



Farm

Share

In The Classroom
Feed The Need:
Bringing The Fields to Hungry Families
Teacher Guide



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Table of Contents

| TE | ST | | | |
|----|----|---|---|--|
| 1 | | Overview | | |
| 2 | | Farm Share Facts For The Teacher | | |
| 6 | 1 | Farm Share Vocabulary | Vocabulary Development | Students will go over essential vocabulary related to the curriculum and complete a work search with the terms. |
| 8 | 3 | Feed The Need: Bringing The Fields to Hungry Families | Reading Comprehension | Students will read about the history of Farm Share and complete reading comprehension questions |
| 11 | 6 | The Pounds Chart | Interpreting a bar graph | Students will use the pounds graph to interpret the data. |
| 12 | 7 | What would it be like? | Writing to an Expository Prompt | Students will explain how Farm Share makes its impact on hungry families. |
| 13 | 8 | Food Values | Rounding & adding | Students will round the food values in dollars to the nearest million and add the totals for each year to determine the total food value from 1991-2004. |
| 14 | 9 | Who Benefits From Farm Share's Generosity? | Reading Comprehension | Students will find out who qualifies for food from Farm Share and answer questions based on the passage. |
| 16 | 11 | Packing the Trucks | Math Applications: Solving word problem | Students will use data from a table to figure solve word problems. |
| 17 | 12 | Help Your Neighbor | Writing to a Narrative Prompt | Students will think of ways they can help their community and write explain they idea in an expository essay. |
| 18 | 13 | What are Government Commodities? | Reading Comprehension | Students will identify the role that Government Commodities play in feeding the hungry of our nation. |
| 20 | 15 | Round and Average | Rounding & averaging | Students will use the data in the table to round to the nearest million and compute the average pounds donated over a 7 year period. |
| 21 | 16 | Even an Inmate Can Make A Difference | Writing to a Prompt | Student will learn about Calvin, a former inmate who has turned his life around helping others. |
| 22 | 17 | Meet Martin, a migrant farm worker | Reading Comprehension | Students will identify the role of a migrant worker as well as the process by which fields are gleaned. |
| 24 | 18 | Pallet Weight | Math Applications: Solving word problem | Students will use data from word problems to figure out how many cases of certain foods can fit on a pallet. |
| 27 | | Appendix A | Kids 4 Kids Inc. | Read articles on line and get ideas about projects your students can do to help their community. www.kids4kids.org |
| 28 | | Appendix B | Sow It, Grow It, Know It | This series of 16 activities teaches students about every aspect of plants from the root on up. Activities also guide students in planting school gardens and taking part in field studies to integrate math measurement skills as they investigate vegetables. Field studies can be adapted to include measurement of vegetables from local supermarkets. |



The purpose of *Farm Share in the Classroom* is threefold. First and foremost, is to teach children about the process and importance of food recovery. Second, is to provide an opportunity to inform poor families of the availability of free food. Finally, this curriculum opens the eyes of children, who go home each day to food in their refrigerators, to the plight of others who are not as fortunate. After teaching the lessons in the guide, teachers are invited to bring their students on a FREE tour of the Farm Share facilities in Homestead, Florida. There, they will see firsthand how Farm Share operates. They are even invited to help sort and pack food for distribution to families.

Two extension guides are also included in this guide as their themes are closely related educationally to the Farm Share. ***Sow It, Grow It, Know It***, is a group of hands-on activity sheets that teaches students everything they want to know about plants. Included are 15 hands-on activities, which can be adapted to grades 2-6, where students learn about growing their own gardens. The second program is ***Kids 4 Kids Inc.*** Kids 4 Kids teaches students that they can change the world through their acts of kindness just as Farm Share does by feeding the hungry. For more information on Kids 4 Kids, visit their website at www.kids4kids.org.





Farm Share Facts for the Teacher

Mission Statement: Millions of Americans suffer from hunger and malnutrition. At the same time, supermarkets only accept perfect same-sized produce because consumers demand it that way. The rest—over 4 billion pounds per year—is thrown out. Farm Share intercepts this surplus produce, combines it with USDA commodities, and gives it to organizations feeding the hungry.

Help the homeless, low income, and working poor of America: While most food recovery programs and food banks share many of the same characteristics in their efforts to recover and distribute surplus food, Farm Share stands out as an innovative, comprehensive and highly effective non-profit organization. Farm Share administers gleaning projects, produces recovery operations, USDA commodity programs and food drives. It is the only charitable packinghouse in Florida and the eastern United States. The program relies on the commitment and dedication of supporters and volunteers, whose contribution of product, funds, equipment and labor enable it to feed America's hungry. Help Farm Share meet its ongoing needs -- get involved. It doesn't take much to make a big impact -- for every nickel donated, Farm Share distributes one pound of nutritious food.



Food Donations

Fresh Fruits & Vegetables

Farmers

- Packers
- Wholesalers
- Brokers

USDA Commodities

- Soup Kitchen/Food Bank Program
- The Emergency Food Assistance Program

Other Food Items

- Grocery Stores
- Corporate Donations
- Canned Food Drive



The following list highlights some of the differences between Farm Share and other food recovery and food bank programs:

- Farm Share operates the only charitable produce packinghouse in the Eastern United States. Farm Share distributes food to agencies and individuals at no charge and without fees of any kind.
- Farm Share ships food throughout the state of Florida and the Eastern seaboard.
- Farm Share has public / private partnerships with the Florida Department of Agriculture and Consumer Services (which provides a warehouse facility, support staff, equipment and services) and with the Florida Department of Corrections (which provides up to 29 inmates and 2 corrections officers daily for sorting, packing and distributing donated food).
- Farm Share provides food to hundreds of non-profit organizations that serve more than 7,000,000 meals monthly reaching more than 2,500,000 families each year.
- Farm Share also directly distributes food to more than 4,000 registered local households -- composed of migrant workers, single mothers, elderly, disabled and other low income recipients.
- Farm Share offers nutrition education courses to all recipients -- thus, assisting them in making better nutritional and economic choices when shopping for groceries.
- Farm Share receives food in bulk and has the resources to sort, pack, store and ship tractor trailer loads of fresh food. More than 12,000,000 pounds of fresh and nutritious fruits and vegetables are shipped each year to participating agencies throughout the Eastern seaboard.
- Farm Share concentrates its efforts on the solicitation of food that has nutritional value (fresh produce, canned and frozen meat products, canned fruits and vegetables, etc.)
- Farm Share's administrative costs are kept low by the use of the VISTA and WAGES programs in addition to partnerships with the Florida Department of Agriculture and Consumer Services and the Florida Department of Corrections.
- Farm Share is located at several State Farmers Markets in Florida. The headquarters, a 53,000 square foot packinghouse, is located at the Florida City State Farmers Market (in the heart of Miami-Dade County's agricultural area). This provides easy access to produce farmers, packers, brokers and wholesalers who freely donate fresh fruits and vegetables.
- Farm Share has the capacity to store more than 12 tractor trailer loads of refrigerated foods and 7 tractor trailer loads of frozen foods as well as dozens of tractor trailer loads of dry foods.



Produce Recovery & Distribution

Distribution to Individuals: Farm Share's main objective is to recover and distribute surplus fresh and nutritious fruits and vegetables. Farm Share recovers fresh produce in bulk (tractor trailer loads, bins, boxes and hoppers) or by gleaning fields with the help of volunteers and inmate labor. The produce is washed, sorted, packed and distributed locally, statewide and throughout the United States to a network of participating social service agencies serving the homeless and low-income households. The Individual Distribution Center (IDC) opened in November 1999 and has blossomed to accommodate and service Farm Share's recipients in

Homestead, Florida City and the surrounding communities of south Miami-Dade County. The staff and volunteers distribute food to over 6,000 eligible households monthly.

