

Lesson 1: Life Cycle of a Plant

Preparation

Copy the Plant Growth Chart (p. 32) or create a larger version of it on the board. Copy and cut out the Plant Life Cycle cards (pp. 30-31). Laminate the cards and attach a strip of Velcro to the back of each one.

Laying the Groundwork

As a class, talk about changes people experience during their lives (we start out as babies and over time become adults). Explain that this is part of the human life cycle. Introduce children to the idea that plants grow and change during their life cycles, too.

Read *The Tiny Seed* by Eric Carle. Make a pictorial time line of how the seed changed over time on the chalkboard, a dry erase board, or poster board.

Exploration

1. To explore life cycles, have each child plant two or three seeds in a 4-inch pot. Although you can use any type of seed for this lesson, those that sprout and grow quickly — beans, marigolds, Wisconsin Fast Plants — work best for short attention spans. Bean and marigold seeds are also fairly large, making them easy for small fingers to handle.

Wisconsin Fast Plants are related to mustard plants. They were developed to grow from seed to seed-producing plant in approximately 40 days. Young children may need help planting the small Fast Plants seeds, but these plants provide constant change. Learn more about Wisconsin Fast Plants at: www.fastplants.org.

2. After planting the seeds, place the containers on a sunny windowsill or under grow lights and water as necessary. Once the seeds sprout, thin the seedlings to one per pot.

3. Have students keep a journal of their plant's progress. Ask them to observe their plant carefully each day and draw pictures showing the changes as it sprouts and grows.

4. As a class, pick one of the plants and measure its growth each day. Record the data on the Plant Growth Chart. Then make a graph of the data. Discuss the plant's growth as a class. Ask, *Did the plant grow the same amount every day? Did it stop growing taller at a certain point? In what ways is the plant's life cycle similar to how people change over time?*

OBJECTIVE

To observe and understand the full life cycle of a plant.

TIME

Groundwork: 30 minutes

Exploration: four weeks

Digging Deeper: 30 minutes

MATERIALS

- seeds for fast-growing plants such as beans, marigolds, or Wisconsin Fast Plants (www.fastplants.org)
- potting mix
- pots
- journals
- crayons
- rulers

Flowering
Wisconsin
Fast Plant
and beans.





Digging Deeper

Using the laminated Plant Life Cycle cards, make a life cycle felt board for students to play with. Encourage them to practice positioning the cards on the felt board in the correct order of the life cycle.

Branching Out

Science: Study decomposition. Ask, *Where do all the leaves go when they fall in autumn?* Explain that after plants die, they break down into smaller pieces with help from organisms called decomposers. Those pieces are incorporated into the soil, which provides nutrients for future plants and animals. A classroom compost pile or a worm compost bin can help demonstrate this concept.

Outdoor Composting. Composting promotes decomposition and nutrient cycling by creating an environment in which particular decomposers thrive. As decomposers use organic matter for energy and maintenance, they break it down into simpler molecules that plants can use as nutrients, and the cycle begins again. This process also gives off heat, which in turn speeds up decomposition. Microorganisms like fungi and bacteria accomplish most of the chemical decomposition in a compost pile, while small invertebrates such as sowbugs and earthworms are responsible for much of the physical breakdown of materials.



Efficient compost piles include a mixture of organic matter loosely classified as “browns” and “greens.” Greens are fresh and rich in nitrogen (grass clippings, garden debris, fruit and vegetable scraps). Browns are dry and rich in carbon (fallen leaves, hay, straw). By alternating greens and browns, keeping the pile moist but not soggy, and turning the pile to keep it aerated, you’ll attract the organisms responsible for efficient, odor-free decomposition. (A wet, compacted pile will still decompose, but it attracts different organisms and results in unpleasant odors.)

The ideal size for a compost pile is 3 cubic feet. In larger piles, the materials take longer to decompose; in smaller piles, they may not heat up enough to decompose well. You may also choose to compost in a commercial bin.

