

About This Unit

Teacher Information

Raising Radishes with Amazing Ammonia is sponsored by the Louisiana Ammonia Producers. Louisiana Ammonia Producers is a group of companies located throughout Louisiana that manufactures ammonia. The ammonia manufactured in Louisiana is used in many ways. However, the majority of ammonia produced in Louisiana is used to make fertilizer, which is used primarily by farmers for growing food such as corn, wheat, sugar cane, and yes, even radishes.

Students begin this unit by sharing prior knowledge of ammonia and exploring their homes for ammonia products. Next, the term “fertilizer” is introduced to students as they prepare for the planting process. Students discover that ammonia is used to make fertilizer, which helps grow the food we eat. **To demonstrate this, each student will:** plant a radish seed, monitor and record its growth, and make observations about the class control plant.

There are eight lessons in this unit; however, some lessons may take more than one class period to complete.

Note: *Radishes have a germination period of four to seven days. Plan to provide students with supplemental activities while waiting for growth to occur. A unit on plants and planting is one suggestion for this period. Once plants begin to grow, students should have several opportunities (at least five) to measure and record the growth of their radish plants.*

When the unit is complete, students can take their plants home to continue growing. Keep at least one plant at school so students can see the final product. Eventually, the radish will need to be transplanted to a larger container. Radishes can successfully grow in a large flower pot. As a final activity, use a radish for a cooking or craft activity. (Your students can taste the radishes after they have grown, or they can develop their own radish character with toothpicks or other craft supplies.)

Suggested Activities to Accompany This Unit:

- Invite a farmer to visit your class to discuss his job and how he uses fertilizer. (If possible, visit a farm.)
- Plan a field trip to a local nursery.
- Invite a guest speaker to your class from one of the Louisiana Ammonia Producers companies. Find out how they manufacture ammonia and discover the many uses and benefits of ammonia.

Louisiana Ammonia Producers:

Borden Chemicals and Plastics - Judy Nordgren
Geismar, Louisiana; 225-473-0463

CF Industries - Adrian Worries
Donaldsonville, Louisiana; 225-473-0236

Cytec Industries - Jim Dutcher
Westwego, Louisiana; 504-431-6436

IMC-Agrico - Todd Madere
Uncle Sam, Louisiana; 225-562-3501, ext. 5900

PCS Nitrogen - Mike Patterson
Geismar, Louisiana; 225-621-1552

Triad Nitrogen - Jimmy Ramagost
Donaldsonville, Louisiana; 225-473-3976

Lesson 1: Ammonia In Our World

Objective: Identify students' prior knowledge of ammonia.

Materials:

- large piece of chart paper
- markers

Procedure:

1. Draw a large circle on a piece of chart paper and write "What We Know About Ammonia" in the middle of the circle.



2. Explain to students ammonia is produced in Louisiana and over the next few weeks they will learn more about how it is used.
3. Using brainstorming techniques, ask students what they already know about ammonia. Remind and encourage students to share ideas freely during brainstorming sessions. Remind them that all ideas are accepted.
4. Display the chart labeled "What We Know About Ammonia." Record students' responses around the outside of the circle. Accept all responses.

Suggestion: You may want to prepare an additional chart. Label it "What We Learned About Ammonia," and use it to record student discoveries throughout the unit.

5. Tell students they will be "ammonia detectives" and locate products at home that contain ammonia. Discuss homework sheet (**on the following page**), stressing the importance of adult supervision.

Name _____

Date _____



Be An Ammonia Detective!

You must get your parent's permission and/or supervision before beginning this assignment. Do not open any containers without the permission of an adult.

Where can you find ammonia? Become an ammonia detective and search for products in your home that contain ammonia. Check the labels on cleaning products found in your bathroom and kitchen. If ammonia is listed as one of the ingredients, write the name of the product on your list. Check the labels of products found in other rooms of your house.

Bonus: With an adult's supervision, check the labels on products found in the garage, tool shed, or utility room.

REMEMBER: Do not open any containers without first receiving permission from an adult.

Ammonia Search Results

Name of product: _____ **This is where I found it:** _____

A line drawing of two children in a kitchen. One child is kneeling on the left, holding a magnifying glass over a bottle on the counter. The other child is kneeling on the right, looking at the first child. There are several horizontal lines for writing below the illustration.

Lesson 2: Where Do You Find Ammonia?

Objectives: Students discuss and graph (see *Vinn Diagram* on next page) the results of their findings. Students will learn that ammonia is used to make fertilizer.

Materials:

- student homework sheets
- markers
- chart paper for graph

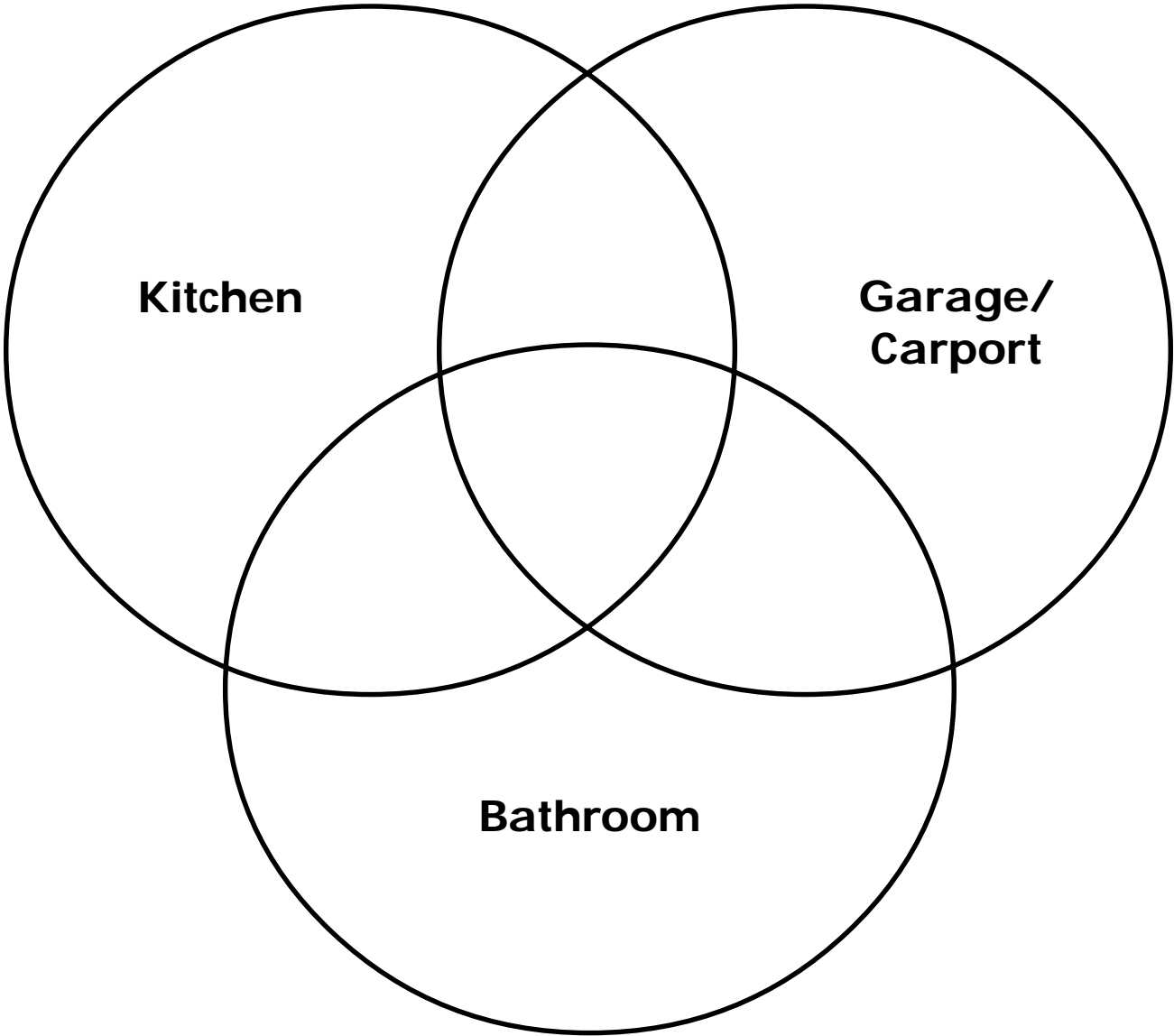
Procedure:

