

# Tulips and Journey North

**Time Frame:** Multiple sessions two main classes 45 minutes each

## **Learning Standards:**

### Earth and Space Science

- Recognize that the sun supplies heat and light to the earth and is necessary for life.

### Life Science

- Recognize that plants and animals have life cycles, and that life cycles vary for different living things.
- Recognize changes in appearance that animals and plants go through as the seasons change.
- Identify the ways in which an organism's habitat provides for its basic needs (plants require air, water, nutrients, and light; animals require food, water, air, and shelter).

## **Skills of Inquiry:**

- Ask questions about objects, organisms, and events in the environment.
- Tell about *why and what would happen if?*
- Make predictions based on observed patterns.
- Name and use simple equipment and tools (e.g., rulers, meter sticks, thermometers, hand lenses, and balances) to gather data and extend the senses.
- Record observations and data with pictures, numbers, or written statements.
- Discuss observations with others.

## **Student will be able to:**

- Describe the life cycle of a tulip. By using Journey North website the students will be able to identify the differences between Tulip growth across the United States.

# Lesson #1: Making Journals

## **Materials:**

### **If making journal:**

- Paper
- Cardboard or poster board
- Hole puncher
- String
- Markers and/or paint
- Scissors

### **If using folders:**

- Plastic three-hole punch folder for each child
- Plain white paper
- Markers and crayons to decorate the covers
- Three-hole punched paper or three-hole punch so that you can insert the cover

## **Vocabulary:**

### **Anticipatory set:**

You should ask the students what is a tool that every scientist uses. They might start by naming such tools as microscopes and rulers. Tell them that not every experiment requires these tools. Help them along by getting them to think about what every scientist must do regardless of what he or she is studying: data collection. Talk about the importance of recording the data that you collect and what are some different ways that scientists record data.

**Activity: There are two options:**

**Option 1: Making Journals**

1. Before class pre-cut enough pages and covers for each child. You can make the journal any size and the cover should be slightly larger and made of thicker material than the pages (cardboard or poster board should work). Use a hole-puncher to punch holes in the covers and pages so that the children can eventually bind their books together. (Make the same journals that we do with Linda! Easy and they know how to do the binding)
2. Have each student assemble his or her notebook. Two covers on the outside with pages in between. The students can use string or twine to secure the books together.
3. Once all students have put together his or her journal, allow them to decorate the front and back cover—make sure they put their names on the journal.

**Option 2: Using Folders:** might be more durable and may be easier to use.

1. Buy plastic folder for each student. The folder should have a three-hole clip so that students can insert work into the folder. Ideally the folder should also be transparent.
2. Have the students decorate a piece of paper for the cover of their journal.
3. Because the folder is transparent the students can simply put their cover page in the front of their folders and it will be visible as the cover.

There are pros and cons to each option, making your own journal may turn out to be both cheaper and more durable. However, by using the folders, the children can put worksheets into their journal and thus they can have all their science materials organized in one spot. Thus the folders would probably be used more.

**Closure:** Wrap up with a discussion of the importance of recording data accurately.

**Assessment:** Participation in class discussion and activities.

# Lesson #2: Planting Tulips

## Materials:

- Spades
- Rulers
- Red emperor tulip bulbs
- String

## Anticipatory set (at rug):

On the board draw the layout of how the Tulips will be planted. The Tulips must be planted four inches apart and exactly seven inches deep. The easiest way to do this will probably be split the class into groups of four or five and have each group dig a row where the tulip bulbs can be placed. Discuss the importance of controlling for variation in an experiment—this is why we must plant the tulips exactly seven inches deep.

## Activity:

- 1.) Split the class into groups of four. Each group should have a spade and a ruler.
- 2.) Jobs should be assigned in each group and then rotated so that each child gets a chance in each job:
  - **Digger** (digs the hole for bulb)
  - **measurer #1** (for depth of bulb-7 in.)
  - **measure #2** (for distance apart-4in)
  - **planter** (plants the actual bulb)

A poster with these jobs and an arrows showing rotation should be posted so that the children know what job they move to next.

- 3.) In the garden you should use string to mark out where each group will dig their row.
- 4.) At the start of their row, the digger should begin to dig the first hole.