Since opening its doors, the IDC has been able to better serve the community by:

- Enabling recipients a more dignified means of picking up food.
- Allowing recipients flexibility when scheduling food pick-ups.
- Creating greater accessibility for many families who could not benefit from the fresh and nutritious food offered by Farm Share due to their inability to attend distributions when they were held only one day per month.
- Eligibility is based on household size and income. The program is available to individuals who meet the Means Tested criteria set forth by the USDA and the Florida Department of Agriculture and Consumer Services, and is the same for everyone without regard to race, color, national origin, sex or handicap.
- Only one member of each household is eligible to receive a Farm Share card.
 - Food is distributed by appointment only, Tuesday - Friday, 9:00am - 2:00pm.

Sample Timeline For Four Day Curriculum Implementation

| Day | Activity | Skill | State Standard |
|------------------|--------------------------------------|----------------------|---|
| Monday | Farm Share Vocabulary | Vocabulary Dev. | |
| | Feed The Need | Reading Comp. | The student uses the reading process effectively. (LA.A.1.2) |
| | Pounds Chart | Reading A Bar Graph | The student uses statistical methods to make inferences and valid arguments about real-world situations. (MA.E.3.2) |
| | Farm Share's Impact | Expository Prompt | The student uses writing processes effectively. (LA.B.1.2) |
| | Food Values | Rounding & Adding | The student understands the different ways numbers are represented and used in the real world. (MA.A.1.2) |
| Tuesday | Who Benefits From Farm Share | Reading Comp. | The student uses the reading process effectively. (LA.A.1.2) |
| | Packing The Trucks | Word Problems | The student uses estimation in problem solving and computation. (MA.A.4.2) |
| | Help Your Neighbors | Narrative Prompt | The student uses writing processes effectively. (LA.B.1.2) |
| Wednesday | What are Government Commodities | Reading Comp. | The student uses the reading process effectively. (LA.A.1.2) |
| | Even An Inmate Can Make A Difference | Writing To A Prompt | The student uses writing processes effectively. (LA.B.1.2) |
| | Round & Average | Rounding & Averaging | The student understands number systems. (MA.A.2.2) |
| Thursday | Meet Martin | Reading Comp. | The student uses the reading process effectively. (LA.A.1.2) |
| | Pallet Weight | Word Problems | The student uses estimation in problem solving and computation. (MA.A.4.2) |
| | Essay Contest | Writing To A Prompt | The student uses writing processes effectively. (LA.B.1.2) |

FARM SHARE VOCABULARY

hunger distressed – not knowing if you can afford to buy your next meal

produce – fruits and vegetables

surplus produce – food grown by farmers that is more than they can sell and would have to be thrown away

discards – food grown by farmers that does not match the supermarket's standards (Usually blemished or the wrong size)

farmers – people who grow and sell produce

food brokers – people who arrange sales between farmers and supermarkets

harvest – gathering produce once it has ripened on the farm

gleaning – gathering the small amount of produce from farms that was missed during harvest

gleaning projects – farmers often agree to let charities or hunger distressed people glean their fields after harvest.

migrant workers – farm workers who move to different parts of the country to pick different crops as they ripen for harvest

non-perishable – food that does not need refrigeration and can be stored for long periods of time

non-profit organizations – groups of people that come together to help others instead of earning money

packers – people who put produce into boxes for shipping

pallets – wooden platforms to put boxes on for moving with a forklift

produce recovery operation – a non-profit organization that specializes in saving, packing, and giving surplus produce and discards to the hunger distressed

social service organization – an organization that helps people

soup kitchen – an organization that serves meals to the homeless and hunger distressed

USDA commodity program – an organization that specializes in distributing non-perishable food provided by the federal government to the hunger distressed

wholesalers – companies that buy in bulk to sell to retail outlets

Farm Share Vocabulary

Find the words from the vocabulary list one page 1.

X X N A I X I L C Q I I K K K W G J N C Z V S L W N N H U T
G O O L Z K Z Z E R X D Z S V S H W O U H R T G F O I U N P
D F I H Q L L S H K X A A K O D Q O X I E K L L I V X N W K
B E T E C U D O R P S U L P R U S G L K K E Z T A L J G F K
G K A B D D H T Z E T S P N S U L D O E A I A J Q G G E W N
W Y Z I U I S O Z B K G R S B E O R O N S R L W J V A R I R
Z K I U V S D E Z W J R R E A W B W I G E A C B M H S D L D
H G N M X C D G S G J E O N M D W N F P G M L N M U V I U Z
N B A A T A E A Q F K U I W O R G M O R F Q R E H B E S T Y
R W G K F R R W C C X N R O T O A Y Q E C U D O R P N T E D
X Y R G B D S A A O G W F W P N R F W I Z G A K D S N R C A
E E O J S S P P L P M A T C O E A D F Q O L M H J A B E A D
F I E V U A Y H R X N M C Y V T T R K K Q P R K L C I S C P
B Q C Z X Q O O L C N Q O O D I D G G H Z B B J T A O S X B
R I I T L Z J Y I R U P C D K L L U X I E W D C C X U E X E
L T V U Q E K S S V K E H Q I K S I M B M K S I W F Y D D L
G Y R G C S B E X Y R Y X Q G T C U K E Z H L M R L Q J B B
N V E T S P H R B E E C T H T R Y D B T H Z C O J E K G U A
W S S L Y E Q D C P A L L E T S Q P Y V E X N I I U Y A S H
S J L O B V P U N O N P R O F I T O R G A N I Z A T I O N S
L U A S D J D Q L E S I Q D K T A E B O Z D B G B C M B T I
N D I H A O S U F B O Q R X S J Z Q T X G T N R U N C P S R
C O C N R Z D C C S V U E Q B D B K N O P R M N O H C U E E
O V O P H C P G U V C U C H T D O P X P P P A X U P D Z V P
Q B S O U P K I T C H E N T M Q B H L B U F M M Y O U M R N
Y T S E M M Z O F Y V O V N E F V X G U X H G L I H P U A O
Q Q B C O J P O H G Z P X K X X A E J G W H H V J H E V H N
Q B K A T U I A N E C J Z R G C N Z M V H K C S O A C J V S
Q V J U U P V G H T M I F Y N L A A V G U Q R W U G Z O D J
S N Z V N Y N R M L Y D O M O O Q G M G K V J V C L J L V C

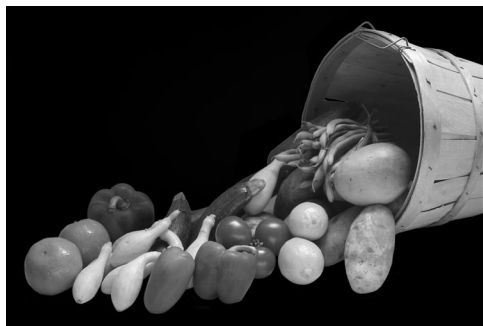
Feed the Need: Bringing the Fields to Hungry Families

Have you ever stopped to wonder how the food you eat gets to the grocery store? If not, you might be surprised to know that for every piece of fruit and vegetable, there are many that used to be thrown away. When you see a display of apples, they all look perfect. Well, for every perfect one, there are many that are not the perfect size, shape, or color that farmers simply threw away because the grocery store would not buy them. A woman named Patricia



Robbins knew this. She also knew that there were hundreds of thousands of people that went hungry every day. Ms. Robbins established a way to “recover” the food that was being destroyed and give it to families throughout Florida who needed it.

Food Donations-Fresh fruits and vegetables:



Established in 1991, Farm Share is a 501(c)(3) non-profit organization, dedicated to the recovery, sorting, packing and distribution of nutritious foods for people in need. Farm Share administers **gleaning projects**, **USDA commodity programs**, foods drives and produce **recovery operations** from a packinghouse provided by the Florida Department of Agriculture, Commissioner Charles H. Bronson. It is located in Florida City, near Homestead, Florida - the heart of Miami-Dade County's farming area. Here is how she did it. She contacted **farmers, packers, wholesalers, and food brokers** and

told them how they could make a difference with their **discards**. She convinced them to donate their food instead of dumping it. She now sends trucks to their facilities and picks up the food they cannot sell. That is only the beginning of the story!