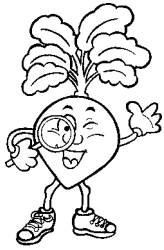
1. Allow students to discuss the results of their “detective work.” (*Lesson Activity Sheet 1, “Be An Ammonia Detective”*) Ask students: “What type of products use ammonia? Where and how are these products used in your home?” Allow time for student discussion.
2. Use “Code Names for Ammonia” tally activity sheet to record information gathered from “Be An Ammonia Detective.” This information should also be used to complete the Vinn Diagram, “Where Do You Find Ammonia?”
3. Graph results. Make class graphs that show where students found ammonia and the types of products that contain ammonia. Examples: The “Types of Products” graph would include: cleaning products, lawn care products, dyes, etc. The “Places Where We Find Ammonia” graph could include: kitchen, bathroom, garage, etc.
4. Tell students ammonia is produced in Louisiana. Discuss common uses for ammonia. The majority of the ammonia produced in Louisiana is used to make fertilizer. Ask students if they have ever heard of fertilizer. Allow time for discussion. Explain to students the materials that supply nutrient elements to plants are called fertilizers. Plants need nutrients to grow strong and healthy just like our bodies need vitamins and minerals. Fertilizer is used to help plants grow strong and healthy. Farmers use fertilizer to increase crop yields so they can grow enough food to help feed the world. In Louisiana, farmers use fertilizer to grow potatoes, sugar cane, soybeans, corn, and wheat.



5. Ask students: Have any of you ever grown something you could eat in a garden? Allow time for student discussion. Have students tell about the materials they used, what type of food they grew, etc. Record responses on a chart.
6. Tell students for the next few weeks the class will learn about planting. Tell students that they will use fertilizer and other materials to grow radishes and that they will record observations about their plants. You may want to review the contents of the kit with the class.

Where Do You Find Ammonia?





Code Names for Ammonia

Put tally marks in the box in front of where you found an item with this word in the ingredients. Use one tally mark for each item.

<p>ammonium sulfate</p> <table><tr><td><input type="checkbox"/></td><td>kitchen</td></tr><tr><td><input type="checkbox"/></td><td>garage/carport</td></tr><tr><td><input type="checkbox"/></td><td>bathroom</td></tr></table>	<input type="checkbox"/>	kitchen	<input type="checkbox"/>	garage/carport	<input type="checkbox"/>	bathroom	<p>ammonium phosphate</p> <table><tr><td><input type="checkbox"/></td><td>kitchen</td></tr><tr><td><input type="checkbox"/></td><td>garage/carport</td></tr><tr><td><input type="checkbox"/></td><td>bathroom</td></tr></table>	<input type="checkbox"/>	kitchen	<input type="checkbox"/>	garage/carport	<input type="checkbox"/>	bathroom
<input type="checkbox"/>	kitchen												
<input type="checkbox"/>	garage/carport												
<input type="checkbox"/>	bathroom												
<input type="checkbox"/>	kitchen												
<input type="checkbox"/>	garage/carport												
<input type="checkbox"/>	bathroom												
<p>monopotassium phosphate</p> <table><tr><td><input type="checkbox"/></td><td>kitchen</td></tr><tr><td><input type="checkbox"/></td><td>garage/carport</td></tr><tr><td><input type="checkbox"/></td><td>bathroom</td></tr></table>	<input type="checkbox"/>	kitchen	<input type="checkbox"/>	garage/carport	<input type="checkbox"/>	bathroom	<p>potassium nitrate</p> <table><tr><td><input type="checkbox"/></td><td>kitchen</td></tr><tr><td><input type="checkbox"/></td><td>garage/carport</td></tr><tr><td><input type="checkbox"/></td><td>bathroom</td></tr></table>	<input type="checkbox"/>	kitchen	<input type="checkbox"/>	garage/carport	<input type="checkbox"/>	bathroom
<input type="checkbox"/>	kitchen												
<input type="checkbox"/>	garage/carport												
<input type="checkbox"/>	bathroom												
<input type="checkbox"/>	kitchen												
<input type="checkbox"/>	garage/carport												
<input type="checkbox"/>	bathroom												
<p>nitrogen</p> <table><tr><td><input type="checkbox"/></td><td>kitchen</td></tr><tr><td><input type="checkbox"/></td><td>garage/carport</td></tr><tr><td><input type="checkbox"/></td><td>bathroom</td></tr></table>	<input type="checkbox"/>	kitchen	<input type="checkbox"/>	garage/carport	<input type="checkbox"/>	bathroom	<p>hydrogen</p> <table><tr><td><input type="checkbox"/></td><td>kitchen</td></tr><tr><td><input type="checkbox"/></td><td>garage/carport</td></tr><tr><td><input type="checkbox"/></td><td>bathroom</td></tr></table>	<input type="checkbox"/>	kitchen	<input type="checkbox"/>	garage/carport	<input type="checkbox"/>	bathroom
<input type="checkbox"/>	kitchen												
<input type="checkbox"/>	garage/carport												
<input type="checkbox"/>	bathroom												
<input type="checkbox"/>	kitchen												
<input type="checkbox"/>	garage/carport												
<input type="checkbox"/>	bathroom												
<p>phosphorus</p> <table><tr><td><input type="checkbox"/></td><td>kitchen</td></tr><tr><td><input type="checkbox"/></td><td>garage/carport</td></tr><tr><td><input type="checkbox"/></td><td>bathroom</td></tr></table>	<input type="checkbox"/>	kitchen	<input type="checkbox"/>	garage/carport	<input type="checkbox"/>	bathroom	<p>potassium</p> <table><tr><td><input type="checkbox"/></td><td>kitchen</td></tr><tr><td><input type="checkbox"/></td><td>garage/carport</td></tr><tr><td><input type="checkbox"/></td><td>bathroom</td></tr></table>	<input type="checkbox"/>	kitchen	<input type="checkbox"/>	garage/carport	<input type="checkbox"/>	bathroom
<input type="checkbox"/>	kitchen												
<input type="checkbox"/>	garage/carport												
<input type="checkbox"/>	bathroom												
<input type="checkbox"/>	kitchen												
<input type="checkbox"/>	garage/carport												
<input type="checkbox"/>	bathroom												

Lesson 3: **Planting Day**

Objective: The students will collect and organize materials for planting.