Indoor Worm Bins. Most kids find worms fascinating. You can supplement — or even replace — an outdoor composting program with an indoor worm bin. Earthworms from outdoor soil won’t survive in a worm bin, but red wiggler worms are well suited to an indoor environment and eat just about everything. To create a worm bin, place worms on a bed of moist newspaper in an aerated plastic container. Red wigglers devour fruit and vegetable peels; coffee grounds and tea bags; leftover pasta, rice, and bread scraps; and garden trimmings (no dairy products, oils, or meats), and turn them into dark brown, nutrient-rich worm castings — a great organic fertilizer! Worm castings have a pleasant earthy smell and a texture that resembles coffee grounds. Add them to houseplant soil mixes or outdoor garden beds, or use them as mulch so the nutrients seep in during watering.

You can make your own worm bin or purchase a commercial one. NGA's *Gardening with Kids* catalog (www.gardeningwithkids.org) offers a number of worm bins. For more information about starting a worm bin, visit: www.kidsgardening.com/Dig/DigDetail.taf?ID=1151&Type=Art

Redworm sources:

Gardening With Kids Catalog
National Gardening Association
1100 Dorset Street
South Burlington, VT 05403
800-538-7476
www.gardeningwithkids.org

Flowerfield Enterprises
10332 Shaver Road
Kalamazoo, MI 49024
269-327-0108
www.wormwoman.com

