

Hands-On Minds-On Science Explorations
Grades 3-5

Plants



Hands-On Minds-On Publications

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NAME: _____ DATE: _____

CLASSIFICATION OF PLANTS

BACKGROUND INFORMATION: Flowering seed plants can be divided into two groups. **MONOCOTS** are plants whose seeds have one section. Corn, oats, wheat, and apple are examples of seeds with one section; they are monocots. **DICOTS** are seeds that have two sections. Peanuts, almonds, and peas split into two sections; they are dicots. Another way to classify monocots and dicots is to count the flower petals. Monocots have petals in groups of three. Dicots have petals in groups of four or five. A tulip is a monocot and a hibiscus is a dicot. Some seed plants have cones and are known as **CONIFERS**. Some examples include pines, firs, spruces and cedar. Conifers, like flowering plants, need seeds to reproduce. Most flowering plants have broad leaves and most conifers have needle-shaped or scale like leaves. The four types of **nonseed plants** include **FERNS, MOSSES, FUNGI, and ALGAE**. **Ferns** have no seeds and reproduce through **SPORES** found on their underside. The second group of nonseed plants consists of plants that have no true roots, stems or leaves. This group includes mosses, fungi, and algae. **Mosses** are found in damp places and often grow on rocks, trees, and soil. **Fungi** cannot make their own food; they must get their food from living or dead plants and animals. Examples include mold, mushrooms, and slime. **Algae** are the simplest of all food producing plants and are grouped by color. Examples include blue-green, green, brown, and red algae.

PROBLEM STATEMENT: How many days will it take for a seed to sprout (be visible above the soil)?

HYPOTHESIS:

--

MATERIALS: 4-5oz.cups, potting soil, corn, radish, pea, and bean seeds, water, sticky dots.

PLANTING THE SEEDS

PROCEDURE:

1. Label 4 blue sticky dots and stick one on each cup: 1. corn, 2. radish, 3. pea, 4. bean
2. Fill 4 cups with soil. Poke a hole in each cup and place the proper seed in each.
3. Measure 10 ml of water and place it in each cup.
4. Take cups with seeds home and complete the activities below:
5. Keep your four seedlings where they are exposed to some form of light. Be sure keep the seedlings moist. **RECORD** your observations.

DAY 1 _____

DAY 2 _____

DAY 3 _____

DAY 4 _____

DAY 5 _____

DAY 6 _____

DAY 7 _____

Results: Look at the cups and describe what you see in each cup. Be sure to tell which ones grew better.

MATH APPLICATION: Mrs. Davis planted 3 plants on Monday, 5 plants on Tuesday, and 7 plants on

Wednesday. At this rate, how many plants would she have planted at the end of 8 days? Write a number sentence and solve:_____

NAME_____DATE_____

1. **Flowering seed plants** can be divided into two groups:_____& _____
2. Plants whose seeds have one section are called_____.
3. Seeds that have two sections are called _____.
4. Flowers with petals in groups of three are called_____.
5. Flowers with petals in groups of four or five are called_____.
6. Some seed plants have cones and are known as _____.
7. Most flowering plants have_____leaves and most conifers have _____leaves.
8. The four types of **nonseed plants** include _____, _____, _____, **and** _____.
9. _____ have no seeds and reproduce through **SPORES** found on their underside.
10. Three nonseed plants that have no true roots, stems or leaves are _____, _____, and _____.

PLANT LEAVES

Plant leaves are very important. Leaves are the part of the plant makes food by photosynthesis. Leaves take in carbon dioxide from the air, water from the soil, and energy from the sunlight. During photosynthesis, the leaves use light energy to change carbon dioxide and water into food called sugar. Some plants are used for medicinal purposes. The leaf of the ALOE plant is often used to help heal burns. The ALOE leaf has a thick fleshy outer layer called the epidermis. The inner layer, the dermis has a gel like substance that can be put on burns. The leaf stores water for the plant in the vacuoles.

Activity 1:

Look at the cross section of the aloe leaf with a hand lens. Find the vacuoles where it stores the water. Make a drawing below and also describe how it feels.

Draw the cross section here, label the vacuoles.	Describe how the inside of the aloe leaf feels. Use a complete sentence.
--	--

Tell about how the aloe plant is used as a medicine.

PLANT LEAVES ONION

A bulb is a flowering plant that grows under the ground. An example would be an onion. Onion bulbs may be round, somewhat flat, or oblong and are 1 inch to 6 inches across. Under its thin, papery cover, the bulb consists of many layers surrounding one or more growing points. In this activity, you will peel away the thin outer skin of the onion and count its layers. The inner layers of

the onion are the edible part.

Problem Statement: How many layers will an onion have?

Hypothesis: Predict how many layers the onion will have.

--

Materials: wax paper, onion, paper towel, plastic knife

Procedure:

Step 1: Carefully peel away the thin outer covering of the onion.

Step 2: Peel away each layer and count the layers. Record your data.