Other Food Items:

Farm Share also gets donations from grocery stores, corporate donations, and canned food drives. You might notice at the end of the day, grocery stores have bakery goods like cakes and breads that are left over. Although there is nothing wrong with the baked goods, and they will last for several days, the grocery store cannot sell the goods as fresh. Therefore, instead of throwing them away, they donate them to Farm Share who passes them along to families who need food. Many other groups of caring individuals like school kids, churches, temples, and corporations hold canned food drives. They ask people to donate cans or packages of **non-perishable** food. The food collected goes to Farm Share for distribution to families and other organizations who feed the poor.

What happens to the food once it reaches Farm Share?



Farm Share picks up food in its 12 trucks and trailers and brings it to their charitable packing house. The packing house has ten freezers and four refrigerated coolers at its locations in Homestead. Each freezer holds 42,000 pounds, the equivalent of one tractor trailer load of food. The coolers each hold 126,000 pounds of fresh produce, three tractor trailer loads each. All the coolers together will hold a total of 12 tractor trailer loads of produce per day. Other food can be stored on pallets in their warehouse. There are two warehouses in the Homestead area. One 53,000 sq ft. with freezers, coolers and racks for stacking donated non-perishable food. This warehouse could hold 37 tractor trailer loads

of food which would be 814 pallets of non-perishable food. The weight of a pallet of food depends on the type of food and container. The additional warehouse in Homestead is 27,500 sq ft. with freezers. This warehouse could hold 13 tractor trailer loads of food which would be 286 pallets of food at any given time. The weight of a pallet of food depends on the type of food and the container. For example, a pallet of canned goods will weigh much more than a pallet of cereal. Also a pallet of tomatoes (lots of water in them) will weigh much more than a pallet of eggplant (a light, dry vegetable). At the packing house the food is sorted and distributed daily with the help of inmates and dozens of volunteers. Although the inmates are incarcerated for crimes they have committed, by working to help others who are less fortunate, many feel that they make a difference for others through their work program. Often times families are left with no working spouse when a member is sent to prison and the family faces not having enough food. Sometimes an inmate is actually, through his work at Farm Share, sorting and packing food that goes to feed his own family.

What Does Farm Share Do With The Food?

Hundreds of Recipient Agencies & Social Service Organizations throughout the state regularly receive food from Farm Share -- at no cost! Food is distributed by Farm Share's participating organizations to countless needy households throughout the state of Florida and across the Eastern seaboard -- **at no cost!** Farm Share has regional distributions to agencies in a five county area representing over 30,000 households. In addition, they have statewide distribution to participating **non-profit organizations** and **social service agencies**. Farm Share also provides out-of-state distributions to participating non-profit organizations and social service agencies. Finally, thousands of local households receive fresh produce and nutritious foods on a monthly basis, directly from Farm Share -- at no cost!

Now you see why Farm Share's motto "Donate, don't dump" is so important. It just goes to show you that one person's trash can be another person's treasure! Just look how happy these kids are that Farm Share took the time to keep food from being wasted.



Feed the Need: Bringing the Fields to Hungry Families

1. In what year was Farm Share founded? **1991**
2. What was the name of its founder? **Patricia Robbins**
3. How many truckloads of food can each freezer hold? **One tractor trailer**
4. How many households does Farm Share serve? **30,000**
5. Who packs and distributes the food?

| |
|--|
| Volunteers and inmates pack the food. |
| |
| |
| |

6. What solution did Farm Share come up with to reduce the amount of food that was being wasted?

| |
|--|
| Farm Share collects and distribute to needy families. |
| |
| |
| |

7. What does the saying, "Donate, don't dump" mean?

| |
|---|
| Instead of throwing away excess donate it to people who need it. |
| |
| |
| |

8. Where are some places that Farm Share gets the food they donate to the community?

| |
|---|
| Farm Share gets its food from farmers, packers, grocery stores, corporations, and canned food drives |
|---|

9. What is the cost to receive food from Farm Share? **none**

POUNDS CHART

The following information represents how many pounds Farm Share has donated since 1991

Use the data in the table to answer the questions below.

Farm Share Food Distributions

Number of Pounds Donated

Year

1. In what year did Farm Share donate the most food? **2001-2002**
2. In what year was the biggest increase in food donations? **2001**
3. In what year was the biggest decrease in food donations? **2002**
4. Between 1997 and 2004, what was the increase in food donated? **9,000,000**
5. Round each year's donation to the nearest million to determine how much food has been donated from 1997 to 2004. **134,000,000**
6. In which year was the food donation closest to 21 million pounds? **2003-04**

Farm Share is in the food recovery business with its main goal being to feed hungry people.

Think about the families Farm Share assists.

Food Values in Dollars Donated by Farm Share

| Year | Dollar Value of Donated Food | Amount Rounded to the nearest million |
|-------------|---|---------------------------------------|
| 1991 | \$1,640,000.00 | 2,000,000 |
| 1992 | \$2,531,610.25 | 3,000,000 |
| 1993 | + \$9,138,556.25 | 9,000,000 |
| | Total 1991-1994 \$13,310,166.50 | 14,000,000 |
| 1994 | \$9,549,987.50 | 10,000,000 |
| 1995 | \$8,942,592.50 | 9,000,000 |
| 1996 | + \$8,565,395.25 | 9,000,000 |
| | Total 1995-1997 \$27,057,975.25 | 28,000,000 |
| 1997 | \$9,487,501.25 | 9,000,000 |
| 1998 | \$19,494,401.25 | 19,000,000 |
| 1999 | \$24,436,073.75 | 24,000,000 |
| 2000 | + \$20,226,802.50 | 20,000,000 |
| | Total 1998-2000 \$73,644,778.75 | 75,000,000 |
| 2001 | \$20,226,802.50 | 20,000,000 |
| 2002 | \$37,797,656.25 | 38,000,000 |
| 2003 | \$22,769,455.00 | 23,000,000 |
| 2004 | \$26,539,547.50 | 27,000,000 |
| | Total 2001-2004 \$107,333,461.25 | 108,000,000 |

Use the data in the table to figure out the total dollar value of food donated by Farm Share between the years 1991-2004.

\$221,346,381.75

Who Benefits From Farm Share's Efforts?



All the recipients of Farm Share food meet the Federal Guidelines of poverty. This means that everyone who comes to pick up fresh vegetables can receive canned, dry and frozen USDA food. Each family receives the same food during a food distribution. There are usually 10 to 14 items of USDA food as well as fresh vegetables. The USDA food is sometimes frozen beef, pork or chicken, canned peas, tuna, beans, pears, apple sauce, tomato sauce, beef stew, dry beans, rice, pasta, cereal, dry milk, raisins, dates, cranberry juice, orange juice, apple juice, corn, cooking oil, bakery mix, meal and trail mix. The fresh vegetables available in South Florida during the fall, winter and spring months of October through May are yellow squash, cucumbers, green beans, tomatoes, corn, eggplant, potatoes, bell pepper, and okra. Other items donated are watermelon, strawberries, papaya, avocados, yucca, banana, leeches, and some items from other counties. Fresh vegetables are very important to the elderly because most canned vegetables have sugar or salt added. Many elderly people have medical problems that require no sugar or no additional salt in their diets to maintain good health. The amount of food received at Farm Share is not intended to be an entire month's supply of food, but to supplement the food the family is able to buy. Sometimes the income of a family is not enough to pay for housing, medicine and a sufficient amount of food for the month. Food Stamps are available for these families, but sometimes even that is not enough to keep their cupboards from becoming bare. Seventy percent (70%) of those qualified to receive USDA food are elderly. Migrant workers and those in this country without proper papers are not counted in these numbers. All people who are in poverty are allowed to receive these USDA commodities regardless of citizenship. In areas of the country where there is a very large population of people without documents of citizenship and/or a large population of migrant workers there is not enough food from the Federal Program because these people are not counted in the assessment of need for an area. The amount of food is based on the US Census and unemployment numbers for the area. Most of the people who receive food from Farm Share are families with small children, the elderly and disabled. Sometimes it is a family whose parent has just lost their job and needs assistance until they can find work again. There is nothing wrong with needing assistance until you can get on your feet again. Soup kitchen and homeless shelters also receive food for the people who are going to these locations to receive their meals. Many people who have received food from Farm Share come back and volunteer to assist in the handing out of food to others. Having experienced the situation of not having enough food for them or their families, they can relate to the persons receiving food and want to give back to others in their community. It is very important that the persons receiving food are treated with respect and friendship. It is a difficult time in their lives and the need for food is basic, something they can't live without.