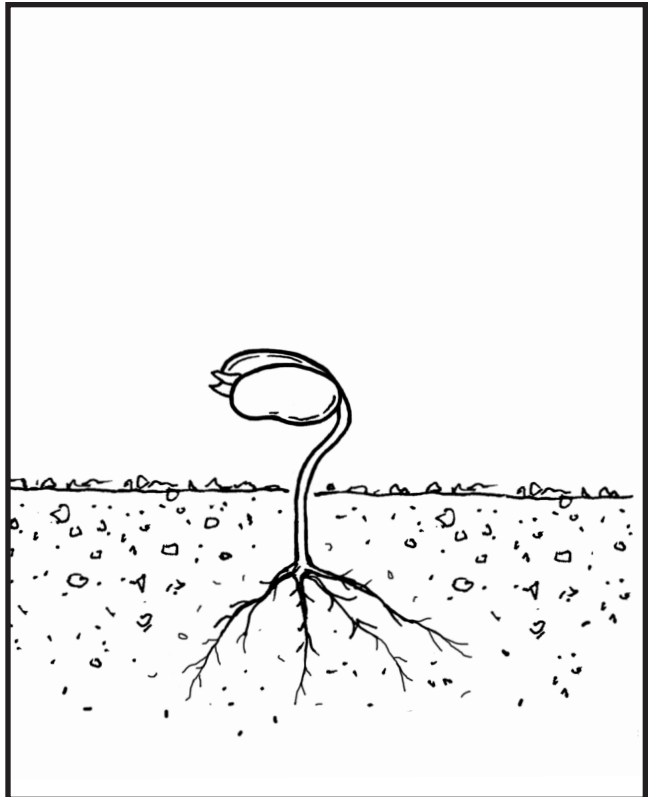
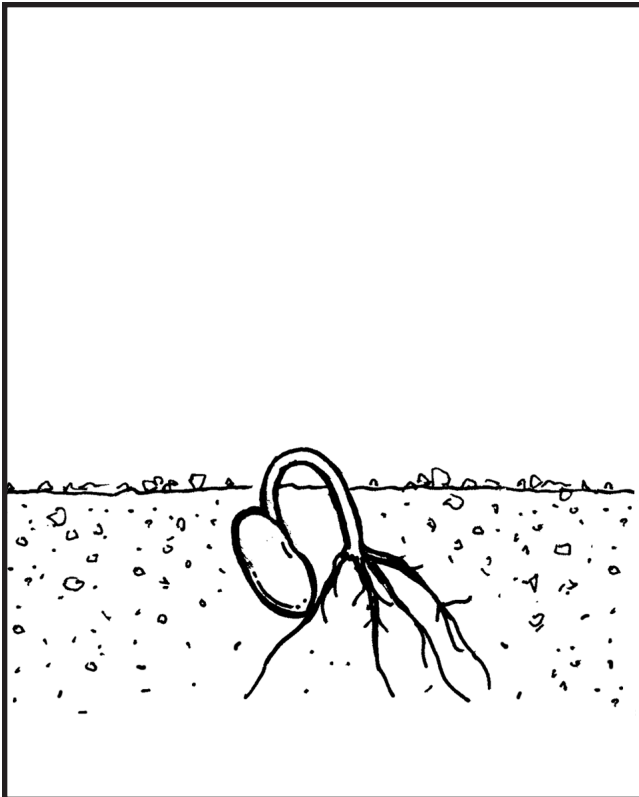
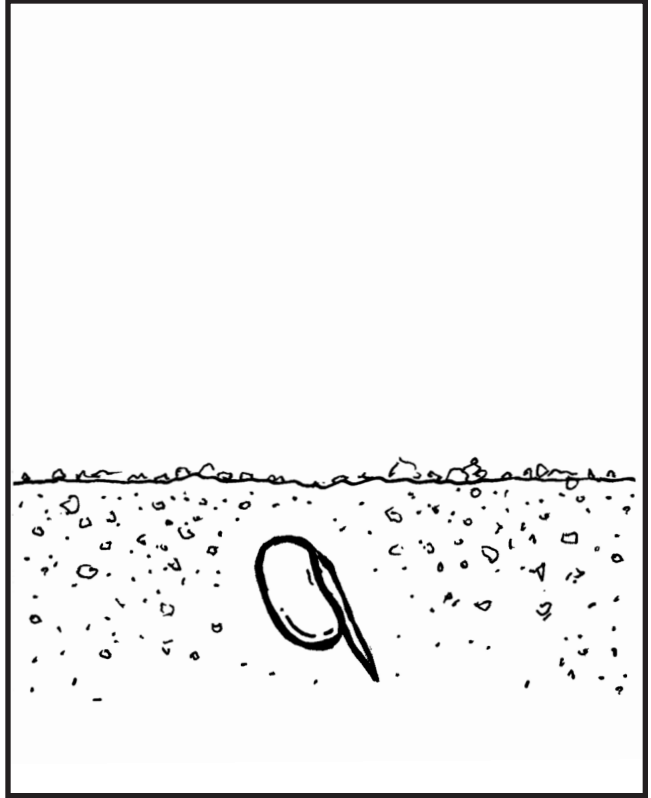
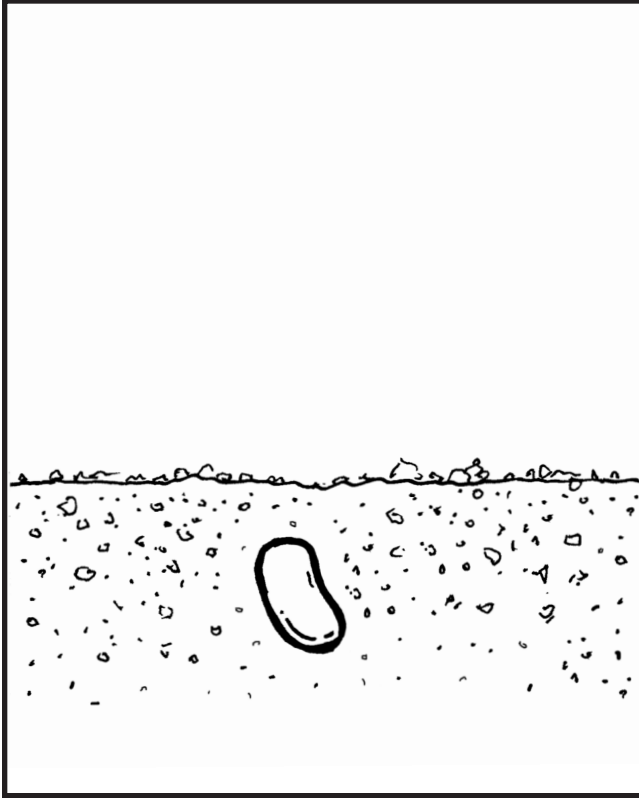
Note: Do not release red wiggler worms outdoors, since they will compete with native worm species.

