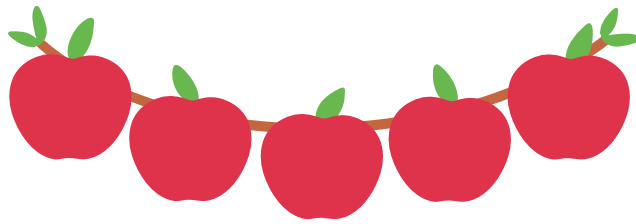


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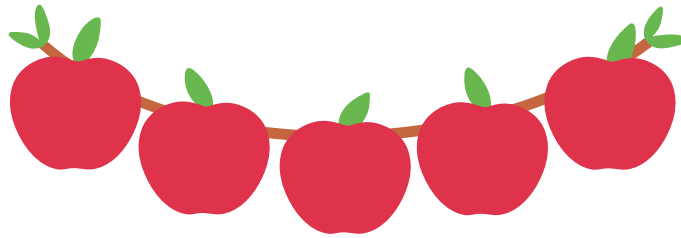
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# Digital Apple Activities

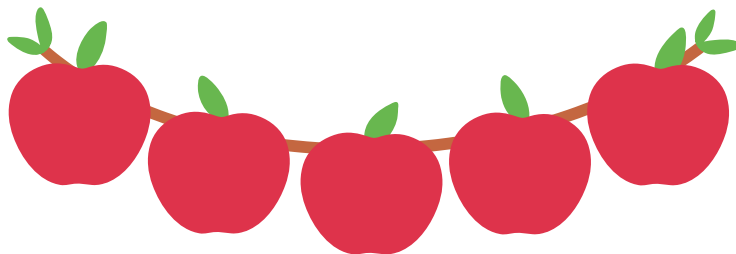


**Virtual field trip to a  
Virginia Apple Orchard  
with Farm Life 360**

*click the link below:*



<https://youtu.be/6HfMrTbDUTE>



## How Do Apples Grow?



**Scan the QR code to watch  
a time lapse of an apple  
tree producing fruit!**



Name: \_\_\_\_\_

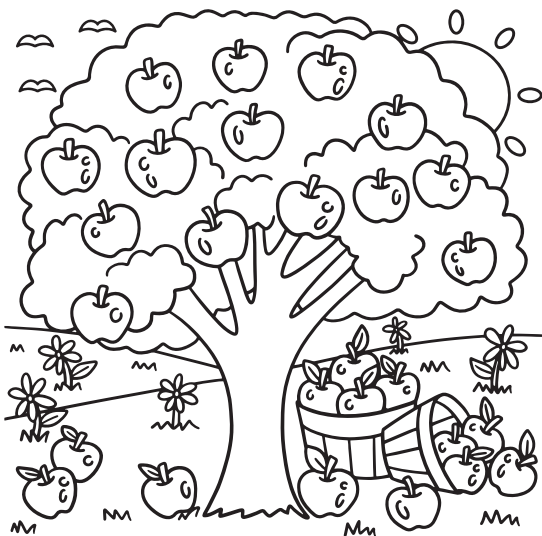
## Virginia Apples Journey: From Seed to Store

**Directions:** Read the story about our Virginia apples journey from seed to store. Use the word bank to fill in the blank spots in the story. Color the apple tree.

An apple seed is planted in the \_\_\_\_\_ and is provided with nutrients it will need to grow. The apple seed breaks and roots and leaves emerge. Now it has become a \_\_\_\_\_. The young plant continues to grow more leaves and is called a sapling. As the plant matures it grows into a tree with branches and a trunk. Flowers, called \_\_\_\_\_, begin to grow on the tree. Pollinators, like bees, and other insects visit the apple blossoms.

Once the apples have \_\_\_\_\_, they are ready to be \_\_\_\_\_. Orchard workers carefully pick the apples from the trees and place them in bins that are in the orchard. The bins are delivered to the packing shed. In the shed, machinery is used to \_\_\_\_\_ and dry the apples. Then, the apples are \_\_\_\_\_ by color. Next, the apples are labeled and boxed. Finally, they are \_\_\_\_\_ to stores.