Results: How many layers did your onion have?

Conclusion: Was your hypothesis supported?

Tell three things you learned today that you did not already know.

1.
2.
3.

NAME: _____ DATE: _____

HOW ARE HUMAN AND PLANTS SIMILAR?

BACKGROUND INFORMATION: Plants and humans have similar functions. Plants and humans both need food, nutrients, water, and sunlight to survive. Humans get their food from plants and animals. Plants make their own food in a process known as **photosynthesis**. Most of photosynthesis takes place in the leaves of plants. **Carbon dioxide** enters the stomates. Plant leaves use **chlorophyll** to trap the light from the sun and make their food. During photosynthesis, oxygen is produced. Plants get energy from the sun and humans need the sun in order to survive. Both plants and humans **reproduce**. Humans reproduce through a process known as **fertilization**. Plants reproduce through **pollination**. During pollination, pollen grains move from the stamen to a pistil. Colorful and fragrant petals attract insects. The insect brushes up against the pollen grains on the **stamen**. Some pollen grains stay on the insect and as it moves from one flower to another, the grains stick to the flower's **pistil**. Both humans and plants are made up of **cells** that carry out functions needed for life.

TELL WHAT YOU ALREADY KNOW ABOUT CELLS:

PROBLEM STATEMENT: Are human cells and plant cells similar in appearance?

HYPOTHESIS:

MATERIALS: onions skin, slides, cover slips, cotton swabs, safety goggles, iodine, droppers, microscopes, paper towels, rubber gloves

TELL WHAT YOU WILL DO IN ORDER TO BE SAFE IN THE LAB TODAY:

PREPARING A WET MOUNT SLIDE: CHEEK CELLS

PROCEDURE:

1. Use a cotton swab to gently scrape the inside of your cheek.
2. Rub the swab onto a clean slide.
3. Put a drop of iodine on top of the specimen.
4. Touch one edge of the droplet with the coverslip and carefully drop it on the slide.
5. Blot any leaks and place the slide on the stage of the microscope.

PREPARING A WET MOUNT SLIDE: ONION SKIN

PROCEDURE:

1. Place a small piece of onion skin on the slide.
2. Put a drop of iodine on top of the specimen.
3. Touch one edge of the droplet with the coverslip and carefully drop it on the slide.
4. Blot any leaks and place the slide on the stage of the microscope.

Next, view each side and sketch it in the boxes below.

ONION CELLS	CHEEK CELLS

RESULTS: (Were the plant cells and human cells similar in appearance?)

CONCLUSION: (Tell whether your hypothesis was correct and why.)

How did your team work together during this lab? Would you do anything different next time? Tell what you learned in lab today.

NAME _____ DATE _____

HOW ARE HUMANS AND PLANTS SIMILAR
MATCH THE PHRASE ON THE LEFT WITH THE WORD ON THE RIGHT

- | | |
|--|-------------------|
| 1. Plants reproduce through _____. | A. leaves |
| 2. Photosynthesis takes place in the _____. | |
| 3. Plants use _____ to trap light from the sun and make food. | B. cells |
| 4. The process of human reproduction is known as _____. | C. sun |
| 5. During photosynthesis, carbon dioxide enters the _____. | D. stomates |
| 6. The food making process in plants is known as _____. | E. photosynthesis |
| 7. In both humans and plants, _____ carry out functions needed for life. | F. chlorophyll |
| 8. Both plants and humans depend on the _____ to survive. | G. fertilization |
| 9. During pollination, pollen grains move from the stamen to the _____. | H. pollination |
| | I. pistil |

NAME _____ DATE _____

MATCH THE PHRASE ON THE LEFT WITH THE WORD ON THE RIGHT

- | | |
|--|-------------------|
| 1. Plants reproduce through _____. | A. leaves |
| 2. Photosynthesis takes place in the _____. | |
| 3. Plants use _____ to trap light from the sun and make food. | B. cells |
| 4. The process of human reproduction is known as _____. | C. sun |
| 5. During photosynthesis, carbon dioxide enters the _____. | D. stomates |
| 6. The food making process in plants is known as _____. | E. photosynthesis |
| 7. In both humans and plants, _____ carry out functions needed for life. | F. chlorophyll |
| 8. Both plants and humans depend on the _____ to survive. | G. fertilization |
| 9. During pollination, pollen grains move from the stamen to the _____. | H. pollination |
| | I. pistil |

Name_____

Date_____

CONDITIONS FOR PLANT GROWTH: PEANUT GERMINATION

All plants need light, water, air, and space to grow. We can compare plant needs by placing some plants in the light and some in the dark to see if the amount of light a plant gets really matters. In this experiment, you will make predictions and chart the growth of peanuts.

In order to make an experiment fair, scientists use variables and controls.

