



## A Thematic Unit

Peanuts are the world's most popular nuts. More peanuts are eaten per year than hazelnuts, almonds, and walnuts combined. Very few of us know, however, that peanuts are not even nuts! They're actually legumes, along with peas and beans and other foods that grow in pods. They are an excellent source of protein, offering as much food value as beef. Thanks to George Washington Carver, a scientist who discovered over 300 uses for peanuts, these legumes are used not only for food, but also as fuel for lamps, as lubricants, in soaps and cosmetics, and many other important uses. This unit will give your students hands-on experience in growing peanuts from seed, making peanut butter, locating countries where peanuts are grown, and doing their own science experiments with peanuts.



# Peanuts



## SOCIAL STUDIES



### *The Origin of Peanuts*

The first peanuts originated in South America and are thought to have been cultivated around 1500 B.C. Other crops that come from South America include potatoes, cocoa, lima beans, and pineapples.



### Crops Around the World

**Objective:** Students will learn where many crops originated around the world.

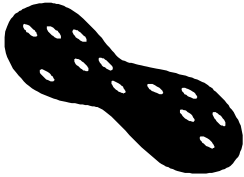
- Place a large map of the world on a bulletin board or make a display using cardboard.
- Ask your students to predict where peanuts came from. Give the following facts about peanuts:
  1. peanuts grow in warm, sunny weather
  2. peanuts grow in a temperate climate with moderate rain
  3. peanuts grow under the ground
  4. peanuts need loose, sandy soil for proper growth
- Write the guesses on a large piece of brown butcher paper shaped into a peanut. Tally the guesses according to geographic location.
- Tell students that peanuts came from South America, specifically areas near the Andes Mountain Range.
- Locate South America on a map and point out the Andes and discuss its general climatic zone (i.e. tropical) and geographic location (i.e. on the equator).
- Give students a list of other crops and have them work in groups to predict where all of them originated. Here is a good list of crops and where they came from:

Crop	Origin
Potato	Andes Mountains, South America
Soybean	Asia
Wheat	Fertile Crescent, Iraq
Corn	Mexico
Rice	Asia
Watermelon	Africa
Coffee	Africa
Olives	Italy
Ginger	India
Asparagus	Mediterranean Region
Sugarcane	New Guinea
Avocado	Mexico
Cranberry	New England, North America
Apple	Baltic Region, Europe
Carrot	Afghanistan
Peanut	South America

- Discuss where all of the crops came from, and have your class locate these places on the map.
- Cut out the pictures of some of these foods from the reproducible included, mount them on heavy paper, and laminate them. Place them around the edges of the map. Add your own pictures for other crops/products to make it more challenging.
- To reinforce this geography lesson, have students attach pieces of string from the food items to their country of origin using pushpins. Have a key available so students can do a self-check. This would work great as an interactive bulletin board.



## History of Peanuts



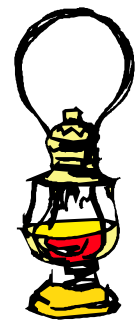
Peanuts have come a long way since 1500 B.C., when they are first thought to have been grown in South America. They have been used through time for various purposes and in many different ways.

- Use the timeline in *The Life and Times of the Peanut* by Charles Micucci to help your class understand what was going on with peanuts throughout history.
- Use butcher paper to create a timeline.
- Have your students create their own pictures to show things going on with peanuts throughout the years. Index cards are a good size for these pictures.
- Have them place these pictures on the timeline proportionally so as to show the expanse of time. Plenty of space should be left for more pictures.
- Divide your class into groups and give them each several historical events to briefly research. They should become familiar with the general time period and dates. Here are a few examples:
  - In 79 A.D, Pompei is drowned in volcanic ash
  - In 610, Muhammad is the prophet to the Arabic people of Mecca
  - In 1000, Leif Eriksson reached North America
  - In 1497, Vasco de Gama sailed around the Cape of Good Hope, and reached India
  - In 1776, the U.S. Declaration of Independence was signed in Philadelphia
  - In 1879, Edison made the first lamp
  - In 1903, the Wright brothers invent the first airplane with a motor
  - In 1929, the Stock Market crashed and the Great Depression swept the United States, afflicting people and economy
- They should also make pictures for each of these events indicating the date as well.
- Have them place these on the timeline in the appropriate areas, labeling the date and other items of interest.
- Students will be able to refer to this timeline as your study of peanuts continues.



## Uses of Peanuts

- Have your students brainstorm the different uses of peanuts, what foods they are found in, where they usually see them, and any other applications of the peanut that they are familiar with.
- Some uses include: (look in *The Life and Times of the Peanut* to find more)
  - Peanut butter
  - Salad oil
  - Margarine
  - Soaps
  - High-protein feed for livestock
  - Lamp oil
- Compare the uses above to your students' responses. They should recognize that the peanut is a versatile food and industrial product.



- Ask your students to compare many of the peanut products to see if they can find a common factor in all of them (i.e. most of the products are oil-based; peanuts are 46% oil). Refer to the Science section for more information about peanut uses.



### Carver Mobile

- George Washington Carver was a great scientist who did many experiments with peanuts. He published a booklet entitled *300 Ways to Use the Peanut*. Until this time, peanuts were used only for eating as a nut; after Carver brought many of these new uses to the general public, peanut consumption and usage increased dramatically.
- You will need to have information on Carver available for this activity. Use books from the library, Web sites, and encyclopedias.
- Have your students research the life of George Washington Carver and choose a particular topic regarding him that they would like to look into in more detail.
- After choosing the topic, have your students make a Carver Mobile. For this they can use a hanger, string, and thick construction paper. They will discuss the main topic by placing pictures, drawings, and writings on the hanger.
- Encourage them to be creative and unique.
- See the information sheet in this unit.

# GEORGE WASHINGTON CARVER

Born 1861 near Diamond Grove, Missouri  
Died January 5, 1943 in Tuskegee, Alabama



George Washington Carver was an American agricultural chemist. His experimentation with peanuts, sweet potatoes and soybeans helped to revolutionize the agricultural economy of the South. He spent most of his career teaching and conducting research at the Tuskegee Institute in Tuskegee, Alabama.

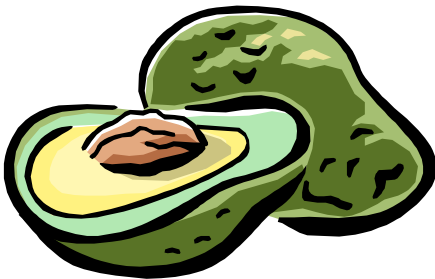
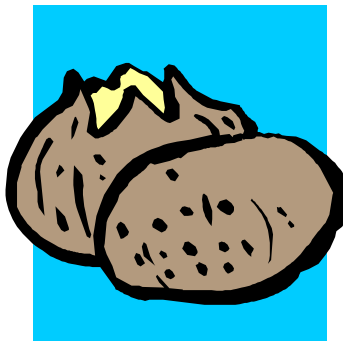
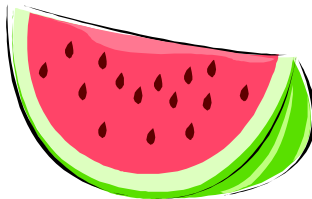
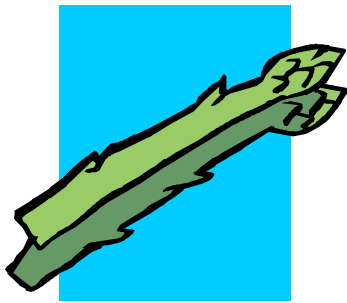
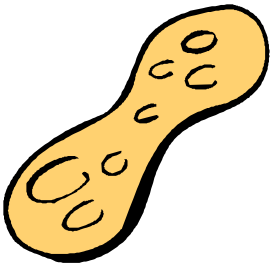
Carver was the son of a slave owned by Moses Carver. He was separated from his mother at a young age. He was good at drawing as a boy. Later in life, he used this ability when painting flowers, plants, and landscapes. He stayed on the Carver plantation until he was about 11 years old, and then left to get an education. He taught himself using books and learned from his experiences. During this time, he supported himself in various ways, including hotel cook, laundry man, farm laborer, and other odd jobs. In his late 20s, he obtained a high school education in Kansas. He was refused college in Kansas because he was a black man, so he decided to attend college in Iowa, where he received a Master's of Science degree in 1896. At this time, he left for Alabama to direct the Department of Agriculture in Tuskegee. His primary reason for going was encouragement by Booker T. Washington, who was trying to change the roles of African Americans through education. Carver stayed in Tuskegee for the rest of his life.

Carver's research was aimed at helping Southern farmers improve their economic situation. Southern agriculture was failing to sustain itself since most growers had planted cotton for several growing seasons, severely hampering the fertility of the land. Carver suggested to them to plant peanuts and soybeans to restore nitrogen to the soil while simultaneously producing a rich food crop to meet dietary needs. The need for peanuts, however, was not as great as that of cotton, so Carver's next step was to experiment with the peanuts to make innovative uses and products to market this new crop. He ultimately derived 300 products from peanuts and 118 from sweet potatoes. In 1896, when Carver arrived at Tuskegee, the peanut had not been recognized as a major production crop. By 1940, it became one of the six leading crops in the United States and the second most important cash crop in the South. Carver's efforts helped the South to become independent of cotton in many ways and become more agriculturally productive.