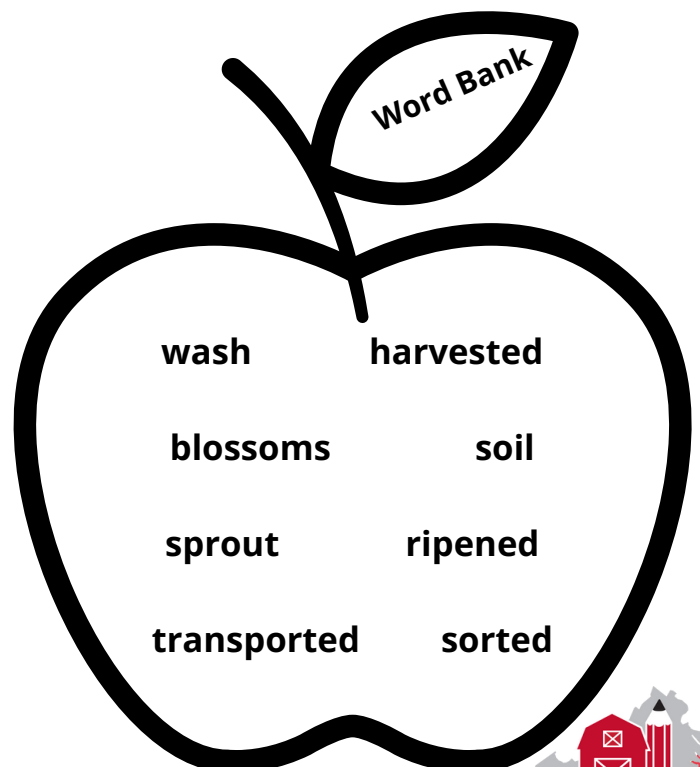
When your family shops in a grocery store, you are the consumers who buy the apples. You could even take a trip to an orchard and pick the apples yourself!



**SOLs:**

**Science:** 2.4b, 2.8b, 3.6b, 4.8b

**English:** 2.6c, 3.4 c and d, 4.4a, 5.4a



Name: \_\_\_\_\_

Follow the apple's journey from seed to store to complete the maze.

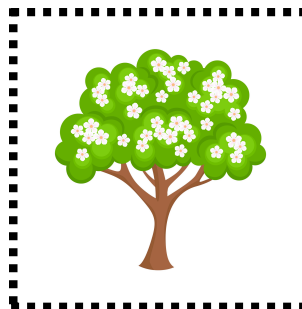
The maze contains the following icons in order of the apple's journey:

- Seed in soil
- Seedling with two leaves
- Sapling with many leaves
- Flowering tree with white blossoms
- Fruiting tree with red apples
- Harvest scene with a person and basket
- Storage bin filled with apples
- Shipping truck
- Person packing boxes
- Grocery store

