CC.3
2.FL.F.5

BRIEF DESCRIPTION:
Through reading or listening to the story of Charlotte's Web, students will be introduced to the life cycle concept.

LEVEL:
Second Grade

SUBJECT:
Science, English Language Arts

SKILLS:
Describing, Investigating, Comparing, Identifying, Analyzing, Comprehending, Sequencing, Developing, Following Directions, Reasoning

OBJECTIVES:
The student will:
- compare life cycles.
- sequence the life cycle of a spider.
- investigate living things and their habitats.

ESTIMATED TEACHING TIME:
45 minutes

Background:

This book is a good example of personification: attributing human traits to animals. Personification can lead to confusing messages about the purpose of animals.

A pig named Wilbur befriends a spider named Charlotte, who lives in the rafters above his pen. Wilbur is devastated when he learns that at the end of the season he will be slaughtered. Determined to save her friend, Charlotte spins a web that reads "Some Pig," convincing the farmer and surrounding community that Wilbur is no ordinary animal and should be saved. This is a story of friendship, hardship, and the passing on into time.

Activity 1 - Life Cycles

Materials:
Charlotte's Web by E.B. White
Spider Life Cycle cards

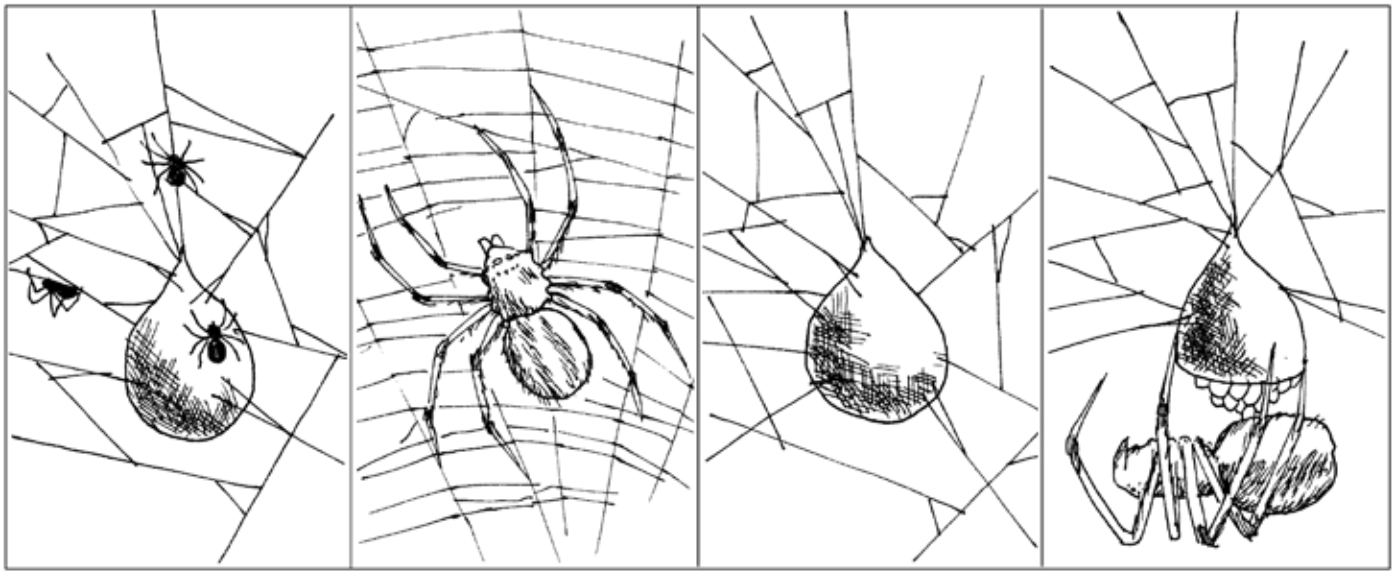
Procedure:

1. Read Charlotte's Web by E.B. White (ISBN 978-0064400558).
2. View the spider's life cycle video at http://www.spiderroom.info/lifecycles.html.
3. Sequence the life cycle of a spider using the "Spider Life Cycle" cards.
4. Use the "Four Phase Insect Life Cycle" to compare its life cycle with another insect, such as a beetle.
5. Compare and contrast the life cycle of a mammal versus a spider, which is an arachnid (has eight legs and two body segments).