George Washington Carver remained humble and modest in the face of his success. He was given many awards and honors, recognized by presidents, Gandhi, Henry Ford, and other government agencies. He was offered more \$100,000 per year to work for Thomas Edison. He refused these offers in order to further his research and to continue his teaching at the Tuskegee Institute.

His great desire in life was to serve humanity.

# Crops Around the World



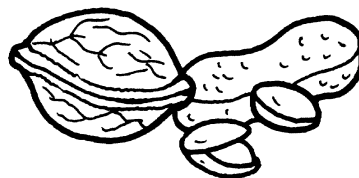
# Peanuts



## *When is a Peanut not a Nut?*

Actually, it never is. A peanut is a legume like peas and beans. It is a flowering plant that bears seeds in pods. It grows in a pod rather than in a thick, hard shell like a walnut. Legumes have round growths on their roots called nodules which make nutrients similar to fertilizer to help feed the plant. A peanut plant is unique among the legumes because peanuts grow underground. They flower above the ground, but shoots from the flowers grow into the ground and develop into peanut pods.

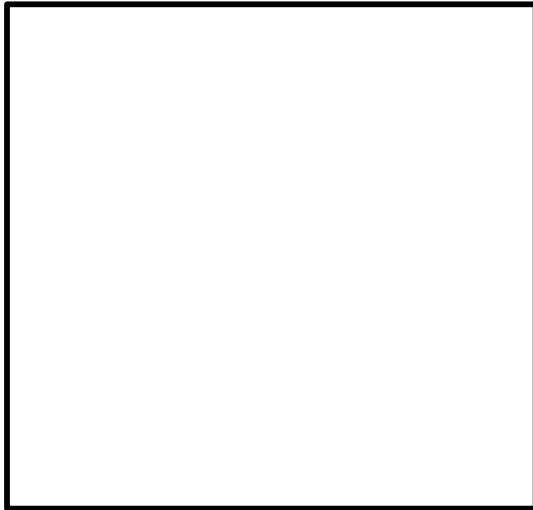
## Nut Comparison



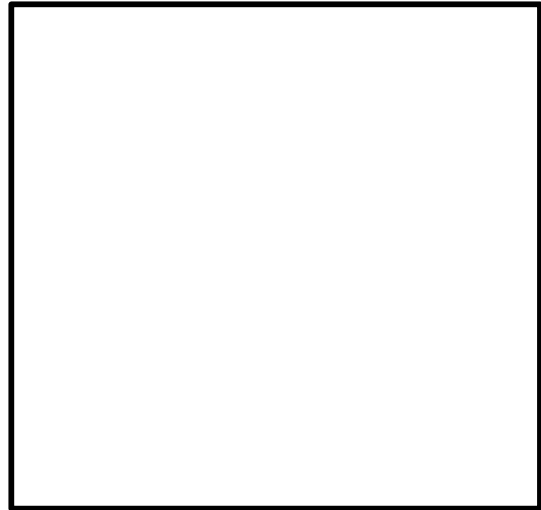
- Bring all kinds of nuts into your classroom: walnuts, pecans, hazelnuts, macadamias, almonds, etc. And bring in peanuts too.
- Have your students do scientific observations of each nut. Have them use the provided recording sheet for their observations. They will do scientific drawings of the nut with and without the shell. They will also need to make written observations about all aspects of the nut.
- You should stress the importance of using all 5 of the senses when doing scientific research. Provide enough nuts so that all of your students can taste them as well.
- Scientists are very specific and detailed when they make observations. Your students should be as detailed as possible in their descriptions of the nuts.
- There is also a place for your students to write how this particular nut compares with the others. They can add any special features they notice.
- Beginning writers can also do this activity. They can write just a few words to describe the nuts. And if you have volunteers, the students can dictate their observations while the volunteers write the words. But the students need to write some words using inventive spelling first.
- Make a large chart out of butcher paper. Make 5 rows for each of the senses and make columns for each nut your students observed. Use the large pictures included to label each column. There are pictures for 7 different kinds of nuts as well as pictures to describe the senses. Make drawings for any additional nuts that you use or simply tape the nut on top of the corresponding column. Add text to label the pictures.
- Your students will need to have their observations available for this activity. Have them give descriptions for each nut for each of the senses as a whole group. Try to add all of the unique observations.
- Discuss the charts results when finished. See what kind of general things the students noticed about nuts. Were there any "different" nuts that stood out? What did they all have in common? You can hint at the peanut being in a pod, but most likely your students will come up with this. You also may want to do several more activities to give them a chance to figure it out on their own.

Name \_\_\_\_\_ Date \_\_\_\_\_






Name of Nut \_\_\_\_\_

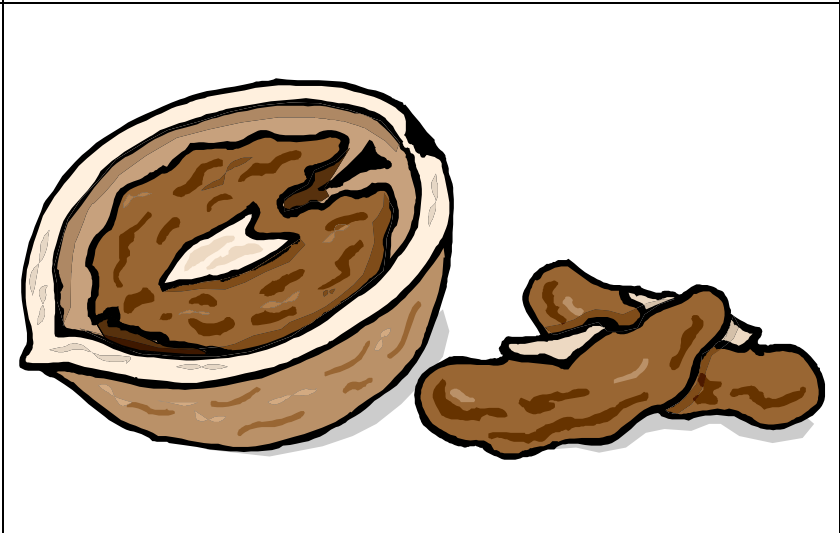
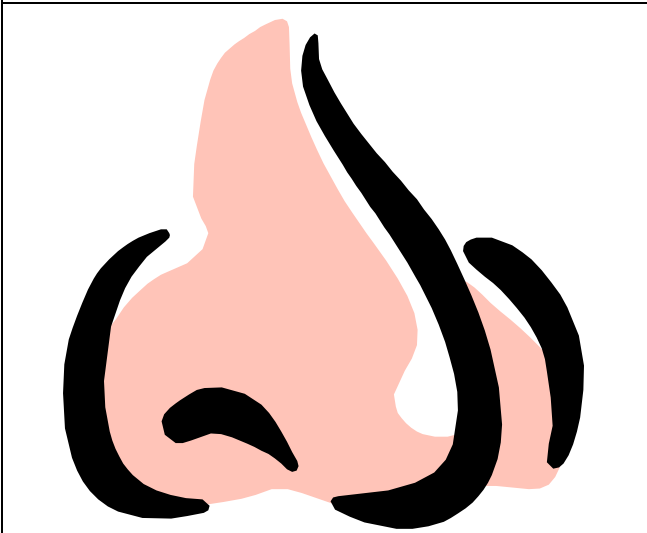
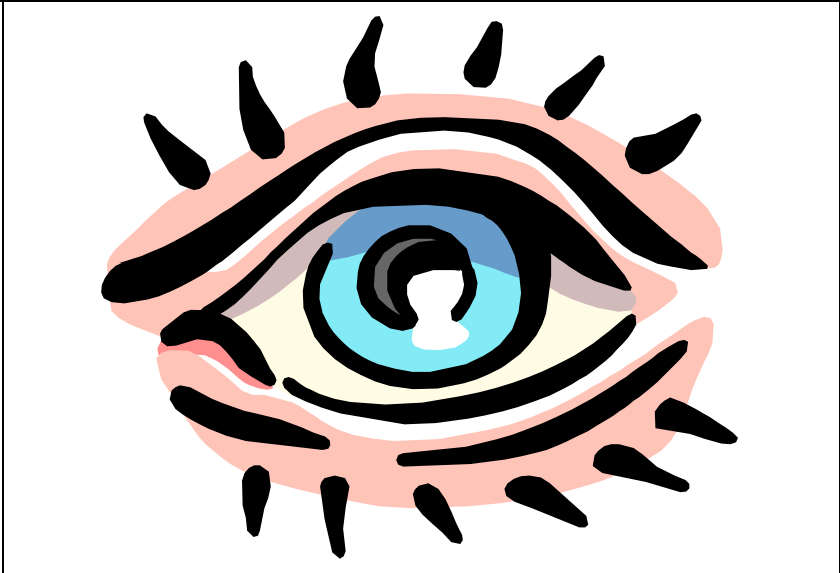
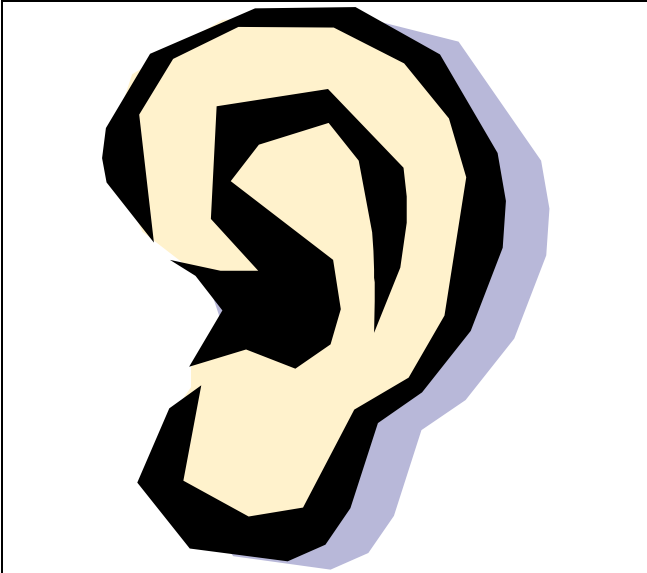