5. Measurer #1 should check to make sure the hole is 7 inches deep.
6. When they have a 7-inch hole then the planter should check with a teacher to make sure the dimensions are right. If they are right the teacher should give them a bulb and the planter should plant the tulip bulb with the **pointed end up**.
7. Teachers should check that bulbs are planted correctly and then planter should cover the bulb with soil.
8. After the first bulb is planted then measurer #2 should measurer 4 inches down the row and mark the spot where the next tulip bulb will be planted.
9. The students should then rotate roles and repeat the above process.
10. Repeat the above process four times so that each child has an opportunity to perform each role.
11. After all the tulips are planted water them.

**Closure:** make sure the students record the exact date that they planted their bulbs. This should be recorded in their journals. In the spring the students should mark when the tulips begin to grow and with teachers help put this information into Journey North website.

**Assessment:** Participation in class discussion and activities. Ability to work well with group.

*The following link contains all the information on journey north and the Tulip project:*

<http://www.learner.org/jnorth/tm/tulips/IntroHandout.pdf>

Key things to remember/timing:

1.) Make sure you order Tulips in September. You can only use Red Emperor Tulip Bulbs if you are going to post your results on the website. You can order Tulips from this site:

<http://www.learner.org/jnorth/tm/tulips/BulbsOrder.html>

2.) In order to report your results online you must register (try to do this in September). You can do that on the following website:

<http://www.learner.org/jnorth/reg/>

3.) You should plant the Tulips in October.

# Apples in Chemicals

**Time Frame:** 2 sessions 45 minutes

**Materials:**

- attached worksheet
- apple slices
- water
- seltzer
- vinegar
- lemon juice
- pencils
- plastic cups
- plastic knives
- masking tape and permanent markers

**Learning Standards:**

Life Science

- Recognize that people and other animals interact with the environment through their senses of sight, hearing, touch, smell, and taste.

Physical Science

- Sort objects by observable properties such as size, shape, color, weight, and texture.

**Skills of Inquiry:**

- Ask questions about objects, organisms, and events in the environment.
- Tell about *why and what would happen if?*
- Name and use simple equipment and tools (e.g., rulers, meter sticks, thermometers, hand lenses, and balances) to gather data and extend the senses.
- Record observations and data with pictures, numbers, or written statements.

- Discuss observations with others

**Student will be able to:**

- Make predictions about how each chemical will affect the apple.
- come up with ways to measure the changes.

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**Vocabulary:** chemicals, solution, acid, chemical reaction

**Anticipatory set (at rug):**

As a class, talk about the importance of measuring specific things in an experiment: when conducting experiments scientist have a clear idea of what they are measuring and a hypothesis of what the outcome will be. Tell students they will be observing the effect of chemicals on apples. They let the apples sit in four different chemicals overnight and will see how this effects the weight, length and one other characteristic of their choosing. Ask the students what are some other things they can observe. Show them how to waft not smell.

**Activity (at tables):**

1. Split students into groups and each group should be given four apple slices and cups of: water, seltzer, vinegar, and lemon juice (the cups should have the group name on it).
2. The students should be allowed to examine all materials and in a group they should discuss how they think the different chemicals will affect the apple slices.
3. As a group the students should then choose a third thing to observe (color, smell, ect...). Along with weight and length, they will observe this characteristic for all chemicals.
4. The students should assign an apple slice to each chemical and before putting the apple slice in the chemical they should record their measurements or observations. The students should also talk about how

they think their measurements will be different after the apples are soaked in each given chemical.

5. After the students have made predictions they should put an apple slice in each chemical and leave over night.

**Closure:** As a class, discuss predictions and hypothesis: how will the different chemicals affect the apples? If a chemical reaction takes place then the chemicals in the apple will change—what will this look like?

**Assessment:** Participation in class discussion and activities



## Session #2

This part of the lesson can be done the day after lab in the classroom.

### Activity

1. The next day students should be given their same apple slices back.
2. They should make new measurements and observations of the same three things and compare the results with their old measurements and predications. Record observations on same worksheet.

**Closure:** As a class the students should discuss their results. How did their predictions differ from their observations? Why did the different chemicals have the different effects?

**Assessment:** Participation in activities and class discussion and quality/accuracy of recorded data.

# Apples and Chemicals!!

**Directions:** With your group, talk about how you think each chemical will change your apple. From this discussion, come up with a third thing to observe. Assign an apple slice to each chemical but before you put the apple slice in the chemical make and record all of your measurements. Once you have completed your measurements check with a teacher to make sure you are ready to put your apple slices in the chemicals!

