

Plants and Pollinators

Grade 2

Come and learn about the adaptations that plants and animals have that allow them to survive.

Overview of Unit:

- Pre-assessment
- Introduction to plants and seeds
- Seed dissection
- From germination to making seeds
- Relationships between organisms
- Field Trip
 - *Pollinator/Flower relationships*
 - *Seed exploration*
 - *Native Bees*
- Flower anatomy
- Flower dissection
- Invent a pollinator and flower partnership
- Post-assessment
- Glossary

Students will know:

- Related vocabulary
- Plants have specialized anatomy and plant reproduction
- Plants and animals depend on one another for survival
- The way in which adaptations of specific plants and insects relate to one another
- How to apply knowledge of relationships between organisms

Students will be able to:

- Create a mini glossary
- Read nonfiction text and respond
- Support ideas with evidence
- Learn directly from nature through making careful observations
- Apply knowledge to a new task
- Use drawing to record data or information
- Understand a chart
- Conduct a field study

Links to Standards

- Common Core
 - ELA
 - CCSS.ELA-Literacy.RI.2.1
 - CCSS.ELA-Literacy.RI.2.2

- CCSS.ELA-Literacy.RI.2.4
 - CCSS.ELA-Literacy.RI.2.10
 - CCSS.ELA-Literacy.W.2.2
 - CCSS.ELA-Literacy.W.2.8
 - CCSS.ELA-Literacy.SL.2.1
 - CCSS.ELA-Literacy.SL.2.3
 - CCSS.ELA-Literacy.SL.2.5
 - CCSS.ELA-Literacy.L.2.4
 - CCSS.ELA-Literacy.L.2.6
- Math
 - CCSS.Math-Content.2.MD.A.1
 - CCSS.Math-Content.2.MD.A.3
 - CCSS.Math-Content.2.MD.A.4
- Next Generations Science Standards
 - Coming soon...
- NM Science Standards
 - Strand 1, Standard 1, Grade 2, Benchmark 1, #1, #2, #3, #4
 - Strand 1, Standard 1, Grade 2, Benchmark 2, #2
 - Strand 1, Standard 1, Grade 2, Benchmark 3, #1, #2
 - Strand 2, Standard 2, Grade 2, Benchmark 2, #3

Lesson Plans:

- Pre-assessment
 - *Purpose:*
 - Assess what students already know about the topic
 - Ask students to support their thinking with evidence
 - *Time:*
 - 15 minutes

- Plants Reading
 - *Purpose:*
 - Examine nonfiction text structure
 - Apply text to personal experiences
 - Consider scale of plants
 - Create a glossary
 - *Time:*
 - 20-30 minutes
 - *Intended Structure:*
 - Anticipatory Set
 - Ask students to quickly look over the page, not giving them time to read the paragraphs
 - Ask what they think it will be about
 - What do they see that makes them think that
 - Write down what they say on a projection or on a poster
 - Activity

- Have students read the text, either alone, in small groups, or as guided reading
 - Answer questions along the way
 - Closing
 - Revisit the guesses about what students thought it would be about
 - Why do they think that the author has certain words in bold?
 - Include definitions in the glossary
- Seed Study
 - *Purpose*
 - Conduct a scientific investigation
 - Learn about native seeds
 - Understand how seeds change as they germinate
 - Explore the parts of a seed
 - *Time*
 - 2 x 45 minute explorations
 - *Materials*
 - Seeds, native beans or peas (Source: Native Seeds or Seeds of Change)
 - Paper towels
 - Water
 - Plastic bags
 - Sharpie or other permanent markers
 - Copies of Bean and/or pea anatomy (attached)
 - Rulers
 - If possible:
 - Microscopes
 - Hand lenses
 - *Intended structure*
 - Anticipatory Set
 - Ask students why plants make seeds
 - Ask what grows from seeds
 - Ask what is in a seed
 - Activity
 - Challenge: How can we learn what is inside of a seed? What happens as seeds germinate?
 - Have students examine seeds
 - What do they see?
 - Note how hard seeds are
 - Have them draw the seeds, with or without the use of magnification
 - Ask how you could open the seed to see what is inside
 - Take suggestions
 - Try what is suggested