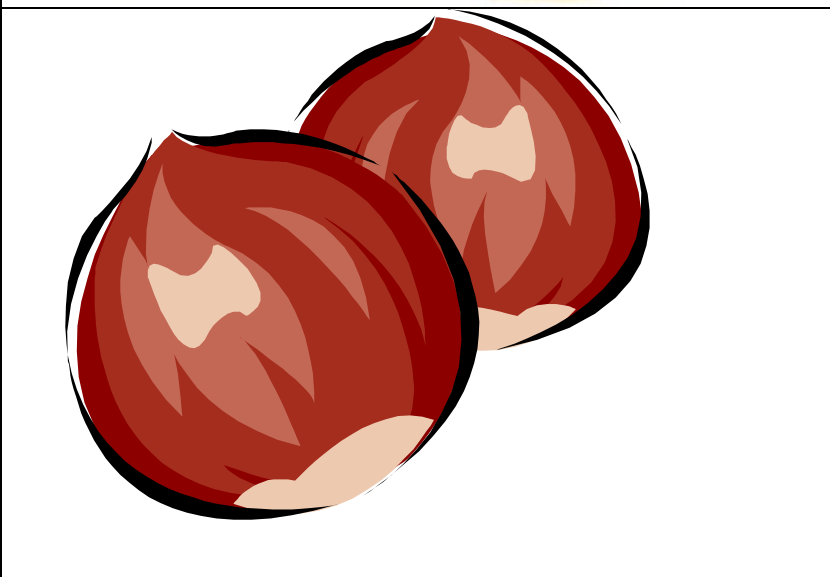
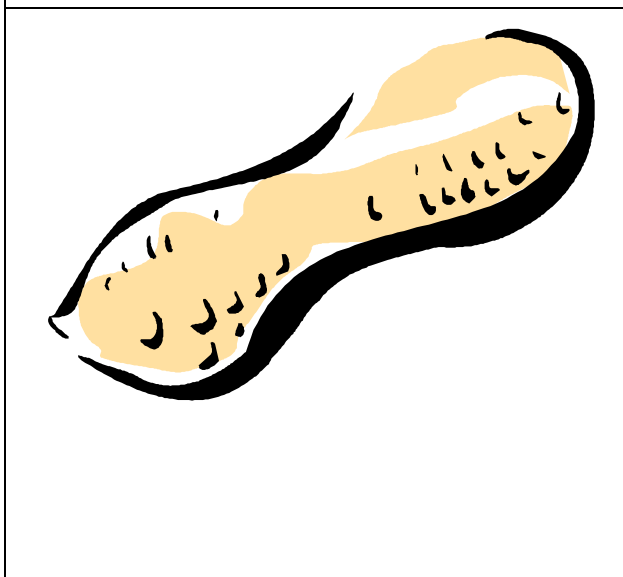
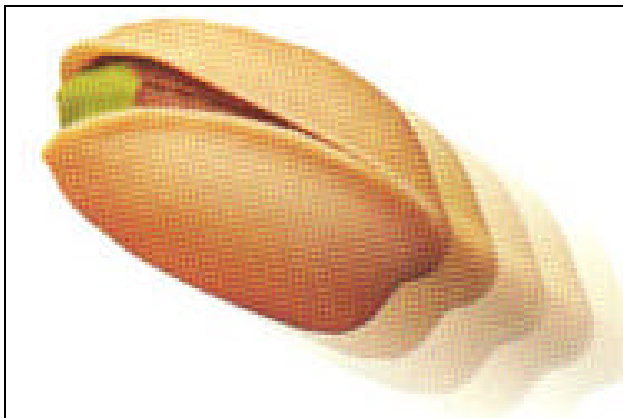
Drawing of nut in shell



Drawing of nut outside of shell

Observations Using the 5 Senses	
Taste 	
Touch 	
Smell 	
Look 	
Sound 	

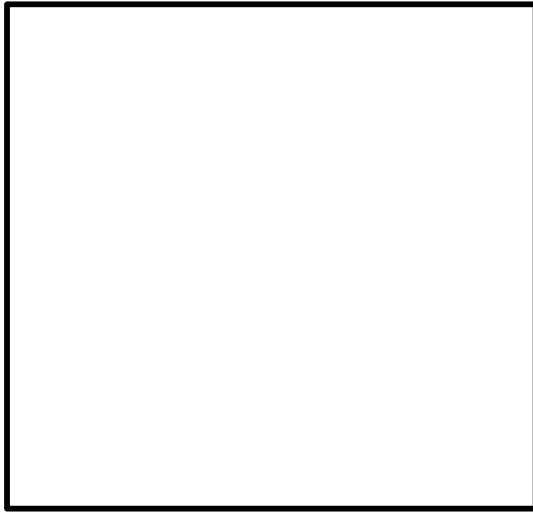




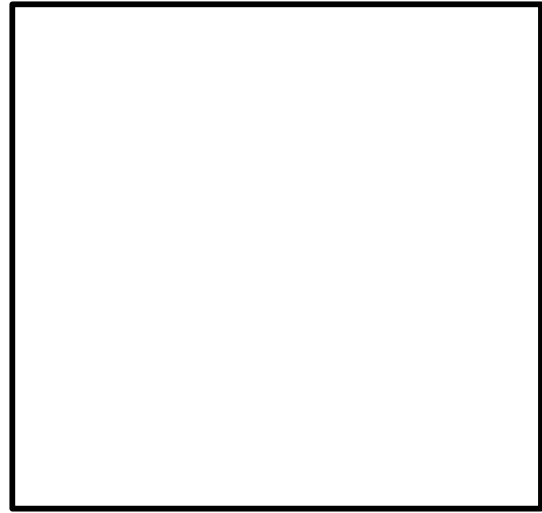
Use these pictures to go along with the observation and nut comparison activity. You may find them useful for other activities as well. Reading from top-left to bottom-right on this page the pictures are as follows: pistachio, cashew, peanut, hazelnut, brazil nut, and almond. The one nut on the other page is a walnut. Cut these out, mount them on thick paper, and laminate for continued use.

Name\_\_\_\_\_ Date\_\_\_\_\_




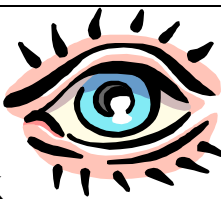

Name of Legume\_\_\_\_\_



Legume in shell



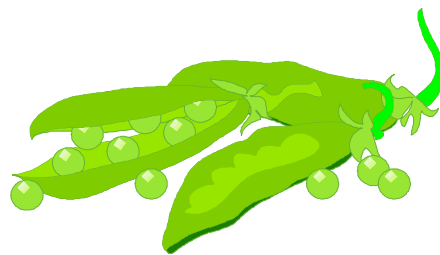
Legume out of shell

Observations Using the 5 Senses	
Taste 	
Touch 	
Smell 	
Look 	
Sound 	



## Legume vs. Nut

- Bring in many different kinds of legumes (peas, beans) for your class to observe.
- Use the legume observation sheet included to have your students make their scientific observations. There is a place for students to draw a picture of the legume both with the naked eye and under a microscope and/or a magnifying lens.
- After your students have had a chance to observe both nuts and legumes have them work in groups to come up with a list of characteristics for each.
- They will need to be able to refer to their observation sheets for this activity.
- Ask students to categorize the peanut. Tell them that it belongs to one of the groups. They should compare their peanut observations to those of legumes and nuts and decide where it belongs.
- Make a simple chart where students' opinions can be tallied and compared. Discuss the results. Tell your kids that a peanut is actually a legume because of the way it grows in pods.



## Parts of the Peanut Plant

- Make an interactive bulletin board where students can label the parts of the peanut plant.
- There is a really good picture in *The Life and Times of the Peanut* that shows all of the parts and has labels as well.
- You will need to make a large diagram of the plant or have parents help. And you will need to make name cards for all of the different parts that you want your class to become familiar with.
  - Make cards as well describing the functions of each plant part. Punch holes in the tops of all of these cards.
  - Create two pockets to attach to the board; label them NAMES and FUNCTIONS.
  - Place thumbtacks on each different part on the picture that the students need to label.
  - Also have thumb tacks placed around the edges of the bulletin board, enough for each separate name card.
  - The object is for students to place the name and function cards next to the corresponding area on the diagram. You may want to use colored tacks or strings to attach from one tack to the other.
  - Have a self-check available for your kids.