Science SOLs: 2.4b, 2.8b, 3.6b, 4.8b

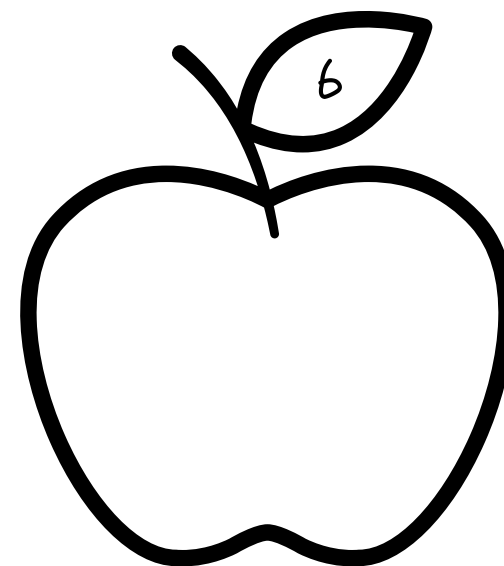
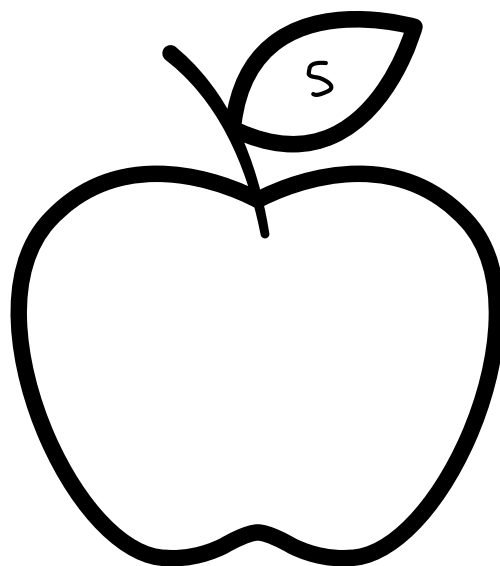
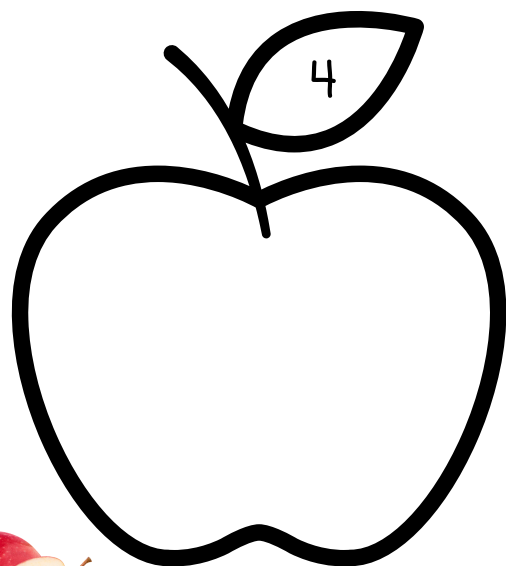
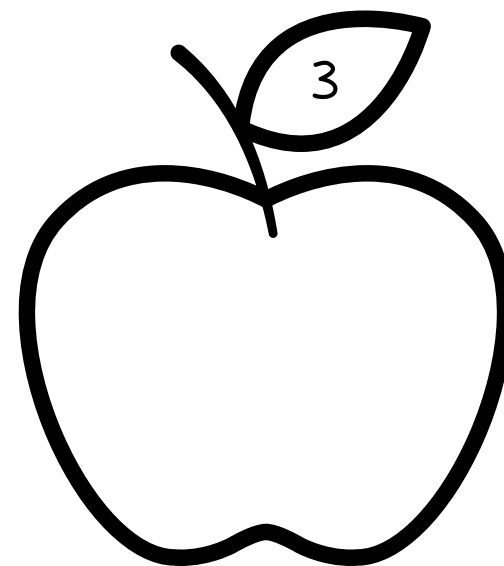
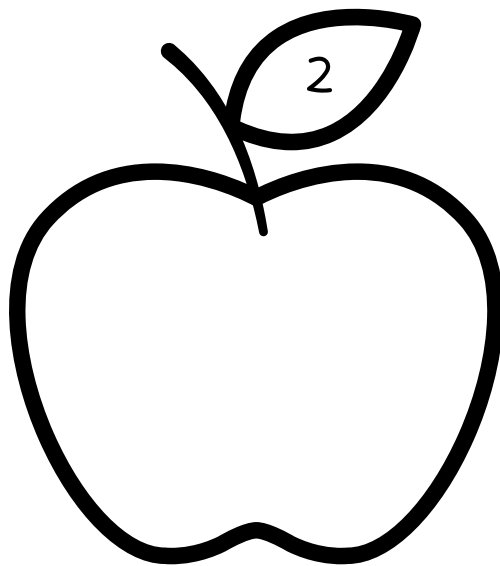
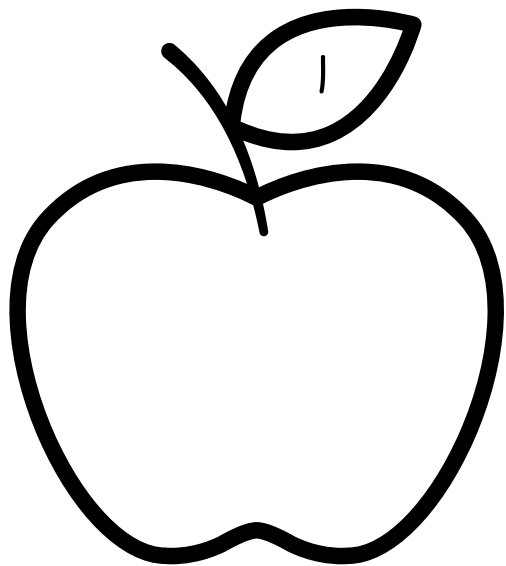


Use the pictures below to sequence the life cycle of an apple tree.  
Cut and paste them in the correct order on the template on the next page.