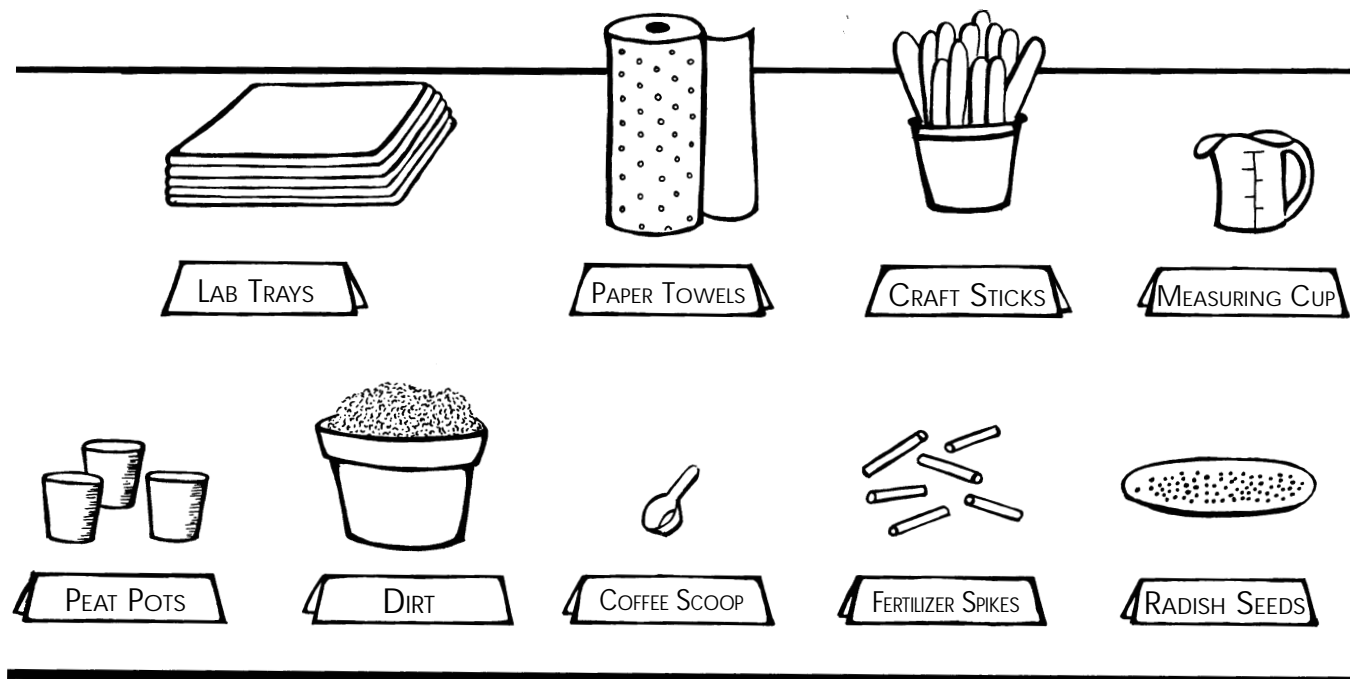
Materials:

- peat pots
- potting soil
- fertilizer spikes
- index cards (for labels)
- radish seeds
- measuring cup
- lab trays
- paper towels
- craft sticks
- coffee scoop
- spray bottle

Procedure:

1. **You must prepare in advance for this activity.** To prepare for this activity, arrange materials needed for planting on a large work space. Place a label on each item telling students what it is and how many to take.

As a management tool allow students to visit the planting station in small groups or set up several planting stations throughout the room. Ask parent volunteers to assist with this activity.



2. Examine all materials with students before planting. Discuss the names of materials and demonstrate the planting procedure on the following page with students.



3. Allow students to plant seeds and record their activities in their plant journal. Encourage students to make observations about the materials before and after planting. Record this information in the journals.

4. Plant two extra radish plants for a class experiment. Label the pots #1 and #2. These will be used as your control in conjunction with Lesson 8.

Reminder: Remember to plant a few extra plants to replace seeds that may not sprout.

5. When the seeds sprout and grow above the soil, have students start recording plant growth by drawing and writing observations in their journals. Record observations every few days. ***Remember to have a student helper water the plants on a regular basis.***



Management Suggestion: Use meat trays (most grocers will donate them to schools) or paper plates as individual lab trays for students.

Planting Procedure

1. Pick up the following materials from the planting station. Place your materials on your lab tray.
 - 1 peat pot
 - 1 cup of potting soil
 - 1 fertilizer spike
 - 1 paper towel
 - 1 craft stick
 - 3 radish seeds
2. Put 2 level scoops of soil in your peat pot.
3. Add your seeds.
4. Put one scoop of potting soil on top of your seeds in the peat pot.
5. Add a fertilizer spike.
6. Spray your seeds with water.
7. Write your name and today's date on the craft stick and place it in your peat pot.
8. Place your peat pot in the class tray.
9. Return all leftover supplies to the planting station.
10. Clean up your work space.

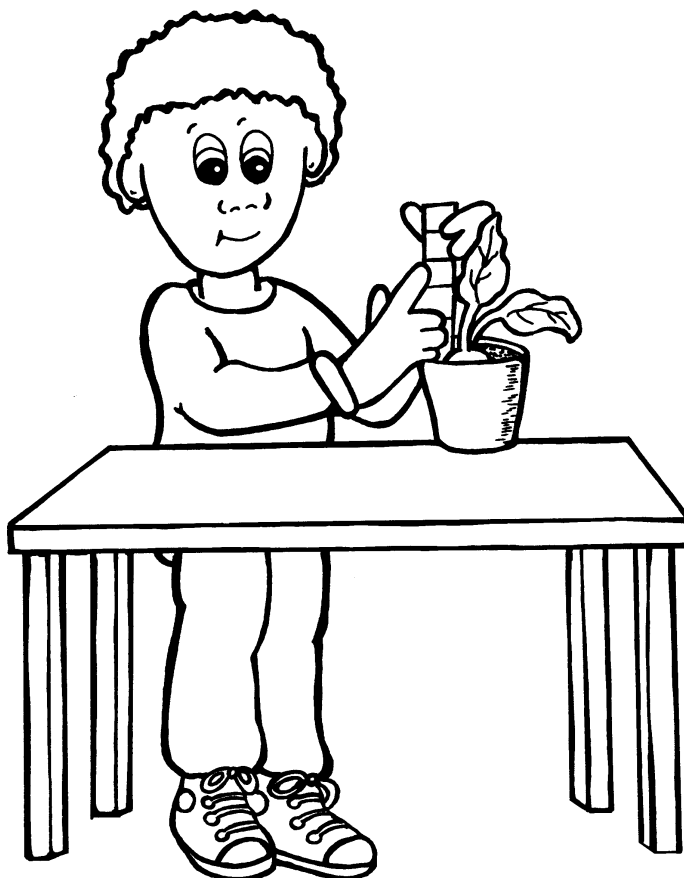
Lesson 4: Measuring Plant Growth



Objectives: Students learn how to measure their plants using centimeter strips. Students will use a bar graph to show plant growth.