## Seed and Embryo: What Makes it Grow?

If you look closely at a peanut that has been split open, you will notice a bump on one end. This is actually the embryo, or baby plant. You can even see tiny leaves sticking out. The peanut is actually a seed, and when the baby plant starts to grow, it uses the rest of the peanut (seed) for food. This is why the peanut is almost 50% fat. As long as the seed is dry, the embryo won't grow. But when it gets water, the peanut will soak it up and dissolve itself into food that the embryo can use. Do the following activity with your class in order to help them better understand the concept of a seed and embryo. Then have them do the experiments to see what conditions and embryo needs in order to grow.



## A Peanut is a Seed

- Have your students look closely at a peanut using a microscope.
- Specifically have them locate the bump (embryo) on the peanut and have them guess what it might be. Record some of these guesses on the board. Tell your kids that the peanut is actually a seed and see if they can explain what that means. Have them name some seeds that they are familiar with. They should be made aware that a seed grows into a new plant.
- Introduce the term “embryo” explaining to your class that it is a baby plant just waiting to grow and that all seeds contain one.
- Now have them consider again what the “bump” is. Discuss.
- Have students work in groups to brainstorm why the embryo isn't growing and what conditions need to be met in order for it to grow.
- Discuss their responses.



## What Makes a Seed Grow?

Have your class perform these experiments in small groups or pairs. There are Lab Reports included for each experiment where your students will be walked through the scientific method of research. All procedures for these experiments are written on the lab reports.

### Experiment 1: Water

Students will learn that seeds need water in order to grow. They will let seeds soak overnight and find out that they soaked up water.

### Experiment 2: Light and Warmth

You will need to have access to a refrigerator for this experiment. Students will place seeds in a warm, sunny spot and in a refrigerator and will observe how the seeds in the refrigerator won't grow.

### Experiment 3: Food

For this experiment your kids will need 3 seedlings per group. They can use the seedlings that sprouted in the jars from experiment #2. As the embryos grow in the jars, the roots grow first, and then the peanut opens up into two halves and the baby plant starts growing. The peanut halves turn green and are called seed leaves. The plants get their food from these seed leaves until real leaves develop which can use the sun and chlorophyll to make food. This experiment should be performed after the peanut halves have opened and the plant is starting to grow. They will consider if the plant can grow without seed leaves by planting the three seedlings in soil as follows: 1) keep both seed leaves 2) clip off one seed leaf 3) clip off both seed leaves. Students will understand after the experiment that the plants need the seed leaves to grow because they use them for food.



## Grow a Peanut Plant to Harvest

A peanut plant takes about five months to grow to maturity. Let your class grow their own plants to learn how they grow and change during the time. Grow them in your school garden, make a small class garden, or grow them indoors in a plant bed or large pots. You may need artificial light depending on where you can plant them in your room and where you live. If none of these ideas work, then you may have students grow them at home and have this as a continuing homework assignment. Have students keep track of their plant daily. They should keep a peanut journal with dates and times along with observations, both in writing and drawings. They should also take measurements, record number of leaves, flowers, etc. Let them know what to expect by showing them real drawings of peanut plants at different time periods. *The Life and Times of the Peanut* has good pictures depicting the peanut plant at different time intervals. Your kids will have a great time growing their own peanuts and they will gain so much from the experience. You may want to use the large peanut picture to make a template for your class to trace and make peanut journals out of.





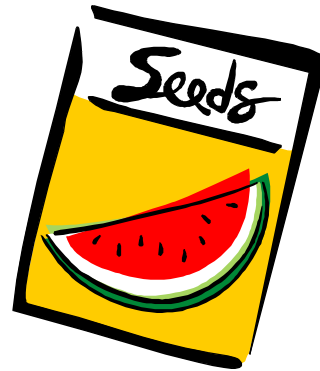
## Plant Report

- Make an area in your class garden where students can experiment with different kinds of seeds and plants. Encourage them to grow as many different kinds of seeds that they want.
- They should keep track of everything that they grow by labeling the garden and by making observations.
- Have each student research one seed in particular and try to grow it. You may want to have them grow it at home so that they provide the necessary conditions for their particular plant. You may want to provide a suggested list of plants to grow that will enable your kids to harvest something within a few months. Because if they choose fruits that grow on trees like apples and oranges, they will have to wait 5-7 years and it won't be very fun. Here are some good choices: radish, carrots, squash, pepper, lettuces, cucumber, herbs, cabbage, green beans, peas, celery, broccoli, tomato, strawberries, cantaloupe and watermelon.
- They should write a report on their chosen plant discussing the plant in general, how it grows, where it grows naturally, and any other items of interest.
- They should also take pictures or make illustrations of the plant during its growth period. Have them present their information in an interesting visual representation that can be displayed for the whole class to learn from.



## Seed Comparison

- Have your class bring in different kinds of seeds from foods that they eat at home. There are obvious ones like apple, orange, lemon, watermelon, cucumber, and pepper. But also the pits from peaches, plums, and avocados are seeds. The largest seed is the coconut.
- Have plenty of microscopes and magnifying lenses available.
- Have students label seeds that they bring in.
- Students will observe all the different kinds of seeds both on the outside and inside. Encourage them to look for the embryos in all of the seeds.
- Have them make notes of things that they find interesting, similarities, differences, etc.
- Students should share some of these things with the class.
- You may want to use a large sheet of butcher paper to record all of the things that your students learned about seeds from observing them. They will be amazed at what they learn.



## Peanut Science Fair

- George Washington Carver came up with over 300 uses for the peanut. Have your students look into some of these uses or experiment with some of their own ideas by doing a science project.
- Have a list of possibilities available for your students, but encourage them to come up with ideas of their own. See the list of peanut inventions by G.W. Carver. The project may deal with growing peanut seed, harvesting, the process of making peanut butter or any other interesting topic.
- Give your kids plenty of time to work on their project in case they have a long-term experiment, such as growing peanuts from seed.
- For the project, your students will need to create a display. Pleated cardboard (usually in three sides) works well for the display. Encourage them to create visual displays, use photographs, diagrams, and real objects.
- Invite other classes in to visit your Peanut Science Fair and learn about the scientific uses for them.

## Carver's Uses for the Peanut Plant

(adapted from <http://edcen.ehhs.cmich.edu/~rlandrum/peanut.htm>)

### Beverages

Blackberry Punch  
Evaporated Peanut Beverage  
Cherry Punch  
Normal Peanut Beverage  
Peanut Lemon Punch  
Peanut Koumiss Beverage  
Peanut Orange Punch  
Peanut Punch  
Plum Punch

### Cosmetics

All-purpose Cream  
Antiseptic Soap  
Baby Massage Cream  
Face Bleach  
Face Cream  
Face Lotion  
Face Ointment  
Face Powder  
Fat Producing Cream  
Glycerine  
Hand Lotion  
Hair and Scalp Lotion  
Peanut Oil Shampoo  
Pomade for Scalp  
Pomade for Skin  
Shampoo  
Shaving Cream  
Tan Remover  
Tetter and Dandruff Cure  
Toilet Soap  
Vanishing Cream

### Dyes, Paints, and Stains

Dyes for Cloth (30)  
Dyes for Leather (19)  
Paints  
Special Peanut Dye  
Wood Stains

### Stock Foods

Hen Food for Laying  
Molasses Feed  
Peanut Hay Meal  
Peanut Hull Bran  
Peanut Hull Stock Food  
Peanut Meal  
Peanut Stock Food  
Bar Candy  
Breakfast Foods  
Bisque Powder  
Buttermilk  
Butter from Peanut Milk  
Caramel  
Cheese Cream  
Cheese Nut Sage  
Cheese Pimento  
Cheese Sandwich  
Cheese Tutti Frutti  
Chili Sauce  
Chocolate Coated Peanut  
Chop Suey Sauce  
Cocoa  
Cooking Oil  
Cream Candy  
Cream from Milk  
Crystallized Peanut  
Curds  
Dehydrated Milk Flakes  
Dry Coffee  
Evaporated Milk  
Flavoring Paste  
Golden Nuts  
Instant Coffee  
Lard Compound  
Malted Substitutes  
Mayonnaise  
Meal Substitutes  
Milk (32)  
Mock Chicken  
Mock Goose  
Mock Meat  
Mock Oyster  
Mock Veal Cutlet  
Oleomargarine  
Pancake Flour  
Peanut Bar  
Peanut Brittle  
Peanut Bisque Flour  
Peanut Butter, regular  
Peanut Cake  
Peanut Dainties  
Peanut Flakes  
Peanut Flour (11)  
Peanut Hearts  
Peanut Kisses  
Peanut Meat Loaf

Peanut and Pop Corn Bars  
Peanut Relish  
Peanut Sausage  
Peanut Surprise  
Peanut Tofu Sauce  
Peanut Wafers  
Pickle  
Salad Oil  
Salted Peanut  
Shredded Peanut  
Substitute for Asparagus  
Sweet Pickle  
Vinegar  
White Pepper  
Worcestershire Sauce

