Natural or Artificial

Grades 3-5

English Language Arts, Math, Visual Arts

Objectives

Students learn how artificial Christmas trees became popular and explore the advantages and disadvantages of using natural or artificial trees.

Vocabulary

artificial—not natural or real; made or produced to seem like something natural
natural—existing in nature and not made or caused by people

Background

According to history, evergreen trees and boughs were an important part of winter celebrations for centuries. Ancient Egyptians, Vikings and Celts all used evergreen trees and wreaths to observe the Winter Solstice as early as the 8th century A.D.

Historians believe the first **natural** evergreen tree was decorated for Christmas in Germany in 1539. As Germans settled in other countries, they took the Christmas tradition with them. German immigrants brought the tradition to the United States. In the mid-1700's, the first community Christmas trees were see in German communities in Pennsylvania.

By the time German immigrants came to North America, cutting natural trees for Christmas decorations was discouraged in Europe. Many families were already creating **artificial** trees from goose feathers, wire, a wooden trunk and a wooden base. These early trees were small and could be easily disassembled. Some German families brought these trees with them as they settled in other countries.

Deforestation concerns in the North America and Europe created a demand for artificial Christmas trees. In the U.S., the first artificial tree was made in 1930 by the Addis Brush Company. Using the equipment that manufactured toilet brushes, they made the bristles green. The first aluminum trees were manufactured in Chicago in 1958. Today most artificial trees are made from PVC (polyvinyl chloride) and are manufactured in China and shipped to the U.S.

According to legend, President Theodore Roosevelt banned Christmas trees from the White House for environmental reasons. While it is true that the family did not have a tree at the White House, friends and family members explained that they simply did not celebrate Christmas with a tree. They had stockings and gifts, but had never used a tree in their Christmas celebration. In 1902 eight year old Archie, with the help of household staff members acquired and decorated a small tree as a surprise for the family.

There are bits of truth in the legend. Roosevelt was a staunch environmentalist. He and Forest Service Chief Gifford Pinchot (who is drawn into the Christmas tree debate in some versions of the story) had discussed forest management for a number of years. Pinchot believed that selectively removing trees from forests actually improved forest health. An increase in spacing between trees allowed more sunlight and water to reach the remaining trees.

Natural or Artificial (continued)

Today we know that trees are important for the environment. Through photosynthesis, they pull in carbon dioxide and water and use energy from the sun to make food for the tree and release oxygen into the air. One acre of trees produces enough oxygen to support 18 people.

Some Christmas trees are still selectively removed from forests, especially on private land. However, most Christmas trees are grown on dedicated, well managed Christmas tree farms. Christmas trees are often grown on land that does not support other crops. While they are growing, the tree stabilize the soil, hellp prevent erosion and provide a habitat for wildlife.

Across the U.S., 350,000 Christmas trees are grown on 15,000 farms. These farms keep money in the local economy. In addition to the money farmers receive when they sell their trees, they purchase fuel, fertilizer and equipment to care for the trees from local businesses. Many farms employ part time or seasonal workers to help with care and management of trees.

Natural Christmas trees are renewable. To insure a consistent supply, Christmas tree growers plant one to three seedlings for every tree they harvest. About 93 percent of those who use natural Christmas trees recycle their tree in community recycling programs, their garden or their backyard.

Most artificial Christmas trees are made from materials that do not break down when the tree is no longer useable. The needles are made from polyvinyl chloride (PVC), is a petroleum based product. The trunk and branches are generally made from steel. A high quality artificial tree can be used for 10-15 years, which often makes it the best financial choice. However, when it can no longer be used, it will remain in a landfill forever. Because they are made in China, the only contribution to the local economy is the profit made by the local retailer.

Additional Reading

Palmer, Robert W. and Donna L Palmer, *Ben and Molly's Christmas Tree Farm: A Christmas Tree Story*, Self-published, 2018

Purmell, Ann, *Christmas Tree Farm*, Holiday House, 2006.

Ray, Mary Lyn, *Christmas Farm*, Clarion, 2013

Winter, Jeanette, *The Christmas Tree Ship*, Guest Cottage, 2002.

Websites

https://www.okchristmastrees.com/
https://forestry.ok.gov/christmas-trees
https://www.travelok.com/article_page/oklahoma-christmas-trees-light-up-the-holidays
https://www.history.com/topics/christmas/history-of-christmas-trees
https://web.extension.illinois.edu/trees/facts.cfm
https://realchristmastrees.org/education/history-of-christmas-trees/
https://www.nationalgeographic.com/travel/article/christmas-tree-customs
https://www.christmastreeassociation.org/
http://www.dasnr.okstate.edu/Members/sean-hubbard-40okstate.edu/christmas-trees-in-oklahoma

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2021 ELA Standards

Activity 1: Comparing Trees, (English Language Arts) 1 50 minute class period

Students will discuss the advantages and disadvantages of natural and artificial trees. They will state and opinion and gather facts to support the opinion.