Spider Life Cycle Cards

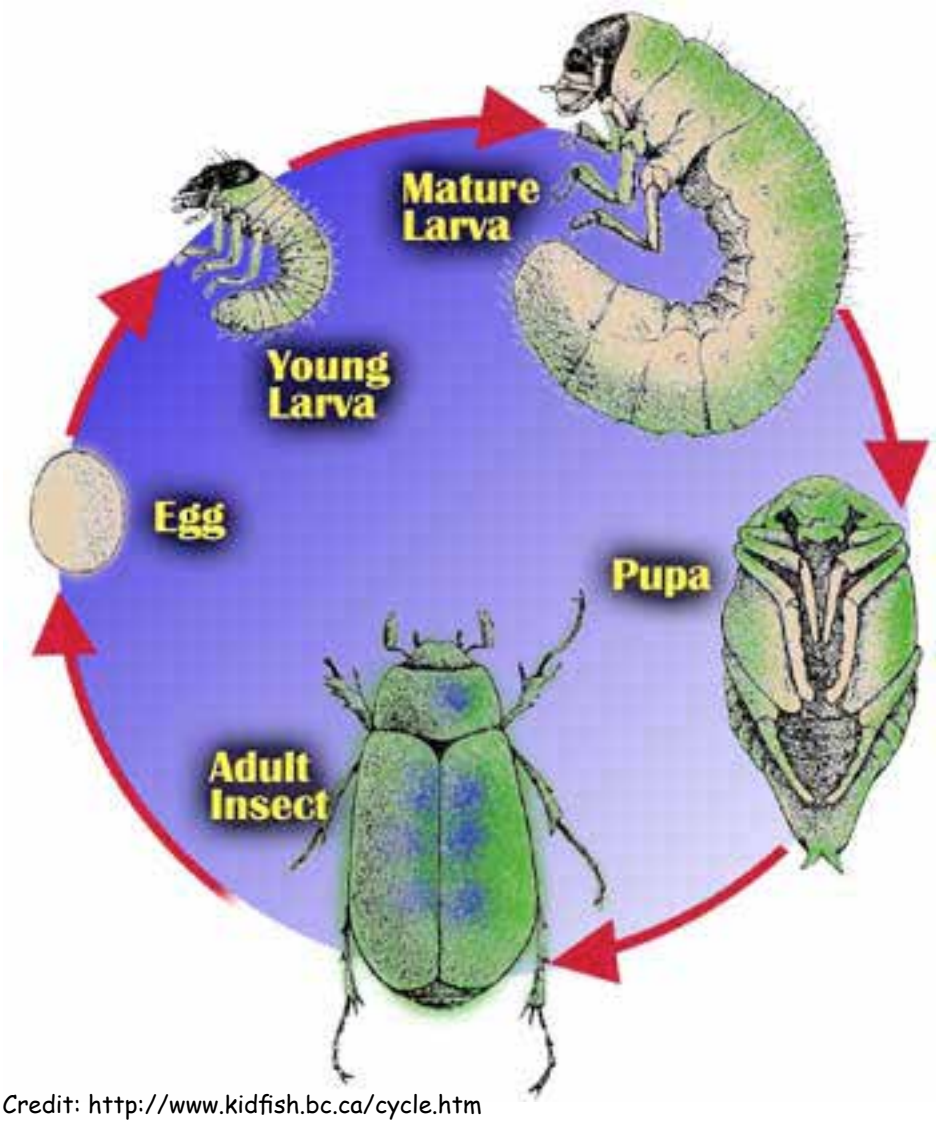
Directions

1. Cut out and color each of the four pictures.
2. Place the pictures in the correct order of the spider's life cycle.
3. Glue the pictures to a larger sheet of paper.
4. Write 1-3 sentences below each picture describing the stages.



Adapted from spiderroom.info

Four Phase Insect Life Cycle



Credit: http://www.kidfish.bc.ca/cycle.htm

GROW IT AGAIN

Science:
2.LS1.1
2.LS1.2
2.LS1.3
2.LS3.1

English Language Arts:
2.RI.KID.1
2.RI.KID.3
2.RI.CS.4
2.RI.CS.5

BRIEF DESCRIPTION:
You may find it hard to believe, but the makings of a fantastic growing experience are probably in your kitchen right now. Don't put those carrot tops in the compost or throw out the seeds in that apple core- try growing them instead. Turn a peanut into an unusual flower or a beet top into a leafy plant.

LEVEL:
Second Grade

SUBJECT:
Science, English Language Arts

SKILLS:
Describing, Investigating, Comparing, Identifying, Analyzing, Comprehending, Developing, Following Directions, Reasoning

OBJECTIVES:
The student will:
- investigate plant habitats.
- identify parts of a plant and their function.

ESTIMATED TEACHING TIME:
60 minutes

Activity 1 - Grow

Materials:
Grow It Again by Elizabeth MacLeod
Baby Peanut Plants worksheet
Peanuts in the shell
Aluminum pan
Paper towels
Plastic wrap

Procedure:

1. Read aloud Grow It Again by Elizabeth MacLeod (ISBN 978-1550745580).
2. Discuss how seeds, beans, or tops of carrots and even eyes of potatoes can be rooted either in water or topsoil.
3. Shell several raw peanuts and spread them on paper towels in an aluminum pan.
4. Wet the paper towels and cover the pan with plastic wrap. In a few days roots and stems will sprout from the peanuts. Explain that the peanut can get along without soil for a while because of the food stored in the seed. As the water soaks into the seed, the food dissolves. It is broken into tiny bits that become part of the sap. The sap flows into the new roots and stems, bringing them everything they need until the seed runs out of food.
5. On the "Baby Peanut Plants" worksheet, label the correct part of the plant.