The three things I will observe about my apple are:

1.) Weight,

2.) Length,

and 3.) \_\_\_\_\_

# Water:

*Before chemical treatment:*

1.) My apple weighs \_\_\_\_\_

2.) The length of my apple is \_\_\_\_\_

3.) \_\_\_\_\_

\_\_\_\_\_

*After chemical treatment:*

1.) My apple weighs \_\_\_\_\_

2.) The length of my apple is \_\_\_\_\_

3.) \_\_\_\_\_

\_\_\_\_\_

# Seltzer:

*Before chemical treatment:*

1.) My apple weighs \_\_\_\_\_

2.) The length of my apple is \_\_\_\_\_

3.) \_\_\_\_\_  
\_\_\_\_\_

*After chemical treatment:*

1.) My apple weighs \_\_\_\_\_

2.) The length of my apple is \_\_\_\_\_

3.) \_\_\_\_\_  
\_\_\_\_\_

# Vinegar:

*Before chemical treatment:*

1.) My apple weighs \_\_\_\_\_

2.) The length of my apple is \_\_\_\_\_

3.) \_\_\_\_\_  
\_\_\_\_\_

*After chemical treatment:*

1.) My apple weighs \_\_\_\_\_

2.) The length of my apple is \_\_\_\_\_

3.) \_\_\_\_\_  
\_\_\_\_\_

# Lemon Juice:

*Before chemical treatment:*

1.) My apple weighs \_\_\_\_\_

2.) The length of my apple is \_\_\_\_\_

3.) \_\_\_\_\_

\_\_\_\_\_

*After chemical treatment:*

1.) My apple weighs \_\_\_\_\_

2.) The length of my apple is \_\_\_\_\_

3.) \_\_\_\_\_

\_\_\_\_\_

# Apple Prints

**Time Frame:** 1 session 45 minutes

**Materials:**

- Paint
- Apples
- Knife to cut apples
- Cardboard frames to print apples on (premade frames)

**Learning Standards:**

Life Science

- Recognize that plants and animals have life cycles, and that life cycles vary for different living things.

**Skills of Inquiry:**

- Ask questions about objects, organisms, and events in the environment.

**Student will be able to:**

- Understand the function and purpose of apple seeds.

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**Vocabulary:** seed, germination

**Anticipatory set** (*on the rug*):

Ask students where apples come from and when they answer apple trees ask where apple trees come from. Show students an apple seed and explain that an apple tree grows from an apple seed (pass the seed around the classroom). The tree then produces more apples, which have more seeds, which in turn grow into more apple trees—draw this process on the board. Tell students that they will be making

apple prints. They will dip the apples in paint and then print them on their paper.

This is a short lesson so it would be great to read a book before the activity.

*Suggested Reading:*

Johnny Apple Seed by Steven Kellog ISBN: 0-688-06417-5

**Activity (at tables):**

1. Each table should have paper plates with different colored paints on the plates. There should also be apple halves with which to make prints.
2. The students should dip the apple halves in the paint and print them on a piece of cardboard. Make sure the students dip the apples in only one color—or else the paint will turn brown.

**Closure:** Discuss how the apples looked on the inside. What do the seeds do and why are they on the inside of the apple? How do seeds spread?

**Assessment:** Participation in class discussion and activities.



# Apple Tasting

**Time frame:** 1 session of 45 minutes

**Materials:**

- Apples (four different kinds)
- knife
- worksheet

**Learning standards:**

**Life Sciences:**

- Recognize that people and other animals interact with the environment through their senses of sight, hearing touch, smell and taste.

**Physical Sciences:**

- Observable properties of objects include size, shape, color, weight and texture.

**Skills of Inquiry:**

- Ask questions about objects, organisms, and events in the environment.
- Record observations and data with pictures, numbers or written statements
- Discuss observations with others

**Students will be able to:**

- Describe taste of the apples and how the tastes of the four kinds of apples differ.

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**Vocabulary:** tart, delicious

**Anticipatory Set (on the rug):**

Have four different apples on a tray; see if students can guess which types of apples they are. Ask the students what are the differences between the apples and then vote on which apple they think will taste the best.