### Household Products

Laundry Soap  
Sweeping Compound  
Washing Powder  
Wood Filler  
  
General Products  
Axle Grease  
Charcoal from shells  
Cleanser for hands  
Coke (from hulls)  
Diesel fuel  
Fuel Bricketts  
Gasoline  
Glue  
Illuminating Oil  
Insecticide  
Insulating Boards (18)  
Nitroglycerine  
Paper (colored) from skins  
Paper (Kraft) from vines  
Paper (white) from vines  
Printers Ink  
Plastics  
Rubber  
Shoe and Leather Blacking  
Soap Stock  
Sizing for Walls  
Soil Conditioner  
Wall Boards

Medicine  
Castoria Substitute  
Emulsion for Bronchitis  
Goiter Treatment  
Iron Tonic  
Laxatives  
Medicine similar to milk  
Rubbing Oil  
Tannic Acid  
Quinine



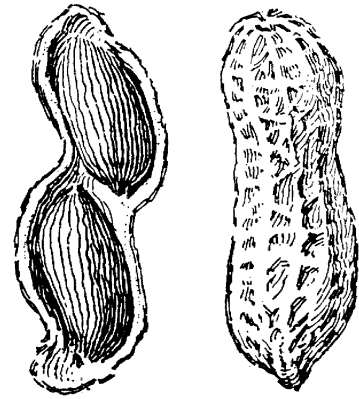
## Experiment 1: Seeds and Water

**Objective:** to soak peanuts in water overnight and see what happens

**You will need:** jar with a lid, a handful of peanuts, measuring spoons and cups

**Procedure:**

1. Measure a tablespoon of peanuts and put them in the jar.
2. Add 10 tablespoons of water to the jar.
3. Place the lid on the jar and let it sit overnight.
4. Write your hypothesis in the space provided.
5. The next day observe what happened. Measure the water in the jar now. Write what you find out.
6. Make a conclusion about the experiment.



**Hypothesis:** What do you think will happen?

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**Observations:** What happened?

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How much water did you put in the jar?\_\_\_\_\_

How much water is in the jar the next day?\_\_\_\_\_

**Conclusion:** Why do you think this happened?

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## Experiment 2: Warm vs. Cold

**Objective:** to compare how seeds grow in warm and cold places

**You will need:** a refrigerator or cooler, a sunny or warm spot, several peanut seeds, 2 jars with lids, paper towels

**Procedure:**

1. Line both jars with a paper towel.
2. Slip several peanuts between the towel and jar in both jars.
3. Add a few drops of water and place the lids on the jars.
4. Place one jar in a warm spot and one in the fridge. Leave them there for several days.
5. Write your hypothesis in the space provided.
6. After 4 or 5 days you should be able to see something happening. Draw pictures of one peanut from each jar in the space provided.
7. Make a conclusion to your experiment.

**Hypothesis:** What do you think will happen?

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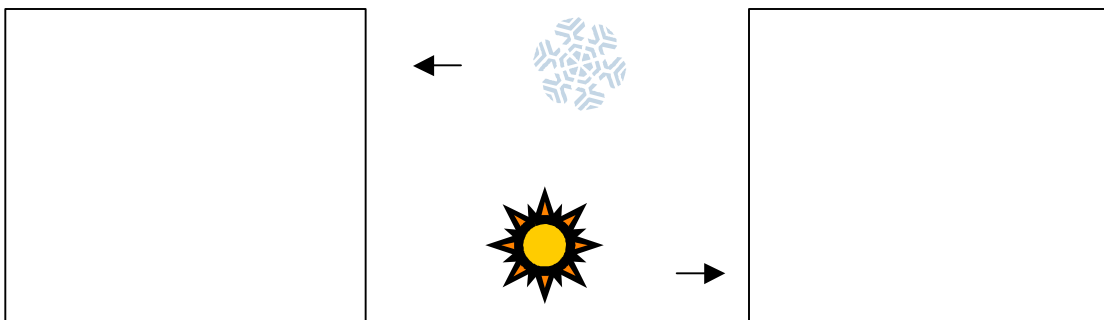
**Observations:** What happened?

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**Conclusion:** Why do you think this happened?

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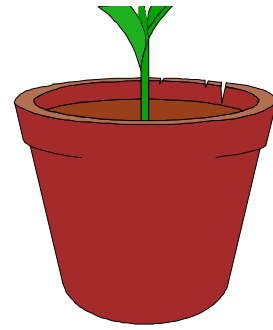
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### Experiment 3: Seed Leaves



**Objective:** to compare how seedlings grow with and without seed leaves

**You will need:** three seedlings, 3 Styrofoam cups, and soil

**Procedure:**

1. Fill the three cups with soil.
2. Clip both seed leaves off of one of the seedlings, clip one seed leaf off of one seedling, and leave one intact.
3. Plant the seedlings and label the cups accordingly.
4. Draw pictures of each seedling in the BEFORE section provided.
5. Water them and place them in a sunny spot.
6. Write your hypothesis in the space provided.
7. After a few days you should be able to see something happening. Draw pictures of each seedling in the AFTER spaces provided.
8. Make a conclusion to your experiment.

**Hypothesis:** What do you think will happen?

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**Observations:** What happened?

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**Conclusion:** Why do you think this happened?

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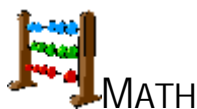
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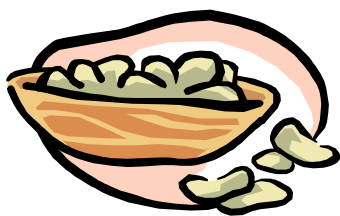
	BEFORE	AFTER
BOTH SEED LEAVES		
ONE SEED LEAF		
NO SEED LEAVES		

# Peanuts



How Many Peanuts are in the Jar? An exercise in estimation and plotting.

- Fill a jar with peanuts.
- Have your students estimate the number of peanuts in the jar.
- Let them pass the jar around so they can make intelligent guesses rather than picking random numbers.
- Have them write down their guess along with how they came up with it.
- Find the highest and lowest guesses in the class, and based on these numbers have your class help you come up with sensible intervals. For example: If the highest is 1164 and the lowest 53, you may want to use intervals of 50 starting with 0 and going up to 1200.
- On a large sheet of graph paper, write the decided intervals on the y-axis. Have your students write their names on the x-axis and plot their predictions.
- Ask your class what the best way to count the peanuts would be. For example: one by one, by twos, split into groups and have each group count some, etc. After deciding on one way, count the peanuts.
- Compare the actual amount with the students' predictions. Draw a line across the graph horizontally to show the actual number. Find the closest guesses from looking at the graph.



Have those students share their calculating technique with the class.



Average Number of Peanuts in a Bag

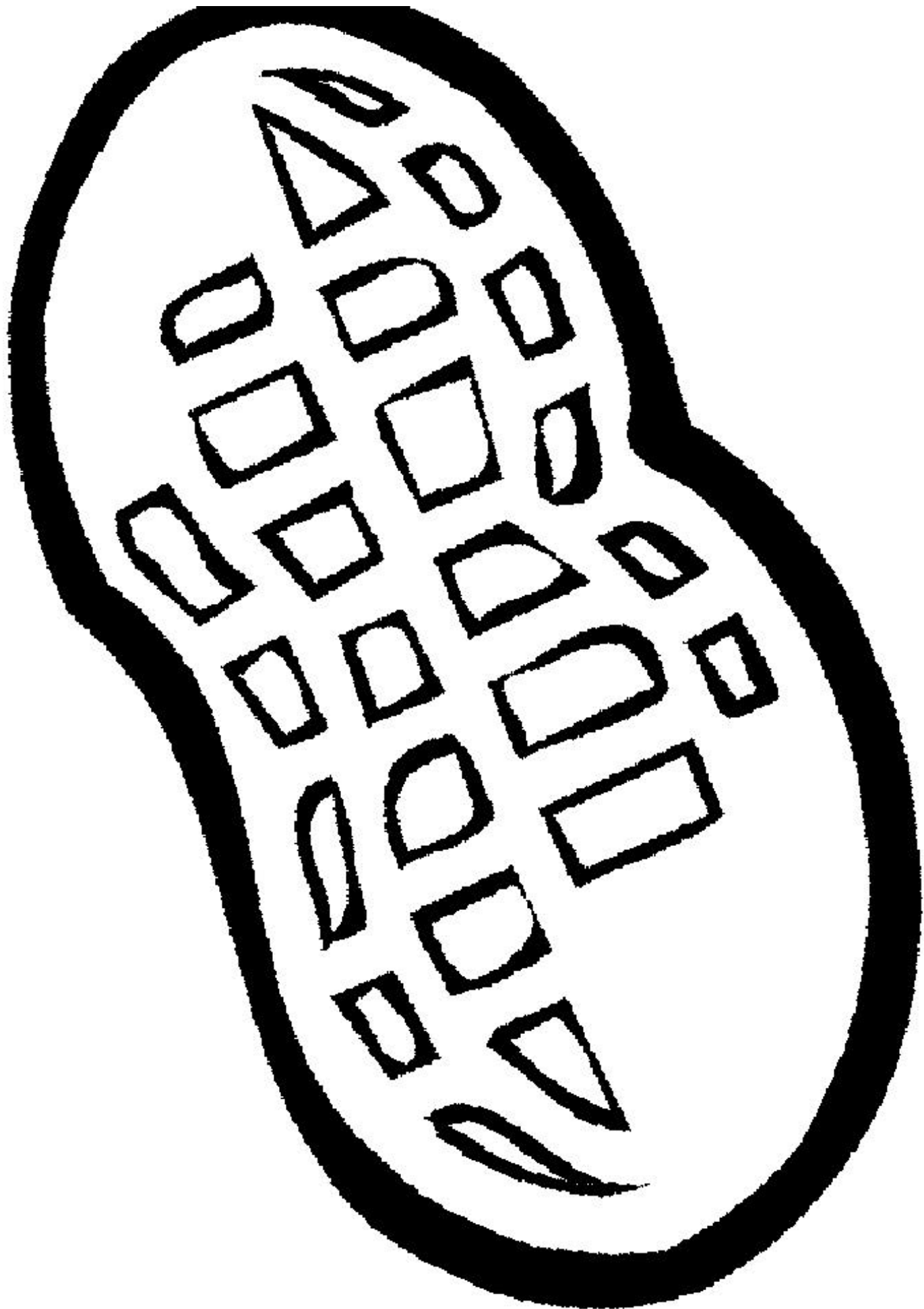
- Have your students form into groups of 4 or 5.
- Give each group a bag of shelled peanuts. Use the same size and brand for each group.
- Each group should come up with an estimation of the number of peanuts in their bag without touching the bag.
- Have them count the peanuts, find how close their estimate was, and consider why. You may want to have them record their estimates and conclusions.
- When all of the groups have finished counting, record all of the numbers on the board or overhead.
- Ask students to find the average number per bag.
- If you have not worked with averages yet, give some examples from which they can form a definition.
  - The average annual rainfall based on the past 2 years in Colombia, South America is 350 inches. One year it rained 300 inches, and one year 375 inches.
  - I have 3 sisters that are 12 years old, 20 years old, and 22 years old. I am 18 years old and our average age is 18 years old also.
  - February has 28 days, March has 31, and April has 30. The average number of days per month (of these three months) is 29.66 days.
- Discuss these problems with your class after they have had a chance to develop a definition for the term "average." Discuss the term and what it means.
- Do the peanut problem with your class after they have done it themselves. Again discuss the meaning. Why is it important to find the average? It may not be so important in this case, but when is it? Where else is it used in "real-life?"