Fruit—a usually useful product of plant growth.

Peg—the flower stalk of a peanut plant.

Petal—one of the often brightly colored modified leaves that make up the corolla of a flower.

Stalk—a plant stem especially of a plant that is not woody.

Seedling—a young plant grown from seed.

Adapted from Oklahoma Agriculture in the Classroom

Name _____

Baby Peanut Plants

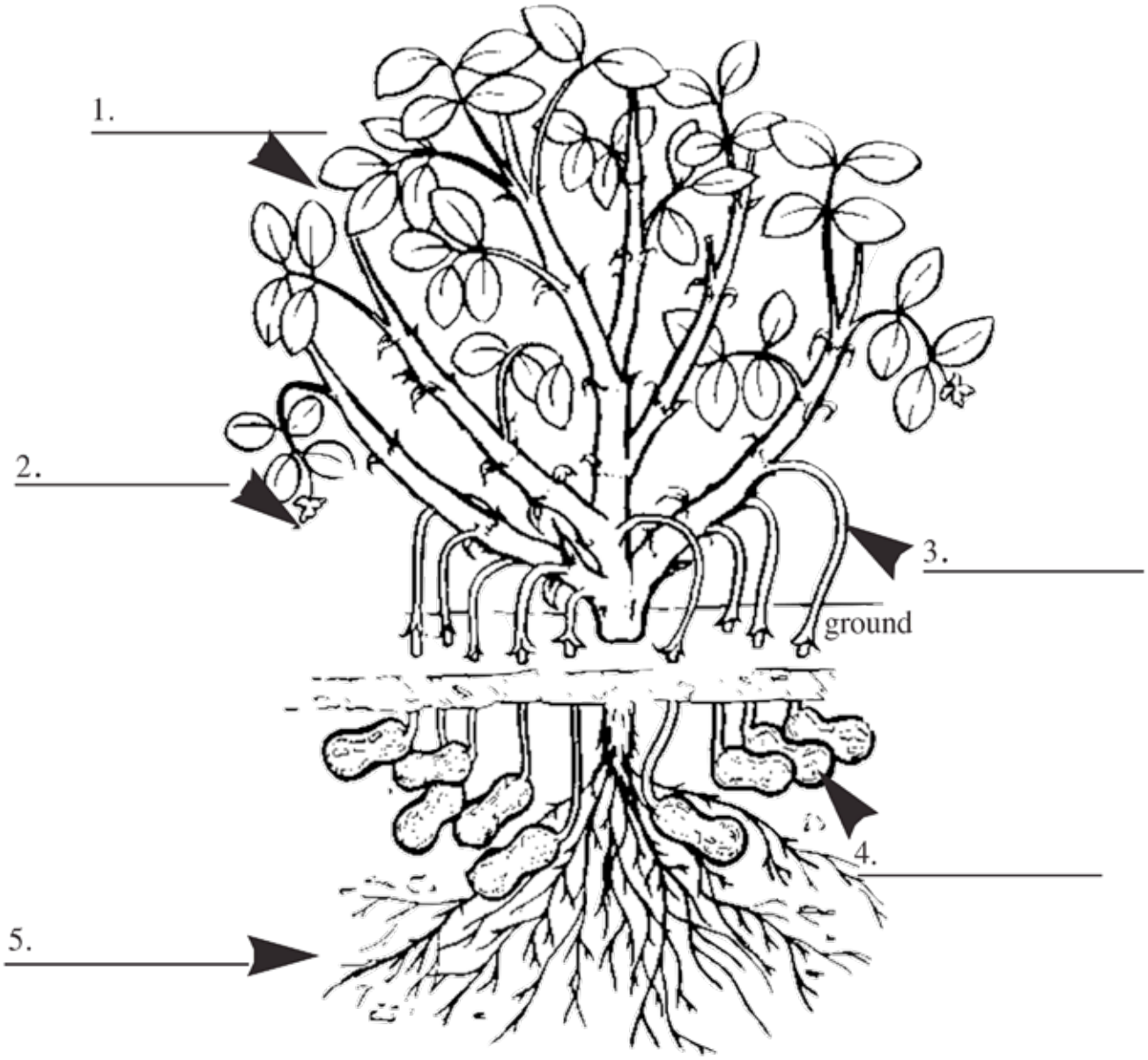
This is a picture of a peanut plant. It shows the five important parts of the plant—the leaf, the flower, the peg, the fruit and the root.

The peg is long and thin. It looks like a rope growing into the ground or reaching for the ground. As the end of the peg grows into the ground and gets bigger, it grows into a peanut.