**Activity (at tables):**

- 1.) There should be four tables and a different kind of apple at each table. The apples should be cut into slices and on a paper plate. There should be a sign on each table reminding students which apple is at that table.
- 2.) Pair students and have them sit down at tables. They should spend 7 minutes at each table. They will taste the apple at each table and fill out the worksheet.
- 3.) Students rotate until they have tasted all four kinds of apples.

**Closure:** After every student has tasted all apples, gather the class back in a circle. Vote on which apple was the best and which was the worst and have the students record answers. Make a bar graph of the distribution of the popularity of apples. The students should record the graph in their science journals.

**Assessment:** Participation in class discussion and activities (student worksheet)

# Apple Measurements

**Time frame:** 1 session of 45 minutes

**Materials:**

- apples (one per student)
- scale
- worksheet
- measuring tape

**Learning standards:**

**Life Sciences:**

- Recognize that people and other animals interact with the environment through their senses of sight, hearing touch, smell and taste.

**Physical Sciences:**

- Observable properties of objects include size, shape, color, weight and texture.

**Skills of Inquiry:**

- Ask questions about objects, organisms, and events in the environment.
- Name and use simple equipment and tools to gather data and extend the senses
- Record observations and data with pictures, numbers or written statements
- Discuss observations with others

**Students will be able to:**

- Measure and record weight of apples as well as their height and width. They will also be able to articulately describe their apple using their senses.

**Vocabulary:****Anticipatory Set (on the rug):**

Show an apple to the class, ask the students what they can observe about the apple. Tell them they will be filling out worksheets, which will help them take a closer look at their apples. Review how to use the triple beam balance scales.

**Activity:**

1. Assign each student a partner and give each student an apple.
2. The students should sit down at the tables and measure and weigh their apples.
3. Once they have completed the measurement worksheet they should check with a teacher—if the worksheet is filled out then they can start on the second worksheet.

**Closure:** If there is time left in the class the students can eat their apples.

**Assessment:** Participation in class discussion and activities (student worksheet)

# Cooking with Pumpkins and Measurements

**Time Frame:** 2 sessions 45 minutes

**Intro:** This is a two step lesson there are many ways that you can combine the two different lessons below is a suggestion of how to combine the cooking and measurement labs.

## **Learning Standards:**

### Life Science

- Recognize that plants and animals have life cycles, and that life cycles vary for different living things.

## **Skills of Inquiry:**

- Tell about *why and what would happen if?*
- Ask questions about objects, organisms, and events in the environment.
- Make predictions based on observed patterns.
- Name and use simple equipment and tools (e.g., rulers, meter sticks, thermometers, hand lenses, and balances) to gather data and extend the senses.
- Record observations and data with pictures, numbers, or written statements.
- Discuss observations with others.

## **Student will be able to:**

- Use measuring tools and read and follow the recipe in order to combine the correct amount of ingredients.
- Use triple beam balance scales and tape measures.
- Record their measurements and understand their results.

# Activity #1: Measuring Pumpkins

## **Materials:**

- Big pumpkin
- wax paper (to put seeds on)
- spoon (to clean out pumpkin)
- little pumpkin per student
- tape measurers
- triple beam balance scales.

## **Anticipatory set (on rug):**

Present the students with a large pumpkin. Explain to them that this pumpkin grows off of a pumpkin plant and in turn the plant grows from a pumpkin seed. Ask the students if they know where the pumpkin seeds are. Cut the pumpkin open and allow the students to look inside. Have each student estimate how many seeds are in each large pumpkin. Record their guesses because you will be counting the seeds next lab.

## **Activity (start on rug):**

1. Scoop out seeds and save for next class
2. You can either let the students scoop out the insides of the pumpkin or do this yourself. You should remove all the stringy material and seeds from the inside of the pumpkin.
3. Then cut the pumpkin into a couple slices and cook it. You can either use microwave or stovetop. For microwave put pumpkin in a bowl with a couple inches of water and microwave. You should cook until pumpkin is soft. Note that the cooking should probably be done at home. Once cooked, put the pumpkin in the fridge to save for next week's class

4. After pumpkin is cleaned out, show the students how to use a triple beam balance scale.
5. Allow the students to go sit down at their tables there should be a small pumpkin at each spot and tape measurers and scales at each table. Teachers should be spread out around tables to help out and stimulate questions.
6. The students should use the tools at hand to fill out the attached worksheet. Teachers should walk around and assist the children in using the scales.