## Taste Test

- Have a taste test using a mixture of 10 different nuts/legumes. In order to compare the tastes use the raw forms of the food.
- Have your students rate the different tastes on a scale of 1 to 10.
- Make a large chart out of butcher paper where students can record their responses. Write all of the names of the foods across the top and all of the students names down the side.
- Have another chart or area where students can describe the tastes. This is good language practice. They have to explain the taste in one or two words for each different food.
- After students have tried everything and the chart is complete, have students find the average scores for each food. Give them a chance to do this on their own and then work out the averages with the class.
- As an independent assignment, have students create a graph showing the foods vs. the scores. Let them be creative. But have samples available and discuss graphing in general.





# Peanuts



## LANGUAGE ARTS



### Spelling / Vocabulary

**George Washington Carver** : an American botanist and educator who helped farmers of the Southern United States improve the soil quality and production of their land by innovative uses of the peanut, soybeans, and sweet potatoes

**crop** : cultivated plants or agricultural produce, such as grain, vegetables, or fruit

**legume** : a flowering plant that bears seeds in pods

**nut** : a hard-shelled seed with a protective skin and shell and one interior kernel

**runners** : a type of peanut plant that spreads out like vines

**bunch** : a type of peanut plant that grows upright like small bushes

**harvest** : the process of gathering a crop

**peanut butter** : a paste made from ground roasted peanuts

**goober** : a term for peanuts first used by slaves coming from Africa

### Parts of the Peanut Plant

**peanut** : the seed of the peanut plant; a legume, not a nut

**leaflets** : small leaves that grow in pairs in groups of four; they fold up in pairs at night

**stems** : supporting structure that carries water and food to the leaflets

**flowers** : are ½ inch across, are low on the plant, and are yellow; only bloom for one day

**primary branches** : these are the first branches from the ground, large stems from which flowers blossom

**Tap Roots** : main root that anchors the plant

**Roots** : branch off from the tap root, absorb nutrients and water from the soil

**Nodules** : round growths on roots that produce food to help the plant grow

**Pod** : structure encasing two seeds (peanuts) which are wrapped with protective skin

**Pegs** : shoots that sprout from the base of wilted flowers and dive into the ground, eventually becoming peanuts



### Phonics

#### The Letter P

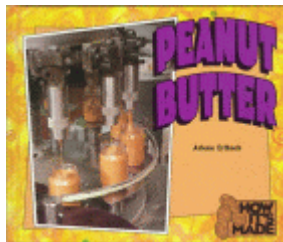
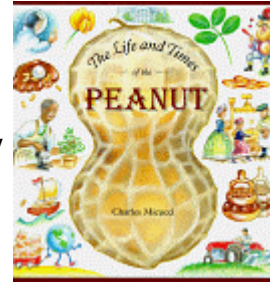
Your beginning spellers may find the included outline of the letter **P** helpful when spelling words that begin with this letter. This reproducible is a large letter P with a small picture of a peanut and the word 'peanut' next to it. Use it for phonics activities, including beginning sounds, ending sounds, and middle sounds also.



Reading

### ***Life and Time of the Peanut* by Charles Micucci**

This is an excellent children's book that explains everything from the origin of peanuts to modern-day uses to George Washington Carver's story. The writing style is easy for kids, but provides plenty of information. The illustrations are delightful.



### ***Peanut Butter (How It's Made)* by Arlene Erlbach**

This book explains of making peanut butter. It has many colorful photographs to make it easy to understand.

### ***Seed to Peanut* by Oliver S. Owen**

This will help your kids understand the science and the life cycle of this legume, the peanut.



### ***The Great American Peanut Butter Book: A Book of Recipes, Facts, Figures, and Fun* by Honey Zisman with Larry Zisman**

Your kids will have fun with this book's neat recipes and information-filled pages.

### ***Peanut* by Millicent Ellis Selsam**

An excellent up-close look at the life of a peanut plant, beginning with germination of the seed to production of the seeds (peanuts). It is full of clear black-and-white up-close photographs. This is a great learning tool.



## Writing

### How-to Instructions

- Throughout your study of peanuts, your students will be making numerous substances using peanuts, such as peanut butter, cookies, peanut butter & jelly sandwiches, etc.
- Have your students choose something they would like to make out of peanut butter and write instructions on how to make it including the recipe, preparation and cooking directions.
- Make a class "Peanut Recipe Book" using your students' work for this activity and make some of the foods as a class, letting students lead the way.

### Letter to Peanut Farmers

- After your students have learned about the peanut farming process and techniques, they should have a better understanding and an appreciation for the labor of the peanut farmer.
- Have your kids write a letter to peanut farmers (or any local farmer) with questions and inquiries, or thanks and praise.
- Often the role of the farmer is taken for granted, and this recognition will be much appreciated by farmers.

### George Washington Carver Interview

- George Washington Carver offered so much to agriculture in the South and was an intriguing character. After studying his life and works, students will most likely have interest in one or more aspects of this man's distinguished career.
- Have them come up with questions that they would like to ask Carver. Have them prepare these questions for a mock interview. They may work in groups to come up with the questions *and* answers based on how they think G.W. Carver would respond.
- Students should share these interviews with the class or present the questions and answers to the class.