Who Benefits From Farm Share's Efforts?

1. Who is eligible to receive free food from Farm Share?

All the recipients of Farm Share food meet the Federal Guidelines of poverty

2. What percentage of Farm Share's clients are elderly?

Seventy percent (70%) of those qualified to receive USDA food are elderly



3. Other than individuals, who else receives food from Farm Share?

Families, soup kitchens and homeless shelters

4. What are some reasons that families might need assistance from Farm Share?

Can't afford enough food, out of work, disabled, elderly and can't work

5. What are some examples of USDA food that a family might receive in their monthly allotment?

The USDA food is sometimes frozen beef, pork or chicken, canned peas, tuna, beans, pears, apple sauce, tomato sauce, beef stew, dry beans, rice, pasta, cereal, dry milk, raisins, dates, cranberry juice, orange juice, apple juice, corn, cooking oil, bakery mix, meal and trail mix.

6. In addition to USDA food, what are some of the fresh produce a family might receive?

The fresh vegetables available in South Florida during the fall, winter and spring months of October through May are yellow squash, cucumbers, green beans, tomatoes, corn, eggplant, potatoes, bell pepper, cucumber, and okra. Other items donated are watermelon, strawberries, papaya, avocados, yucca, banana, leeches, and some items from other counties

7. Why is receiving fresh vegetables so important to the elderly?

Fresh vegetables are very important to the elderly because most canned vegetables have sugar or salt added. Many elderly have medical problems that require no sugar or no additional salt in their diets to maintain good health

8. Explain why you think the work of Farm Share is so important to the community.

Packing the Trucks

Farm Share distributes fresh produce three ways. One is the daily distribution to 6,300 families living in South Miami-Dade County. The other is the twice a week distribution to 650 agencies feeding the poor, directly from the docks in Florida City. The third is to truck the product in refrigerated tractor trailers to agencies in other counties within the State of Florida who then distribute it to families. Sometimes if there is an overabundance of one product in Florida, Farm Share will ship the product to New York City, Washington, D.C. or the Carolinas to the agencies serving the poor in these areas. You must keep the product moving to the end user as the “shelf life” is short on fresh vegetables. Also the vegetables lose vitamins as the days pass after they are picked. The “best case” is picking in the morning, begin packing by noon, and ship out that same evening to the grocery stores. That is the normal activity for the South Miami-Dade farmers. Farm Share transports food in large tractor trailers that are attached to semi trucks. A tractor trailer load is always 42,000 pounds. That is the weight restriction for the highways. Of course the truck is not always exactly that weight, but everyone uses that weight to keep it simple. Use the information above to solve the problems below.

1. Fresh green beans are always packed in 35 pound wooden crates. How many wooden crates can be loaded on a truck that holds 42,000 pounds?

1,200

2. Tomatoes are picked green, put in coolers and gassed, like bananas, so they turn red, but are still firm to ship. The gas used is the same as the gas expelled by a ripening apple. Tomatoes are packed in 25 pound boxes. At that rate, how many boxes of tomatoes can be loaded onto a truck?

1,680

3. Yellow squash and zucchini are packed in waxed boxes and the size is called “a bushel and an eight”. That weights about 32 lbs. At that rate, how many boxes of squash and zucchini can be loaded onto a truck?

1,312.5

4. At least 50% of what is grown never reaches any market. Sometimes that amount is 75% or 100%. The reason for this is because the vegetable is “not pretty enough” or there is no market for “that size”. This is where Farm Share comes in. Farm Share takes these discards and gets them to people who need them. On any given day, 18,236 pounds of bananas were picked. If 75% was rejected on Monday, how many pounds of bananas did Farm Share receive?

13,677

5. A group of migrant workers gleaned 9,766 pounds of potatoes on Thursday. Unfortunately, 66% was rejected by Publix headquarters. How many pounds of potatoes did Farm Share receive on Thursday?

6,446

6. On Friday, another group of workers gleaned 12,833 pounds of peppers. From that crop, 53% was unacceptable. How many pounds of peppers did Farm Share rescue?

6,801

7. How many pounds of food did Farm Share recover in all on Monday, Thursday, and Friday?

26,924

Help Your Neighbor

All wonderful projects start with a good idea. Patricia Robbins had an idea to recover food and give it to people who need it. Kids 4 Kids is a youth organization that teaches kids to help other kids in their community. Some activities they have done include filling backpacks for homeless kids, making Valentine bags for kids in

What are Government Commodities?



Government Commodities are vegetables, meats and grains, (any crop) grown by US farmers and purchased by the US Government to supplement these farmers so that low prices do not drive them out of business. These crops or commodities are purchased by the US Government, through the United States Department of Agriculture. Next, they are processed, stored and distributed under the federal programs of distribution to feed the hungry in the US. In addition these commodities are also distributed to other programs to feed people in other countries. The commodities are also used in the school lunch program to keep down the cost of school lunches. The Government

Commodities program was once called the “cheese program” because when it was implemented there was lots of cheese in 5lb blocks distributed to the poor. The cheese and other foods were stored in caves in Kansas City, Mo. because it was the most economical way to keep large quantities of food. The practice was still in effect until the 2000’s when it was slowly phased out. The US Commodities program to foreign countries was begun by President Truman. USAID (Foreign aid) just celebrated its 50th birthday in July of 2004 in Washington, D.C. with Colin Powell as its featured speaker.

For many years the US Commodities Program packaged all its food in light brown packaging that said “USDA commodities, not to be sold, traded or bartered”. Recent changes in the program are that foods are no longer packaged in the light brown packaging, but are packaged the same as you see in the grocery store. It was found that changing to the USDA special packaging increased the cost of the product.



Recipients of the US Commodities are required to meet the Federal Guidelines for poverty, published yearly on July 1. Recipients no longer have to provide proof of their poverty, but just sign that they are aware of the qualifications and received the food. People who are homeless or receiving meals at soup kitchens are not required to make any statements or sign to receive food.



What

are

Government Commodities?



1. What are Government Commodities?

Government Commodities are vegetables, meats and grains, (any crop) grown by US farmers and purchased by the US Government to supplement these farmers so that low prices do not drive them out of business.

2. Why does the government purchase food from farmers?

To supplement these farmers so that low prices do not drive them out of business.

3. Why does the U.S. government no longer use light brown packaging for their food?

It was cheaper not to use it.

4. Which U.S. President began the USDA Commodities program? **Truman**

5. If USAID celebrated their 50th birthday July 2004, in what year did it begin? **1954**

6. Why was the Government Commodities program once called the “cheese program”?

The Government Commodities program was once called the “cheese program” because when it was implemented there was lots of cheese in 5lb blocks distributed to the poor

7. Who are some of the individuals who benefit from this program?

Individuals who are homeless, poor people, and those living in shelters.

8. What could happen to farmers if there was no Government Commodities program?

They might go out of business.

Round and Average

The following data represents how many pounds of food were donated by Farm Share. Use the data to answer the following questions.

Food Donations In Pounds

| | |
|--------------------------|--|
| Number of pounds donated | |
|--------------------------|--|

| Year | | |
|--------------------|--------------------------|---------------------------------------|
| Year | Number of pounds donated | Pounds rounded to the nearest million |
| 1997 / 1998 | 12,061,841 | 12,000,000 |
| 1998 / 1999 | 15,595,521 | 16,000,000 |
| 1999 / 2000 | 19,548,859 | 20,000,000 |
| 2000 / 2001 | 16,181,442 | 16,000,000 |
| 2001 / 2002 | 30,238,125 | 30,000,000 |
| 2002 / 2003 | 18,215,564 | 18,000,000 |
| 2003 / 2004 | 21,231,638 | 21,000,000 |
| total | 133,072,970 | 133,000,000 |

After rounding the number of pounds donated to the nearest million, add up the total in each column and place it on the blank line.