**Closure:** Tell the students that next class they will be making pumpkin pie with the pumpkin they have just cut.

**Assessment:** Participation in class discussion and activities.

# Activity #2: Pumpkin Pies

## Materials:

- four pie crusts
- four measuring cups and teaspoons
- pumpkin from last class (bring canned pumpkin just in case)
- sugar
- ground cinnamon
- ground nutmeg
- salt
- ground ginger
- ground cloves or allspice
- 8 eggs (2 per group)
- four mixing bowls and at least four big spoons to mix ingredients.

(Recipe from Joy of Cooking is attached on back)

## Vocabulary:

## Anticipatory set:

Ask students if they remember what they did last week in lab. Present the different measuring tools (cup and teaspoon) and quickly explain how to use them. Tell the students that as a team they must combine the correct amount of ingredients to make their pie.

## Activity:

1. At each table there should be all the appropriate ingredients and measuring tools. Put the attached list of simplified directions at each table so that the students must follow written directions to make the pie. Each table should also have a pre-made piecrust.
2. The students should be split up into four groups and each group should be responsible for making their own pie.

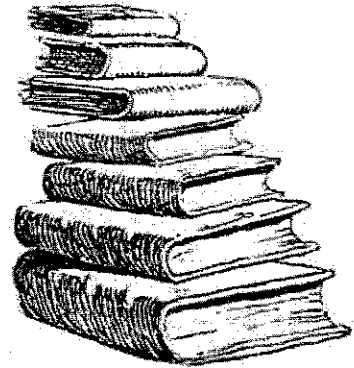


3. Teachers should walk around room making sure that all students are contributing and measurements are being taken carefully.
4. Once the ingredients are mixed, the students should pour mixture into crust and the teachers should take the pies to be cooked.
5. While the students are waiting for the pie to cook they should count the pumpkin seeds. Give each group a clump of seeds from the pumpkin they cut open last class. When each group has counted their clump of seeds, have the students add up the seeds to find the total amount of seeds in the pumpkin.

**Closure** Look at the list of estimations and determine which student was closest to the actual number of seeds. Were most people pretty close?

**Assessment:** Participation in class discussion and activity. Ability to accurately measure and combine ingredients.

# Plant Unit Books!



## Suggested reading for Plant Life Cycle Unit:

- Life-cycle Books by Althea: Flowers ISBN 0-88462-184-7
  - *This book goes through the plant life cycle.*
- A log's Life by Wendy Pfeffer: ISBN 0-689-80636-1
  - *This book clearly demonstrate the life cycle of tree, more specifically how the tree is interconnected with the rest of it's environment.*
- The tiny seed Eric Carle ISBN 0-590-42566-8
- Seeds Grow by Colin Walker ISBN 0-7802-0248-1
- Pumpkin pumpkin by Jeanne Titherington ISBN 0-590-42871-3
- Patty's pumpkin patch by Teri Sloat
- It's pumpkin time! By Zoe Hall ISBN 0-590-55849-8
- The Autumn Equinox; Celebrating the Harvest by Ellen Jackson  
ISBN 0-7613-1442-3

## Apple Measurements



Partner \_\_\_\_\_

1. Weigh your apples.

My apple weighs \_\_\_\_\_.

My partner's apple weighs \_\_\_\_\_.

Who's apple is heavier? \_\_\_\_\_

How much heavier is it? \_\_\_\_\_

2. Using the tape measure, measure how tall and how wide each of your apples are.

My apple is \_\_\_\_\_ high.

My apple is \_\_\_\_\_ around.

My partner's apple is \_\_\_\_\_ high.

My partner's apple is \_\_\_\_\_ around.

How tall are your apples on top of each other? \_\_\_\_\_



## Apple Tasting

1. Write the names of the apples that you will be tasting.

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2. Before tasting, predict which apple you will like the best.

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3. Now taste! Which apple did you like the best and why.

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4. Which apple was the most popular?

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5. Which apple was the least popular?

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Read the diagram below. Then fill in the bubbles to answer the questions.