The peanut is the plant's fruit.

Write these words on the lines where they belong.

flower root fruit peg leaf



Name **Answer Key**

Baby Peanut Plants

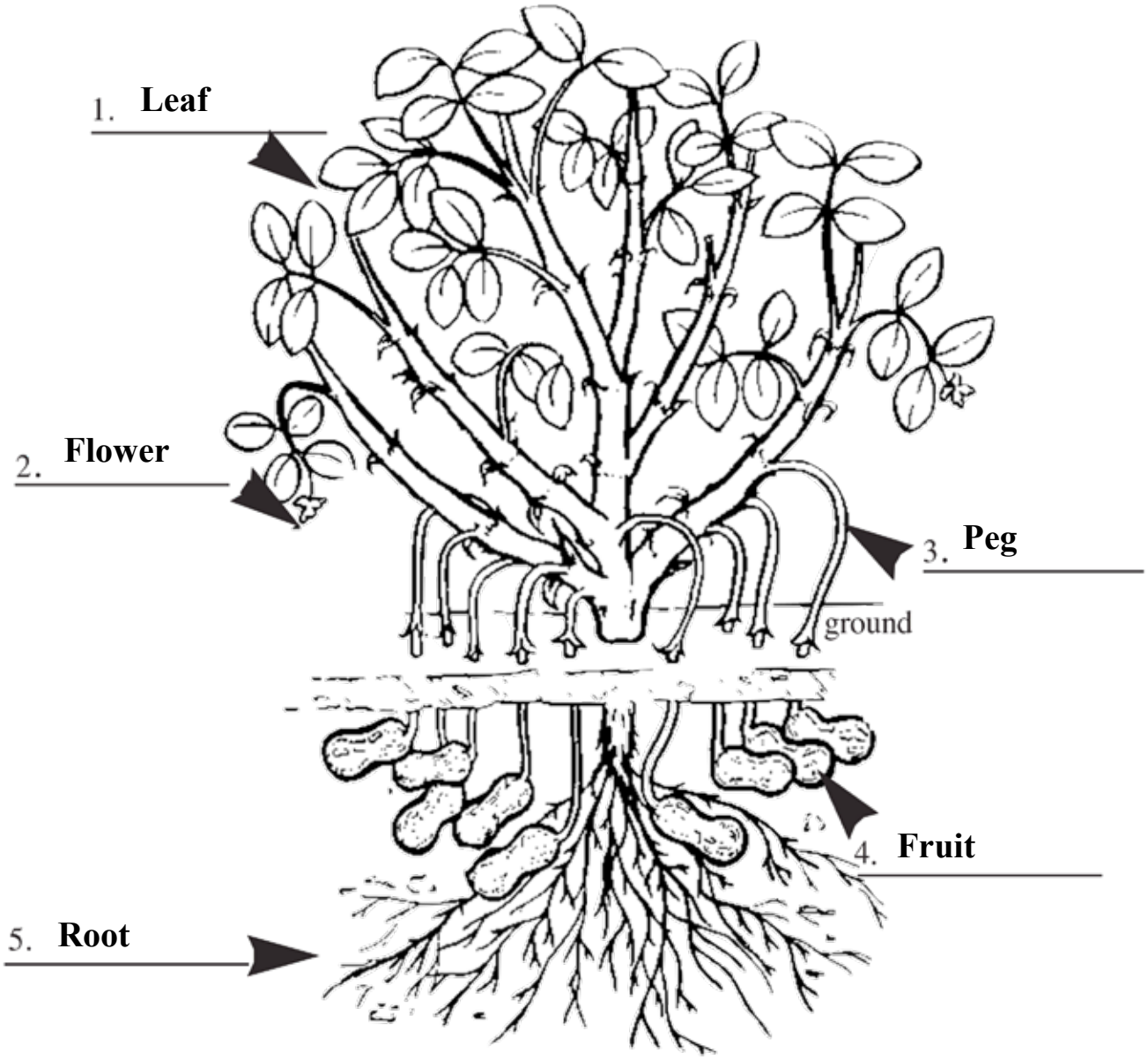
This is a picture of a peanut plant. It shows the five important parts of the plant—the leaf, the flower, the peg, the fruit and the root.

The peg is long and thin. It looks like a rope growing into the ground or reaching for the ground. As the end of the peg grows into the ground and gets bigger, it grows into a peanut.

The peanut is the plant's fruit.

Write these words on the lines where they belong.

flower root fruit peg leaf



THE BEAN BOOK

Science:
2.LS1.1
2.LS1.3
2.LS3.1

English Language Arts:
2.RI.IKI.7
2.SL.CC.1
2.RI.KID.3

BRIEF DESCRIPTION:
Students will learn about the parts of a seed while also learning about soybeans.