Science SOLs: K.7b, K.10b, 2.4b, 2.8b, 3.6b, 4.8b

Name: \_\_\_\_\_



# Apple Earth

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## Standards of Learning

Science 1.1, 1.8, 3.1, 3.7, 3.9, 3.10, 4.1, 4.9

Social Studies 2.7

## Objective

Students will:

- Understand that natural resources are limited
- Discuss the importance of managing natural resources
- Identify the effects of humans and weather on land

## Materials

- An apple
- A knife

## Background Knowledge

How much of the Earth's land is available to feed, clothe, and fuel the world's population? Explore this question as well as the importance of soil as a natural resource in "Apple Earth."

Farmers are keenly aware of the importance of soil and its value as a natural resource. Thus, they may adopt one or several ways to protect the soil. Examples include conservation tillage, wind breaks, contour farming, and crop rotation. As the population increases, vital cropland is being covered and lost from production. Thus, today's farmers must find ways to be more efficient and produce more food on less land, especially as it is projected that the world's population will reach 9 billion by 2050. In the 1960s, one farmer supplied food for 25.8 persons in the U.S. and abroad. Today, even as the population increases but the number of farms decreases, one farmer supplies food for 166 people in the U.S. and abroad. Modern technology that creates farming efficiency is crucial to generating a food supply to sustain the growing world. In order to feed 9 billion by 2050, the world's farmers will have to grow about 70% more food than what is currently produced.

## Procedure

1. Cut the apple into four equal parts and do the following:
  - Remove three parts –  
These three parts represent the portion of the earth covered by water. Locate the Earth's oceans on a map.
  - The part that is left, one-fourth of the earth, represents land.
2. Cut the remaining portion (quarter) in half lengthwise and do the following:
  - Remove one part – This half represents areas of Earth where plants we eat can't grow because the climate is too hot or cold. What places are too hot? (identify major deserts) What places are too cold? (identify the poles and places where the ground is frozen).

*continued on next page*





# Apple Earth

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## **Procedure continued:**

3. Cut the remaining portion crosswise into four equal parts and do the following:

- Remove three parts –

These three parts represent land that is too rocky or steep, too marshy, or where something has already been built.

The fourth part – only  $\frac{1}{32}$  of the earth – represents the land that can be used for growing crops to sustain more than seven billion people and all of the billions of animals in their care.

4. Ask students if we can grow plants all the way into the core of the earth. Once they have identified that this is not a possibility, discuss what part of the earth we do use for planting and growing crops (topsoil on the crust of the earth).

5. Peel the skin off of the remaining section and do the following:

- Show the skin –

This tiny piece of the apple represents the topsoil – the part of the earth where plants grow.

This small amount of soil is important for growing all of the food needed to feed all of the people and animals on our planet.

