

Lesson 2: Germination

Notes for Parents

- Before starting this lesson, you will need seeds to plant. Allow your child to pick their favorites and pick at least one for you to tend alongside them. The beans from the previous lesson may serve this purpose, or purchase new ones.
- Use the graphics from lesson 1 as references.
- Once seeds germinate you will need to move them to bigger spaces—this ties very closely to Lesson 3 on Soil so you might want to glance at that and begin when appropriate.
- If growing vegetables isn't interesting to your child, purchase flower seeds. You will still need to get at least one vegetable to grow such as tomatoes or radishes.
- You may place several plants in a large pot or garden area, but you will want to check compatibility with the plants you and your child have chosen.
- Tips to help your child learn:
 - Show them how to do the action
 - Model both good and bad examples
 - Allow mistakes and offer corrective feedback
- Not all seeds will sprout, this is a good opportunity to teach children that outcomes will not always be what they wanted and teach resiliency. Continue trying and continue working with what you have.
- Reminder: Use nature! If you look closely there are often seeds sprouting at parks or under trees.

Ideas for What to Plant

Edible Flowers

Marigolds
Lavender
Chamomile

Herbs

Annuals: Basil, Cilantro
Perennials: Rosemary,
Thyme, Chives, Mint

Max Output Vegetables

Radishes, Onions,
Lettuce, Bok Choy,
Tomatoes

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Process in which seeds begin to sprout



Now that you have planted your bean seed you can begin to observe the seed opening and beginning to sprout, this is called **germination** [*jerm-en-a-shun*].

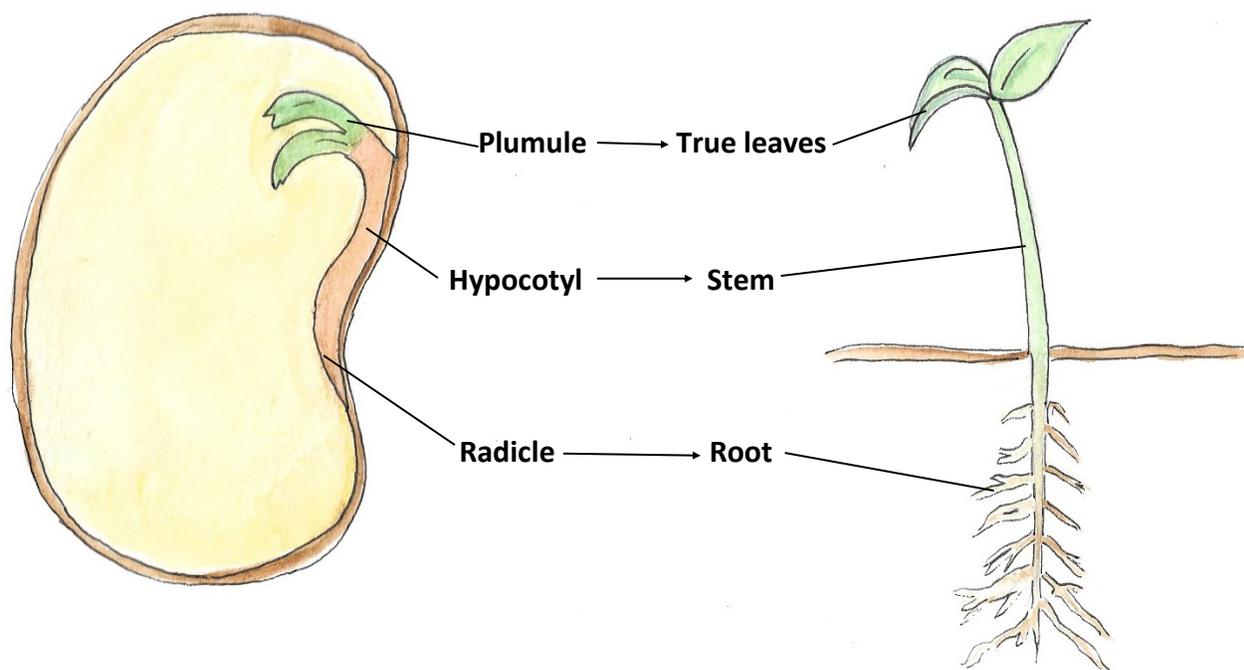
Recalling the last lesson when we pretended to be seeds, this process begins when a seed receives what 3 things? Warmth, Air and Water.

Did you notice the seeds do NOT need fertilizer? Can you guess why? It has something to do with the cotyledon.

The **cotyledon** (food storage) contains the nutrients including plant sugar for the baby plant to survive and grow with-out fertilizer and sun for a brief time. Once the seed germinates and begins to grow and shed its cotyledons, you will need to add fertilizer or move your plant to fertilized soil.

The process Of Germination

- Water will loosen the **testa** (seed coat) and wake up a dormant embryo.
- First to emerge from the testa is the **radicle**, the part that will become the roots.
- Then the **hypocotyl** pushes out, this is the part which becomes the stem, and **epicotyl** the part that holds the first leaves, or the **plumule**. These will all emerge and work their way toward the light.
- The **cotyledon** will hang onto the stem and soon fall off leaving the new plant free.



Hands on: Germination

Make a Flip Book

1. Use the bottom corner of a notebook or staple paper together to form a small book
2. Cut out each stage of germination below, follow the boxes
3. Glue the first stage on the first pages bottom corner
4. Glue each successive stage on the following pages
5. Flip the pages and watch the seed grow!

Modified Version:

1. Same steps as above except draw the stages on the bottom corner using the pictures as guides