- Have at least some students soak the seeds, either in wet paper towel in bags or actually submerged in water. Include extras so everyone can have one to study what happens during germination
 - Have students carefully pull the seed apart
 - Use the seed anatomy sheets to help them identify the different components of the seed
 - Have them draw the seed immediately after splitting it in half, and then again if they can take the pieces apart
 - Closing
 - Have students share what they found and what they learned
 - Enter terminology into glossary
 -
- Plant Germination and Lifecycle
 - *Purpose*
 - Learn that plants germinate, grow, make leaves, flower, and make more seeds
 - Understand that plants go through a lifecycle
 - Introduce students to correct anatomical terminology
 - Compare to the lifecycle of people and animals
 - *Time*
 - 30-40 minutes
 - *Materials*
 - Lifecycle examples, plants, insects, and animals
 - *Intended Structure*
 - Anticipatory Set
 - Have students brainstorm what a lifecycle is
 - Share some examples
 - Tell them they will be making drawings of plant lifecycles
 - Activity
 - Share either actual sprouts you have made, from the last lesson, or pictures of the plant lifecycle
 - Have students draw the lifecycle
 - Closing
 - Discuss that a cycle repeats
 - Ask what other cycles they can think of (water cycle, bicycle, etc) Ask how these also repeat
- Relationships between Organisms
 - *Purpose*
 - Explore how plants, animals, and humans have different types of relationships
 - *Time*
 - 20-30 minutes
 - *Intended structure*

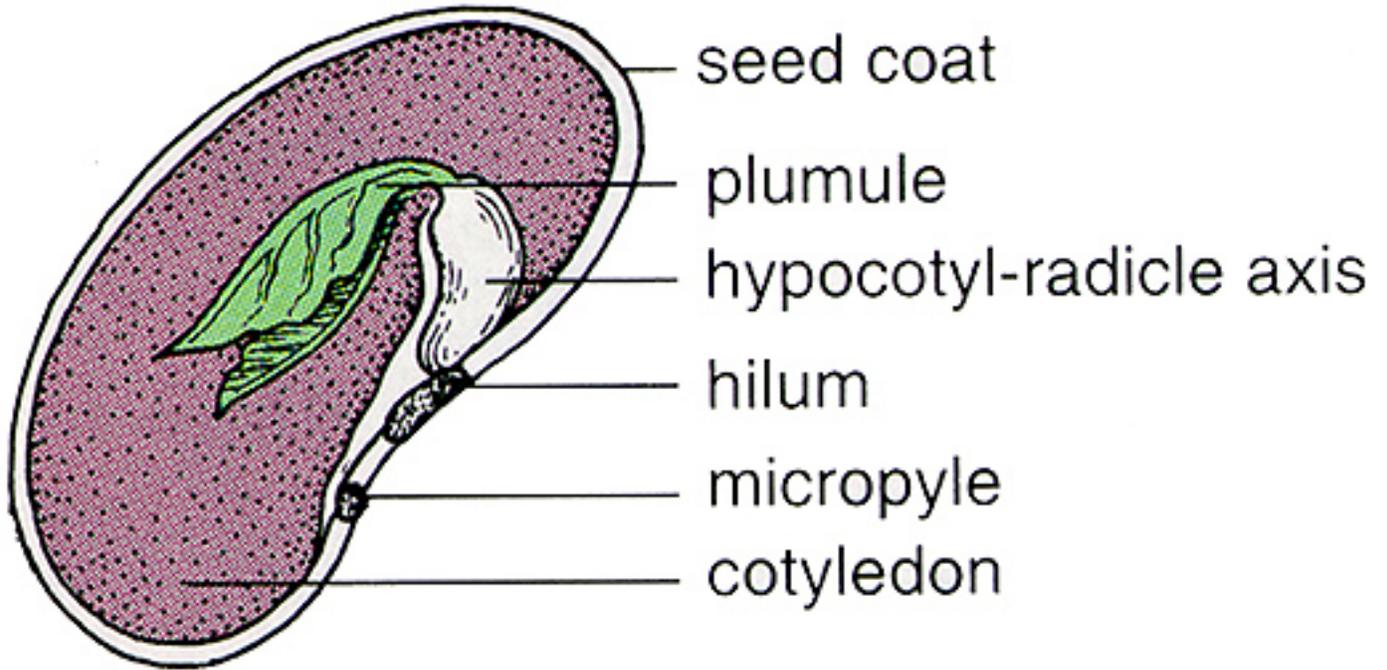
- Anticipatory Set
 - Have students brainstorm what kind of relationships they have with other people
 - Have them brainstorm how they depend on others
 - Read the short paragraph together
 - Activity
 - Discuss the different categories of relationships between animals, humans, and plants on page 7
 - Have students read the cartoons
 - Have them brainstorm other examples of each category in partners
 - Share these with the class and make a list for each
 - Closing
 - Remind them of the way that flowers grow, introduce idea of pollination again, that the pollen has to touch the stamen to make more seeds
 - Explain plants often need help to do this
 - Let them know they will be learning more about this during and after their trip to the garden