LEVEL:
Second Grade

SUBJECT:
Science, English Language Arts

SKILLS:
Investigating, Identifying, Analyzing, Comprehending, Sequencing, Developing, Following Directions

OBJECTIVES:
The student will:
- design a book.
- identify parts of a seed.
- discover soybean by-products.

ESTIMATED TEACHING TIME:
60 minutes

Activity 1 - Making a Bean Book

Materials:
The Bean Book templates
Scissors
Stapler
Glue

Procedure:
1. Cut out the seed coat, seed leaves, and embryo.
2. Cut apart blocks of text, following the dotted lines.
3. Fold the seed leaves (yellow) into the seed coat (tan) and tuck the embryo (green) into upper center of seed leaves.
4. Attach seed parts by stapling along fold.
5. Using the numbers as reference (see below), glue text onto the pages of your Bean Book.
6. Write your name on the cover of your book.

Place Bean Book text in the following order:

1-Front cover
2-Inside front cover
3-Page after inside front cover (first cotyledon)
4-Inside of first cotyledon, next to embryo
5-Inside of second cotyledon, with arrows pointing to parts of embryo
6-Inside back cover
7-Outside back cover

The Bean Book

By:

_____

❶

Where can you find soybeans? Almost everywhere! Soybeans can be found in all of these products...

plastic	car wax
paint	tofu
chocolate	soap
crayons	insulation
body lotion	glue
cooking oil	makeup
candles	candy
printing ink	cereal
biodiesel fuel	livestock feed

...and so much more! Check out the ingredients listed on packages around the house or school and see what else you can find!

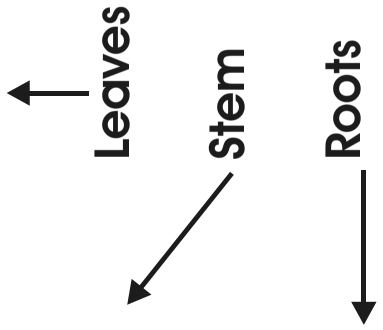
❼

The bean has a cover called the **seed coat**. It protects the seed. ❷

Inside the seed coat are two **seed leaves (cotyledon)**. They hold the food the new plant needs to grow. ❸

A baby plant is hiding between the seed leaves. It is called an **embryo**. ❹

❺

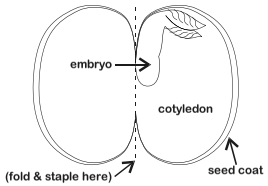


Every kind of seed has three parts. They are the **embryo**, **stored food (cotyledon)**, and a **seed coat**. ❻

Bean Book Instructions:

- **Cut out the seed coat, seed leaves, and embryo.**
- **Cut apart blocks of text, following the dotted lines.**
- **Fold the seed leaves (yellow) into the seed coat (tan) and tuck the embryo (green) into upper center of seed leaves.**
- **Attach seed parts by stapling along fold.**
- **Using the numbers as reference (see below), glue text onto the pages of your Bean Book.**
- **Write your name on the cover of your book.**