Materials:

- pre-cut paper strips
- plant growth graph (1 per student, in activity books)
- scissors
- crayons
- glue



Procedure:

Note: Students should have prior experiences with measurement before doing this activity. Previous experience with bar graphs is also suggested.

1. Tell students they will begin to record information about their plants by measuring their plant's growth. Distribute copies of the plant growth graph to students. Show students where to record the date. Have each student write the date in the correct place.
2. Show students the materials they will use for this activity (the pre-cut strips and graph paper). Using one of the extra plants, demonstrate how to use the pre-cut strips to measure the height of the plant and how to mark the bar graph.

Note: Students will be more successful at completing this task independently and correctly after watching your example.

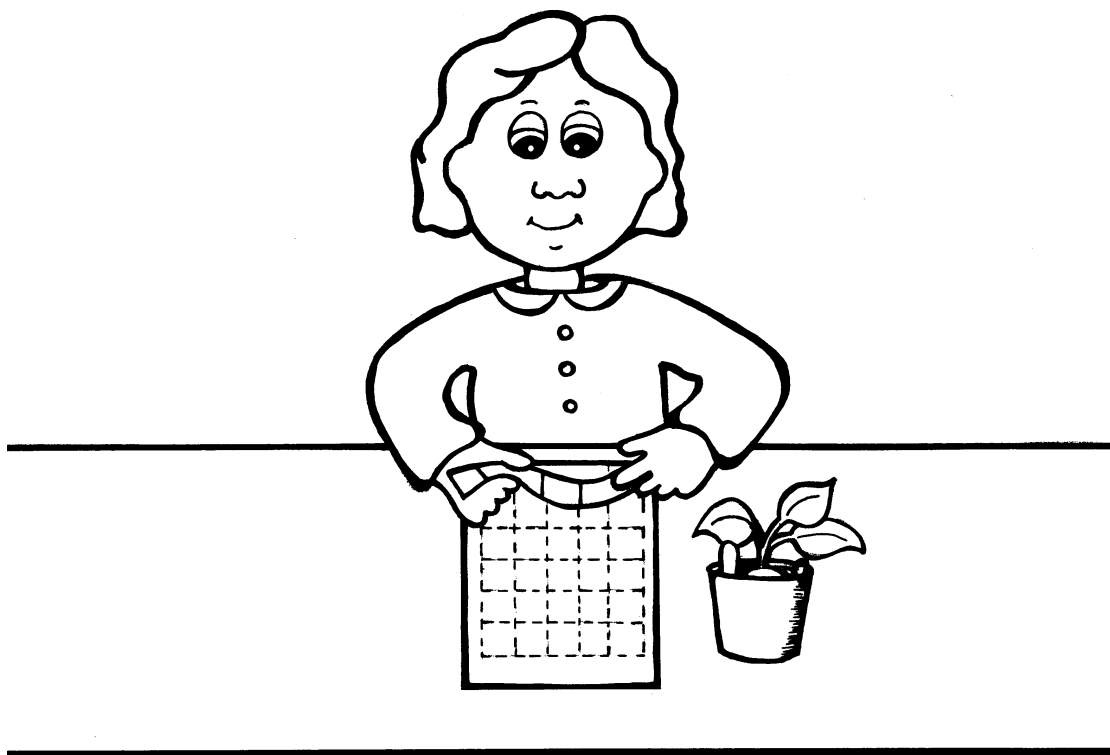
Make a transparency of the graph paper. Using an overhead projector, demonstrate the method of coloring the strips.

- Lay the sheet of graph paper on your desk. Place the peat pot on the graph and mark the height of the pot.
- Color the peat pot height brown.
- Color the rest of the graph green.
- To measure the plant height, the students will:
 1. Place the bottom of the strip on the table and then stretch it to the top of the plant.
 2. Mark the height of the plant by drawing a line on the strip.
 3. Double check by holding the paper up to the plant again.
 4. Cut the colored strip.

3. Allow students to share their findings. Students may notice differences in the heights of the plants. Allow students to offer explanations for findings. Have students record these findings in their plant journals. Review the procedure used for measuring plant height. Tell students they will use this procedure each time they measure and record plant growth. Have students measure and record plant growth at least five times.



Note: Schedule a few days between observations of plant growth.



Lesson 5: **A Closer Look at Fertilizer**

Objective: Students will examine household fertilizer products to identify ammonia as an ingredient.

Materials:

- a variety of fertilizer products such as Vigiro®, Jobs®, and Miracle Gro® (at least one product for each group of four students)
- “Code Names for Ammonia” word list from Lesson 2
- paper for recording
- pencils

Note: *This activity requires advance teacher preparation.*

Procedure:

1. In this lesson students will examine the list of ingredients on packages of fertilizer for ammonia and ammonia products or aliases. You will need to prepare word cards for these aliases using index cards. (Using the word cards, the students will only have to match the words on the cards to the words listed as ingredients.) Terms to look for may include: ammonium sulfate, ammonium phosphate, monopotassium phosphate, and potassium nitrate. Look for combinations of nitrogen and hydrogen and forms of the major nutrients in fertilizer (nitrogen, phosphorus, and potassium).
2. Ask students if they can recall what is used to make fertilizer. If students have trouble recalling ammonia, remind them of their ammonia searches at home. Tell students you have a variety of fertilizers to share with them and once again you would like them to be ammonia detectives. Their job is to find out if ammonia is one of the ingredients used to make these fertilizers. Inform students that ammonia is sneaky sometimes and may use an alias or “code name.” Show them the word cards with the ammonia “code names.” You may want to show students where to find the list of ingredients on each package.
3. Divide students into groups of four. Give each group a fertilizer package. Allow students to look for ammonia and its “code names.” Students should record their findings. Allow students to trade packages and record findings. The groups should examine each fertilizer package.

4. Allow students to share their findings. Discuss some of the “code names” for ammonia. Did every package have the same “code names?” Did any type of fertilizer have more ammonia ingredients than the others? Which (if any) “code names” were found on all of the packages? Which “code name” was the most popular (or was found on the most packages)? Students could graph or prepare group charts to display information.

Activity sheet to accompany this lesson follows on next page.