Controlling Variable	Independent Variable	Dependant Variable
Anything kept constant in the experiment is "controlled" so that it won't affect the results of the experiment.	The thing that is changed to determine its effect on the result of the experiment.	What is changed in the experiment, the outcome or the results
1. amount of water 2. paper towel 3. type of seed 4. plastic bag	1. amount of light	1. length of root 2. length of the stem 3. color of the leaves

Problem Statement: Which plant will have a taller stem in one week, the plant in the light or the plant in the dark?

Hypothesis: (What is your prediction?)

Materials (per student): ziplock sandwich bag, paper towel, 2 teaspoons of water, 2 green peanuts (found in the produce section)

Procedure:

- Step 1:** Fold the paper towel in fourths and place the paper towel in the bag.
- Step 2:** Staple across the bag about 2 inches from the top, leaving small spaces between the staples.
- Step 3:** Remove 2 peanuts from their shell, remove the seed coat (skin), and place the two peanuts in the bag above the staples.
- Step 4:** Measure 20 ml (or one small portion cup) of water and pour it across the paper towel. Do NOT close the bag.
- Step 5:** Write your name on the bag using a label or piece of masking tape. Tape the bag in a window or on a door.
- Step 6:** Choose one bag to tape inside a closet or somewhere dark.
- Step 7:** Mark the growth daily.

Each day, write a comment on the growth of your seed (for example: no growth, stems sprouting, roots sprouting, leaves sprouting). At the end of the two weeks, measure the growth and complete the graph.

Day 1: _____

Day 2: _____

Day 3: _____

Day 4: _____

Day 5:_____

Day 6:_____

Day 7:_____

Data: Use a ruler to measure the length of the root and stem of your plant. Also record the data from the plant in the dark.

	Root length in centimeters	Stem length in centimeters
Plant in the light	_____cm	_____cm
Plant in the dark	_____cm	_____cm

PLANT GRAPH

		DARK			LIGHT	
	17					
	16					
	15					
	14					
C	13					
E	12					
N	11					
T	10					
I	9					
M	8					
E	7					
T	6					
E	5					
R	4					
S	3					
	2					
	1					
		Root	Stem		Root	Stem

PLANT PART

Results: After a week of observation, tell which one grew the biggest. Also summarize the length of the roots and stems on the lines below.

Conclusion: Was your hypothesis supported?

Name _____ Date _____

EDIBLE ROOTS

Background Information: Roots are the least seen of any other part of the plant. The root anchors the plant in the ground and keeps it upright. It also stores food for the plant's use. Water, nutrients, and minerals are taken in by the plant's roots. Tiny hairs grow on the roots that help absorb water. The root is the first part of the plant that develops. As the embryo develops, the roots push down into the soil. There are two main types of roots. They are called tap roots and fibrous roots. Carrots, radishes, and turnips are examples of tap roots. Some roots are edible. In this activity, you will take a look at some edible roots.

You will be given a slice of each root below. Use a ruler or tape measure to measure the diameter of each cross section. The diameter is the distance across the slice. Record the number of centimeters on the line next to each root type. In the box below, use crayons or colored pencils to draw the cross section. Be sure to use your hand lens to look at the markings on the cross sections.

RUTABAGA _____cm	CARROT _____cm	TURNIP _____cm
PARSNIP _____cm	MALANGA _____cm	BONIATO _____cm
YUCCA _____CM	GINGER _____cm	RADISH _____cm

Tell which root had the smallest diameter. _____
Tell which root had the largest diameter. _____
List the roots and diameters of each in order from smallest to largest.

NAME OF ROOT	DIAMETER
1	_____cm
2	_____cm
3	_____cm
4	_____cm
5	_____cm
6	_____cm
7	_____cm
8	_____cm
9	_____cm

Graph the diameter of each root from smallest to largest. Fill in the name of each root on the table below

Root Diameter Graph

D	22														
I	21														
A	20														
M	19														
E	18														
T	17														
E	16														
R	15														
	14														
In	13														
	12														
C	11														
E	10														
N	9														
T	8														
I	7														
M	6														
E	5														
T	4														
E	3														
R	2														
S	1														
	0														

Type of root

Name_____Date_____#_____

GARDEN FIELD STUDY

Today you will use the garden as your lab. WALK through the garden and answer the following questions.

1. Go to the tomatoes in the wooden white planters. Measure the height of the tallest plant and count how many yellow flowers you see in one planter. Each flower will become a tomato.

Height_____cm # of flowers_____

2. Go to the CABBAGE patch. Count the number of plants. Use your tape measure to find the diameter of the one head of cabbage. Remember, the diameter is the distance across.

of heads_____ diameter_____cm

3. Find the BELL PEPPERS. Count how many plants are in the bed. Then look on the top of four plants and count how many buds you see. Each bud will be a pepper. Add the total # of buds for all 4 plants you observed.

____+____+____+____=____

4. Find the radishes. Write a one sentence observation about what you see. Gently look under the leaves as part of your observation.