6. Discuss the importance of soil conservation and ways that erosion can be prevented.

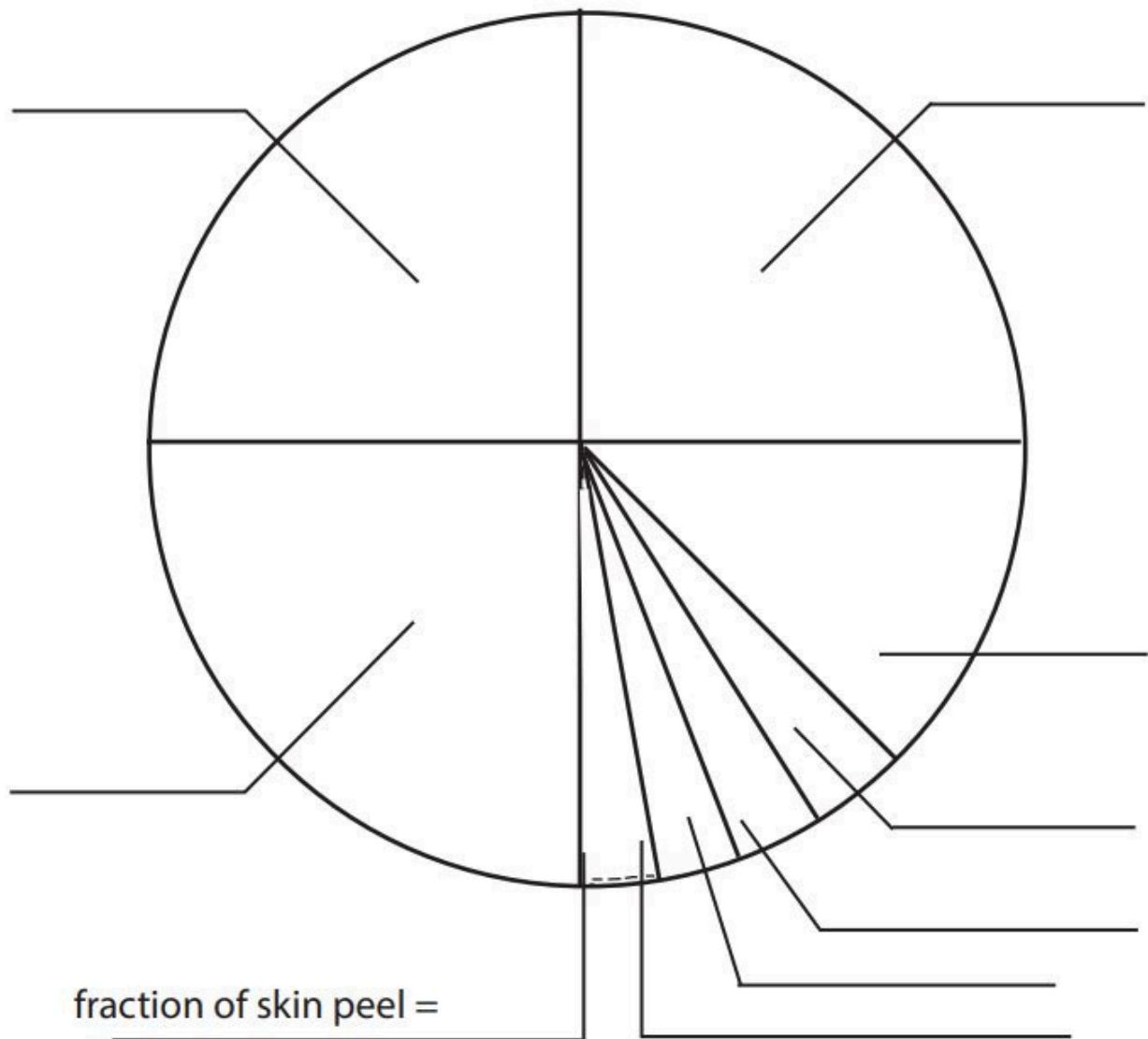




Name \_\_\_\_\_

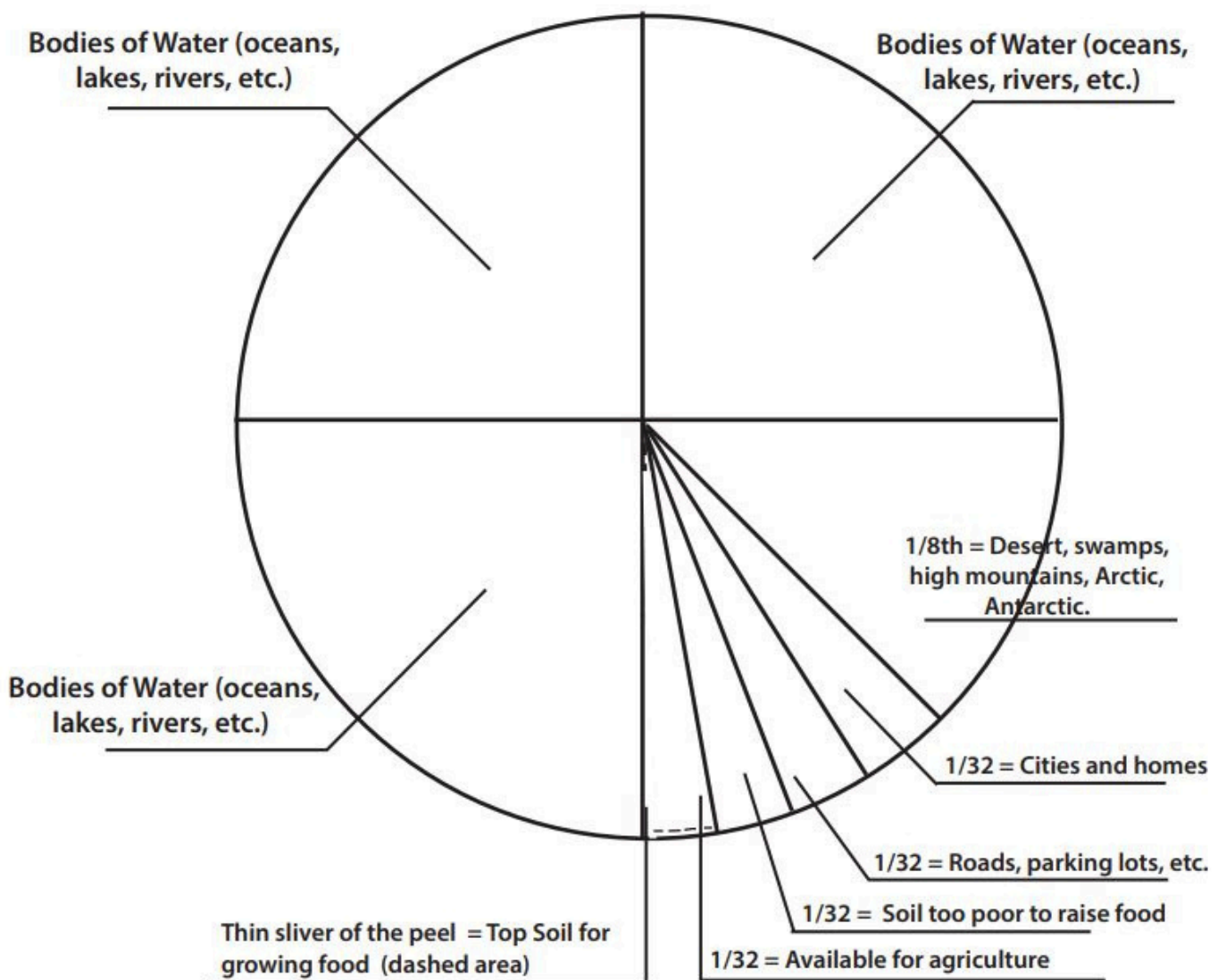
## The Earth as an Apple

**Directions:** Label the segments of the graph, using the information from the teacher's demonstration. When you are finished, color the graph, using a different color for each segment.



## The Earth as an Apple

**Directions:** Label the segments of the graph, using the information from the teacher's demonstration. When you are finished, color the graph, using a different color for each segment.



# Apple Earth

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## Elementary School Math Extensions

Math Standards of Learning: 1NS3, 2NS3, 3NS3, 4NS3

As the apple slices are cut into fractions students can demonstrate their knowledge by:

- writing the fraction
- showing the fraction with fraction strips, pattern blocks, fraction rods, number lines, drawing, pie pieces, other available materials
- comparing the fractions used in the apple earth demonstration ( $1/4$  vs  $1/32$  and so on)
- listing the fractions of the apple and then ordering them least to greatest; greatest to least

