

Teacher Directions

Materials: Print a set of pages 2 – 7 for each student. You will also need a pencil and crayons or colored pencils. You will be directed to look for seeds in food or outside of your home and to cut them open. You will also be directed to look for different types of soil (loam, clay, sand, humus, silt).

Preparation: Cut pages 2-7 in half and staple them into a booklet, except of the answer key. (Page numbers are at bottom right.)

Instructions: The text in the booklets walks you through the lesson. Depending on what your children have learned in the past, you may want to spend more time in some areas and review other areas quickly.

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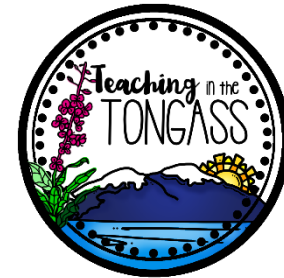
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Thank you, Randi Smith

Credits

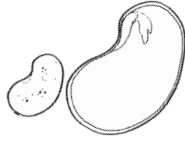
Frames:



Plants and seeds:



How Does a Seed Grow?



Many plants start out as **seeds**. The type of plants we are going to talk about today are called **angiosperms**. This means their seeds start out in flowers. Sometimes, the flower turns into a fruit and you will find the seeds in a piece of fruit.

Can you list **five** fruits that you have found seeds in? Hint: some might be food you think of as a “vegetable”!

Find some different kinds of seeds in the fruit and flowers around your home.

Draw the seeds you found below.

Germination

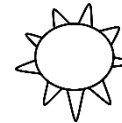
Germination is when a seed **sprouts** or starts to turn into a plant.

A seed needs three things to germinate:

1. **Moisture**



2. **Warmth**



3. **Soil**



Soil

The best soil for plants is called **loam**. Loam is dark brown or black and is what many of us consider 'dirt'. It is a combination of different types of soil.

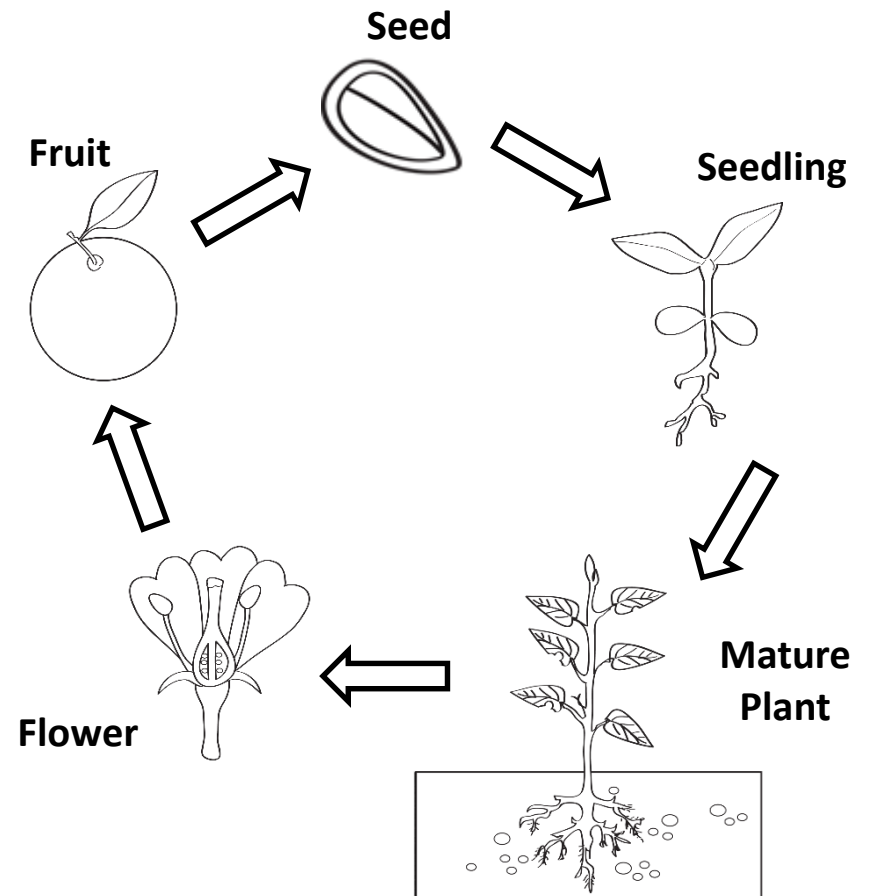
Loam is made from :