5. In the beans, radishes, and corn, there is a RAPITEST water tester. If the line points to 1, the plant needs water. If it points to 2 or 3, the plant needs no water. Look at the indicator each planter and tell if the plant needs water or not.

beans_____

radishes_____

corn_____

6. Find the JALEPENO PEPPER bed. Count the number of plants and record the color of the flowers. The flower is where the peppers will come out.

of plants_____ flower color_____

7. Find the CAULIFLOWER bed. Choose one plant to observe. Count the number of leaves on one plant and measure the length of the longest leaf.

of leaves_____ Leaf length_____cm

8. Find the BROCCOLI bed. Choose one plant to observe. Count the number of leaves on one plant and measure the length of the longest leaf.

of plants_____ Leaf length_____cm

9. Find the BEANS. Sketch one leaf.



When you have finished the field study, sit on the sidewalk and respond to the following prompt.

Vegetables are good to eat, they help you to grow strong and healthy. Think about your favorite vegetables. Tell what they are and how you like to eat them.

Name_____ Date_____

Garden Field Study

Several weeks ago, you planted vegetables in the garden. Today you will use the garden to do a field study as you make careful observations about the plants.

Choose one plant. Write a paragraph describing what you see. Include what the plant looks like, how many are in the area you are observing, are there any flowers? If so what color are they? Are there any vegetables on the plant? If so, how many?

Observation of the _____ plant.

Cherry tomatoes	Total number on one plant

A fraction is used to compare a part to the whole. The bottom number called the denominator tells how many there are in all. The top number tells how many of a certain part you have. Look at the number of cherry tomatoes on one plant. Fill in the numbers to show a fraction to represent the red and green tomatoes.

Numerator red tomatoes
total Denominator total tomatoes

green tomatoes
total tomatoes

Look at the cucumber and the squash beds. Write a few sentences comparing the size and color of their flowers.

Data Table

Item measured	Number of centimeters	Number of vegetables
Yellow banana pepper (YPB) (length-how long is it from end to end)		
Cabbage heads (CH) (Diameter- the distance across)		
Green bell peppers (GBP) (the circumference-the distance around)		
Purple eggplant (PE) (the circumference-the distance around)		
Broccoli (BR) (Plant height-how tall is it?)		

Vegetable Graph

29														
28														
27														
26														
25														
24														
23														
22														
21														
20														
19														
18														
17														
16														
15														
14														
13														
12														
11														
10														
9														
8														
7														
6														
5														
4														
3														
2														
1														
	YBP length	YB P #	CH Diameter	CH #	GBP Circumference	GBP #	PE Circumference	PE #	BR height	BR #				

Vegetable measurement

Name_____ Date_____ #_____

GARDEN FIELD STUDY

Several weeks ago, you planted vegetables in the garden. Today you will use the garden to do a field study as you make careful observations about the plants.

Date the vegetable was planted: _____

Number of days since it was planted: _____

How many days did you predict it would take for the vegetable to be seen? ____

Was your hypothesis supported? _____

Observation of the _____ plant.

In planter #1 count the number of jalapeno peppers and record the total.

Measure the length of the longest jalapeno pepper and record it on the table.

In planter #2 measure the diameter of the cabbage and record it on the table.

In planter #3 measure the height of the tallest broccoli plant from the bottom to top and record it on the table.

In planter #4 count the number of green tomatoes and red tomatoes and record it on the table.

Look at the cabbage plant in planter #5. Tell what you saw and how it might have happened.

Data Tables:

item measured	number of centimeters
longest Jalapeno pepper	
diameter of the cabbage	
height of the tallest broccoli plant	

Sketch what you saw here:

item measured	number of vegetables
Jalapeno peppers	
green tomatoes	
red tomatoes	

Sketch what you saw here:

28+			
26			
24			
22			
20			
18			
16			
14			
12			
10			
8			
6			
4			
2			
	longest Jalapeno	cabbage diameter	height of broccoli

Vegetable measured

24+			
22			
20			
18			
16			
14			
12			
10			
8			
6			
4			
2			
	Jalapeno peppers	red tomatoes	green tomatoes