*Modifications can be made depending on the academic needs of the students*

## Middle School

Standards of Learning: Science 6.9, English 6.1, 6.7, 7.1, 7.7, 8.1, 8.7

Students will demonstrate their knowledge of human impact by choosing an idea from the strand and writing about how why:

- *natural resources are important to protect and maintain;*
- *renewable and nonrenewable resources can be managed;* and so on

Students may work individually, as partners, or small groups to engage all portions of the writing process to complete a written answer and present it to their peers.

## High School

Standards of Learning: English 9.6, 9.8, 10.6, 10.8, 11.6, 11.8, 12.6, 12.8

Students will demonstrate their knowledge of their community by discussing these questions in a written response or media presentation:

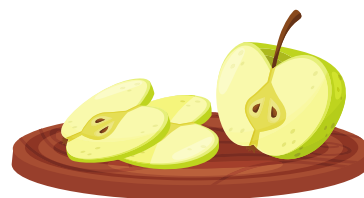
- *Are there examples of agricultural land in your community or examples of agricultural land you've seen somewhere else? Be descriptive in what these spaces look like and how they are used. How do local community member benefit from the agricultural land?*
- *Research local and state laws concerning agricultural land. What is your opinion of that law? Explain your stance. Discuss any changes you would make to the law and why.*