- Field Trip
 - Structure of Field Trip
 - 15 minutes – Begin as a group
 - 60 minutes – Rotate through 3 Activities
 - 15 minutes – Closing activity as a group
 - 30 minutes – Time for teacher and class to explore
 - Rotations:
 - Study specific pollinator and flower relationships, tracking which pollinators visit which flowers
 - Explore how some seeds depend on animals and the environment to disperse
 - Make native bee habitats

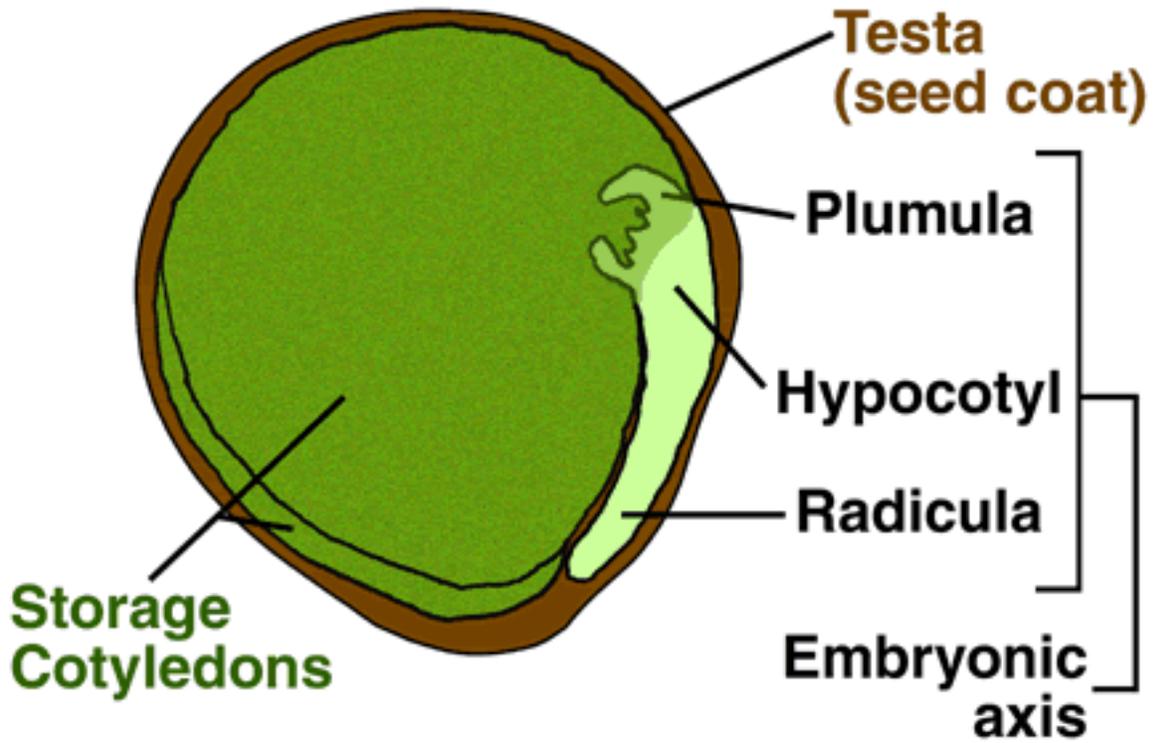
- Dissect a Flower
 - *Purpose*
 - Follow a procedure to learn more about the natural world
 - Closely examine an organism
 - *Time*
 - 30-45 minutes, depending on level of detail
 - *Materials*
 - Flowers (Request donations from local flower shops of old flowers. Lilies work well, but there are many excellent examples)
 - Kitchen knife or exacto knife
 - *Intended structure*
 - Anticipatory Set
 - Ask students why plants have flowers