A Closer Look at Fertilizer

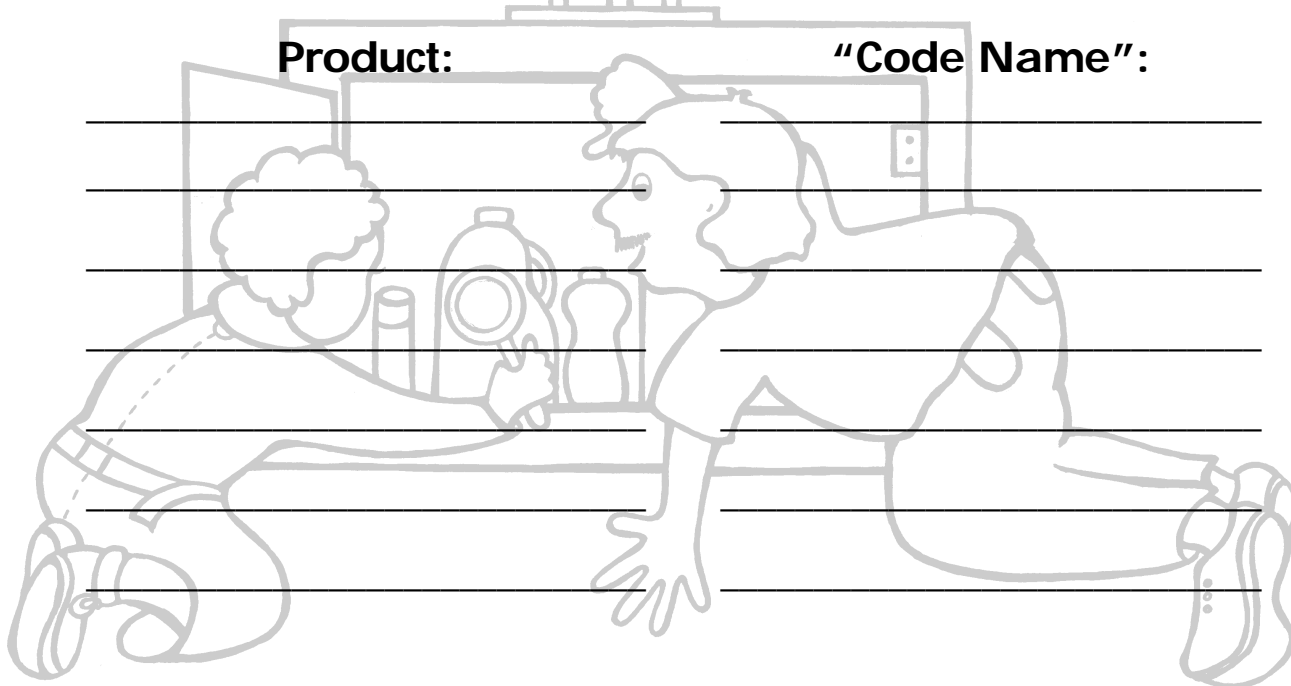
Names of "Ammonia Detectives":



We found ammonia or a "code name" on these products:

Product:

"Code Name":



Lesson 6: What Do Plants Need to Grow?

Objective: Students will learn that plants need soil, water, light, and air to grow; but with fertilizer, the plants we eat grow stronger and healthier.

Materials:

- milk cartons, paper cups, peat pots, **or** any container suitable for planting
- bean, radish, or corn seeds
- potting soil
- fertilizer spikes

Procedure:

1. Ask students to name some of the things a plant might need to grow. Accept all responses. Tell students that plants need sunlight, water, soil, and air in order to grow and be healthy. Tell students that they will plant a different set of plants to explore what happens if a plant does not receive something it needs.
2. Distribute materials: planting containers, potting soil, and seeds.

Note: *It is important to choose seeds that sprout fast, such as radish, bean, or corn. All students should have the same type of seed.*

Review planting procedure with students. (See Planting Procedure instructions from Lesson 4.) Spray each plant with water. Students may label plants with their names if desired.

4. After the seeds sprout, divide them into four different groups. Subject them to different growing conditions. The conditions are as follows:

Condition #1: Plant has soil, water, and air but does not have light. Put these plants under a box or in the closet.

Condition #2: Plant has soil, light, and water but no air. Seal these plants in a large clear plastic bag. Make certain you eliminate as much air in the bag as possible and seal it airtight.

Condition #3: Plant has soil, light, and air but no water. Do not water these plants.

Condition #4: This is the control group. The plants have soil, air, light, and water.



5. When the seedlings come through the soil, measure each week to see how much the plants have grown in each environmental condition. Allow students to draw pictures and write descriptions of the plants in each of the four conditions.



6. Record the results for each condition on a separate graph. After several weeks compare the graphs. Do all plants grow at the same rate?

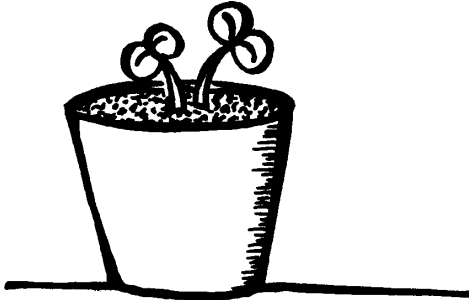
7. Ask students what plants need to grow and be healthy (soil, air, light, and water). What happens to a plant if it does not receive the things it needs to live and grow?

8. Remind students that we also provide plants with fertilizer. Fertilizer provides the plants with extra nutrients. These nutrients help the plants we eat grow stronger and healthier so farmers can grow enough food to feed the world (i.e., fertilizer increases crop yields). Tell students nutrients are like vitamins for plants. Tell students they will learn more about plant nutrients later.

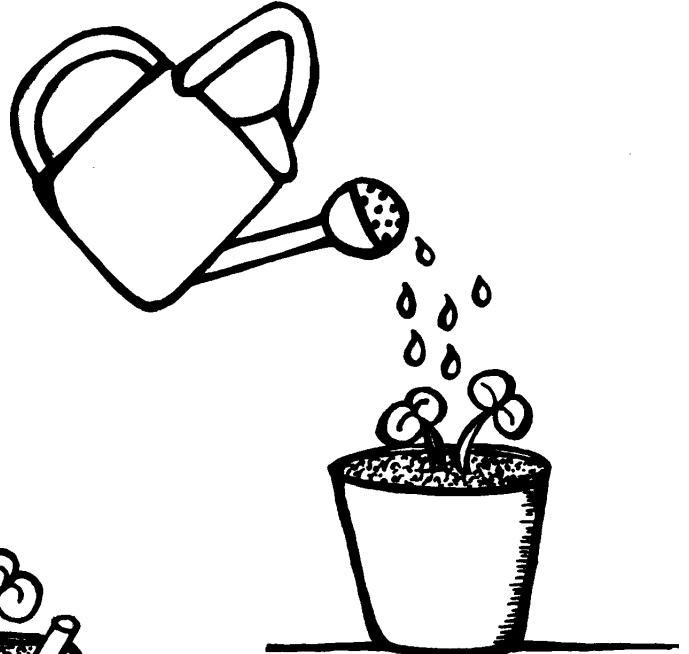
Activity sheet for students to color as homework assignment follows on next page.