Use the data in the pounds rounded to the nearest million to find out the average number of pounds donated.

Average pounds donated: **19,000,000**

Even an Inmate Can Make A Difference

Sixty-two year old Calvin Scott committed a crime for which he was incarcerated (sent to prison) for ten years. During that time, he had to make many choices. Perhaps the most important one was that he would be a model prisoner and work hard until his release. While in prison, he was

Meet Martin, a migrant farm worker

Martin Estanislado was born in San Binito Texas in 1966. He has two brothers and one sister. His parents were both migrant farmers and he and his siblings followed in their footsteps. Migrant work is family work. When the children are old enough, everyone gets involved. Martin started working the fields when he was just thirteen years old. Each day after school, instead of going home to play, he and his brothers and sisters would go to the fields and help pick the crops. Martin helped to plant and harvest the crops. Migrant work is seasonal ,which means that families travel with the seasons to pick the crops. Different vegetables grow at different times of the year. Potatoes, beans and squash grow from November through May 'in south Florida. The tomato and strawberry season starts in December and goes through February. Picking the crops is a fascinating process. Each worker has a bucket. Once the bucket is filled, it is thrown up to someone in a truck who empties the buckets and places a chip in the bucket. The workers will collect these chips to cash in. The empty bucket with the chip in it is dropped back down to the worker. The truck follows the workers and the buckets are thrown back and forth to the person on the truck until the day is done. At the end of the day, the migrant worker cashes in their chips and is paid by the number of buckets that are filled. Martin's family began gleaning the fields in Homestead, FL then traveled to Ocala. After that, they made their way up the states. They worked in Georgia, Ohio, Michigan, and Indiana. Since migrant families move around a lot, Martin attended four different elementary schools. Neither Martin nor his siblings graduated from High School since they had to help their parents in the fields. It is hard to be a migrant family. When there is no crop that means there is no money. There are however, places that families can go where they can get food stamps and canned foods. There are also pantries that give out food as well as provide shelters to live in. After working as a migrant worker, Martin started his own farm where he grew okra, squash, beans, and peppers. He also helped to manage a potato farm. Once a squash seed is planted, it takes 110 days until it is ready to harvest. When potatoes are harvested, a machine must first dig them out of the ground. Next they are taken to a packing house where they are washed and graded (checked for their size). Then, they are put through a drying machine. Finally, they are placed in 50 pound bags and placed in coolers until they are sold. When that was sold, he got a job driving a truck for a produce company. He is now working for Farm Share as a truck driver and a packing house worker. Martin is responsible for picking up food from the packing houses and placing the food in coolers using a fork lift. Looking back, Martin's favorite part of being a migrant child was being able to help his family at a very young age. His least favorite part was the instability of moving from place to place to find work, sometimes, not knowing where they would be living. "It was hard to leave old friends behind and having to always make new ones."

Meet Martin, a migrant farm worker

All answers should be in complete sentences.

1. How old is Martin and how many years ago did he start working in the fields?

38 years old, 25 years ago

2. What crops grow from November to May?

Potatoes, beans, and squash

3. What crops grow from December to February?

Tomato and strawberries

4. Explain the process by which potatoes are harvested.

A machine digs them out of the ground. They are then harvested and taken to a packing house where they are washed and graded. Next they are put through a drying machine, placed in 50 pound bags and placed in a cooler.

5. At the end of the day, how is it determined how much money each worker will be paid?

According to the number of chips they have collected for each bucket they have picked.

6. Think about what life is like for a migrant family. Compare your life to that of a migrant family. Be sure to tell the advantages and disadvantages of both.

Pallet Weights

A pallet is made up of pieces of wood that are nailed together to form a platform to stack boxes on. The pallets are lifted onto trucks with a forklift. Use the information in the problems below to figure out how many cases of food can be loaded on pallets or food weights of the pallets.

1. Bricks of cheese are loaded onto a pallet. There are six 5-pound blocks in each case. If there are 60 cases on each pallet, what is the total weight of the cheese on the pallet?

1,800

2. There are twelve 13-ounce boxes of rice cereal in each case. How many cases are on a pallet that weighs 312 pounds?

32

3. There are 96 ears of corn on the cob in each case. The cost per ear is \$0.09. Each truck holds 1320 cases. What is the cost of one truckload of corn on the cob.

\$11,404.80

4. Publix has corn on the cob on sale for 10 ears for \$1.00. What is the gross profit to Publix on one truckload of corn on the cob?

\$1,267.20

5. There are twenty-four 1-pound bags of macaroni in each case. The pallet weighs 768 pounds. How many cases of macaroni are on the pallet?

32

6. There are twenty-four 15-ounce cans of applesauce in each case. How many cases will fit on a pallet weighing 1687.5 pounds?

75

7. If each case of applesauce costs \$7.33, what is the value of a truck carrying 1620 cases? **\$11,874.60**

8. Two cases of peanut butter weighs 27 pounds. There are 12 jars per case. How many ounces are in each jar of peanut butter?

18

9. One case of tomatoes weighs 25 pounds. Each case costs \$9.16. What is the price per pound for a case of tomatoes?

\$ 0.37

10. If there are 1,600 cases of tomatoes on each truck, what is the total weight of one truck of tomatoes? What is the value of the tomatoes on the truck?

40,000 pounds

\$14,656.00

11. If there are twelve 2 pound boxes of spaghetti in each case, how many boxes of spaghetti will there be on a pallet weighing 2016 pounds?

1008

12. There are forty-eight one pound boxes of raisins in each case. How many cases will be on a pallet that holds 1,920 pounds?

40

13. If each case of raisins costs \$48.11, using the information you found in problem 12, how much is one pallet worth?

\$1924.40

14. If the truck holds 828 cases of raisins which weigh 48 pounds, what is the weight of the raisins on the truck.

39,744

Appendix A: Kids 4 Kids



How It All Started...Under the direction of their teacher, Beth Davis, the Kids 4 Kids Fill-A-Backpack Campaign was a project that was taken on by the students of the Jack D. Gordon Elementary Community School in Miami, Florida in 1996. The goal of the campaign was to fill new backpacks with school supplies for 500 homeless children living in shelters and attending public schools in Miami-Dade County and Broward County Florida. Students in the club, as well as other students in the school and community, became so inspired in making a difference for other kids that, at the end of this first annual campaign, 1000 backpacks were collected, filled with school supplies, and delivered to homeless, abused, migrant, and foster children. In the years that followed, a total of 38,000 filled backpacks and 75,000 new books have been delivered. You can start a Kids 4 Kids Club in your own class teaching your students that they can change the world through their acts of kindness.

SAMPLE KIDS 4 KIDS CLUB PROJECTS

- Decorate brown bags and fill with candy for kids living in a homeless shelter. Did you know that those kids don't get to go trick or treating?
- Make Valentine bags with little trinkets and cards for abused kids.
- Design and assemble coloring books and deliver with small boxes of crayons or send get well cards to kids in hospitals.
- Hold a Holiday Toy Drive.
- Have a drive to collect canned goods and donate them to your local food bank or Farm Share.
- Make Thanksgiving baskets for needy families in your own school.
- Draw or paint pictures to decorate your local soup kitchen for various holidays.
- Have a recycled book drive to collect new or gently used books for kids who need them. You can recycle books you've read and help someone else too.
- Collect travel size toiletry items year round, like those given in hotels and make Welcome Baggies with cards for your local homeless shelter.

