What's Inside a Seed?

Estimated Time:
Prep: 10–15 min. the night before
Activity: 30 min.

Introduction

Overview

Experiment: Students dissect a **seed** to identify its parts.

Key Concepts: Students will understand that seeds have three parts: the **seed coat**, the **embryo**, and the **cotyledon**.

Lead-In

Bring in examples of fruit, such as apples, kiwifruit, or peaches. Remind students that fruits grow from seeds and that seeds sprout and grow into plants. Ask students to predict what the seeds inside look like. Then cut the fruit and have students describe the seeds. Ask students, "What do you think the inside of the seed looks like?"

Teacher Preparation

Lead-In Materials:
- Examples of fruit (apples, kiwifruit, peaches, etc.)

Teacher-Provided Experiment Materials:
- Glue

Try This! Materials:
- Paper towels
- Lima bean seeds*
- Zip-close sandwich bags

Prepare:
- Make copies of the Experiment Sheet.

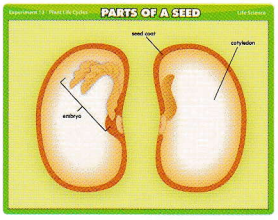
Note: The night before, soak three lima bean seeds in water for each student completing the experiment. You may need to purchase additional seeds.

**included in kit*

Vocabulary

- **cotyledon** [kah-tuh-LEE-dun] the part of a seed that stores food; it is one of the first leaves developed by the embryo of a plant
- **embryo** [EM-bree-oh] the part inside a seed from which a plant grows; it is usually a simple, underdeveloped plant
- **seed** the part of a plant that can grow into a new plant
- **seed coat** the outer protective covering of a seed

You Will Need

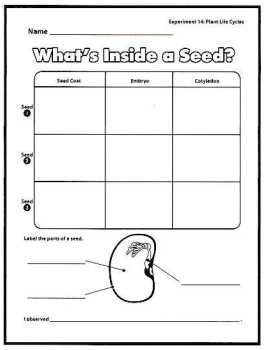


Parts of a Seed reference card

magnifier

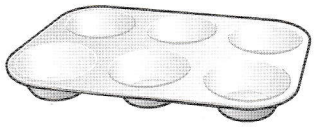
Teacher-Provided Materials

glue

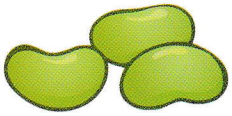


Experiment Sheet

tweezers



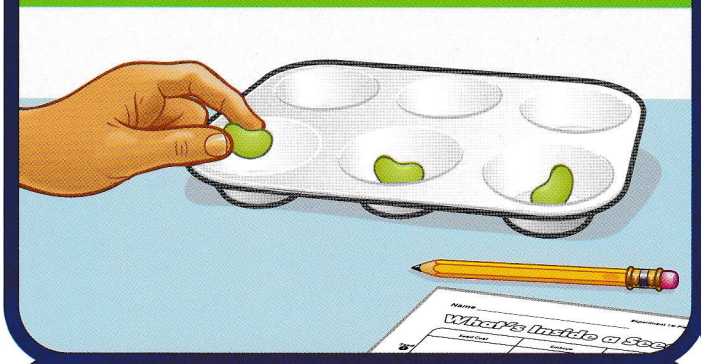
plastic tray



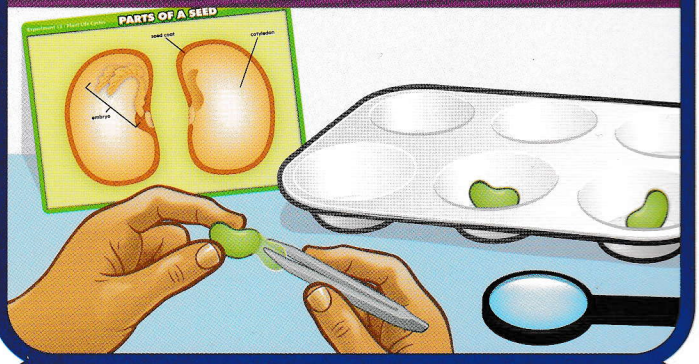
3 lima bean seeds (soaked in water the night before)

Procedure

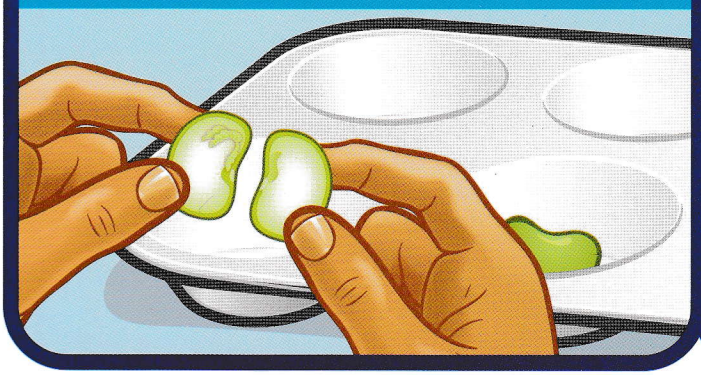
1 Place one lima bean seed in each of three wells of the tray.