1. **Sand**: tiny rock and mineral pieces that are slightly bigger than silt and clay.
2. **Silt**: slightly smaller than sand.
3. **Clay**: very small particles that hold onto water longer and stick together when wet.
4. **Humus**: dead or decaying plants that break into small pieces.

See if you can find examples of some of these soils around your house and compare them. How do they look different? How do they feel different? **Write or draw your thoughts below.**

Plant Life Cycle

Once a seed germinates, it will grow into a seedling and then a full plant. The plant will grow flowers, which may then turn into a fruit. The flower or fruit will contain the seeds that then will turn into a new plant some day. *Color the parts of the plant life cycle.*



Parts of a Seed

Let's explore seeds a little more! You may want to cut open some of the seeds you found earlier and see if you can find these parts.

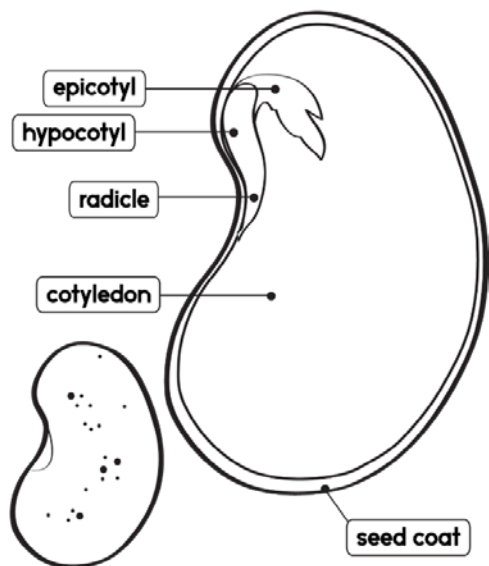
Seed Coat: Protects the seed from dampness and from being broken. *Color the seed coat below brown.*

Epicotyl: The very top of the plant that grows rapidly and lengthens the stem. *Color the epicotyl below dark green.*

Cotyledon : The first leaf that will grow on the plant. *Color the cotyledon below light green.*

Hypocotyl: The part of the stem between the root and the first leaves. *Color the hypocotyl below another shade of green.*

Radicle: The part that becomes the root. *Trace the radicle with tan.*



Parts of a Plant

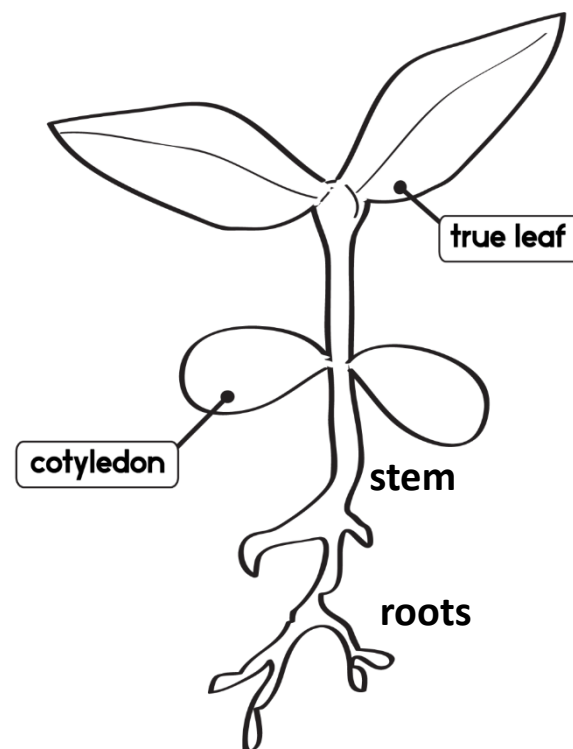
You can see below how the different parts of the seed turn into a seedling.