# Spring in Bloom

It's spring! Flowers will soon be blooming. Some plants grow from seeds. Others, like this tulip, grow from bulbs. Read about the parts of a tulip.

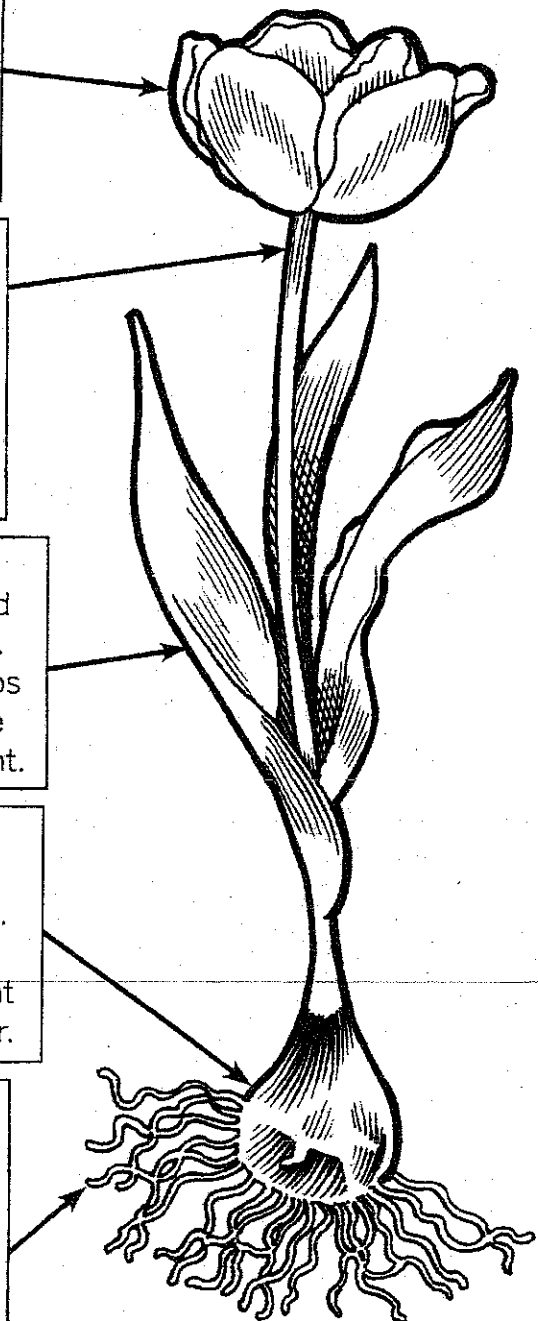
**Flower**  
It makes the plant's seeds. Its bright color may attract helpful insects.

**Stem**  
It holds up the leaves and flower. The stem carries water and minerals to the plant's parts.

**Leaf**  
Plants need food in order to grow. The flat leaf traps sunlight to make food for the plant.

**Bulb**  
Some plants grow from bulbs. The bulb stores food for the plant during the winter.

**Root**  
It keeps the plant in place. It **absorbs** water and minerals from the soil.

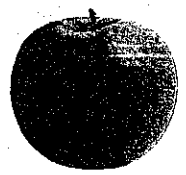


- The purpose of this diagram is to
  - (A) explain the parts of a tulip.
  - (B) show how seeds work.
  - (C) teach people about different flowers.
  - (D) explain why plants have leaves.
2. Which part of the tulip attracts insects?
  - (A) the stem
  - (B) the leaf
  - (C) the root
  - (D) the flower
3. Which statement is an *opinion* about tulips?
  - (A) Tulips are beautiful.
  - (B) Tulips bloom in the spring.
  - (C) Tulips grow from bulbs.
  - (D) Tulips have leaves.
4. What does a plant's stem do?
  - (A) It holds up the plant's leaves.
  - (B) It holds up the plant's flowers.
  - (C) It carries water to the plant's parts.
  - (D) All of the above
5. The word *absorb* means
  - (A) to soak up.
  - (B) to dry off.
  - (C) to give off.
  - (D) None of the above

Adapted from TIME FOR KIDS, March 26, 2010



1st / 2nd



### Apple Observations

1. What color is your apple? \_\_\_\_\_

2. Tell how the apple feels?

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3. Describe what the apple looks like. Use some good describing words.

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4. Cut the apple open. How is the inside different from the outside?

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