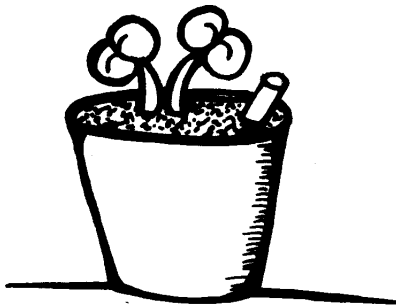
What Do Plants Need to Grow?



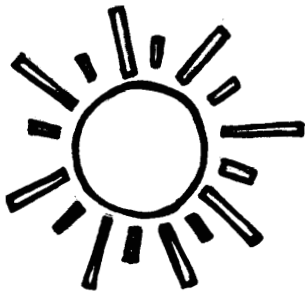
soil



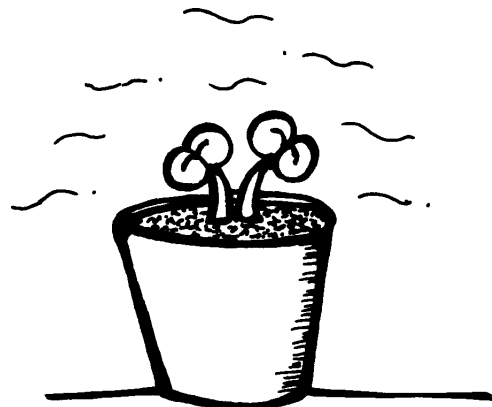
water



fertilizer



sun



air

Lesson 7: **A Plant's Needs**

Objective: Students will explore the purpose of fertilizer.

Note: *The purpose of this lesson is for students to learn that similar to humans needing vitamins and minerals to grow and be healthy, plants need nutrients (provided by fertilizer) to grow and be healthy. It is not important for students to learn the names of the three nutrients provided by fertilizer; however, the vocabulary is introduced to students in this lesson.*

Materials:

Prepare a plate with the letter "A" in the center and food samples: carrot sticks, broccoli, yellow squash, or spinach; a plate with the letter "C" in the center and food samples: orange slices, grapefruit slices, strawberries, tomatoes, green peppers; a plate with a milk carton in the center and food samples: cheese, yogurt, broccoli. A plate with the word "iron" written on an index card in the center and food samples: hard-boiled eggs, raisins, nuts, peanut butter.

Note: *You can ask parents to assist with providing the food items.*

Procedure:

1. Review planting procedure from previous lessons. Encourage students to describe the materials used. Ask students to name some of the things a plant might need to grow. Responses may include: water, soil, air, light from the sun, and fertilizer. *(Students may need prompting to recall the fertilizer.)*
2. Remind students that fertilizer supplies nutrients to plants. The plants we eat need nutrients to grow strong and healthy. Ask students if they can think of anything our bodies need to stay healthy. Students should suggest vitamins and minerals. *(They may name foods that provide essential vitamins and minerals. Use class discussion to introduce the terms vitamins and minerals.)*
3. Tell students they will examine some foods that provide us with the vitamins and minerals our bodies need to be healthy and strong. They will learn the names of three nutrients that fertilizer provides to plants. Show students each plate as you describe the vitamins and minerals.

Vitamin A helps keep skin healthy, keeps eyesight good, helps us grow properly, and builds resistance to infection. Good sources of Vitamin A are: dark green, yellow, or orange fruits and vegetables, beef liver, cheese, and milk. Allow time to sample the foods.

Vitamin C helps strengthen walls of blood vessels, keeps gums healthy, helps the body resist infection, and helps wounds and cuts heal. Good sources of Vitamin C are: citrus fruits, cantaloupe, broccoli, strawberries, tomatoes, cabbage, green peppers, and potatoes. Allow time to sample the foods.

Minerals also keep us healthy and help our bodies function properly. Calcium is an important mineral. Calcium helps build strong bones and teeth. Good sources of calcium are: milk and milk products. Broccoli is also calcium-rich. Allow time to sample the foods.

Iron is in our blood and helps carry oxygen from our lungs to our cells. Oxygen is needed to help burn food in the cells, which gives us energy. Allow time to sample the iron-rich foods.

4. Review with students: Vitamins and minerals keep us healthy by helping our bodies function properly. We eat foods that provide us with these vitamins and minerals to grow and stay healthy. Fertilizer provides needed nutrients to plants. The plants we eat need these nutrients to grow healthy and strong.
5. Plants need 16 different nutrients. Three major plant nutrients come from the air and water. Plants get the other nutrients from potting soil and fertilizer. Plants need large amounts of nitrogen, phosphorus, and potassium. Fertilizer provides plants with: nitrogen, phosphorus, and potassium. Ammonia fertilizer provides plants with: nitrogen for healthy leaves, phosphorus for flower development, and potassium for root growth.

FOR TEACHER INFORMATION ONLY: *Nitrogen is responsible for the dark green color of a plant's foliage or leaves. Phosphorus is required for the production of flowers and early root growth. Potassium is necessary for a strong, vigorous stem and shoot and for mature plant growth.*

6. Distribute activity sheet for coloring. **Found on following page.**

Name _____

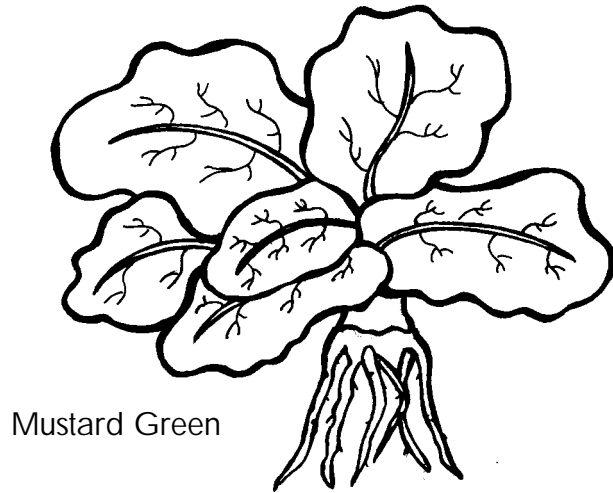
Date _____



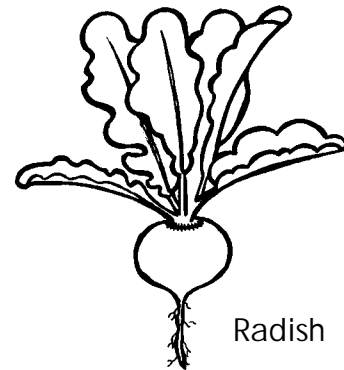
Plants Need Nutrients

**Ammonia is used to make fertilizer.
Fertilizer provides plants with three important nutrients.**

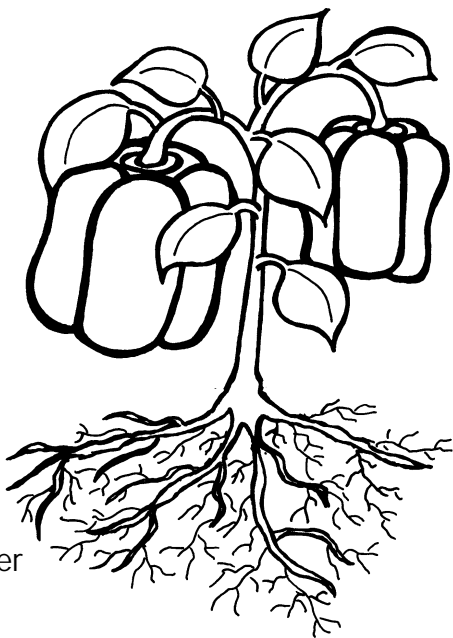
Fertilizers provide plants with:
Nitrogen for **healthy leaves.**
Phosphorus for **flower development.**
Potassium for **root growth.**