VISIT www.kids4kids.org for more information

APPENDIX B

SOW IT, GROW IT, KNOW IT

| |
|---|
| Overview |
| Lesson 1: Plant Classification: Students will identify the difference between monocots & dicots and seed plants & non-seed plants. Students will also predict how long it will take for seeds to sprout and make daily observations of the seeds as they sprout.(SC.F.1.1, SC.H.1.1, SC.G.1.2) |
| Lesson 2: Parts Of A Seed: Students will compare a dry and soaked seed and their physical characteristics. They will also use a hand lens to identify the seed coat, embryo, and cotyledon and give the function of each part.(SC.F.1.1, SC.H.1.1, SC.G.1.2) |
| Lesson 3: Seed Sort: Students will sort seeds by attributes and predict how many of each seed will be in their cup. Students will also record their data and graph.(SC.F.1.1, SC.H.1.1, SC.G.1.2) |
| Lesson 4: What Plants Need: Students will identify what all plants need to survive. Students will plant a seed and predict how long it will take to grow and chart the progress and the variables involved in the experiment. Students will also grow one plant in the dark and one in the light and identify the variables and controls in the experiment. (SC.F.1.1, SC.H.1.1, SC.G.1.2) |
| Lesson 5: Conditions For Growth: Students will predict which plant will grow better, one in the light of one in the dark. They will plant peanuts in bags and chart the growth in cm of the roots and stems. Students will also identify variables and controls in the experiment. (SC.F.1.1, SC.H.1.1, SC.G.1.2) |
| Lesson 6: Students will identify the function of stems as a transport system in plants. They will also compare stems in plants to veins in humans.(SC.F.1.1, SC.H.1.1, SC.G.1.2) |
| Lesson 7: Edible Roots: Students will identify different edible roots. They will measure the diameter of each root, illustrate, and graph the data. (SC.F.1.1, SC.H.1.1, SC.G.1.2) |
| Lesson 8: Leaves: Students will identify the function of leaves and the role that photosynthesis plays in producing food for plants. Students will go on a leaf hunt. After finding a leaf, they will make a rubbing, use a hand lens to see the veins, and calculate the area. (SC.F.1.1, SC.H.1.1, SC.G.1.2) |
| Lesson 9: Leaves: Aloe Plants: Students will review the functions of leaves and learn that some leaves like aloe are used for medicinal purposes. They will look at a cross section of an aloe leaf and identify the vacuoles that carry water to the plant.(SC.F.1.1, SC.H.1.1, SC.G.1.2) |
| Lesson 10: Bulbs & Onion: Students will learn that bulbs are plants that grow underground. They will also predict how many leaves (layers) an onion will have. (SC.F.1.1, SC.H.1.1, SC.G.1.2) |
| Lesson 11: Comparing Human & Plants: Students will compare humans and plants. In this lesson, they will discuss differences in reproduction and will also compare human cheek cells and cells from an onion skin. (SC.F.1.1, SC.H.1.1, SC.G.1.2) |
| Lesson 12 & 13: Field Study: Students will use the school garden as their classroom to practice math and science skills. (SC.F.1.1, SC.H.1.1, SC.G.1.2) |

Overview

Before beginning, it is important to set one thing straight. I have never owned a plant that I did not kill. It is by pure luck alone coupled by the dedication and love my students put into this garden program that made it such a huge blossoming success. It all started one summer when I took a botanical gardening course. It was offered over the summer for two weeks at Fairchild Tropical Garden and led by Chris Migliacio, a Miami-Dade Professor. I, like many in the course, took the course because it looked interesting and carried a stipend at its summer completion. Boy was I in for a huge surprise. I was one of a few elementary teachers in the group. Most of the others in the course were high school science teachers or plant geeks. The bad news was it was the hardest inservice I ever took. The good news, I was inspired to take what I learned into my classroom, or should I say outside my classroom.

We started by putting a cute picket fence around a 50' x 60' area in the back of the school by the portables. We started learning about plants from the seed on up. We planted seeds in cups and when they grew, we planted them in the ground. We couldn't dig into the ground because all we found was coral rock. So, we threw dirt on the ground and transplanted our seedling plants. To our amazement, vegetables grew and grew and grew. Students participated in field studies and without even knowing it; they were learning math and science, the fun way. We grew two kinds of tomatoes, radishes, carrots, turnips, green beans, broccoli, cauliflower, cucumbers, bell peppers, jalepeno peppers, squash, cabbage, and herbs. We had no luck with the strawberries.

Students tasted it all! Many of them had never eaten most of the vegetables before. None of them realized that tomatoes are green before they turn red. We made salsa with the tomatoes, peppers, and herbs and coleslaw from the cabbage. We didn't learn science out of a book. We learned science and math by participating in a hands-on inquiry based method of study. Students took part in field studies. They measured the length of the tallest broccoli stalk and the longest green bean. They compared the ratio of green to red tomatoes and the diameter of the cabbage. They found the length and circumference of squash, peppers, radishes, and cucumbers. They even measured the height of the sunflowers and made sketches of several other plants. Student predicted, recorded data, and analyzed it with graphs and charts. Finally, they wrote about their findings. They participated in science to take them to the FCAT and beyond.

On the pages that follow, you will find 13 hands-on, inquiry based science activities to teach your students about plants. Feel free to leave your textbook behind. These lessons will teach your students far more than they will learn in any old textbook. Activities teach science and throw in math and language arts at no extra charge! All lessons can be adapted up or down for students in grades 2-6. You will also find two "scrapbook pages" that will show you photos and descriptions of students participating in the activities.

Parts Of A Seed

Students spent part of the year in the science lab studying plants. For their first lab, our botanists compared a soaked seed to a dry seed. They learned that the food for the growing plant is stored in the cotyledon. They removed the seed coat and took a careful look at the cotyledon and the embryo. Students also wrote a list of comparisons about the two seeds and made detailed drawings identifying the seed parts.

Seed Sort

For this activity, students sorted 8 different beans into groups by characteristics. After predicting how many were in each group, they counted and graphed their results. Next they estimated how many of each bean would equal the weight on one dinosaur gram counter. After estimating, students put one counter on the scale and added beans to the other side until the scale was balanced.

Planting In The Garden

To continue their study of plants, students began their own garden. They mixed their own potting mix with equal parts of peat moss, perlite, and potting soil. Next they planted bell peppers, jalepeno peppers, three types of tomatoes, broccoli, cabbage, and cauliflower. After adding fertilizer, they planted marigolds to be a natural pesticide. Finally, students predicted how long it would take for the seedling plants to bear vegetables. Over the next few weeks, they visited the garden to water, weed, and observe.

Conditions for Growth

Students learned that there are certain conditions that all plants need to grow. They tested to see if a peanut seed would grow in the dark. Students soaked a paper towel and removed the seed coats from two peanuts. Next they placed one in the dark and one in the light for two weeks. After discussing variables, students made predictions as to which one would have the longest stem. For two weeks they made daily observations.

Seed in A Bag Part Two

After two weeks, students removed their seed from the bag and made comparisons with the seed in the dark. They measured the roots, stems, and counted the leaves. Students observed that the one in the dark had yellow leaves. They discussed the role light plays in photosynthesis. They also observed that the one in the light had longer roots and more leaves.

Planting Seeds In Cups & Pots

Home Depot donated wonderful planting tables. Students planted seeds in cups and pots and predicted how long they would take for three leaves to grow. They observed weekly. Once the leaves grew, students made plots by laying potting mix on top of the grass. They transplanted their seedlings in the bed and predicted how long it would take for the vegetables to be full grown. Students made weekly observations.

Field Studies

Once plants started to grow, students took part in field studies. They measured the diameter of the cabbage, the height of the tallest broccoli plant, the width of the leaves, and counted the number of red and green tomatoes on each vine, and drew sketches. Students recorded data and graphed their findings.

Sampling The Garden

Students harvested the vegetables and made salsa and coleslaw. They also tasted the red and white radishes, cucumbers, broccoli, beans, peppers, tomatoes, squash, and lettuce. They also smelled the herbs. Many students had never tasted most of the vegetables before.

Comparing Plant & Human Cells

Students made wet mount slides of cheek cells and onion skin cells. They predicted whether they would look similar. Then they viewed them under a microscope and drew what they saw. Students learned that cells carry out specific functions both in plants and humans.

Edible Roots

Students discussed that roots are used to anchor the plant in the ground and to send water to the plants. They examined several edible roots. Students took a cross section of each and used a tape measure to find the diameter. They recorded the results on a data table and graphed their findings. They also drew color illustrations. They also learned the difference between a taproot and a fibrous root.