Oklahoma Academic Standards

Activity 1: Comparing Trees (English Language Arts)

3.3.W.3 4.3.W.3	Students will write an opinion about a topic and provide relevant evidence as support in multiple paragraphs with transitional words and phrases.
5.3.W.3	Students will write opinion essays that: ● introduce a topic and state a clear opinion ● incorporate relevant, text-based evidence to support the opinion ● use sentence variety and word choice to create interest ● organize writing in a logical sequence with transitional words and phrases

Materials:

- Activity 1 Worksheet 1 **"Frayer Model"**
- Activity 1 Worksheet 2 **"Opinion: Natural or Artificial Christmas Trees"**

Procedures

1. Discuss the history of why and how artificial Christmas trees were developed.
2. Go over vocabulary words. Have students complete Activity 1 Worksheet 1 **"Frayer Model"** for each word.
3. Some people like to use natural trees during the winter holidays and some people like to use artificial trees.
   —Lead a discussion of the pros and cons of natural and artificial trees. Help students think about the following points:

   Natural Trees
   - Make your house smell great
   - Can be a problem for people with allergies to dust, mold, fungi or tree dander.
   - Can be a fire hazard if they dry out
   - Can be easily recycled, reused or composted. (have students research these options)
   - Cost less to buy than a comparable artificial tree.
   - Give off oxygen while growing
   - Need 5 to 10 years to grow to a marketable size.
   - Use chemicals and fertilizer to keep trees healthy while they are growing
   - Can be grown on land that might not be good for other crops
   - Support local and U.S. farms and the businesses that serve them
   - Needles fall off - extra cleaning is needed
   - Requires regular care/watering
   - Need to buy a stand and lights

Continued procedures:

Artificial Trees

- A high quality tree costs more initially than a natural tree
- A high quality tree can be used for 10-15 years - lower cost over the lifespan
- Many artificial trees are pre-lit
- They come with a stand
- Many artificial trees are made in China.
- A few are made in the U.S. - these are MUCH more expensive
- Buying an artificial tree does not support local economies
- Are made from non-renewable resources like petroleum and steel
- Cannot be recycled or composted
- Take time to set up
- Require extra packaging like cardboard and tape
- Must be stored between seasons unless they are left up and decorated for other holidays

4. After the discussion, have students use Activity 1 worksheet 3 **"Opinion: Natural or Artificial Christmas Trees"** to choose an opinion and list at least three facts that support the opinion.
—Students will use online or library resources to research their opinion.
—On a separate page, students will write a short essay that tells why their choice is best.
—This activity can be used with Activity 2 Worksheet 1 **"Smart Spending"** to compare costs of natural and artificial trees.

Natural or Artificial

Activity 1 Worksheet 1: Frayer Model

Name: _____ Date: _____

Definition	Facts or Characteristics
_____	_____
_____	_____
_____	_____
_____	_____
Examples	**Non-examples**
_____	_____
_____	_____
_____	_____
_____	_____