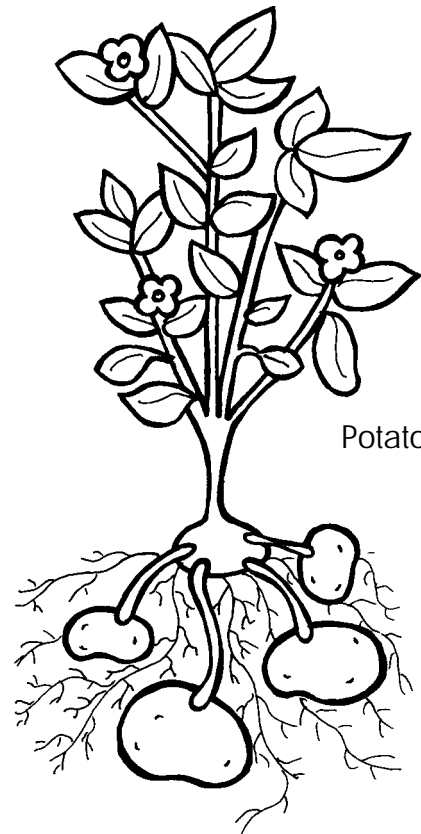
Mustard Green



Radish



Bell Pepper



Potato

Lesson 8: Is More Better?

Objective: Students will set up a class experiment to determine if the amount of fertilizer used affects plant growth.

Materials:

- plants labeled #1 and #2
- fertilizer spikes
- chart paper or crayons
- markers
- student journals

Procedure:

1. Begin discussion by asking students to describe why fertilizer is used to grow plants. Review fertilizer's role with students. Tell students: Fertilizer provides plants with nutrients, which help them to grow and produce food. What do you think would happen if we provided our plants with more fertilizer? Allow students to share their ideas. Record student responses on a class chart and have students record their predictions in their plant journals.



2. Display the plants labeled #1 and #2 and tell students the class will use the two plants for an experiment. Remind students that these plants were planted when they planted their plants. Tell students that you will add an extra fertilizer spike to plant #2. Make a class journal to record observations and results of the experiment. Record the date and have a student draw each plant. Encourage students to make detailed observations that include a description of each plant and the plant's height. Allow students to record in their personal journals.



3. Allow students at least 7-10 days to explore the results of their investigation. Allow time each day for class discussion and sharing of observations. At the end of the experiment, discuss the results of the investigation and encourage students to draw conclusions. Stress the importance of accurate observations throughout the process.



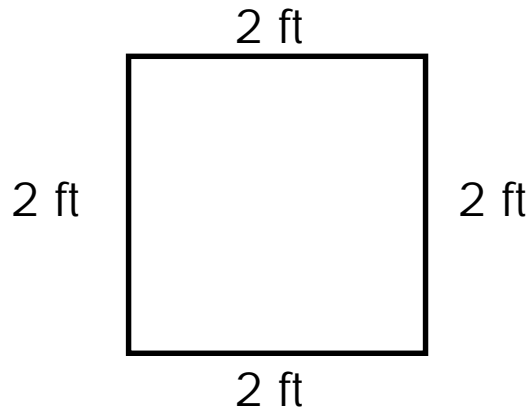
Literature Connections

- Carle, Eric. The Tiny Seed. Scholastic, 1989.
- Ehlert, Lois. Eating the Alphabet: Fruits and Vegetables from A to Z. HBJ, 1989.
- Ehlert, Lois. Growing Vegetable Soup. HBJ, 1987.
- Ehlert, Lois. Planting A Rainbow. HBJ, 1988.
- Gibbons, Gail. Farming. Holiday House, 1988.
- Hankin, Rosie. The Flower Seeds. Steck-Vaughn.
- Heller, Ruth. The Reason for a Flower. Putnam, 1983.
- Kellogg, Steven. Johnny Appleseed. Morrow, 1987.
- Krauss, Ruth. The Carrot Seed. Harper & Row, 1945.
- Kroll, Steven. The Biggest Pumpkin Ever. Scholastic, 1984.
- Lauber, Patricia. Seeds: Pop, Stick, Glide. Crown, 1981.
- Parkinson, Kathy. The Enormous Turnip. Albert Whitman, 1986.
- Wexler, Jerome. Flowers, Fruits, Seeds. Simon & Schuster, 1987.

Raising Radishes with Amazing Ammonia

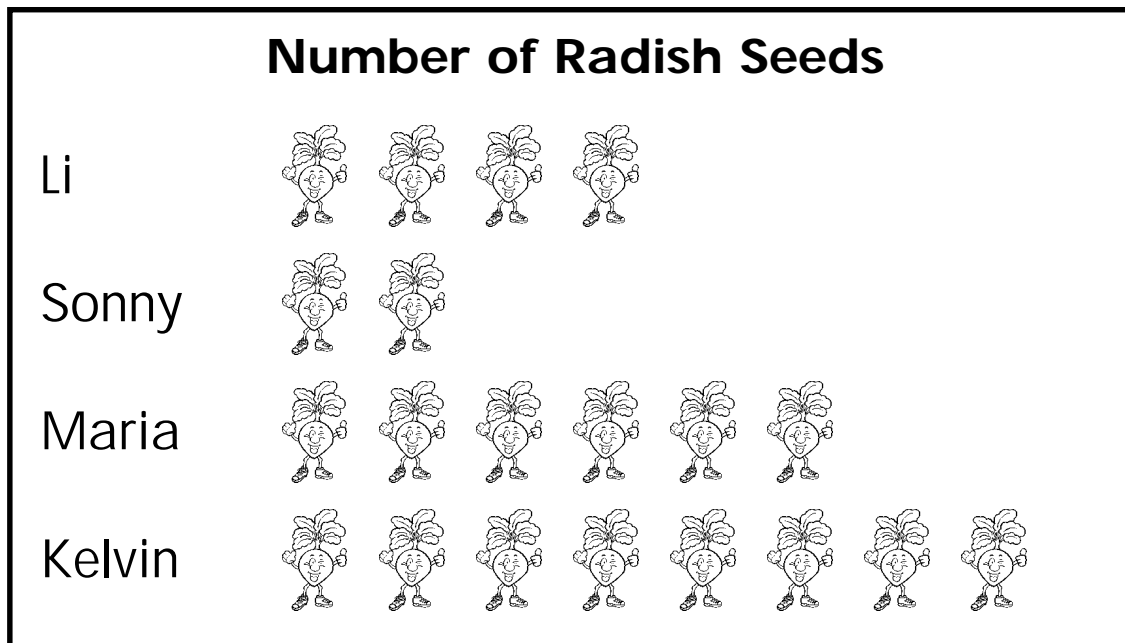
Mathematics Questions for Second Grade


1. Mrs. Smith has planted some radishes in the garden below. What is the perimeter of her garden?



- a. 8 ft *
- b. 4 ft
- c. 6 ft
- d. 2 ft
2. Kwan has a bag of 15 seeds: 10 radish seeds, 2 bean seeds, 2 corn seeds, and 1 tomato seed. If Kwan reaches into the bag and pulls out 1 seed, which seed will he most likely get?
- a. a radish seed *
- b. a bean seed
- c. a corn seed
- d. a tomato seed

Use the graph below to answer question 3 - 4.