Placing of seed parts

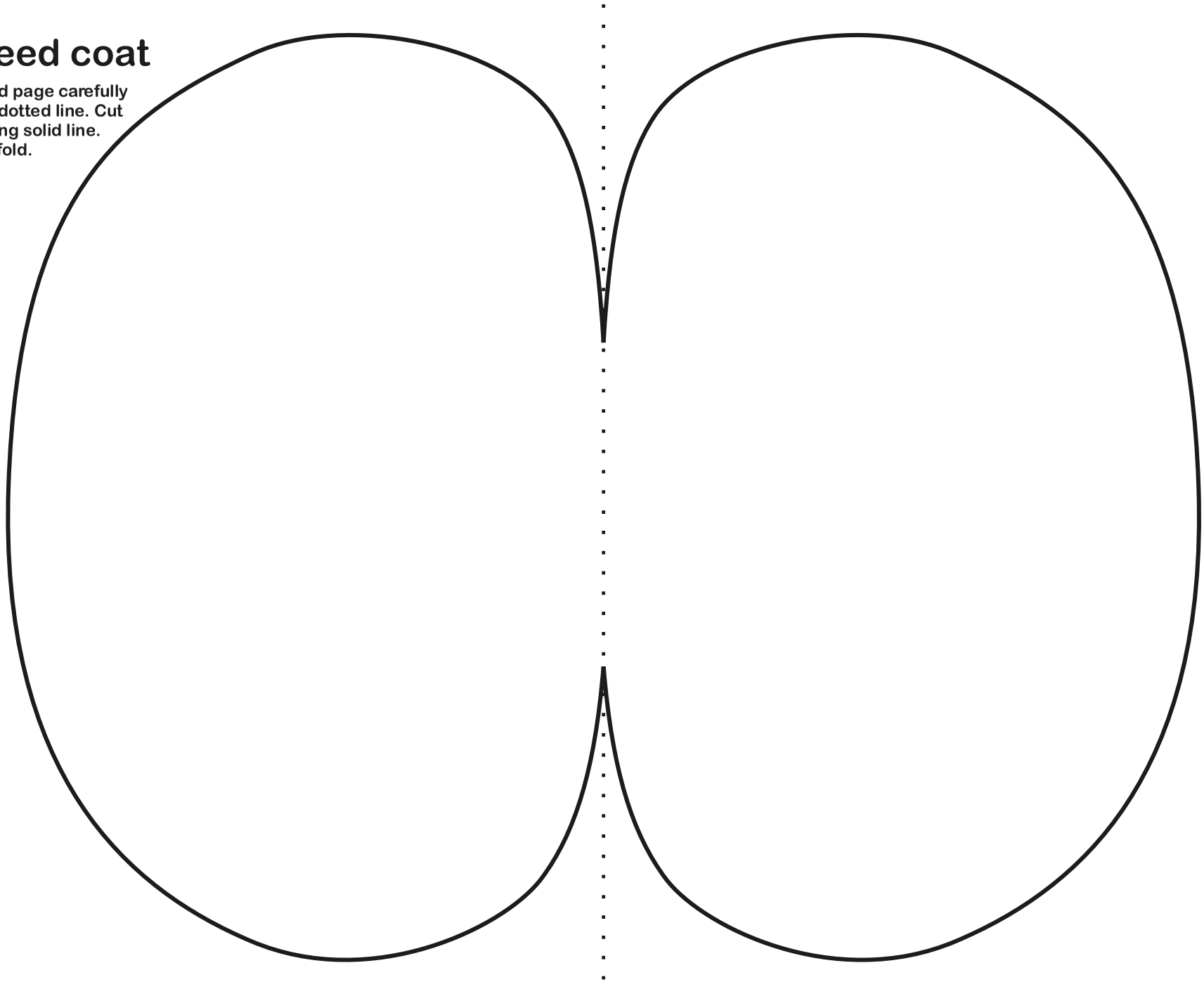


Place Bean Book text in the following order:

❶ **Front cover**
❷ **Inside front cover**
❸ **Page after inside front cover (first cotyledon)**
❹ **Inside of first cotyledon, next to embryo**
❺ **Inside of second cotyledon, with arrows pointing to parts of embryo**
❻ **Inside back cover**
❼ **Outside back cover**