## No Bake Apple Cinnamon Slices in a Bag

### Materials Needed:

- Knife (for adult use only)
- Measuring spoons (teaspoon and tablespoon)
- Corer or Apple Slicer (optional)
- Cutting board



### Per student:

- One Virginia apple (A Granny Smith is suggested but any variety will do)
- One Ziploc baggie
- 1/2 teaspoon of ground cinnamon
- 1 tablespoon of brown sugar



### Directions:

- 1) All participants will wash their hands.
- 2) An adult will slice the apples for each student.
- 3) Students will place their apple slices in their Ziploc baggie.
- 4) Students, with assistance or supervision as needed, will correctly measure the brown sugar and cinnamon and pour them into the baggie.
- 5) Students will carefully zip and seal the baggie closed.
- 6) Students will shake their baggie for 30 seconds or more so that the cinnamon and sugar are well distributed.
- 7) Students may take out their apple slices to eat and enjoy!



# MUMMIFYING APPLES

## Objective:

Students will conduct a scientific investigation to validate a hypothesis determining the best mineral for mummifying an apple.

## Related Competencies:

### Introduction to Culinary Arts:

- Demonstrate techniques for scaling and measuring volume and weight.
- Describe food-science principles in food preparation.

### Culinary Arts I:

- Demonstrate scaling and measuring techniques for weight.
- Identify culinary units of measurement and measurement tools.

## Materials:

- 2 fresh apples (any variety), each cut into quarters (per group)
- 48 ounce large box of table salt
- 3 pound bag of Epsom salts
- 4 pound box of baking soda
- knife
- eight 12-oz. disposable plastic cups (per group)
- measuring cup (one per group)
- large mixing bowl
- permanent marker (one per group)
- masking tape (one roll for each group)
- scale
- graph paper

## Extension:

Put the dried apple slices under a microscope to allow the students to observe the appearance.

Try this experiment with other types of fruit, such as strawberries, bananas, and cherries.

## Background Knowledge:

Throughout history, countries have used mummification as a way to preserve their family members who have passed on. In order for mummification to occur, all the water must be removed from the body. Although the mummification process evolved over time, body preparers used a natural salt, natron (now called baking soda), to help dry out the body. This investigation will allow students to experiment with different minerals to determine which best dries out an apple. This lesson focuses on conducting an experiment using different salt compounds to determine which will best mummify an apple.

## References:

- [https://www.educationworld.com/a\\_lesson/daily/p/daily/p102.shtml](https://www.educationworld.com/a_lesson/daily/p/daily/p102.shtml)
- <https://www.virginiaapples.net/>

## Activity Steps:

1. Put students in groups of 3 or 4. Pass out eight apple slices, eight cups, and eight pieces of tape to each group of students.
2. Ask the students to create a table on graphing paper.
3. Write "starting weight" on eight pieces of tape. Leave room to write the weight of the apple slices on the tape. Attach one piece of tape to each cup.
4. Select one apple slice, weigh it, and record the slice's weight on the piece of tape on the front of cup 1. Place this apple slice in cup 1.
5. Select the other apple slices, one at a time, and weigh them. As each apple is weighed, place it in a cup and write its corresponding weight on the front of the cup. Complete this step for all apple slices.
6. Ask students to record the data on their data tables. Add  $\frac{1}{2}$  cup of baking soda to Cup 1, completely cover the apple slice. Label this cup "baking soda only."
7. Add  $\frac{1}{2}$  cup of Epsom salt to Cup 2, completely covering the apple slice. Label this cup "Epsom salt only."
8. Add  $\frac{1}{2}$  cup of table salt to Cup 3, completely covering the apple slice. Label this cup "table salt only."
9. Add  $\frac{1}{4}$  cup of table salt and  $\frac{1}{4}$  cup of Epsom salt to Cup 4, completely covering the apple slice. Label this cup "table and Epsom salt."
10. Add  $\frac{1}{4}$  cup of table salt and  $\frac{1}{4}$  cup of baking soda to Cup 5, completely covering the apple slice. Label this cup "table salt and baking soda."
11. Add  $\frac{1}{4}$  cup of baking soda and  $\frac{1}{4}$  cup of Epsom salt to Cup 6, completely covering the apple slice. Label this cup "baking soda and Epsom salt."
12. Add  $\frac{1}{3}$  cup baking soda,  $\frac{1}{3}$  cup table salt, and  $\frac{1}{3}$  cup Epsom salt to Cup 7, completely covering the apple slice. Label this cup as "baking soda, table salt, and Epsom salt."
13. Leave Cup 8 with only the apple slice and label this cup "control".
14. Place all eight cups on a shelf/windowsill in direct sunlight and let them sit for seven days.
15. Ask the students to make a hypothesis about which mineral mixture will work best to dry out (or mummify) the apple slice. Have the students write down their hypothesis in their science notebooks.
16. At the end of the seven days, take down the cups from the shelf. Take each apple slice out of the cup, one at a time, and try to brush off as much salt and baking soda as possible. Do not rinse off the slices, as they will become rehydrated.
17. Weigh each apple slice and ask students to record the data on their data tables.
18. Ask the students to compare the starting weight of each apple slice with its ending weight.
19. Ask the students to record their conclusions in their science notebook and create a graph comparing the different weights of the apple slices.