NAME: _____ DATE: _____

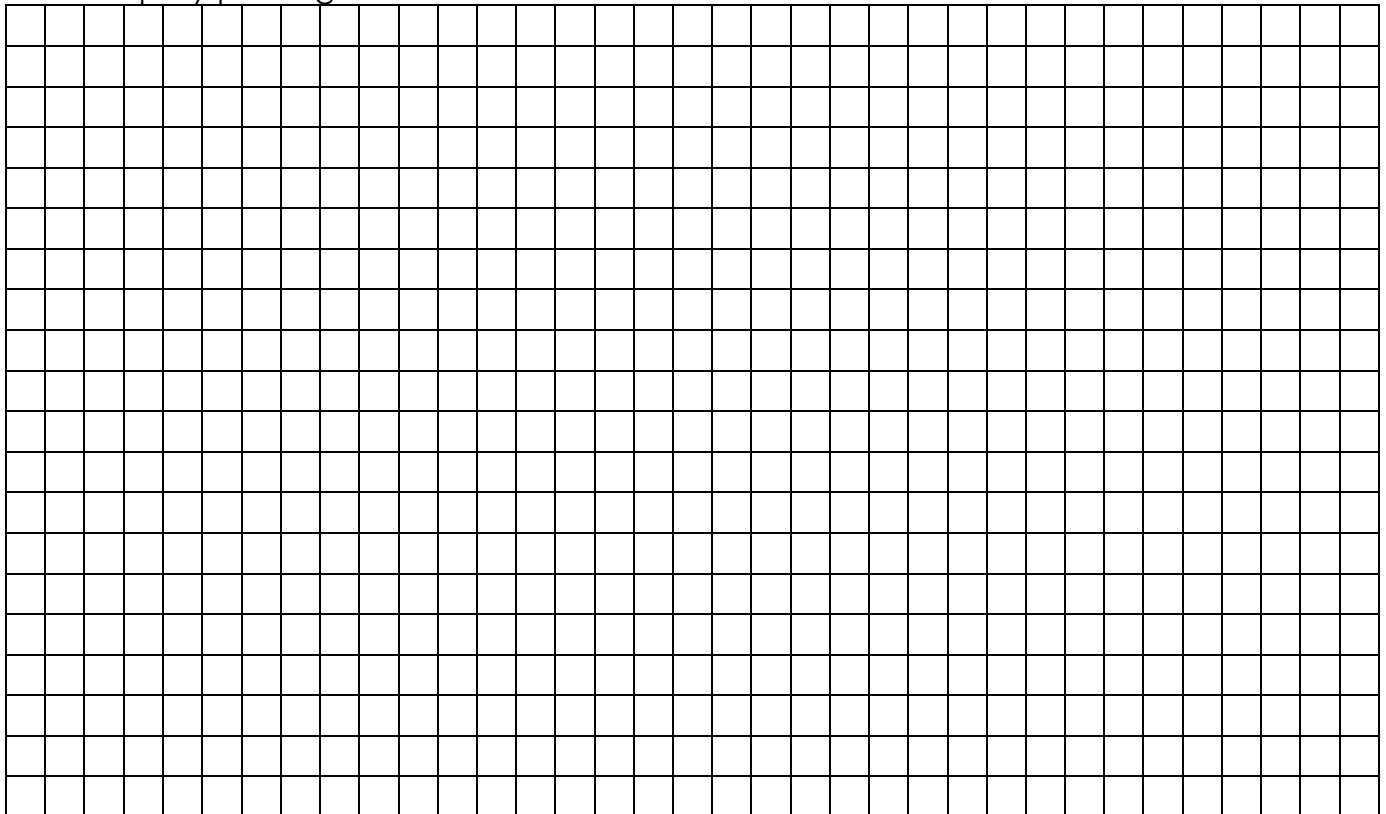
LEAVES

BACKGROUND INFORMATION: Green plants make their own food. That food is sugar. This process is called **photosynthesis**. Most of the food is made in the **leaves** of plants. Water is taken through the **roots** and carried to the leaf by the stems. Leaves need a gas called **CARBON DIOXIDE**. Carbon dioxide enters the leaf through small openings in the leaf's surface called **pores**. Plants also need energy that they get from the **sun**. Plants give off a gas called **oxygen**. Oxygen is needed by most living things to survive.

MAKE A LEAF RUBBING BELOW:

Place a leaf under the paper and gently rub the paper with the side of a crayon.

Place your leaf on the grid below. Trace the leaf and count the number of boxes it takes up by placing an "x" in each box. The number of boxes is the area of the leaf.



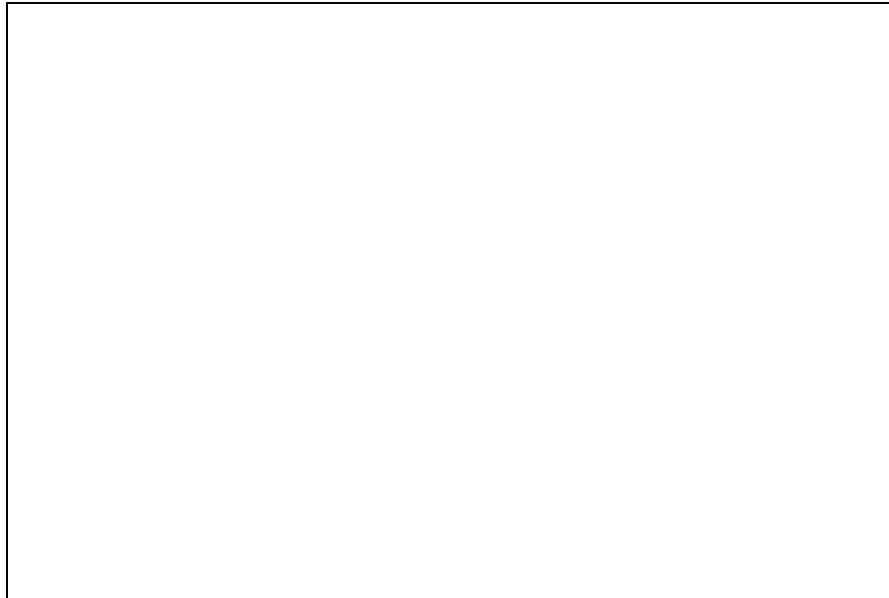
What is the area of the leaf? _____

Use a ruler or tape measure or ruler to measure the following:

Leaf length (how long is the leaf) _____

Leaf width (how wide is the leaf) _____

Make a sketch of the leaf. Use the hand lens to get a closer look at its veins. Be sure to show the veins in the sketch.