Leaves, Bulbs & Using Plants For Medicinal Purposes

In this lesson, students learned the functions of leaves and that there are different kinds of leaves. They examined the papery thin outer layers of the onion as well as the thicker inner layers. They learned the terms epidermis and the dermis. Then they predicted how many layers the onion would have. They found their results by peeling away each layer and counting the leaves. Next, they looked at the aloe leaf and discussed some of the ways it is used for medicinal purposes. They looked at a cross section under the microscope and identified the vacuoles as the place where water is stored. Finally, they rubbed the aloe on their hands to feel what the inner layer felt like.

Learning More About Leaves

For this activity, students learned about the role photosynthesis plays with leaves. They learned about different leaf types and went on a nature walk to collect leaves. Next, students traced their leaf on a grid and found the area and perimeter. After answering several questions about their leaves, they placed their leaves on a card that was put it in a leaf press. Students discussed the reasons why pressing leaves would be important to scientists.

Herbicides, Pesticides, &The Food Chain

Students discussed the harmful affects of pesticides on animals by playing *The Food Chain Game*. In the game, students pretend to be grasshoppers, mice, and hawks. They found out that pesticides can keep away pests, but they also have environmental consequences on animals. Several weeks later, students were upset to see that

several Tomato Horned Worms has eaten all our tomato plants bare. They opted to use organic pesticides on the next crop.

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: _____

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 _____.

Name _____

Date _____

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 its 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

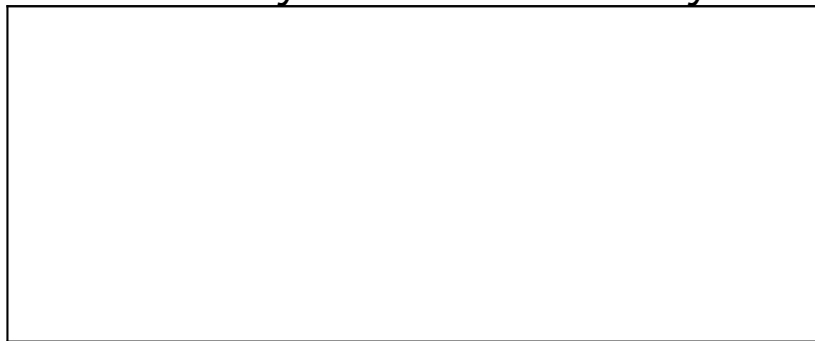
Procedure:

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.

| |
|--|
| |
| |
| |
| |

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 |
|--------------|-----------------|
|--------------|-----------------|

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

| | | |
|---|--|---|
| <p>Plants are organisms that grow and reproduce their own kind. They need soil, air, water, light and space to grow.</p> | <p style="text-align: center;">SOIL</p> <p>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.</p> | <p style="text-align: center;">LIGHT</p> <p>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.</p> |
| <p style="text-align: center;">AIR</p> <p>Plants need clean air. Green plants take in carbon dioxide from the air and use it during a process known as photosynthesis.</p> | <p style="text-align: center;">WATER</p> <p>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.</p> | <p style="text-align: center;">SPACE</p> <p>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.</p> |

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?)

| |
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| |
| |

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.

| |
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| |
| |
| |

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

| |
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| |
| |
| |

Do this part after the plant bear food.

Results: (The answer to your question)
When the plant bears food, tell how long it took.

| |
|--|
| |
| |

Conclusion: (Was your hypothesis supported?)

| |
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| |
| |

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 is 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.

Day1: _____

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?

| |
|--|
| |
| |

ACTIVITY TITLE: Super Stems!

ACTIVITY OBJECTIVES: Students will identify the function of stems as a transport system in plants. They will also compare stems in plants to veins in humans.

SUNSHINE STATE STANDARDS: SC.F.1.1, SC.H.1.1

MATERIALS AND SOURCES: a stalk of celery or a white carnation, a clear cup or jar, water 10 drops of food coloring.

ACTIVITY STEPS:

1. Ask students what they think the stem of the plant is good for. Some ideas might be to hold up the plant, to give the plant strength, or they bring water from the roots.
2. Tell students that stems have many important functions in the growth of plants. One thing a stem does is act as a support system holding the plant upright so that it can grow toward the sun. Another important function is that a stem acts as a transport system. Water and minerals are carried through the stem to the roots and leaves of the plant. Students can observe the movement of liquids through the stem in this activity.
3. Cut off the bottom of the carnation stem or the celery stalk. Pour about 3 oz. of water in the cup. Add 8-10 drops of food coloring to the water. Place the flower or celery in the cup and leave it overnight.
4. Have students predict what they will see the next day.
5. The next day, discuss why the carnation or celery turned color (the colored water was transported through the stem).

EXTENSION: Discuss that our veins carry blood through our body. Have students find a vein in their arm. Veins transport blood just like the stem transports water and nutrients to the plant.

WRAP UP: Invite students to try at home with either a celery stalk or carnation.

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 taproots. 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 | | | | | | | | | | |
| I | | | | | | | | | | |
| 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 | | | | | | | | | |
| | | | | | | | | | | |

Type of root

NAME: _____ DATE: _____

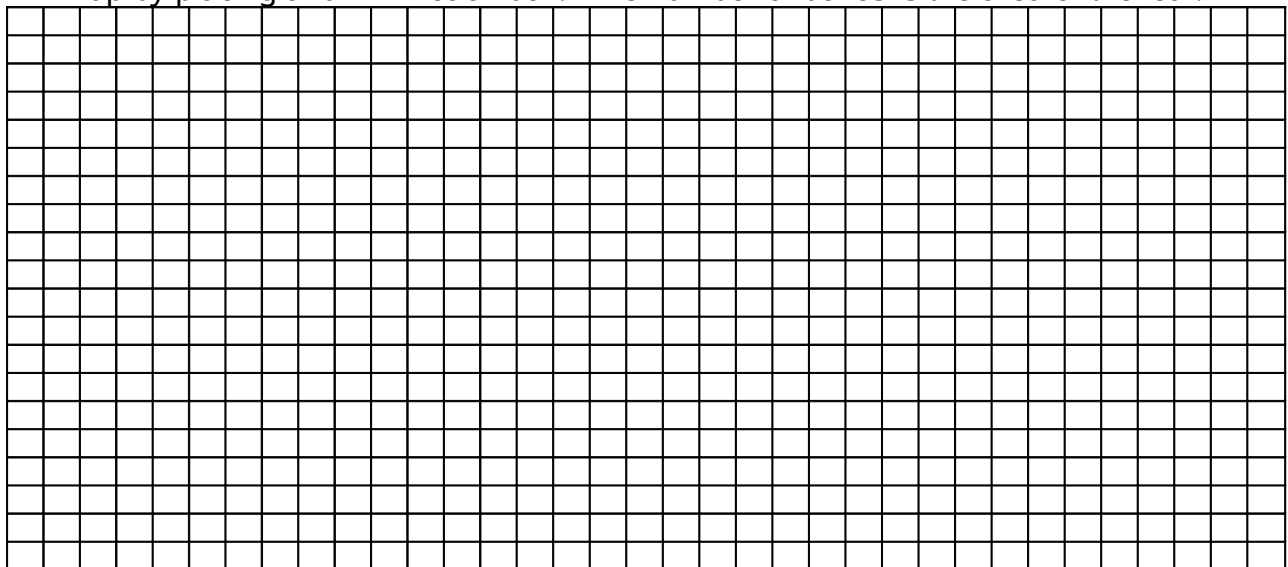
LEAVES

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.