Color everything above the cotyledon dark green. This is what the **epicotyl** turns into.

*Color the two **cotyledon** leaves light green.*

Color the stem below the cotyledon leaves, but above the root another shade of green. This was the **hypocotyl**.

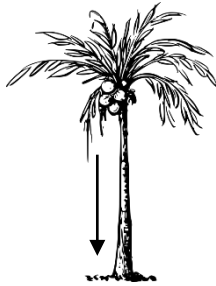
Color the roots tan. These were the **radicle**.



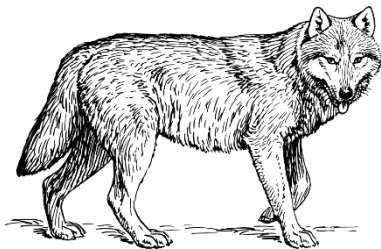
How Seeds Spread

There are five main ways seeds spread naturally so that more plants are created. *Color the pictures below and add seeds where needed.*

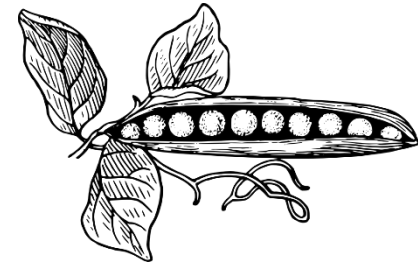
1. Falling to the ground: When fruit falls to the ground and rots, it leaves behind a seed and **humus** that can grow into a plant. If too many seeds fall in one area, though, they can crowd each other out.



2. Animals may find the seeds and carrying them off to bury them somewhere else. Or they may eat the fruit and leave the seeds behind in their poop somewhere.



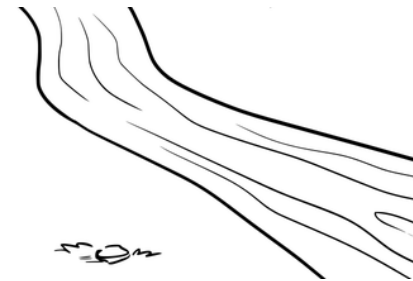
3. Seed pods popping: Some seeds are protected in a seed pod. When that seed pod gets wet and the sun shines on one side of it, the pod warms and the water starts to evaporate. This causes the pods to pop open, flinging the seeds out.



4. Wind: Some seeds are designed to easily blow out of a tree and travel on the wind. They may be in seed coverings shaped like wings or in light, fluffy clumps that blow easily



5. Water can move seeds as well. Sometimes, seeds float on top of the water and travel long distances.



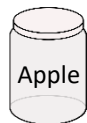
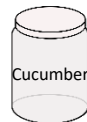
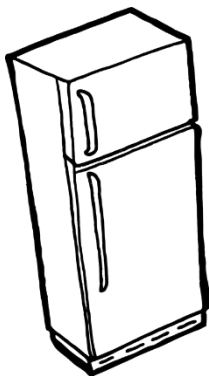
Saving Seeds

A fun activity is to save seeds from fruit you have eaten, plants you have grown, or that you have found while exploring nature.

Depending on the time of year, you can plant these seeds right away or save them for the right time of year.