Tell why a leaf is so important to the plant.

PARTS OF A SEED

Seeds are alike in many ways. They develop in the ovary of a plant and contain a little plant called an embryo. Seeds are covered by a thin outer coating called a seed coat. The seed coat protects the seed. The tiny seed has its own food until it is able to make its own food in the leaves. The food storage of a seed is called the cotyledon. Seeds are different sizes and shapes. A corn seed is a monocotyledon and has a tiny embryo inside, but since it has only one cotyledon, it cannot be split in half. A bean seed is a dicotyledon meaning it has two cotyledons and can be split in half. The embryo is between the two cotyledons.

In this activity, you will have a chance to compare a dry and soaked bean seed. One lima bean has been soaked overnight. The other one is a dry seed that has not been soaked.

Materials (per person): one soaked seed, one dry seed, a hand lens,
a ruler or tape measure

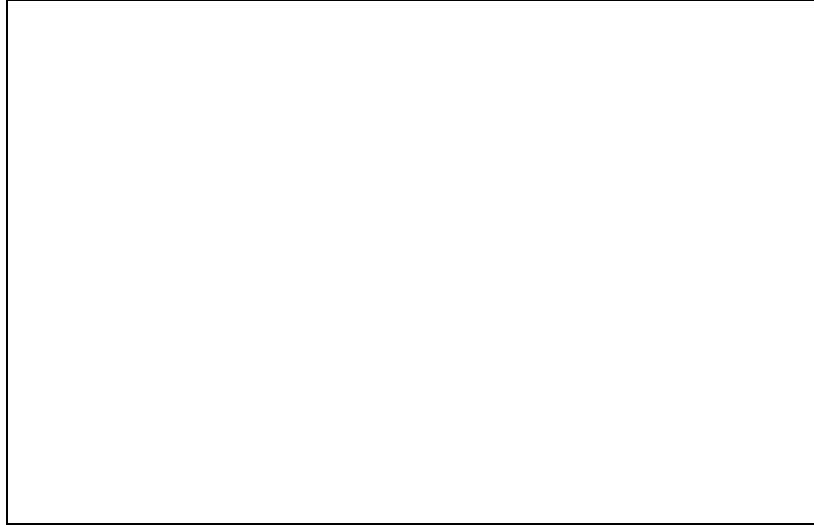
Procedure:

1. Lay out the soaked seed and the dry seed next to each other. Write down five observations of each seed on the chart below. Be sure to write down some physical properties to describe or compare the seeds.

The dry seed....	The soaked seed....
Draw the dry seed here:	Draw the soaked seed here:

(Procedure continued)

2. Carefully remove the seed coat.
3. Split the seed in two parts.
4. Look for the embryo in the middle. It may break off or fall out.
5. Draw the two cotyledons and the embryo here.



Write about it:

Pretend you found a bag of magic beans. Explain what happened after you planted the beans.

PUMPKIN SCIENCE**PLEASE DO NOT SPIN, ROLL, OR BANG THE PUMPKINS ON THE TABLE**

Pumpkins are fruits that grow on leafy vines from pumpkin seeds. Yellow-orange flowers bloom on the vine, then they die and wither away. The flowers' ovaries (at the bottom of the flower), swell and become tiny green pumpkins. As they grow larger, they change color and about four months after planting, they are ready to harvest. Pumpkin colors can vary from white to yellow, to orange. Pumpkins contain vitamin A and potassium. Pumpkins are an ingredient in pies, breads, soups, and other foods. Pumpkin seeds can be roasted for a snack and some pumpkins are used as feed for farm animals.

Use the chart below to fill in information about your pumpkin and the pumpkins of the other members of your team. Graph your data.

Count how many lines are on the outside of your pumpkins.

Pumpkin Lines

			16				
			14				
PUMPKIN	# of lines		12				
Pumpkin #1		#	10				
Pumpkin #2		Of	8				
Pumpkin #3		Lines	6				
Pumpkin #4			4				
			2				
				#1	#2	#3	#4

Pumpkin

Use the tape measure to find the circumference. Wrap the tape measure around the pumpkin and record how many inches it measures around.