# Virginia Grown Apples: Mummifying Apples

## Activity Steps:

1. Put students in groups of 3 or 4. Pass out eight apple slices, eight cups, and eight pieces of tape to each group of students.
2. Ask the students to create a table on graphing paper.
3. Write "starting weight" on eight pieces of tape. Leave room to write the weight of the apple slices on the tape. Attach one piece of tape to each cup.
4. Select one apple slice, weigh it, and record the slice's weight on the piece of tape on the front of cup 1. Place this apple slice in cup 1.
5. Select the other apple slices, one at a time, and weigh them. As each apple is weighed, place it in a cup and write its corresponding weight on the front of the cup. Complete this step for all apple slices.
6. Ask students to record the data on their data tables. Add  $\frac{1}{2}$  cup of baking soda to Cup 1, completely cover the apple slice. Label this cup "baking soda only."
7. Add  $\frac{1}{2}$  cup of Epsom salt to Cup 2, completely covering the apple slice. Label this cup "Epsom salt only."
8. Add  $\frac{1}{2}$  cup of table salt to Cup 3, completely covering the apple slice. Label this cup "table salt only."
9. Add  $\frac{1}{4}$  cup of table salt and  $\frac{1}{4}$  cup of Epsom salt to Cup 4, completely covering the apple slice. Label this cup "table and Epsom salt."
10. Add  $\frac{1}{4}$  cup of table salt and  $\frac{1}{4}$  cup of baking soda to Cup 5, completely covering the apple slice. Label this cup "table salt and baking soda."
11. Add  $\frac{1}{4}$  cup of baking soda and  $\frac{1}{4}$  cup of Epsom salt to Cup 6, completely covering the apple slice. Label this cup "baking soda and Epsom salt."
12. Add  $\frac{1}{3}$  cup baking soda,  $\frac{1}{3}$  cup table salt, and  $\frac{1}{3}$  cup Epsom salt to Cup 7, completely covering the apple slice. Label this cup as "baking soda, table salt, and Epsom salt."
13. Leave Cup 8 with only the apple slice and label this cup "control".
14. Place all eight cups on a shelf/windowsill in direct sunlight and let them sit for seven days.
15. Ask the students to make a hypothesis about which mineral mixture will work best to dry out (or mummify) the apple slice. Have the students write down their hypothesis in their science notebooks.
16. At the end of the seven days, take down the cups from the shelf. Take each apple slice out of the cup, one at a time, and try to brush off as much salt and baking soda as possible. Do not rinse off the slices, as they will become rehydrated.
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18. Ask the students to compare the starting weight of each apple slice with its ending weight.
19. Ask the students to record their conclusions in their science notebook and create a graph comparing the different weights of the apple slices.

HYPOTHESIS:

APPLE	BEFORE WEIGHT	AFTER WEIGHT
1		
2		
3		
4		
5		
6		
7		
8		

CONCLUSION:





## Reflection Questions

After reading the passage, please answer the questions below by writing your response.

1. Which mineral mixture was the most effective? Least effective?
2. What did you observe by completing this experiment?
3. What conclusion did you draw about your hypothesis?

## Application Questions

After reading the passage, please answer the questions below by writing your response.

1. How can we use the information that we gathered from this experiment in our life?
2. What are ways that we use mineral mixtures already?
3. How can you use the information you learned in other ways?