If you are going to save them, you need to make sure of the following:

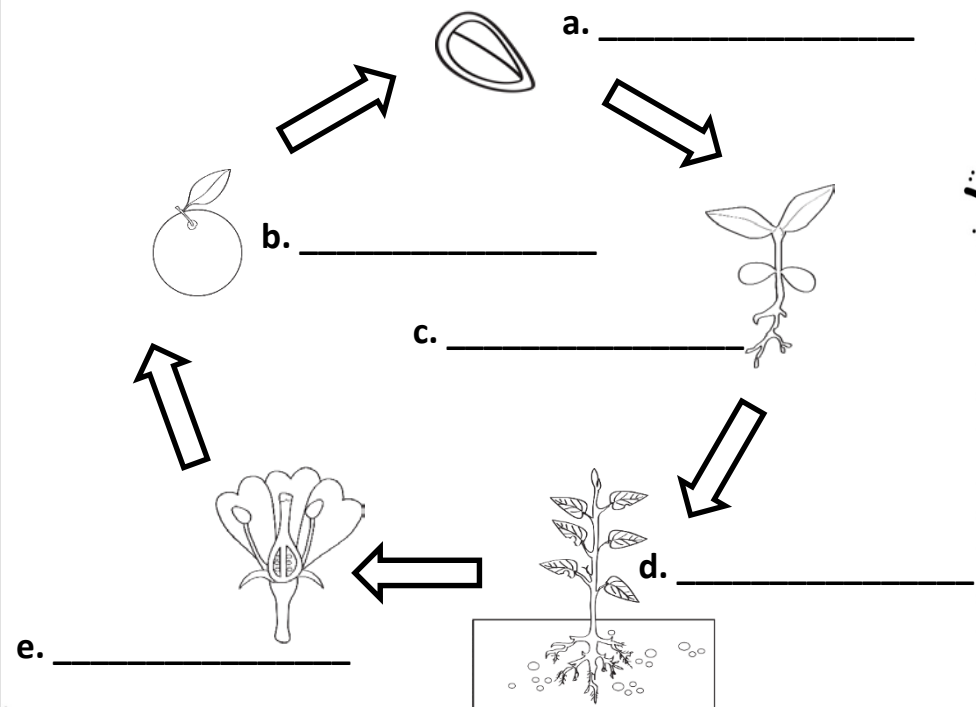
1. **Dry** the seeds for a few weeks before storing.
2. The seeds will then need to be stored in a container where they will **stay dry**. Empty spice and medicine bottles can make good storage containers.
3. The seeds need to be **kept cool**. In general, seeds from root vegetables or seeds that you will be storing for a year or more, need to go in a freezer. Other seeds can be stored in your refrigerator. Seeds may last a few years if stored properly.



What did you learn?

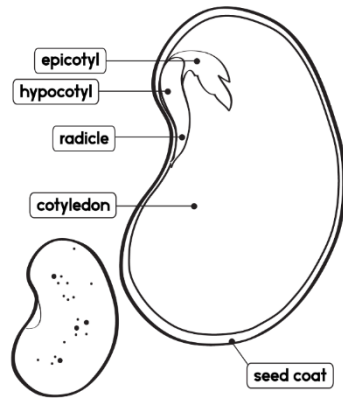
1. Most plants start out as _____.
2. To germinate, a seed needs:

3. The best soil for plants is called _____.
4. Label the plant life cycle below:



What did you learn? (cont.)

- 5. A seed coat _____ the seed.
- 6. The epicotyl lengthens the _____.
- 7. The hypocotyl is the stem between the _____ and the first leaves.
- 8. The radicle becomes the _____.
- 9. The cotyledon is the first _____.



- 10. Five ways seeds are spread are:

- 11. To store seeds you need to keep them _____ and _____.

Answer Key

- 1. seeds.
- 2. Moisture, warmth, and soil.
- 3. Loam.
- 4. a. seed, b. fruit, c. seedling, d. mature plant, e. flower
- 5. protects
- 6. stem
- 7. roots
- 8. roots
- 9. leaf
- 10. Falling, Animals, Seed pods popping, Wind, Rain
- 11. cool, dry

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Thank you, Randi Smith