

Where Do Plants Come From?

Plants come from seeds. But is a seed really alive? A seed certainly looks dead. It does not seem to move, to grow or do anything else. In fact, when tested for the processes we associate with life, the rate is so slow that it would be difficult to determine whether there was anything alive in the seed.

But, inside every seed is a baby plant or embryo. If a seed is not allowed to germinate (sprout) within some certain length of time, the embryo inside will die. Some seeds sprout within two weeks of maturing while others can still germinate after 2000 years.

The seeds may look different, but they all share common features. All seeds have a seed coat for protection, an embryo (the baby plant – leaf and root) and stored energy-seed leaf- for the young plant. If a seed finds a good place to live, it germinates. Seeds need water, oxygen, and warm temperature to germinate.

Germination begins when water enters the seed coat and the cells inside the seed begin to fill with water and expand. The embryo begins to grow using the stored energy in the seed leaves. The root first emerges from the seed and then the stem and leaves. As the plant grows it uses the energy in the seed leaves until it has leaves and can begin to make its own food through the process of photosynthesis.

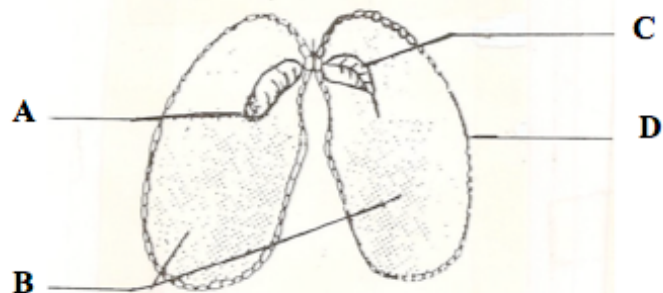
Label:

A = root

C = leaf

B = seed leaves

D = seed coat



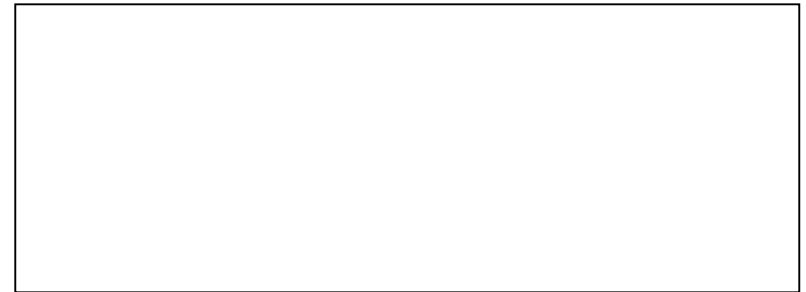
Materials: soaked lima beans (large), iodine, paper towels

What To Do:

1. Place a paper towel in front of you.
2. Your teacher will give you a lima bean that has been soaked for several hours.
3. Use your fingernail to carefully peel off the thin outer covering or seed coat from the lima bean.
4. Carefully split the seed in half and find the following parts: (Use the labeled diagram)

Root Seed leaves Leaf Seed coat

5. Add a drop of iodine to each part of the lima bean and observe what happens.
6. Draw, label and color what you see in the box below.



Questions:

1. What is function of the seed coat? _____
2. What is the function of the seed leaves? _____
3. What parts make up the embryo? _____
4. What happened when you put the iodine on the seed leaves? _____
5. What does this tell you about the seed leaves? _____
6. What happened when you put the iodine on the embryo? _____
7. What does this tell you about the embryo? _____



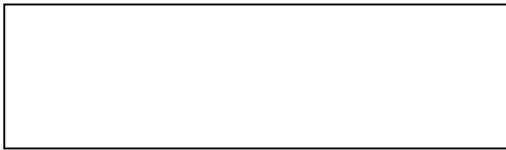
In the next activity your group will start some seeds and observe them for several days to see how they grow.