Pumpkin Circumference

			16				
			14				
PUMPKIN	# of inches around		12				
Pumpkin #1		#	10				
Pumpkin #2		Of	8				
Pumpkin #3		inches	6				
Pumpkin #4		around	4				
			2				
				#1	#2	#3	#4

Pumpkin

Use the tape measure to find the diameter. Wrap the tape measure across the top of pumpkin and record how wide the pumpkin measures.

Pumpkin Diameter

			8				
			7				
		#	6				
PUMPKIN	# of inches wide	Of	5				
Pumpkin #1		inches	4				
Pumpkin #2		wide	3				
Pumpkin #3			2				
Pumpkin #4			1				
				#1	#2	#3	#4

Pumpkin

Watch as your teacher weighs the pumpkin on the scale. Add up the gram masses and write how many grams the pumpkin weighed.

Pumpkin Mass _____

Predict whether the pumpkin will sink or float. _____

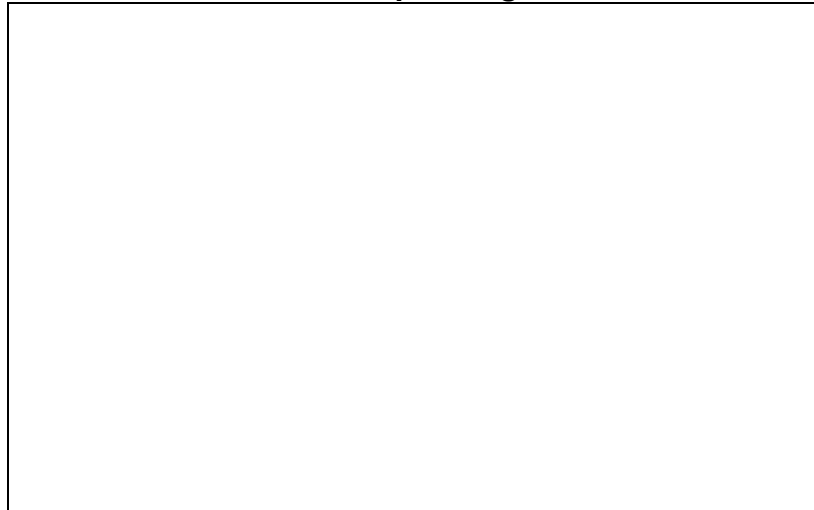
If it floated, how did it float? Stem up, stem down, on its side. _____

List three physical properties to describe how your pumpkin looks.

Summarize the data for your pumpkin on the lines below.

My pumpkin has _____ lines. Its circumference was _____ inches. Its diameter was
_____ inches. It weighed _____ grams. My favorite part of this activity was
when

Draw a pumpkin below and illustrate how you might carve it for Halloween.



NAME: _____ DATE: _____

PLANTS: UNDERSTANDING ROOTS AND STEMS

BACKGROUND INFORMATION: All plants need **water, sunlight**, and **nutrients** in order to survive. All seed plants have three main parts. They are the **roots, stems**, and **leaves**. The **ROOT** holds the plant in the ground. It also takes in water and minerals that helps the plant to grow. **STEMS** of most plants grow above the ground. They support or hold the plant upright. Most stems grow upward. In strawberries, stems grow along the ground. A potato stem grows under the ground. Trees have one main stem called a **TRUNK**. A **shrub** or bush has many woody stems. A **vine** has a soft stem that cannot stand up. Vines can be found growing up the side of a fence, building, or wall.

PROBLEM STATEMENT 1: Will plants grow better in light or in the dark?

HYPOTHESIS 1:

--

PROBLEM STATEMENT 2: How many days will it take for a seed to sprout (be visible above the soil)?

HYPOTHESIS 2:

--

MATERIALS: 4-5oz.cups, potting soil, corn, radish, pea, and bean seeds, water, sticky dots.

ACTIVITY 1: PLANTING THE SEEDS

PROCEDURE:

1. Label 4 blue sticky dots and stick one on each cup: 1. corn 2. radish 3. pea 4. bean
2. Fill each cup with soil. Poke a hole in each cup and place the proper seed in each.
3. Measure 10 ml of water and place it in each cup.
4. Take cups with seeds home and complete the activities on the back of this page.

ACTIVITY 2: OBSERVING PLANT PARTS WITH THE MICROSCOPE

PROCEDURE:

1. Choose a slide from the box on your table and focus it on the microscope.
2. Write the name of the slide in a box below and draw a sketch of the slide in the box.
3. Once you have finished with one slide, go on to another.

--	--	--	--

Keep your four seedlings where they are exposed to some form of light. Be sure to keep the seedlings moist. **RECORD** your observations of the seedlings **EACH DAY AT HOME** for seven days. Tell what you see or do not see.

DAY 1
DAY 2
DAY 3
DAY 4
DAY 5
DAY 6
DAY 7

RESULT 1: The plant in the _____ grew better.

CONCLUSION 1:

RESULT 2: It took _____ days for the first seed to sprout.