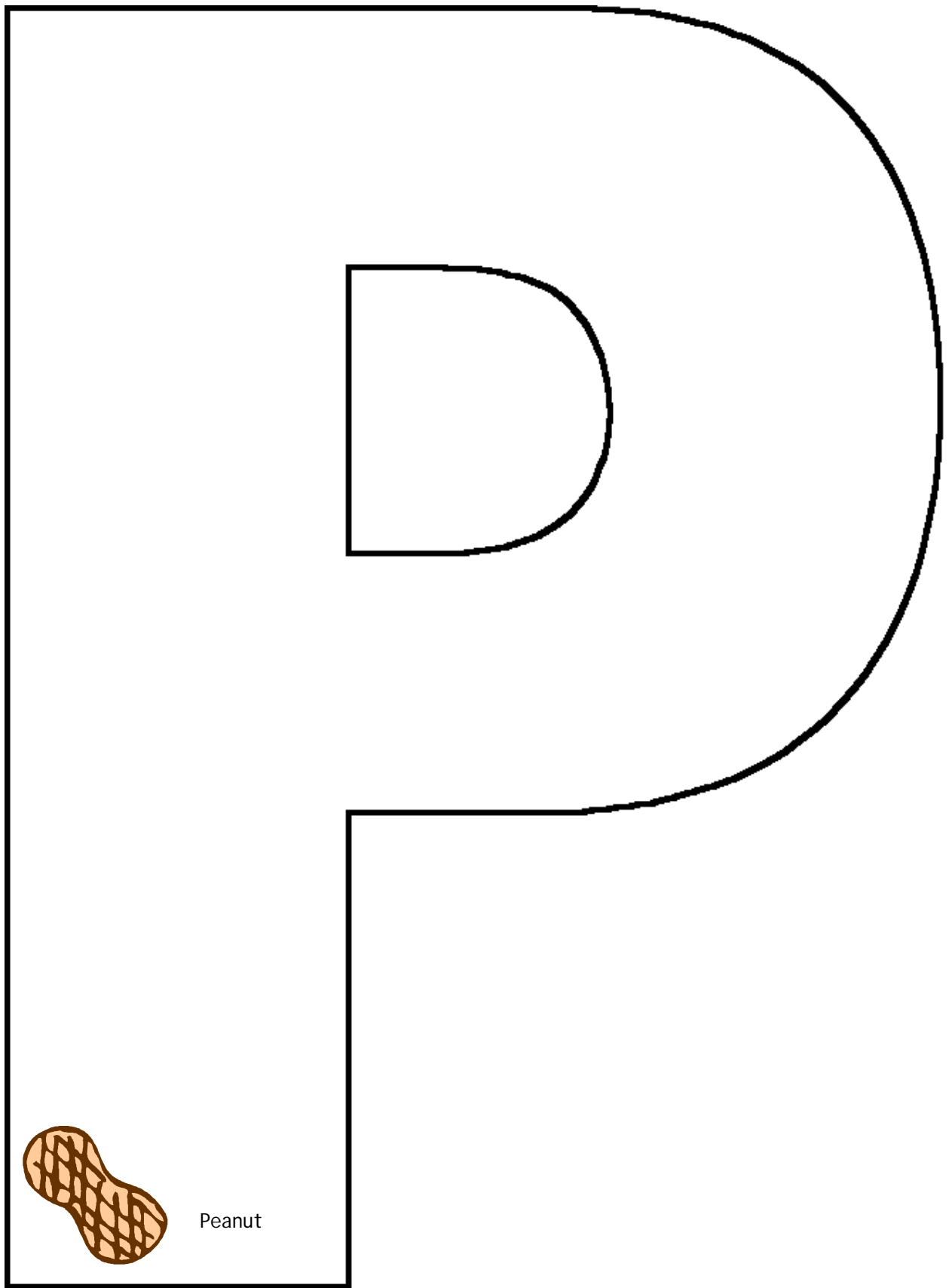
### Persuasive Essay Concerning Peanuts

- George Washington Carver had to present his case for the importance of peanuts to the United States Congress in order to persuade the government to subsidize peanut farming.
- Have your students write their own persuasive essay to the government or a political organization to convince that body that peanuts are essential to the success of southern farming.
- The essay should be based on facts and hands-on experience that your students obtain from reading and studying about this plant and by experiments they do. They can also write their essay on a specific aspect of peanuts, i.e. importance of peanut butter, peanut oil, etc.

### My Own Peanut Butter

- Have students work in teams as advertising designers to come up with a name for a new peanut butter. They will need to make the name of the peanut butter marketable by appealing to a wide audience. They may create magazine ads as well as television commercials.
- Bring in several different kinds of peanut butter, such as Peter Pan, Jiffy, and Skippy in order to help students visualize the marketing scheme. You may want to present several commercials as well as paper advertising.





# Peanuts



- Planters Peanuts found their mascot, Mr. Peanut, by having elementary school students compete to come up with a logo for the signature product.
- Show your kids Mr. Peanut and tell them the story behind him.
- Have them discuss why Planters may have chosen this logo. What are some of the appealing features of Mr. Peanut?
- Tell your students that they will be designing their own logo for a peanut company. Have them brainstorm features that they would like to see incorporated in the logo.
- Have them design it and share these with the class.



- Create a scene with peanuts on table, in a dish, etc., using both shelled peanuts and the seeds (peanuts).
- Have your students choose a medium with which to do a still life of this scene.
- Encourage them to sit at different angles to see the objects at different perspectives to help them decide from which view to draw.
- You should also have students use pencil at first, and then they may paint, use pastels, charcoal, collage, etc.



- Use the next page as a creative art assignment for your class.
- Have them make the peanut into a picture by creating a background around the peanut. For example, they could draw pictures of farmers harvesting peanuts, a peanut compress, a commercial brand of peanut butter, someone eating peanuts, a nutrition chart, etc.
- You can let the kids create more abstract art using peanuts if you would like.



- Have your kids make creations from peanuts shells. They are easy to use; they can be the base for peanut people, animals, and other peanut figures.
- Let them use fabric, yarn, and other miscellaneous materials to create their peanut family. They can make the peanut people or paste the shells onto paper to make a collage.



# Peanuts



## Extras



## Nutrition

- Peanuts are 26% protein. They have the same food value as beef.
- Have a nutrition chart available. There is one in this unit from the USDA that indicates two tablespoons of peanut butter count as one ounce of meat!
- You will also need to have different peanut products available that have Percent Daily Value (%DV) descriptions.
- Have your students figure out how they can get their daily amount of protein by eating peanut products. For example, how many raw peanuts would they need to eat, how much peanut butter, etc.
- Your class will gain experience reading food labels, ingredients, and serving size, as well as understanding how they can incorporate peanuts into their diet.



## Peanut Oil

- Many countries use peanuts primarily as a source of oil instead of direct consumption. The oil extracted from peanuts is used in margarine, cheeses, soaps, lubricants, and especially as lamp oil.
- You may want to demonstrate the use of peanut oil in oil lamps.
- Peanut oil is also used by many cooks, who prefer it to other oils because it can be cooked to a higher temperature and doesn't absorb odors as easily. You can see if this is true by cooking eggs, bacon, pancakes, or popcorn in both regular oil and peanut oil. Have a test taste to come to a class consensus about which tastes better.
- You can also make salad dressing using peanut oil instead of regular vegetable or canola oil.





## Graphs

Here is a list of graphs about peanuts to use with this unit.

- Peanut Butter Brands Tally
  - Favorite Nuts
- (You can use the large pictures in the Science section to make a graph for this)
- Chunky vs. Smooth
  - How Often do You Eat Peanut Butter & Jelly Sandwiches?
  - Peanut Oil vs. Other Oil
  - Homemade Peanut Butter vs. Commercial Brands
  - Do You Like Peanuts?
  - Favorite Use of Peanuts



## Class Peanut Butter

- Peanuts are easily made into peanut butter as have high oil content. Large presses are used to extract peanut oil for commercial peanut butter and peanut cooking oil.
- When making peanut butter with your class, you will need to add a small amount of peanut oil to supplement the natural oil from the crushed peanuts.
- A general recipe for peanut butter is
  - 1-½ cups roasted peanuts
  - 1 tablespoon peanut oil
  - ¼ teaspoon salt

Simply add these ingredients into a blender or food processor and blend until you reach the desired consistency. If you would like to make chunky peanut butter, save ¼ of the peanuts. Add these peanuts to the peanut butter and blend the mixture for just a few seconds to chop the added peanuts.








- Have your students compare their class-made peanut butter with other commercial ones. Which one do they think is more fresh? Better tasting?



## Sites About Peanut Butter

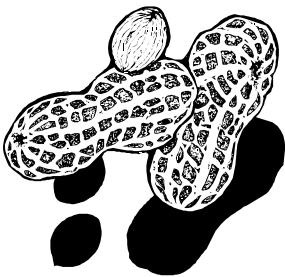
1. [www.peanut-institute.org](http://www.peanut-institute.org) : This site gives dietary information about peanuts, facts, articles on peanut research, and will be opening the education materials section soon.
2. [www.usda.gov](http://www.usda.gov) : This site gives information about food value, including nutrition charts and food pyramids that may be downloaded.
3. [www.jif.com](http://www.jif.com) : The home site for Jif® brand peanut butter. The site includes information about peanuts, interesting facts about peanut butter and several recipes.
4. [www.peanutsusa.com](http://www.peanutsusa.com) : This site contains recent news, facts and standards and specifications about peanuts and peanut butter.
5. [www.peanutbutterlovers.com](http://www.peanutbutterlovers.com) : This web site discusses the process of making peanut butter commercially, including the history, peanut butter standards, and recipes.

What brand of peanut butter do you use?