- Ask and then introduce the anatomy, page 11
 - Tell them they will be trying to find all these part as they dissect the flower
 - Activity
 - Have students start by drawing the flower
 - Check the first drawing, if happy with level of detail, cut their flower in half
 - Have students draw the flower's half
 - Students may then completely deconstruct the flower, sorting the parts and drawing and labeling them
 - Closing
 - Have students share what they were able to identify and what was challenging
 - With a flower you dissect, show them all the parts, hopefully using an Elmo
- Invent a Pollinator and Flower
 - *Purpose*
 - Apply knowledge of flower anatomy and the purpose of pollinators
 - *Time*
 - One to three 45 minute sessions, depending on how much detail you want to see
 - *Intended structure*
 - Anticipatory Set
 - Have students review why plants and pollinators need one another
 - Introduce the activity
 - Activity
 - Students must make up their own flower and pollinator. It should be a mutualistic relationship
 - Have students brainstorm some ideas
 - Let each student create their own pollinator
 - Closing
 - Have students share their pollinator and flower, explaining how they help each other
- Post-assessment
 - *Purpose*
 - Formally assess what students learned
 - *Time*
 - 15-20 minutes
 - *Intended structure*
 - Students should complete the page independently

Seed Anatomy, Bean



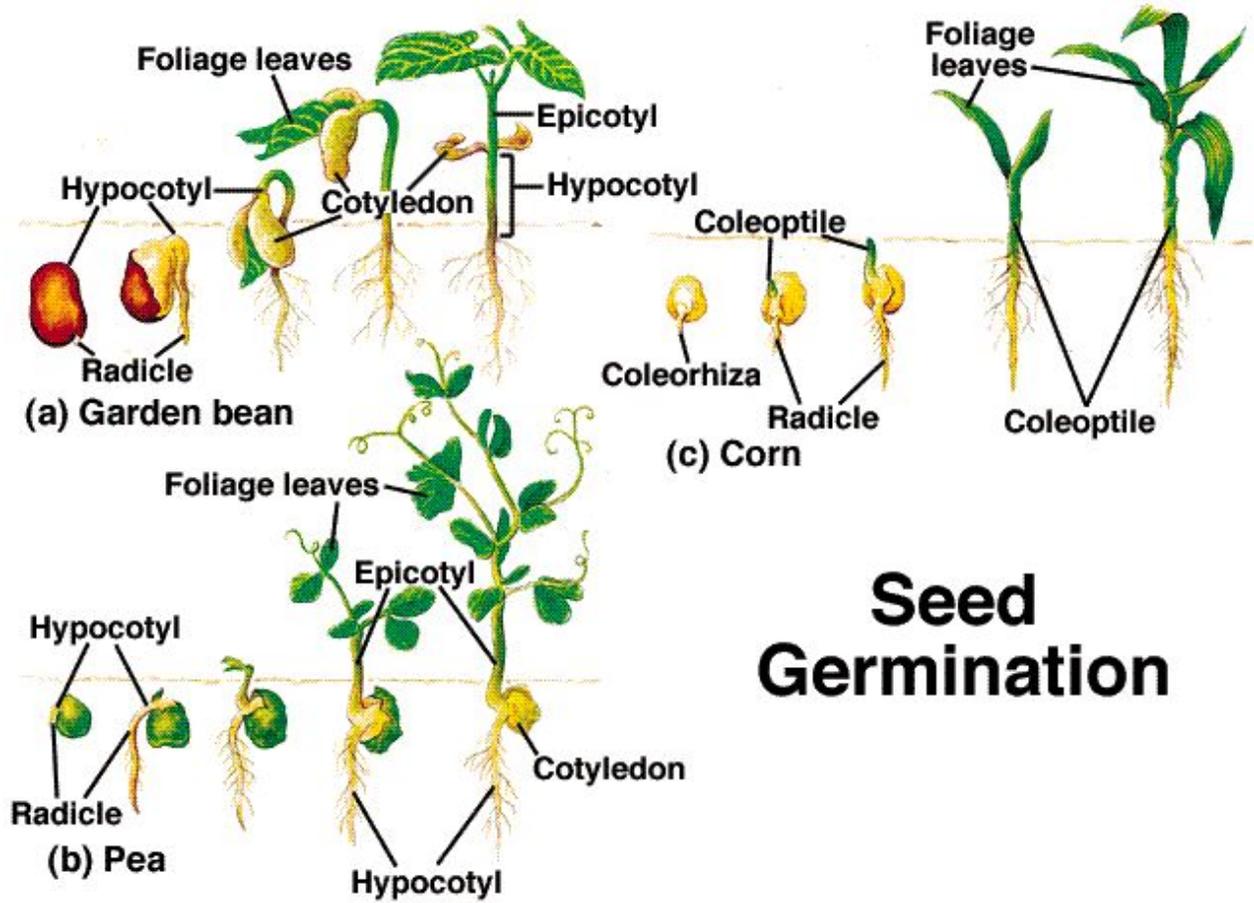
Pea Seed Anatomy



Pisum sativum

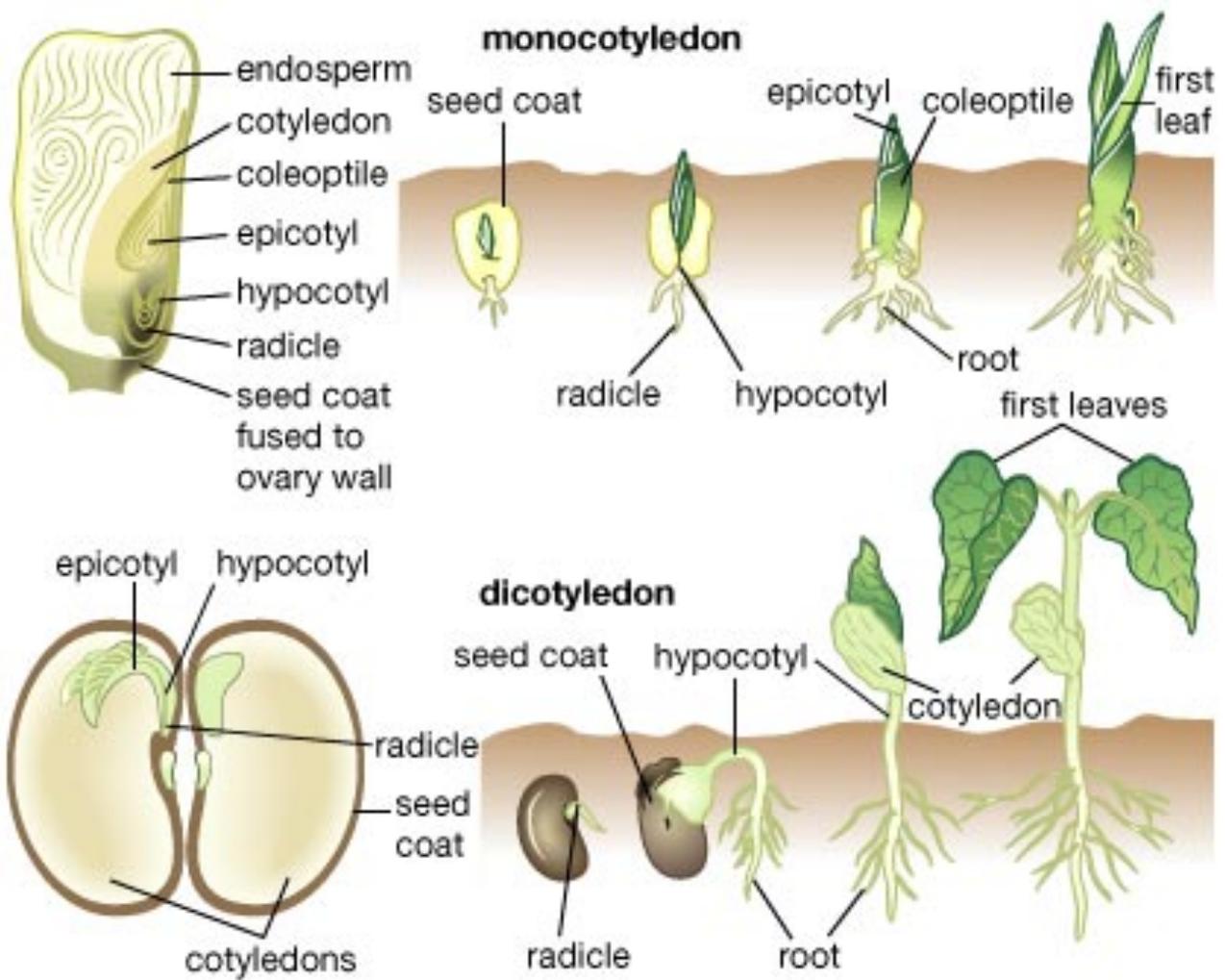
Seed Germination

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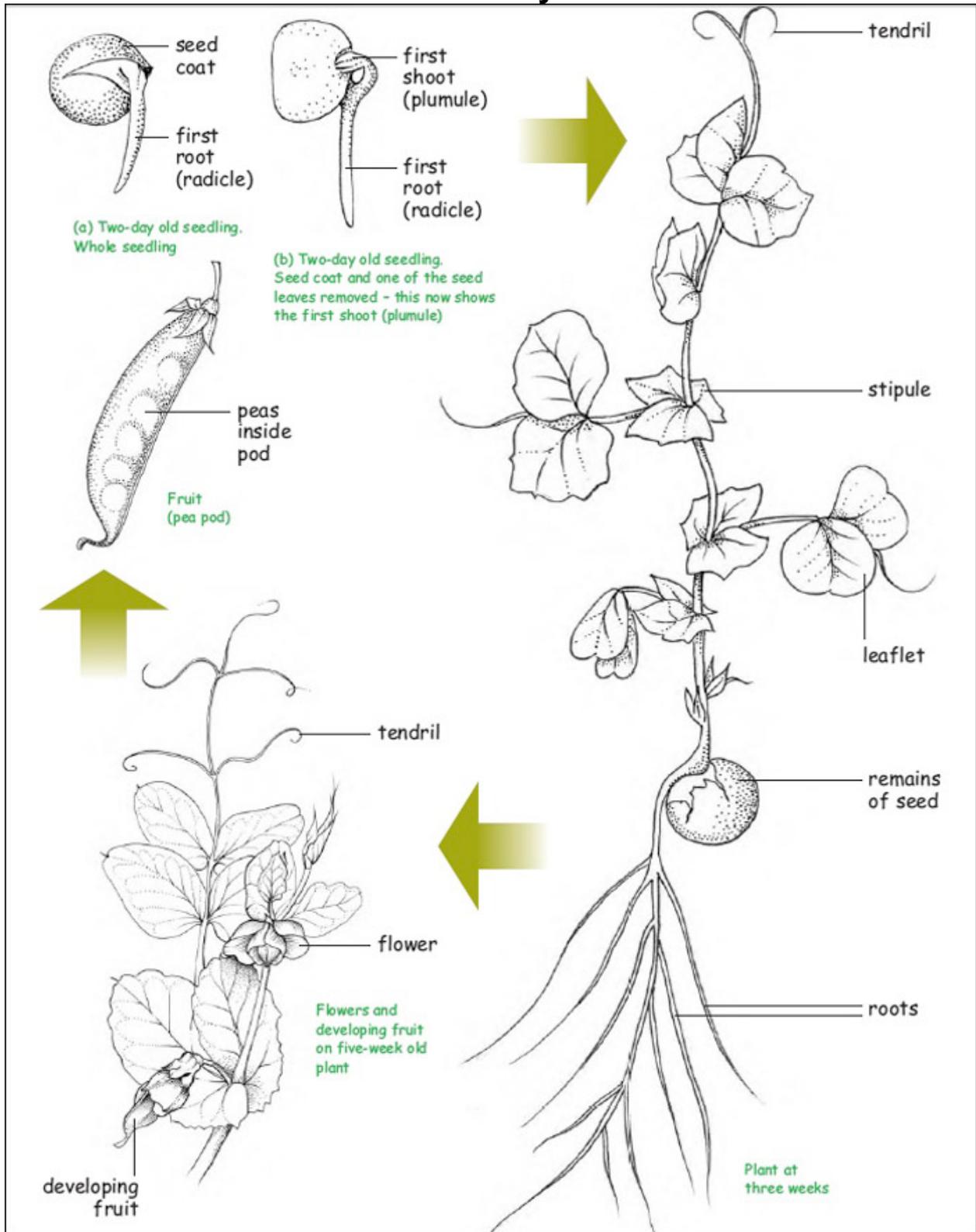