CONCLUSION 2:

Tell what you learned from this lab:

WRITING ACTIVITY: Name one of your seedlings and write a short story about how it felt to have you for a caretaker.

MATH ACTIVITY:

1. If a corn plant grew 5 centimeters each week, how tall would it be at the end of 6 weeks? Write a number sentence and show your answer. _____
2. Mrs. Davis planted 3 plants on Monday, 4 plants on Tuesday, and 6 plants on Wednesday. How many plants were planted in all? Write a number sentence and show your answer. _____

NAME_____ DATE_____ TEACHER_____ NUMBER_____

LAB QUIZ ROOTS & STEMS

1/2/ 3. All plants need three things in order to survive. They are_____,
_____, and _____.

Match the words in column one to its meaning in column two. Write the correct letter next to each word.

_____4. roots

A. Trees have one main stem.

_____5. stems

B. Stems that grows along the ground.

_____6. shrub

C. Holds the plant in the ground. It also takes in water and minerals that helps the plant to grow.

_____7. vine

D. A bush that has many woody stems.

_____8. trunk

E. A stem that grows under the ground.

_____9. potato

_____10. strawberry

F. The part of the plant that supports or holds the plant upright.

G. Most stems grow upward.

H. Has a soft stem that cannot stand up. Some can be found growing up the side of a fence, building, or wall.

_____ 11/12 Lab homework completed.

NAME_____ DATE_____ TEACHER_____ NUMBER_____

LAB TAKE HOME QUIZ ROOTS AND STEMS

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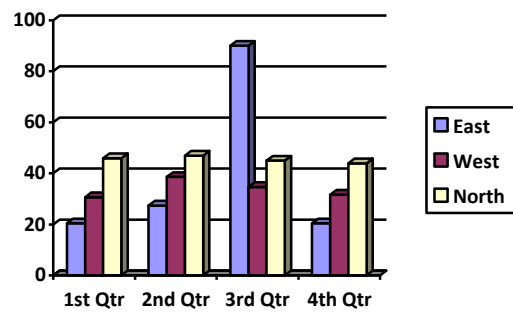
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_____ 11/12 Lab homework completed.

Name _____ Date _____

Seed Sort

Seeds come in different sizes and shapes, most are surrounded by fruit. Different types of fruit have different types of seeds. Most plants grow from seeds. Seeds are planted in the ground and as long as the seed has water and sunlight, it will grow into a new plant.

Problem Statement: How many of each kind of seed or bean are in the cup?

Materials: Cups with seeds or beans

Data Table: Draw one of each kind of seeds in the boxes in the first column. Pour out the seeds and sort them into piles that look the same. Count how many there are of each and write the number next to the glued seed.

Draw your seed here:	How many were there?

Seed Graph

	20							
	19							
N	18							
U	17							
M	16							
B	15							
E	14							
R	13							
	12							
	11							
O	10							
F	9							
	8							
	7							
S	6							
E	5							
E	4							
D	3							
S	2							
S	1							
		Seed 1		Seed 2		Seed 3		Seed 4

Seed Types

Count how many seed you have in all. Write how many you have in the box below.

If you have a scale, weigh the cup of seeds and record how many grams were in the cup.

Cup of seeds	Number of grams_____
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Think about your favorite fruit. Tell which fruits are your favorite and how you like eat them.
Draw pictures of your favorite fruits. Draw the seeds inside them.

Name _____ Date _____

WHAT PLANTS NEED TO GROW

Plants are organisms that grow and reproduce their own kind. They need soil, air, water, light and space to grow.	SOIL Water and minerals are taken from the soil through the roots. Soil also provides support for the plant and an anchor for roots to grow in. Decaying plants and animals leave minerals in the soil that help the plant to grow.	LIGHT Plants need sunlight to grow properly. They use light energy to change carbon dioxide into food (sugars). This food making process is called photosynthesis. Only with light can plants make their own food.
AIR Plants need clean air. Green plants take in carbon dioxide from the air and use it during a process known as photosynthesis.	WATER Water is needed for all living things. Plants use water to carry nutrients and moisture from the roots to the leaves and from the leaves back down to the roots.	SPACE Plants must have space in order to grow. If their space is small, plants will be small. Plants need space for their roots and branches to spread out.

You can choose to use any type of seeds for this activity. Radish seeds however, grow a complete radish in a short period of time.

Problem Statement: (What you are trying to find out)

How long will it take food a plant to produce an edible food?

Hypothesis: (What is your guess of prediction?)

Materials: (List the things you will use in the experiment.)

Procedure:

List the steps you used in planting the plant.

Step 1: Place soil in a cup.
Step 2:
Step 3:
Step 4:
Step 5:
Step 6:

Tell what type of plant you planted today. Also, tell whether you planted your plant from a seed or a seedling plant.

List the 5 things that all plants need. Be sure to use a complete sentence.

Do this part after the plant bears food.

Results: (The answer to your question)

When the plant bears food, tell how long it took.

Conclusion: (Was your hypothesis supported?)