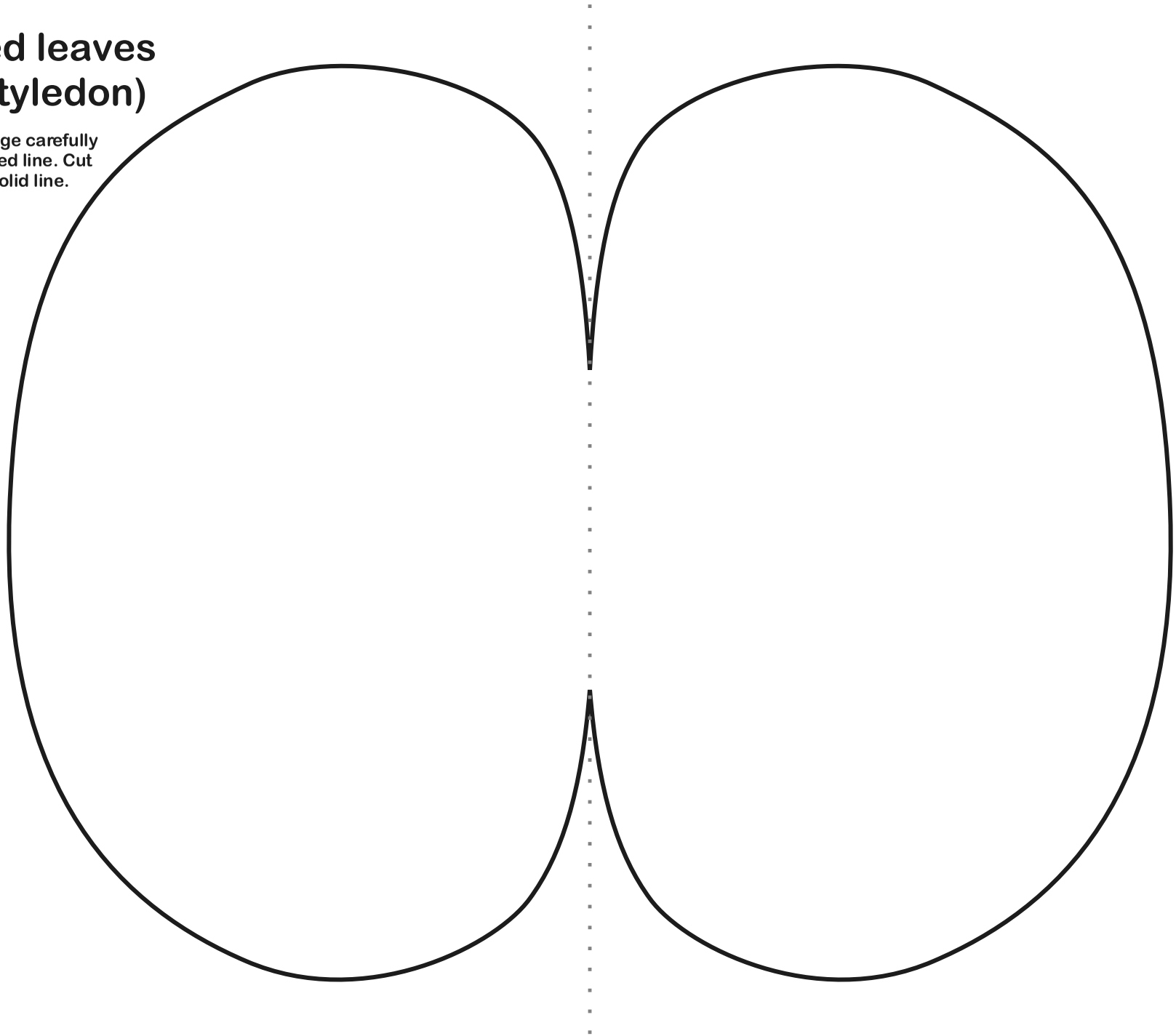
seed coat

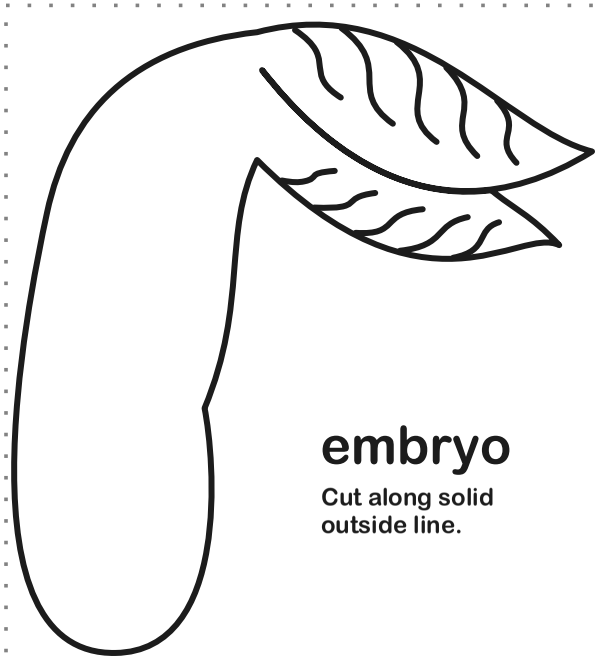
Fold page carefully on dotted line. Cut along solid line. Unfold.



seed leaves (cotyledon)

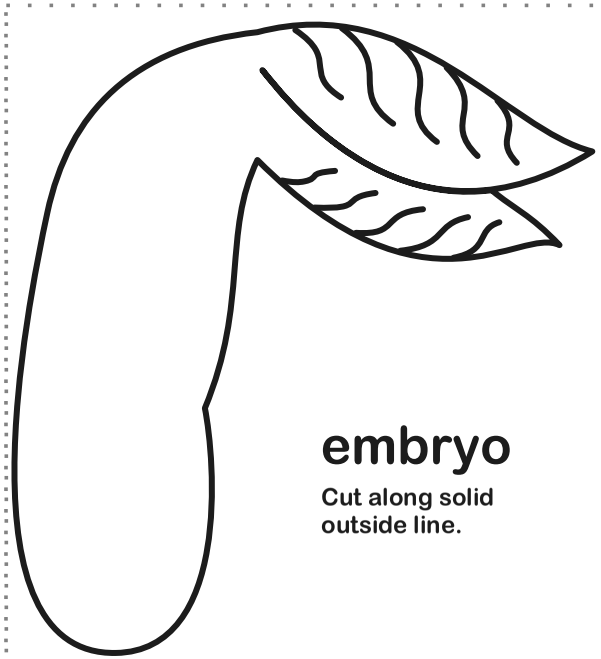
Fold page carefully on dotted line. Cut along solid line. Unfold.