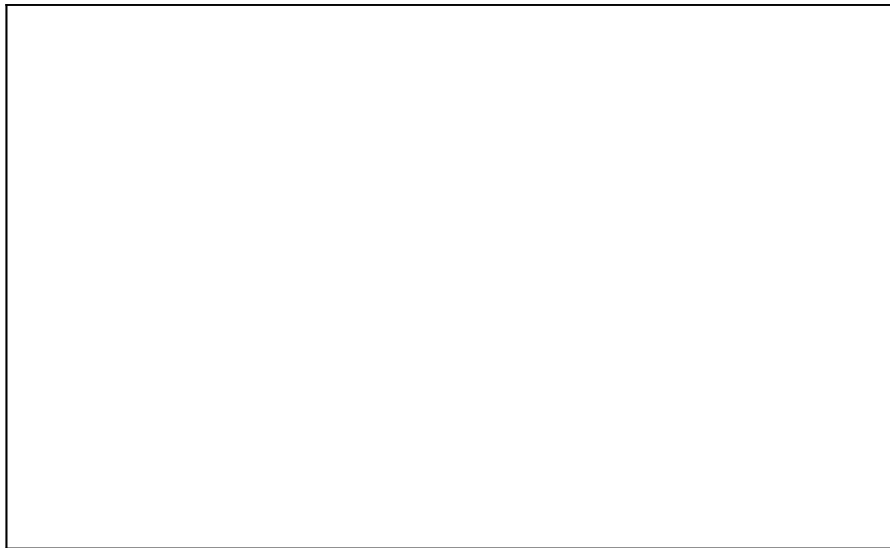
What is the area of the leaf? _____

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.

| |
|--|
| |
| |
| |
| |
| |

Name _____ Date _____

Plant Leaves: Aloe

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.

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

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

| |
|--|
| |
| |
| |

Name _____ Date _____

BULBS

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 know 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.

- Blot any leaks and place the slide on the stage of the microscope.

PREPARING A WET MOUNT SLIDE: ONION SKIN

PROCEDURE:

- Place a small piece of onion skin on the slide.
- Put a drop of iodine on top of the specimen.
- Touch one edge of the droplet with the coverslip and carefully drop it on the slide.
- 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.)

| |
|--|
| |
| |
| |
| |

NAME _____ DATE _____

HOW ARE HUMANS AND PLANTS SIMILAR

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

- | | |
|---|--|
| <ol style="list-style-type: none"> Plants reproduce through _____. Photosynthesis takes place in the _____. | <ol style="list-style-type: none"> Plants use _____ to trap light from the sun and make food. The process of human reproduction is known as _____. |
|---|--|

5. During photosynthesis, carbon dioxide enters the _____.
6. The food making process in plants is known as _____.
7. In both humans and plants, _____ carry out functions needed for life.
8. Both plants and humans depend on the _____ to survive.
9. During pollination, pollen grains move from the stamen to the _____.
- A. leaves
- B. cells
- C. sun
- D. stomates
- E. photosynthesis
- F. chlorophyll
- G. fertilization
- H. pollination
- I. pistil

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

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 all 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 that numbers to show a fraction to represent the red and green tomatoes.

$\frac{\text{Numberator}}{\text{total Denominator}}$ $\frac{\text{red tomatoes}}{\text{total tomatoes}}$ $\frac{\text{green tomatoes}}{\text{total tomatoes}}$

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

| |
|--|
| |
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| |
| |
| |

Data Table

| | | |
|---------------|-----------|-----------|
| Item measured | Number of | Number of |
|---------------|-----------|-----------|

| | | |
|--|-------------|------------|
| | centimeters | 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

| | | | | | | | | | | | | | |
|----|-----------|----------|----------------|---------|----------------------|----------|---------------------|---------|--------------------|---------------|--|--|--|
| 31 | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | |
| 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 cm | YBP # | CH Diameter | CH # | GBP Circumference | GBP # | PE Circumference | PE # | Broccoli height | Broccoli # | | | |

Vegetable measurement

Name _____ Date _____

Garden Field Study

- Record the length (distance from end to end) of 3 cucumbers and then find the average length. Remember, to find the average, you must first add up the total of the 3 lengths and divide by 3.

| | |
|----------------------|--|
| Cucumber 1: _____ cm | Compute the average here. Be sure to show your work. |
| Cucumber 2: _____ cm | |
| Cucumber 3: _____ cm | |
| Total _____ cm | |
| Average _____ cm | |

2. Record the circumference (the distance around) of 3 eggplants. Find the average circumference.

| | |
|----------------------|--|
| Eggplant 1: _____ cm | Compute the average here. Be sure to show your work. |
| Eggplant 1: _____ cm | |
| Eggplant 1: _____ cm | |
| Average _____ cm | |

3. Choose 4 tomato plants. Count how many tomatoes are on each plant. Figure out the average number of tomatoes.

| | |
|-----------------------------|--|
| Tomato Plant 1: _____ | Compute the average here. Be sure to show your work. |
| Tomato Plant 1: _____ | |
| Tomato Plant 1: _____ | |
| Tomato Plant 1: _____ | |
| Average # of tomatoes _____ | |

4. Record the height (distance from top to bottom) of 2 broccoli plants and compute the average height.

| | |
|---------------------------|--|
| Broccoli #1 _____ cm high | Compute the average here. Be sure to show your work. |
| Broccoli #1 _____ cm high | |
| Average height _____ cm | |

5. Record the diameter (distance across) of 4 broccoli heads. Compute the average.

| | |
|---------------------------|--|
| Broccoli #1 _____ cm | Compute the average here. Be sure to show your work. |
| Broccoli #2 _____ cm | |
| Broccoli #3 _____ cm | |
| Broccoli #4 _____ cm | |
| Average diameter _____ cm | |

6. Count the number of leaves on each collard plant in one bed. Compute the average number of leaves.

| | |
|---------------------------|--|
| | Compute the average here. Be sure to show your work. |
| | |
| | |
| | |
| | |
| | |
| | |
| Average # of leaves _____ | |

Name _____

Date _____

PUMPKIN SCIENCE

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

| | | | | | | | | |
|----------------|---------------------------|--|---------------|---|----|----|----|----|
| | | | | 1 | | | | |
| | | | | 6 | | | | |
| | | | | 1 | | | | |
| | | | | 4 | | | | |
| PUMPKIN | # of inches around | | | 1 | | | | |
| | | | | 2 | | | | |
| Pumpkin #1 | | | # | 1 | | | | |
| | | | | 0 | | | | |
| 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

Place each pumpkin on the balance scale. Record how many grams each one weighed. Round your answer to the nearest ten.

Pumpkin Mass

| | | | | | | | |
|----------------|-------------------|----------|----|----|----|----|----|
| | | | 35 | | | | |
| | | | 0 | | | | |
| | | | 34 | | | | |
| | | | 0 | | | | |
| | | | 33 | | | | |
| | | | 0 | | | | |
| | | | 32 | | | | |
| | | | 0 | | | | |
| | | | 31 | | | | |
| | | | 0 | | | | |
| | | | 30 | | | | |
| | | | 0 | | | | |
| | | | 29 | | | | |
| | | | 0 | | | | |
| | | | 28 | | | | |
| | | | 0 | | | | |
| | | | 26 | | | | |
| | | | 0 | | | | |
| | | | 25 | | | | |
| | | | 0 | | | | |
| | | | 24 | | | | |
| | | | 0 | | | | |
| PUMPKIN | # of grams | # | 23 | | | | |
| | | | 0 | | | | |
| Pumpkin #1 | | | 22 | | | | |
| | | | 0 | | | | |
| Pumpkin #2 | | O | 21 | | | | |
| | | | 0 | | | | |
| Pumpkin #3 | | F | 20 | | | | |
| | | | 0 | | | | |
| Pumpkin #4 | | | 19 | | | | |
| | | | 0 | | | | |
| | | G | 18 | | | | |
| | | | 0 | | | | |
| | | R | 17 | | | | |
| | | | 0 | | | | |
| | | A | 16 | | | | |
| | | | 0 | | | | |
| | | M | 15 | | | | |
| | | | 0 | | | | |
| | | S | 14 | | | | |
| | | | 0 | | | | |
| | | | 13 | | | | |
| | | | 0 | | | | |
| | | | 12 | | | | |
| | | | 0 | | | | |
| | | | | #1 | #2 | #3 | #4 |

Pumpkin

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.

| |
|--|
| |
| |
| |
| |
| |
| |

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