Health: Physical activity is an important part of good health. Encourage movement by having the class act out the life cycle of a plant. Ask students to curl up into small balls that represent seeds, then slowly stretch out their legs and bodies to demonstrate the growth of roots and stems. Finally, ask students to expand their arms as leaves and smile to indicate flowering.

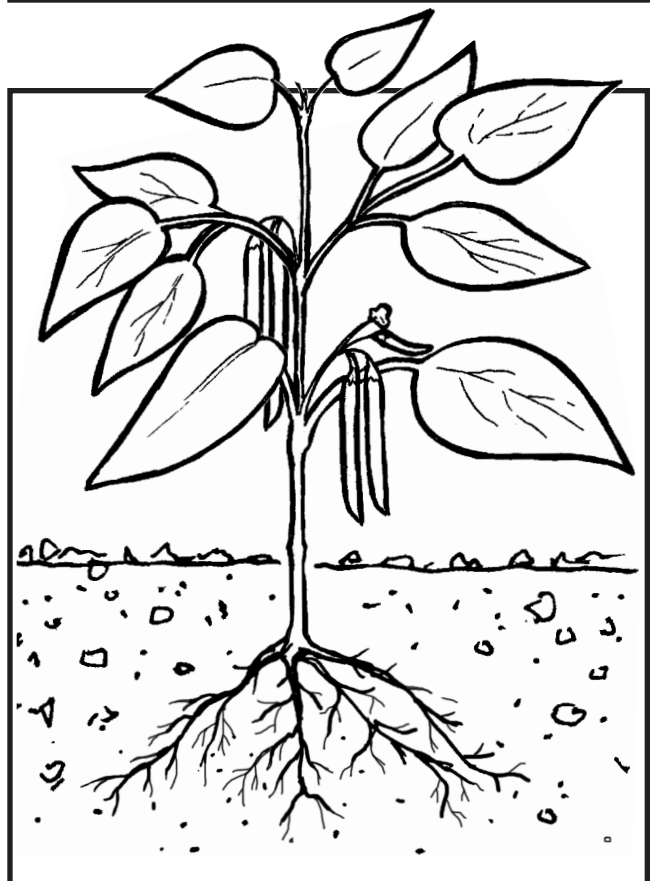
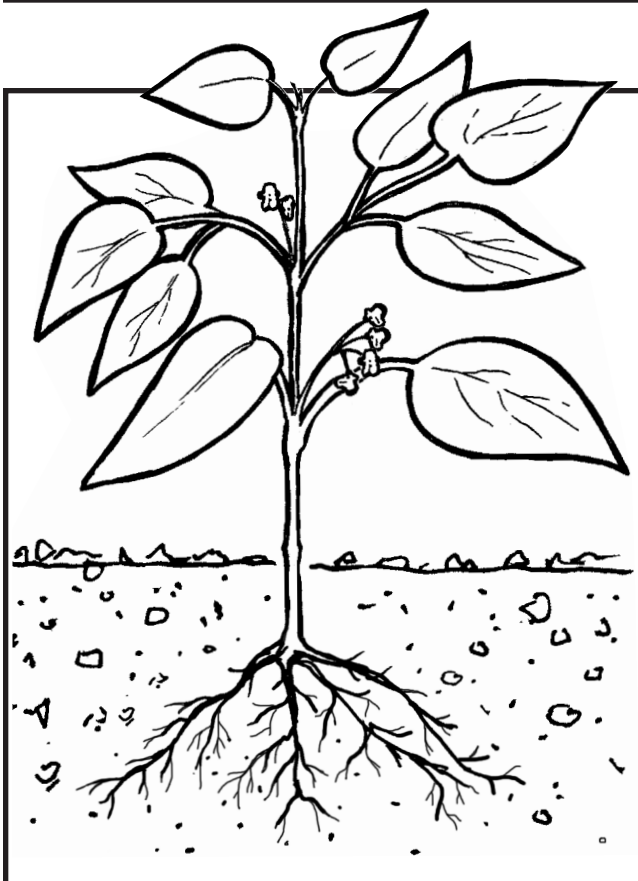
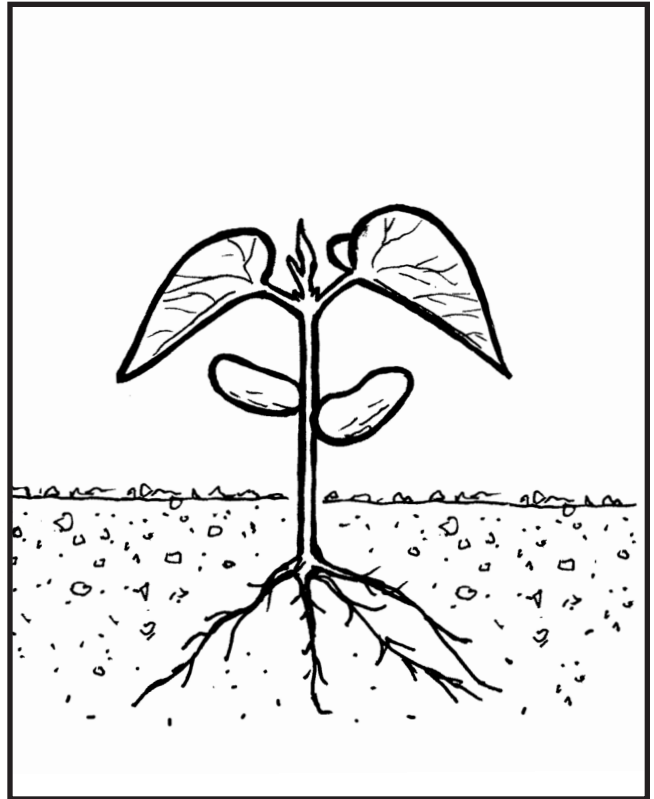
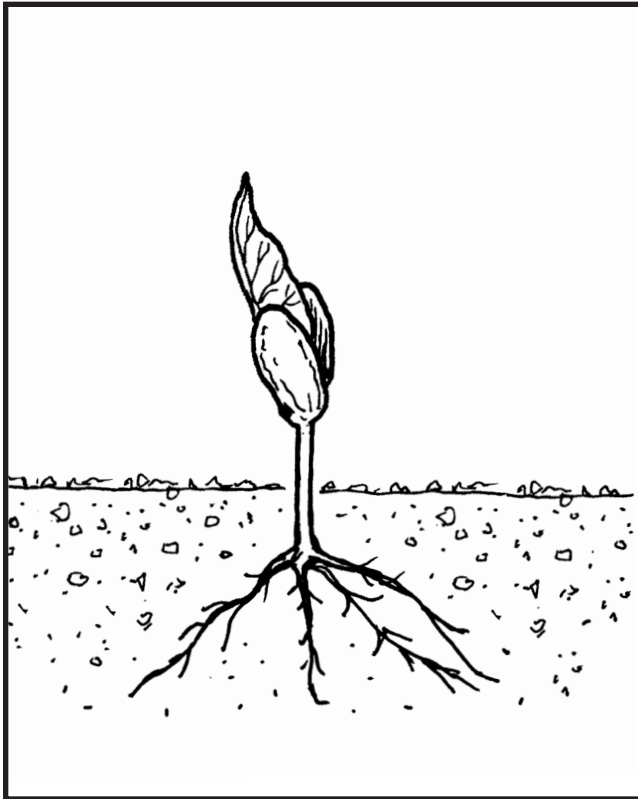
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Plant Life Cycle Cards



Plant Life Cycle Cards



Plant Growth Chart

Plant # _____

DATE	HEIGHT	CHANGE IN HEIGHT	COMMENTS