

## Willett Garden of Learning

### Apple Seeds

**Activity:** Cut apples and count how many seeds they have.

**Goal:** Learn a little about apples and practice math and science skills.

**Supplies:**

- 2 red apples and 2 golden apples for each group (8 apples per class)
- cutting boards and knives
- small cups
- worksheet & pencil (3<sup>rd</sup> grade)

**How to proceed:**

Set up apples, cutting boards, and knives.

Explain the goal of finding out if all apples have the same number of seeds.

3<sup>rd</sup> grade: As you go, note hypothesis, data, and results on worksheet.

Ask students to hypothesize (guess) if all apples have the same number of seeds or same number per type of apple.

You may need to cut the apples for the students, or have them cut the apples themselves. **Cut at least one apple in half horizontally and show the students the star shaped pattern.**

Break into groups of 2-3 students and give each one an apple and a small cup. Have them put the seeds in the cup, then count how the seeds.

Compare the number of seeds each group has. What is the result? Is it what you expected? Why might this be the case?

Once you're done with the seed project, students can eat the apples.

Apples are closely related to pears. How many seeds would you guess that pears have?

3<sup>rd</sup> grade: multiply out how many seeds there are for your whole class; for all the gardening classes together.



## **Background Information: Apple seed & fruit development**

If you look a well-developed apple and cut it cross-section, you would see that the ovary has 5 compartments (called “carpels”). Each carpel should contain 2 seeds, for a total of 10 seeds. (The exception is the “Northern Spy” variety, which contains 4 seeds per carpel.)

Apples that are well developed are set to be “set”. But apples don’t always set. Why?

1. The number of seeds inside each apple is related to the health of the tree. Healthier trees produce better fruit with more and larger seeds.
2. The apple blossoms (flowers) need to be pollinated in order to grow large fruit that have most or all of their seeds.

Pollen is a substance produced by apple trees as well as many other plants, and is necessary for reproduction. Pollen stimulates the development of the seed, which in turn stimulates other parts of the fruit to develop.

In late spring, lovely white blossoms appear on apple trees for about 9 days. These blossoms produce a lot of pollen, as well as a sweet nutrient-rich substance called nectar. Honeybees are attracted to the blossoms in order to obtain the nectar, and as they move from tree to tree collecting nectar they also transfer pollen from blossom to blossom. Pollinated blossoms grow into ripened fruit in about 4½ to 5½ months.

## **Misc**

- The volume of a ripe apple is about 20% air – that’s why they float.
- The fuzzy little thing at the bottom of an apple is called the “sepal”
- Apple trees belong to the Rosaceae (rose) family.
- Apple trees begin to bear fruit in 6-8 years. They are capable of producing fruit for as long as 100 years, but most commercially grown apple trees are replaced every 12-20 years.
- If an apple tree has a particularly good growing year and produces an abundance of fruit, this may cause it to become temporarily low on stored energy and it may produce apples with a small number of fruit & seeds the following year.

Source: extracted from <http://www.geocities.com/perfectapple/science.html>

**Question:** Do all apples have the same number of seeds?

**Hypothesis:**

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**Test / Gather data:**

Apple #1 (red): \_\_\_\_\_

Apple #2 (red): \_\_\_\_\_

Apple #3 (golden): \_\_\_\_\_

Apple #4 (golden): \_\_\_\_\_

**Result:**

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