Natural or Artificial

Activity 1 Worksheet 2: Opinion: Natural or Artificial Christmas Trees

Name: _____ Date: _____

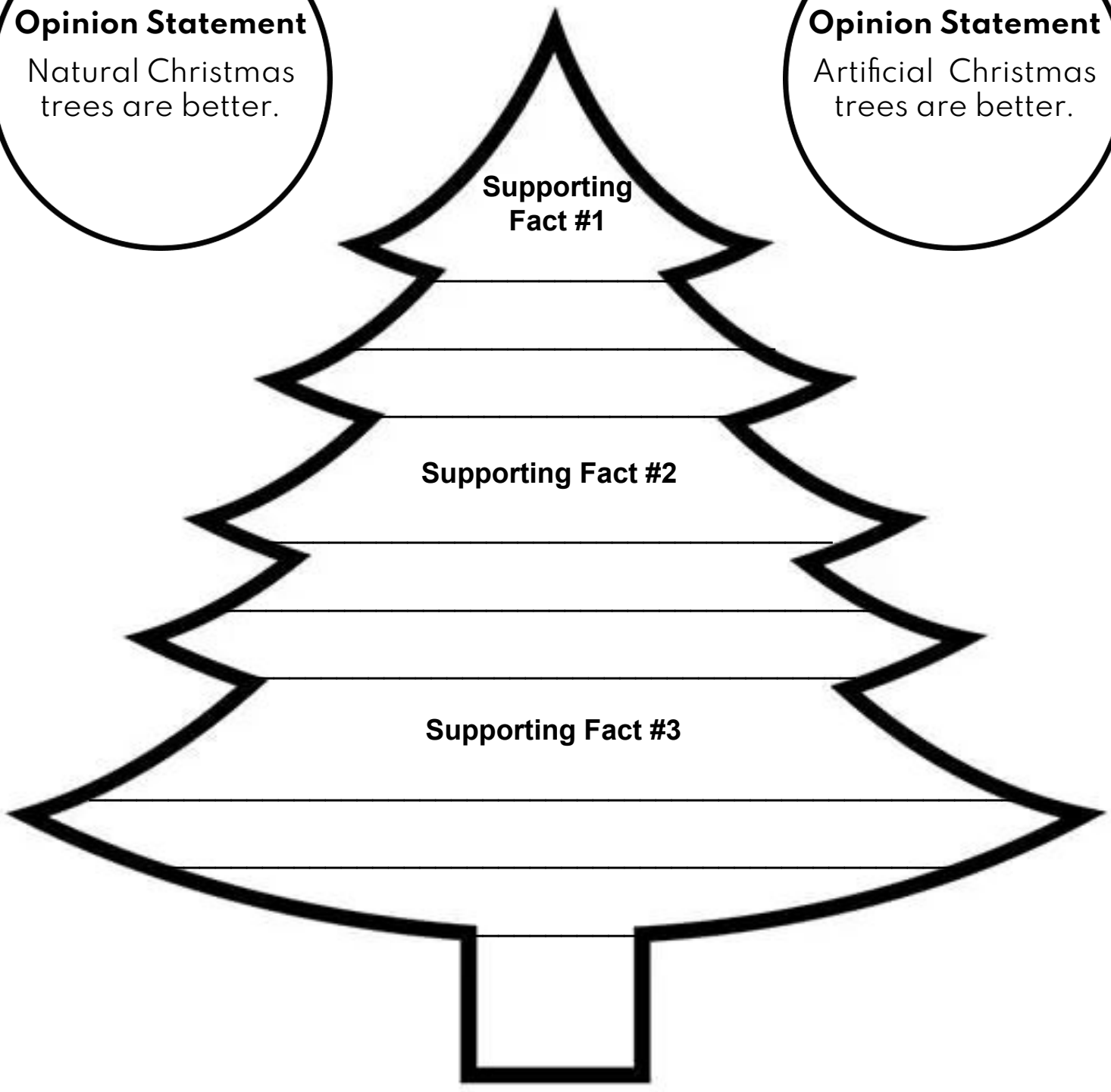
Circle one of the opinion statements.
Find three facts that support the opinion.
Write the facts below.

Opinion Statement

Natural Christmas trees are better.

Opinion Statement

Artificial Christmas trees are better.



Activity 2: Smart Spending, (Math) 1 50 minute class period

Students will solve real world problems by comparing the total cost for natural and artificial Christmas trees over several years.

Oklahoma Academic Standards

Activity 1: Smart Spending (Math)

3.N.2.7	Recognize the relationship between multiplication and division to represent and solve real-world problems.
4.A.2.2	Solve for unknowns in problems by solving open sentences (equations) and other problems involving addition, subtraction, multiplication, or division with whole numbers. Use real-world situations to represent number sentences and vice versa.
5.A.2.3	Evaluate expressions involving variables when values for the variables are given.
5.D.1.1	Find the measures of central tendency (mean, median, or mode) and range of a set of data. Understand that the mean is a "leveling out" or central balance point of the data.

Materials:

- Activity 2 Worksheet 2 **"Smart Spending"**

Procedures

1. Use Activity 2 Worksheet 1 **"Smart Spending"** in conjunction with Activity 1 Worksheet 2 **"Opinion: Natural or Artificial Christmas Tree"**.
   —After discussing advantages and disadvantages of each choice, use the worksheet calculations to determine the most cost-effective option.
   —After students complete the calculations, discuss factors other than cost that might influence the decision to purchase a natural or artificial tree.

   Examples:
   -A natural tree may not be an option for someone with allergies.
   -Someone with suitable natural trees (not Eastern Red Cedar) growing on their property could have a natural tree every year without much expense.
   -You are a local business owner and the local Christmas tree farm buys supplies from you, and you buy a Christmas tree from them to support their business.
   -You prefer a natural tree and price does not matter.
   - Artificial trees are made in China and you want to support local businesses
   - Artificial trees cannot be recycled after they wear out.
   - The manufacturing of artificial trees contributes to air pollution.

Natural or Artificial

Activity 2 Worksheet 1: Smart Spending

Name: _____ Date: _____

You are trying to decide whether to buy a natural or artificial Christmas tree. Each tree has advantages and disadvantages. Cost is one factor in choosing a tree.

The first year cost of a natural tree is usually lower than an artificial tree, however an artificial tree can be used for several years. A good artificial tree can be used for about 10 years. A high quality tree can last up to 20 years. Lights on either tree would need to be replaced every 5 years. The tree stand should last 10 years or more.