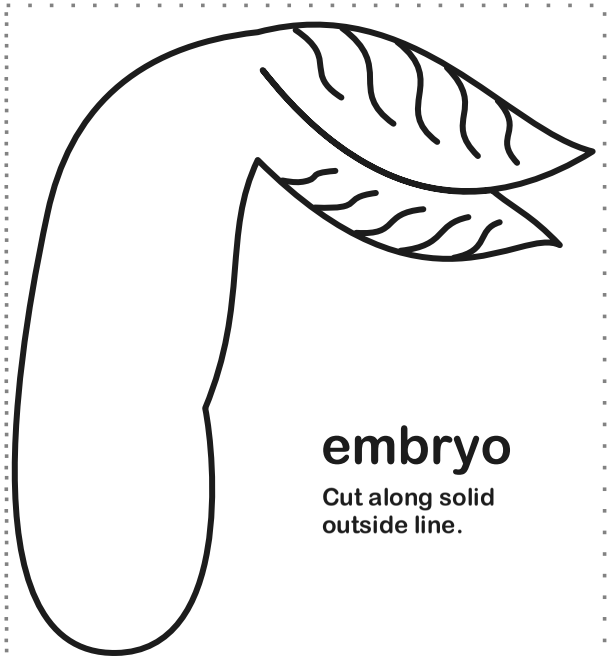
embryo

Cut along solid outside line.



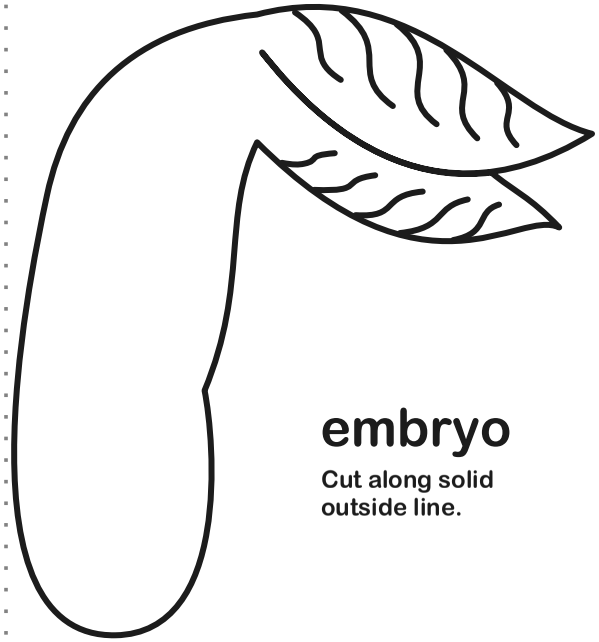
embryo

Cut along solid outside line.



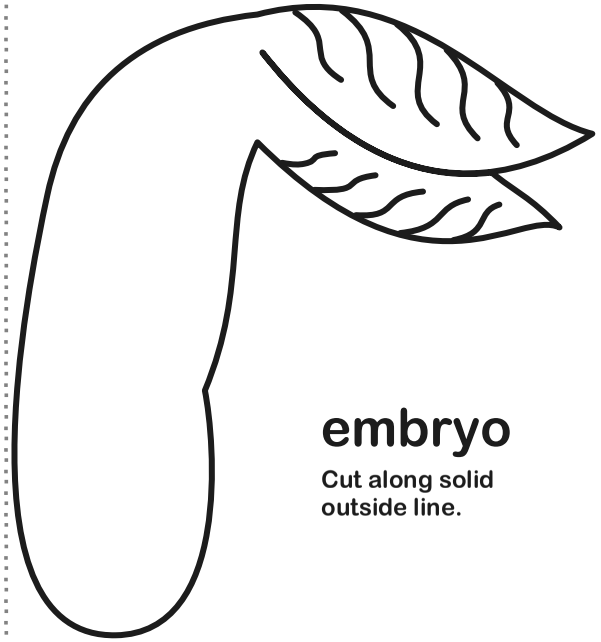
embryo

Cut along solid outside line.



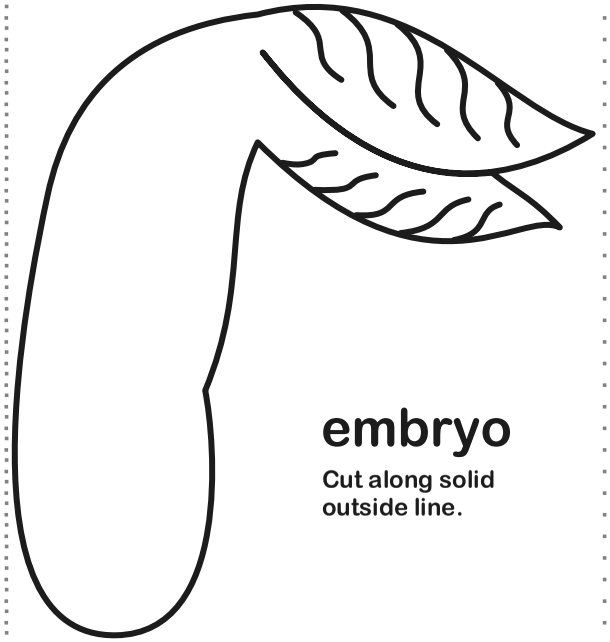
embryo

Cut along solid outside line.



embryo

Cut along solid outside line.



embryo

Cut along solid outside line.