	
	
	
	
	
	
 <p>or other organic peanut butter</p>	
<p>Other</p>	

# Do You Like Peanuts?


(color in one box starting from the bottom)



Yes	No	Kind of

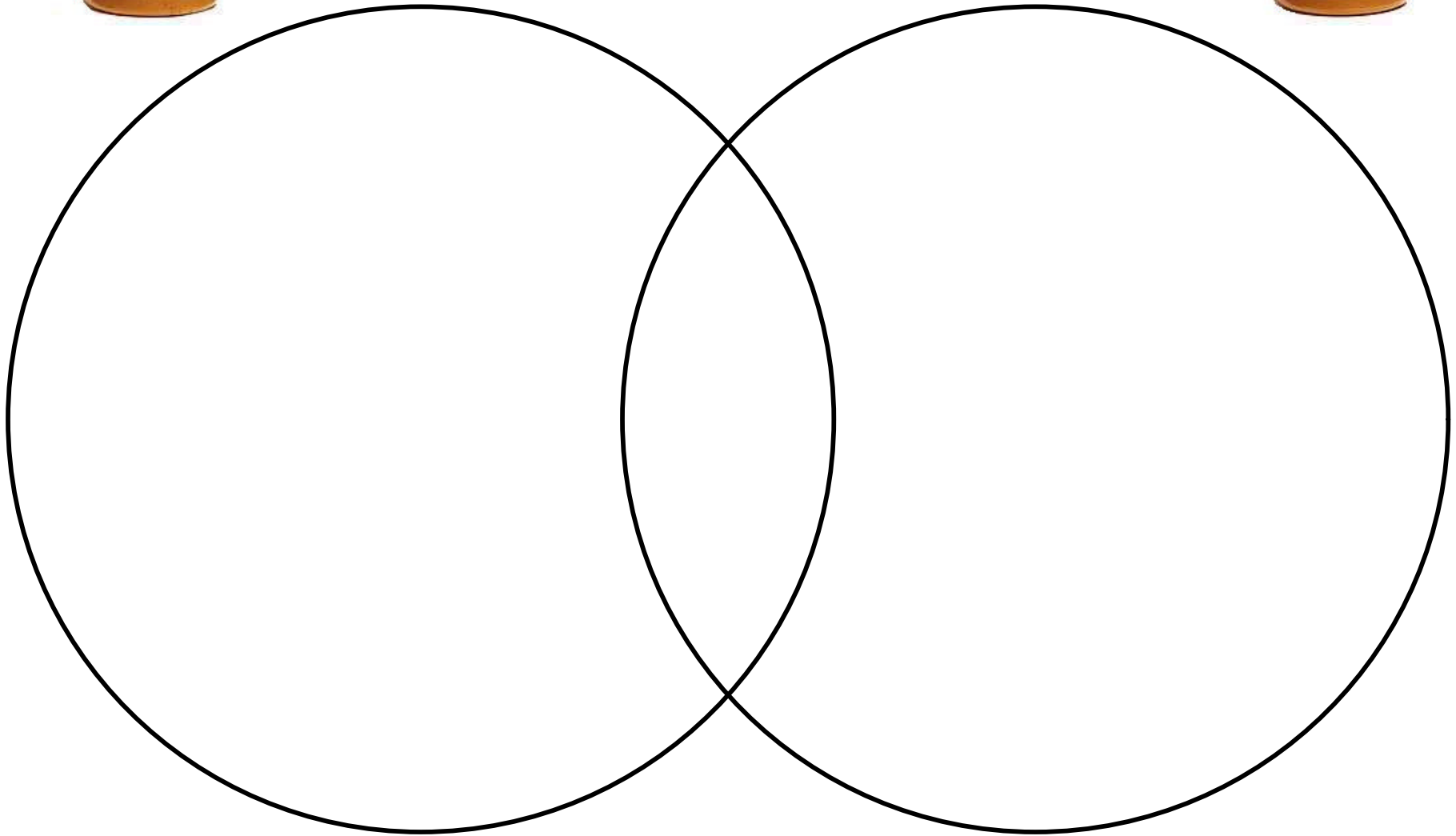
# How often do you eat PB&J's?

Never	Once a week	Twice a week	3 or more times a week





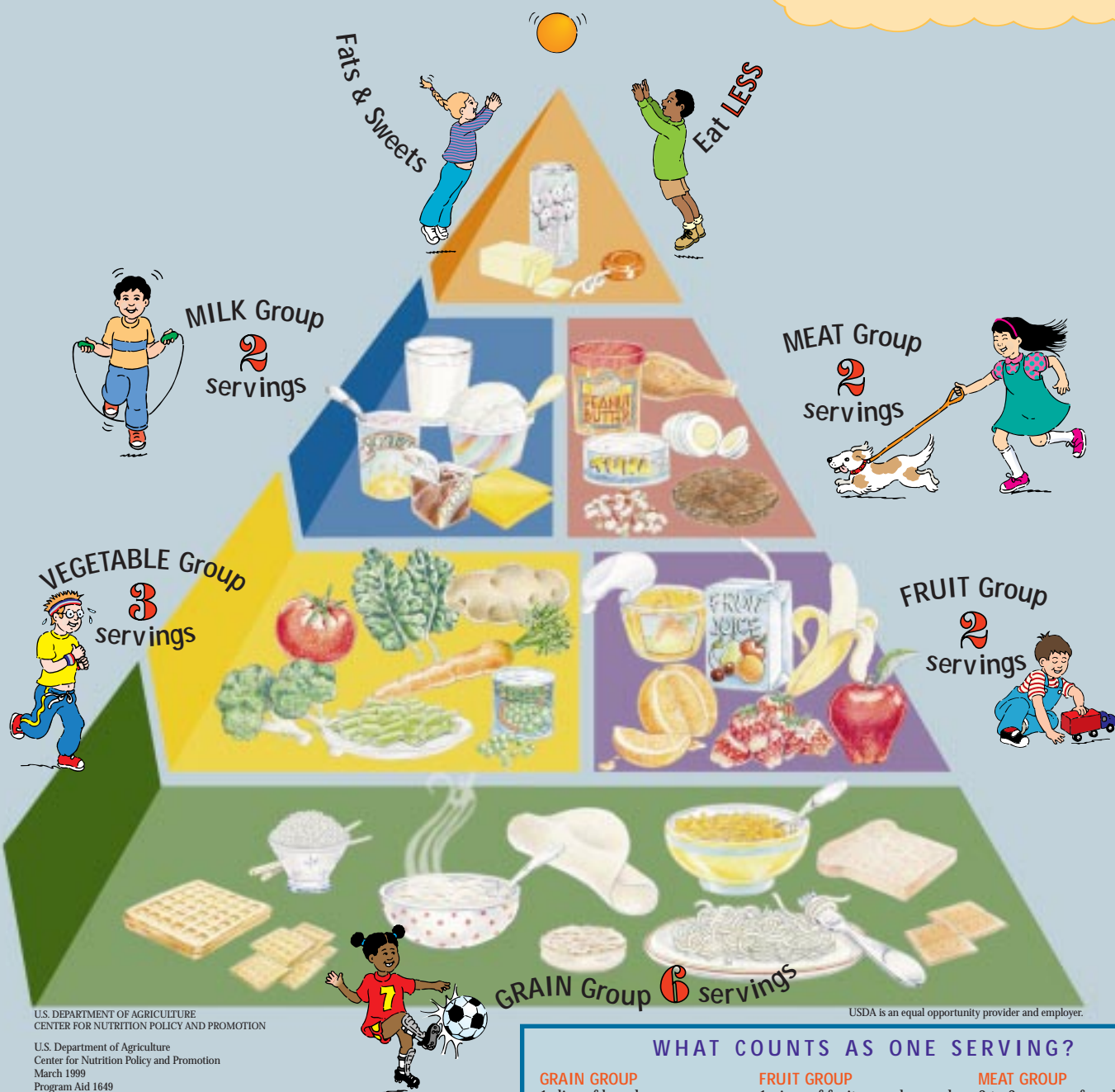
Chunky or Smooth?



# FOOD Guide PYRAMID

## for Young Children

A Daily Guide for  
2- to 6-Year-Olds



**FOOD IS FUN** and learning about food is fun, too. Eating foods from the Food Guide Pyramid and being physically active will help you grow healthy and strong.

### WHAT COUNTS AS ONE SERVING?

#### GRAIN GROUP

1 slice of bread  
1/2 cup of cooked rice or pasta  
1/2 cup of cooked cereal  
1 ounce of ready-to-eat cereal

#### VEGETABLE GROUP

1/2 cup of chopped raw or cooked vegetables  
1 cup of raw leafy vegetables

#### FRUIT GROUP

1 piece of fruit or melon wedge  
3/4 cup of juice  
1/2 cup of canned fruit  
1/4 cup of dried fruit

#### MILK GROUP

1 cup of milk or yogurt  
2 ounces of cheese

#### MEAT GROUP

2 to 3 ounces of cooked lean meat, poultry, or fish.  
1/2 cup of cooked dry beans, or 1 egg counts as 1 ounce of lean meat. 2 tablespoons of peanut butter count as 1 ounce of meat.

#### FATS AND SWEETS

Limit calories from these.

Four- to 6-year-olds can eat these serving sizes. Offer 2- to 3-year-olds less, except for milk. Two- to 6-year-old children need a total of 2 servings from the milk group each day.

**EAT** a variety of **FOODS** AND **ENJOY!**

# PLAN FOR YOUR YOUNG CHILD . . . The Pyramid Way

Use this chart to get an idea of the foods your child eats over a week. Pencil in the foods eaten each day and pencil in the corresponding triangular shape. (For example, if a slice of toast is eaten at breakfast, write in “toast” and fill in one Grain group pyramid.) The number of pyramids shown for each food group is the number of servings to be eaten each day. At the end of the week, if you see only a few blank pyramids...keep up the good work. If you notice several blank pyramids, offer foods from the missing food groups in the days to come.

	SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
Milk Meat Vegetable Fruit Grain	△△	△△	△△	△△	△△	△△	△△
	△△	△△	△△	△△	△△	△△	△△
	△△△	△△△	△△△	△△△	△△△	△△△	△△△
	△△	△△	△△	△△	△△	△△	△△
	△△△	△△△	△△△	△△△	△△△	△△△	△△△
Breakfast							
Snack							
Lunch							
Snack							
Dinner							