

Lesson: From Bee to Pie

Grade: First & Second Grade, Environmental Literacy

Overview: In this lesson, students will learn about the importance of agriculture in the state of Pennsylvania. In particular, they will learn about apple orchards and the key role pollinators play in the reproduction of apples. Students will learn the process from apple blossom to fruit to harvest to distribution to table. Students will then get to make their own apple pie cup using math fractions to demonstrate measurement skills. Finally, Students will get to enjoy their yummy treat while learning about the human impact in agriculture.

Science Content & Standards:

Pennsylvania New Academic Standards for Science-

<https://www.pdesas.org/Page/Viewer/ViewPage/11>

Environmental Literacy and Sustainability- Agriculture and Environmental Systems and Resources

Standard- K-2 ELS 1-2: Categorize ways people harvest, re-distribute, and use natural resources.

Science Practices:

APPENDIX F – Science and Engineering Practices in the NGSS

<https://www.nextgenscience.org/sites/default/files/Appendix%20F%20%20Science%20and%20Engineering%20Practices%20in%20the%20NGSS%20-%20FINAL%20060513.pdf>

Practice 1 Asking Questions and Defining Problems

- Ask questions about what would happen if a variable is changed.
- Ask questions that can be investigated and predict reasonable outcomes based on patterns such as cause and effect relationships.

Math Content & Standards:

Pennsylvania Academic Standards for Mathematics-

<https://www.stateboard.education.pa.gov/Documents/Regulations%20and%20Statements/State%20Academic%20Standards/PA%20Core%20Math%20Standards.pdf>

PA CORE STANDARDS Mathematics 2.3 Geometry

Standard- CC.2.3.1.A.2 Use the understanding of fractions to partition shapes into halves and quarters.

Standard- CC.2.3.2.A.2 Use the understanding of fractions to partition shapes into halves, quarters, and thirds.

Math Practices:

Pennsylvania Common Core State Standards for Mathematical Practices.

https://static.pdesas.org/content/documents/Math_Practices_and_Grade_Progressions_rev%201-24-13.pdf

1. **Reason abstractly and quantitatively-** Recognize that a number represents a specific quantity.
2. **Model with mathematics-** Experiment with representing problem situations in multiple ways including numbers, words (mathematical language), drawing pictures, using objects, acting out, making a chart or list, creating equations, etc.
3. **Use appropriate tools strategically-** Begin to consider the available tools (including estimation) when solving a mathematical problem.

Science & Math Connection:

<https://static.nsta.org/ngss/PracticesVennDiagram.pdf>

Relationships and Convergences Found in the Common Core State Standards in Mathematics (practices), Common Core State Standards in ELA/Literacy*(student portraits), and A Framework for K-12 Science Education (science & engineering practices) Venn Diagram NSTA Science, Math, & ELA

- S2. Develop and use models
- M4. Model with mathematics
- S5. Use mathematics & computational thinking

Materials:

- Plastic clear cups
- Spoons
- Non-bake apple pie filling
- Non-bake whip cream
- Graham crackers
- Plastic bags
- Markers

Resources:

- Read aloud: “How to Grow an Apple Pie” by Beth Charles
<https://www.amazon.com/How-Grow-Apple-Beth-Charles/dp/0807504017>
- Student video: “The Life Cycle of an Apple” <https://youtu.be/wgEciDLSh9I>
- Teacher video: “Apple, How does it grow?” <https://youtu.be/UWLMeh1HIBw>

- Teacher reading passage: “Apples: A class Act”
<https://web.extension.illinois.edu/apples/edu-introduction.cfm>
- Extension activity: Visit a Pennsylvania Apple Orchard, <https://youtu.be/-X2O-ojLoNs>

Learning Objectives:

- Students will learn how apples grow from seed to fruit from a Pennsylvania apple orchard.
- Students will learn the process of how people harvest apples from the grocery store to apple pie.
- Students will make their own apple pie cup model using mathematical fractions.

Procedure:

- 1.) The teacher will introduce how apples grow by reading the book, “*How to Grow an Apple Pie*” by Beth Charles. The teacher will guide students into a classroom discussion to review.
 - a.) “Where do apples grow from?”
 - b.) “How does an apple blossom grow into an apple?” (What type of insect visits the apple blossoms?)
 - c.) “Do you think apple trees take a long time to grow? Why?”
- 2.) Students will then watch a short video on apple orchards in Pennsylvania.
- 3.) After the video, the teacher will demonstrate and use the following recipe located below to have students create their own apple pie in a cup.
- 4.) Students can work in small groups or individually to create an Apple Pie Cup. Have students complete the *From Bee to Pie* student guided worksheet.
- 5.) When completed, the teacher will guide students into a classroom discussion.
 - a. The apples you ate from your cup, where do you think they came from?
 - b. How do you think the apple tree was able to produce the apples you are eating?
- 6.) Extension activity: The teacher can guide students to a Pennsylvania Apple Orchard through a virtual tour or go on a field trip.

Guided instructions for teacher- [Apple Pie Cup](#)

- 1.) Take a marker and label the plastic clear cups with the following fractions; $\frac{1}{3}$, $\frac{2}{3}$, 1 or $\frac{3}{3}$. (Teacher or student can complete step #1 based on grade level.)
- 2.) Place the cup aside, put 1-2 graham crackers into a plastic bag. Seal the bag and crush the graham crackers into crumbs using your hand.
- 3.) Open the plastic bag and use the spoon to place graham cracker crumbs into the plastic clear cup. The graham crackers should fill up to the first line mark, $\frac{1}{3}$.
- 4.) Then open the apple pie filling, use the spoon to fill up the plastic clear cup to the second line, $\frac{2}{3}$.
- 5.) Finally, open the whip cream and use a spoon to fill up the plastic clear cup to the 1 whole or $\frac{3}{3}$ line.

6.) Use the spoon to enjoy your Apple Pie Cup!

Examples of Apple Pie in a Cup-