 = 1 radish seed

3. How many radish seeds does Li have?

- a. 2
- b. 4 *
- c. 6
- d. 8

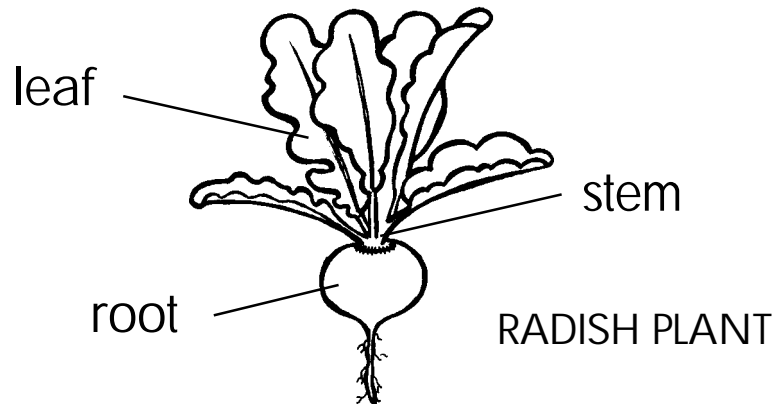
4. How many more seeds does Kelvin have than Sonny?

- a. 2
- b. 4
- c. 6 *
- d. 8

Raising Radishes with Amazing Ammonia

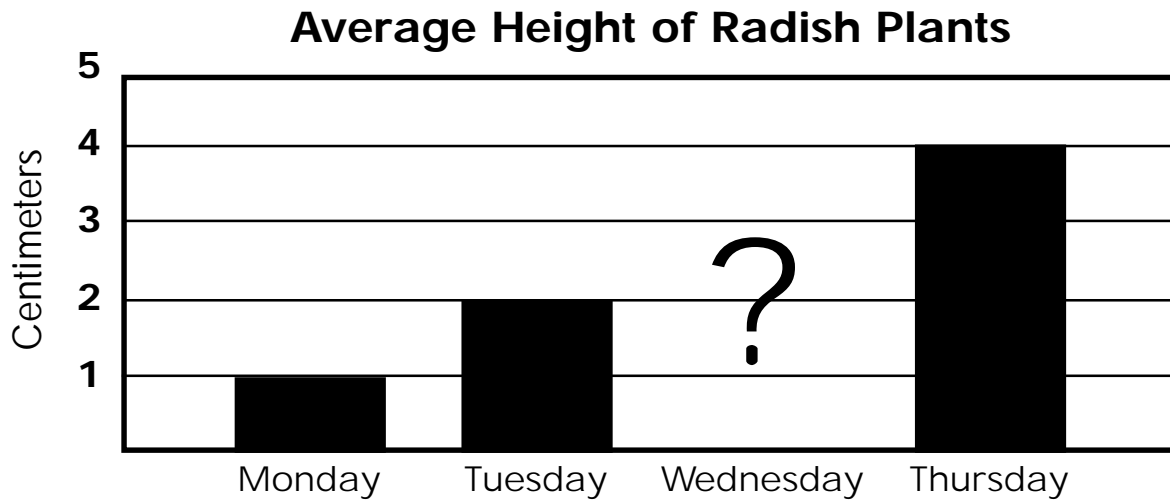
Science Questions for Second Grade

Use the picture below to answer question 1.



1. What part of the radish do we eat?
 - a. leaf
 - b. stem
 - c. root *
 - d. flower
2. Sean sprouted some radish seeds and planted them in two pots. He put one pot in a dark closet and one pot by the window of his classroom. He gave the plants the same amount of water every few days. What was Sean testing?
 - a. how light helps radish plants grow *
 - b. which type of radish seed grows best
 - c. how water helps radishes grow
 - d. which type of soil is best for growing radish seeds
3. Lana found a radish on the ground and decided to measure the length of it. What unit of measurement did she use?
 - a. liters
 - b. centimeters *
 - c. grams
 - d. ounces

Use the graph below to answer question 4.



4. Ronny and Shameka grew radish seeds in a pot and measured the growth every day. They forgot to measure the radish plant on Wednesday. What probably was the height of the radish plant on Wednesday?
- a. 1 centimeter
 - b. 2 centimeters
 - c. 3 centimeters *
 - d. 4 centimeters

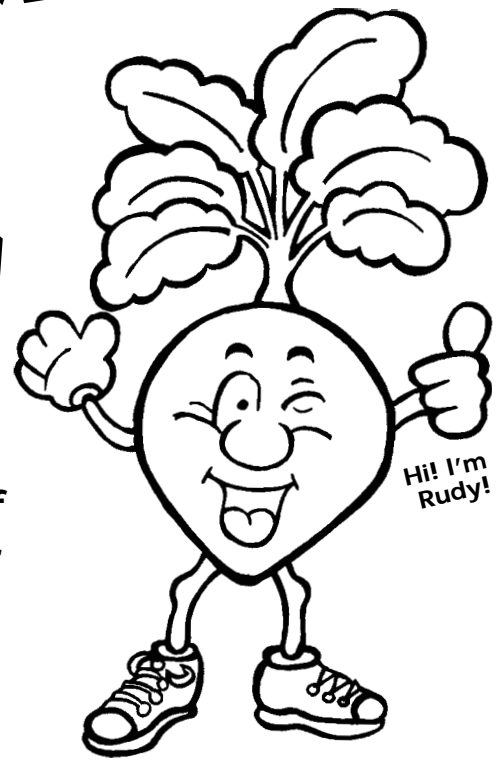
Raising Radishes with Amazing Ammonia

Teachers' Lesson Plan

A Teaching Unit on
Discovering the Use of
Ammonia as Fertilizer

Written by
Latrenda Knighten

Revised by
Roxson Welch



This lesson plan has been field-tested
by second grade teachers in south
Louisiana and includes LEAP test skills.

Produced by

Ammonia
Louisiana Ammonia Producers

© Copyright 2000 Louisiana Ammonia Producers

LRCE
"Helping Teachers Help Children"
LOUISIANA RESOURCE
CENTER FOR EDUCATORS