Materials: 3 kidney bean seeds per group, paper towel, snack size plastic bag, water, pipette, Sharpie marker

What To Do:

1. Use the Sharpie marker to put your period and group number along the bottom of the bag.
2. Fold the paper towel so that it fits inside the plastic bag.
3. Place 4 full droppers of water in the bag.
4. Place the three beans on the paper towel so you can see them through the bag.
5. Seal the bag and give it to your teacher.
6. Observe it each day and draw what you observe below.

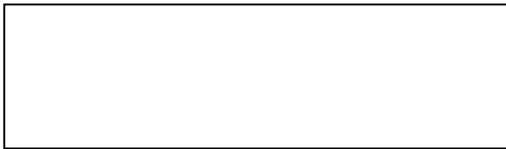
Initial
Observation



Day 1



Day 2



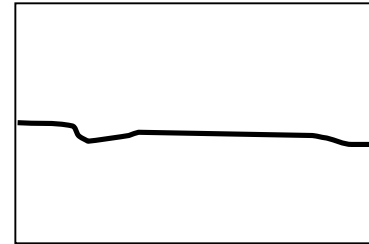
Day 3



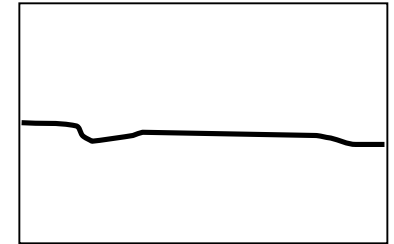
Watch the video Germination from www.missdoctorbailer.com. Write down three things you learned below.

Watch the time lapse of radish seeds sprouting. Your teacher will pause it several times. Draw what you observe below.

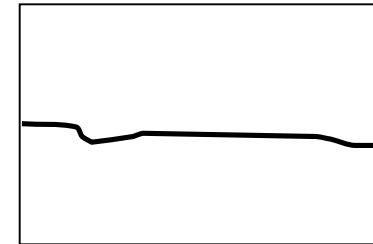
The SEEDS



The seeds and ROOTS



The seeds, roots and LEAVES



Questions:

1. Several of the seeds did not germinate. What might have caused this? _____
2. What three things does a seed need to germinate?

Name _____ period _____

EXIT TICKET

Where do plants come from?

1. What is another name for a baby plant inside the seed?

- A. sapling
- B. embryo
- C. seed coat

2. What happens when water gets inside the seed?

- A. It causes it to die
- B. The cells inside expand
- C. The cells inside contract

3. A student planted some seeds in soil on Friday. She gave them some water and placed them in the window to germinate. Over the weekend it snowed and was really cold. The student didn't return until Tuesday. She observed that none of the seeds had germinated yet. What was missing from the experiment?

- A. Seeds need to be watered every day
- B. Seeds need to be in the dark to germinate
- C. Seeds need warmth to be able to germinate

4. Where does the baby plant get its energy before it grows leaves?

- A. From the seed coat
- B. From the root
- C. From the seed leaves

5. What does the iodine tell you about the seed leaves?

- A. They contain starch
- B. They do not contain starch
- B. They contain protein

Name _____ period _____

EXIT TICKET

Where do plants come from?

1. A student planted some seeds in soil on Friday. She gave them some water and placed them in the window to germinate. Over the weekend it snowed and was really cold. The student didn't return until Tuesday. She observed that none of the seeds had germinated yet. What was missing from the experiment?

- A. Seeds need to be watered every day
- B. Seeds need to be in the dark to germinate
- C. Seeds need warmth to be able to germinate

2. Where does the baby plant get its energy before it grows leaves?

- A. From the seed coat
- B. From the root
- C. From the seed leaves

3. What does the iodine tell you about the seed leaves?

- A. They contain starch
- B. They do not contain starch
- B. They contain protein

4. What is another name for a baby plant inside the seed?

- A. sapling
- B. embryo
- C. seed coat

5. What happens when water gets inside the seed?

- A. It causes it to die
- B. The cells inside expand
- C. The cells inside contract