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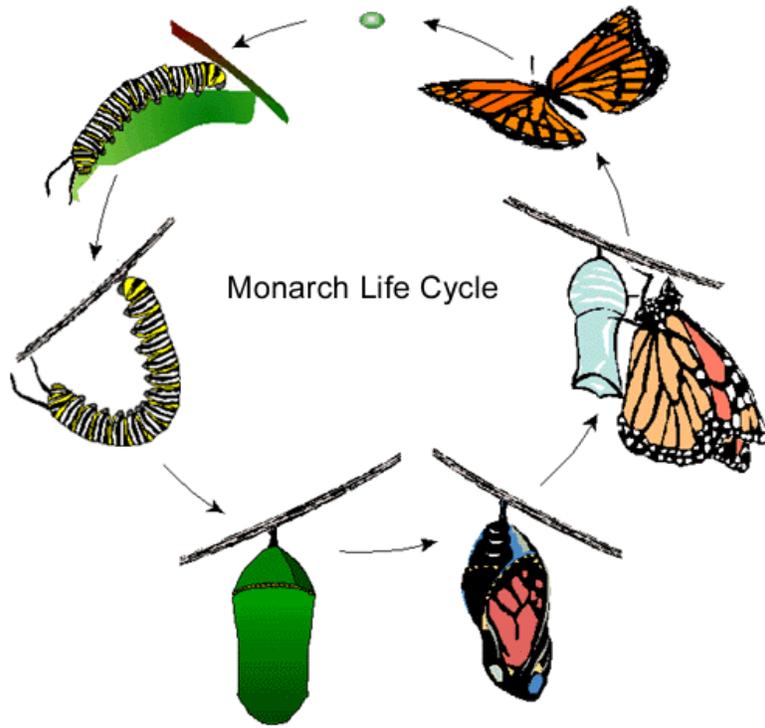
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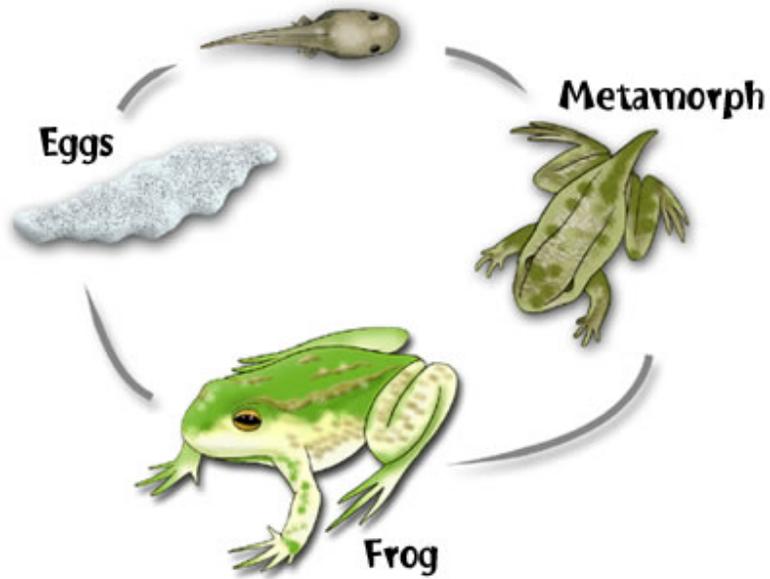
Plant Lifecycle



Other Lifecycles



Tadpole



Human Lifecycle