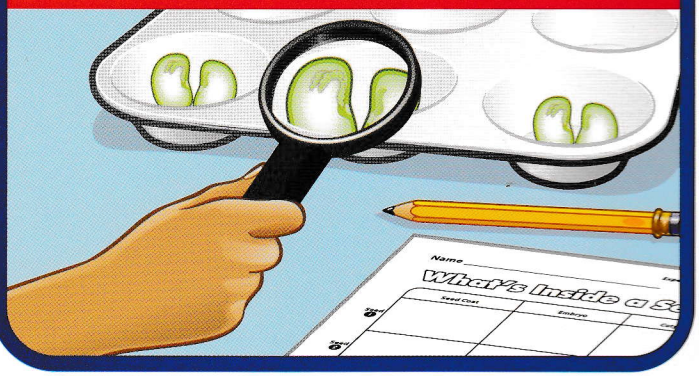
2 Look at the seed reference card to learn the different parts of a seed. Then use tweezers to carefully remove the seed coat from a seed. Use the magnifier to study the seed coat.



3 Gently separate the two cotyledons and return them to the well. Use the magnifier to study the seed parts.



4 Repeat the process with the other two seeds. Were all the seeds the same? Glue each seed part to the Experiment Sheet. Label the parts of a seed and record your observations.

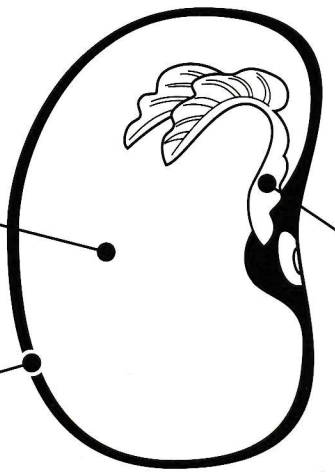


Name _____

What's Inside a Seed?

	Seed Coat	Embryo	Cotyledon
Seed ❶			
Seed ❷			
Seed ❸			

Label the parts of a seed.



_____

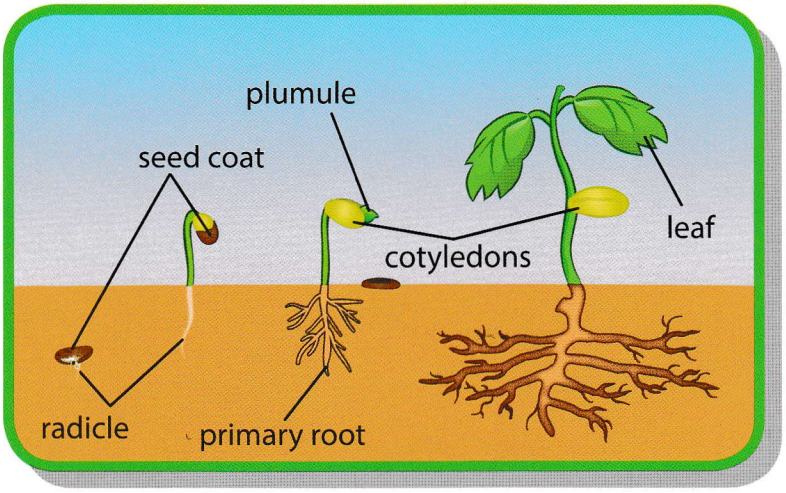
_____

_____

I observed _____.

Why?

Plants that grow from seeds are called spermatophytes. The seed coat protects the structure inside the seed from physical damage. A seed coat may also contain waxes and oils to prevent the inside of a seed from drying out. The basic structure of a plant is completely contained within the embryo, which is where the plant begins to grow. The cotyledons store food and often quickly unfold into leaves as the plant begins to grow. In some plants, such as beans, the cotyledons are large.



Discussion Prompts & Questions

- What is the largest part of the lima bean seed?
- What do you think the purpose of the seed coat is?
- Did any embryos look more or less developed than the others?
- What do you think happens to the seed coat as the plant begins to grow?

Sentence Frames

- All the lima bean seeds had _____.
- The embryo had _____.
- From my observations, I think the seed coat _____.

Try This!

After this experiment, have students germinate lima bean seeds. Place a lima bean seed in a zip-close sandwich bag with a damp paper towel. Allow some air into the bag before sealing it. Hang the bags in a warm, sunny place, or tape them to a window that gets sunlight. Have children observe the seeds every day and record changes they see. What happens to the seed coat and the cotyledons? Are there new plant structures?