Natural Tree	
	Cost
6 ½ ft. fir tree	$98.00
Tree stand	$28.00
6 strands of lights	$24.00
Total cost	$_____
If the cost stayed the same and you bought a natural tree every year, what would the cost be after 5 years? _____ x _____ =_____	
If the cost stayed the same and you bought a natural tree every year, what would the cost be after 10 years? _____ x _____ = _____	

Artificial Tree	
	Cost
7 ½ ft. hinged, pre-lit fir tree with stand	$149.00
What would be the cost per year if you used the tree for 5 years? _____ ÷ _____ = _____	
What would be the cost per year if you used the tree for 10 years? _____ ÷ _____ = _____	
If the lights (six strands) need to be replaced every 5 years, how much would that add to the average cost per year?	

Natural or Artificial

Activity 2 Worksheet 1: Smart Spending

ANSWER KEY

Name: _____ Date: _____

You are trying to decide whether to buy a natural or artificial Christmas tree. Each tree has advantages and disadvantages. Cost is one factor in choosing a tree.

The first year cost of a natural tree is usually lower than an artificial tree, however an artificial tree can be used for several years. A good artificial tree can be used for about 10 years. A high quality tree can last up to 20 years. Lights on either tree would need to be replaced every 5 years. The tree stand should last 10 years or more.

Natural Tree	
	Cost
6 ½ ft. fir tree	$98.00
Tree stand	$28.00
6 strands of lights	$24.00
Total cost	$ 150.00
If the cost stayed the same and you bought a natural tree every year, what would the cost be after 5 years? $98.00 x 5 = $490.00	
If the cost stayed the same and you bought a natural tree every year, what would the cost be after 10 years? $98.00 x 10 = $980.00	

Artificial Tree	
	Cost
7 ½ ft. hinged, pre-lit fir tree with stand	$149.00
What would be the cost per year if you used the tree for 5 years? $149.00 ÷ 5 = $29.80	
What would be the cost per year if you used the tree for 10 years? $149.00 ÷ 10 = $14.90	
If the lights (six strands) need to be replaced every 5 years, how much would that add to the average cost per year? $24.00 ÷ 5 = $4.80 per year for years 6-10	

Activity 3: Feather Christmas Tree, (Visual Arts) 1 50 minute class period

Students will make a feather tree to simulate the first artificial Christmas trees made in Germany.

Oklahoma Academic Standards

Activity 3: Feather Christmas Tree (Visual Arts)

3.VA.CP.2.2 4.VA.CP.2.2	Demonstrate an understanding of the safe and proficient use of materials, tools, and equipment in a manner that prevents danger to oneself and others.
5.VA.CP.2.2	Demonstrate proper and safe handling through care, storage, and use of materials, tools, and equipment.
3.VA.CHP.1.2 4.VA.CHP.1.2	Explore ways that people have created artwork using accessible resources.
5.VA.CHP.1.2	Explore how artists and cultures used media (materials) to express themselves.

Materials:

- Activity 3 Project Sheet 1 **"Feather Christmas Trees"**
- Styrofoam or fiberboard cone (or cone made from posterboard)
- Low-melt glue gun and glue sticks
- Small feathers

Procedures

1. Review the history of artificial Christmas trees. The first artificial trees were made in Germany. Christmas trees had become so popular that deforestation was a concern. For about 15 years, cutting a tree in the woods was illegal. The first trees were made using a stick for the trunk, a wood block for the base and goose feathers attached to wire for the branches. The feathers were dyed green. The trees varied in size. Larger trees had branches spaced far enough apart to use candles for decorations. The trees were easy to disassemble and pack, so as Germans migrated to other parts of the world, they carried the feather tree tradition with them.
2. Students will make an artificial tree using feathers.Activity 3 Project Sheet 1 **"Feather Christmas Trees"** provides instructions for making a simple feather tree.
3. There are many online videos that show how to duplicate the first German goose feather trees. There are also more detailed videos to complement the simple tree instructions included with this lesson.

Name: _____ Date: _____

The first artificial Christmas were made in Germany. They were made from goose feathers and wooden sticks.

To make a feather tree gather these supplies:

- Fiberboard or styrofoam cone
- Low temperature glue gun and glue sticks
- Small feathers (any color)

1. Starting at the bottom, mark the cone with lines about 2 inches apart
2. Turn feathers so the curved side is up.
3. Put a line of glue along the bottom row.
4. Put the feather stems close together in the glue.
5. Press into the glue until they stay.

6. Be sure the cone does not show through the feathers.
7. Put glue along the next line and press feathers in place. Be sure the feathers in the second row cover the stems of the first row.
8. Continue until the whole cone is covered in feathers.
9. Use the smallest feathers at the top or trim feathers to fit.
10. Glue beads or tiny ornaments to feathers for decorations.