

CLASSROOM INSTRUCTIONS

Each class should receive the following supplies:

- 2 Bankers box
- 6 germination trays
- 6 planting kits (each kit has soil, vermiculite, seeds and a ruler)
- 6 wooden stakes
- 1 roll of mylar tape (for scaring birds and pests away and marking the area)
- 1 watering can

Before beginning this lesson, identify a safe space outside to allow your plants to grow. This area should have full sun (ie minimal shade throughout the day) and be somewhat protected from playing kids and stray balls.

Divide your students into 6 groups. Assign 2 groups for **FULL SUN**, 2 groups for **PARTIAL SUN**, and 2 groups for **NO SUN**. Encourage students to get their hands dirty and share in the work.

Give each group 1 tray and 1 planting kit. Students will fill the seed cells about 3/4 full with soil, then place one bean seed on top of the soil. Fill the rest of the seed cell with vermiculite.

Once all seeds are planted, place trays in the designated area and use the watering can to give the seeds a good amount of water. The soil should be moist throughout. Trays need to be watered once per day for the duration of the project (do not let the soil dry out and don't water so much that the seeds float away).



CLASSROOM INSTRUCTIONS (CONT.)

FULL SUN GROUPS: discuss a plan to protect all trays from birds and other unwanted guests. Use 2-4 stakes and mylar tape to identify the area and scare away birds. Tape can be tied to a fence or around stakes.

PARTIAL SUN GROUPS: Use 2-4 stakes and the Bankers box lid to construct a shade. This may require some help and definitely some creativity. (Other classroom supplies like tape or glue may be needed).

NO SUN GROUPS: Use the Bankers box to completely cover your trays. Using some of the other supplies (bags soil and seed came in) or items from the environment (rocks, sticks, etc) to secure the box so it does not blow away.

Use the GERMINATION LOG worksheets to record observations about when the plants start to grow, number of plants growing, the size, and color of the plants.

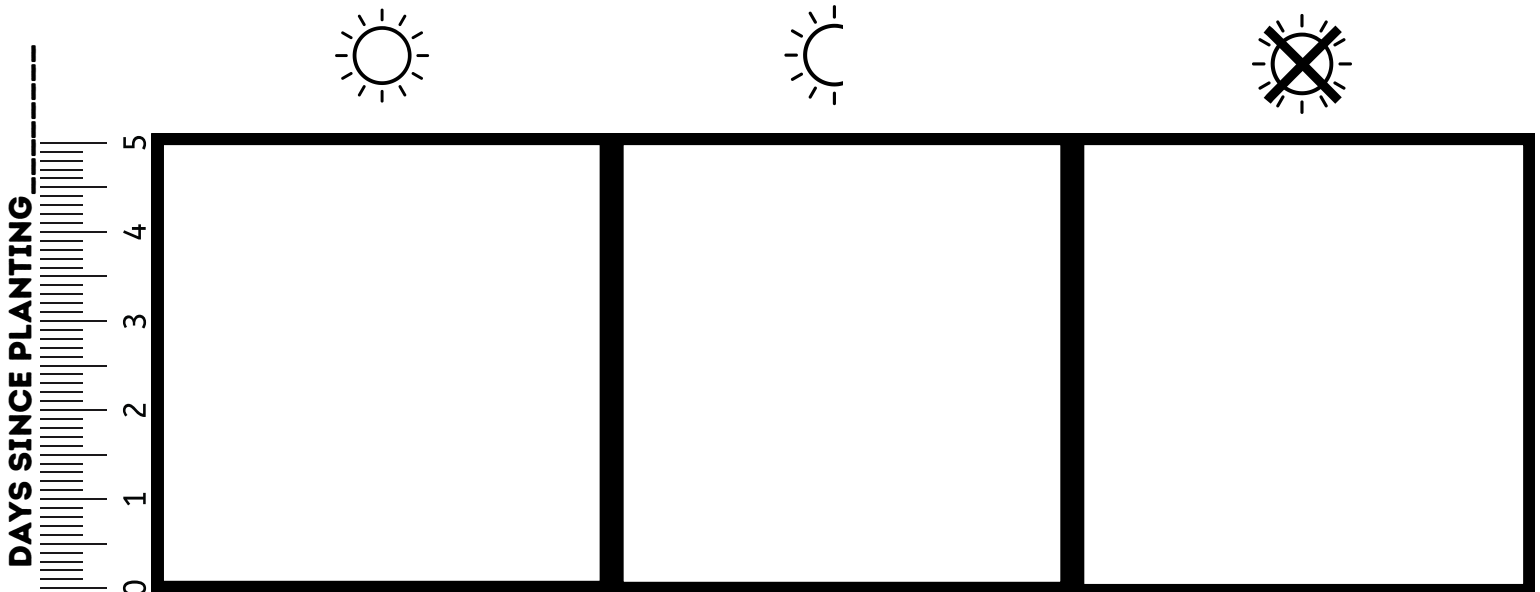
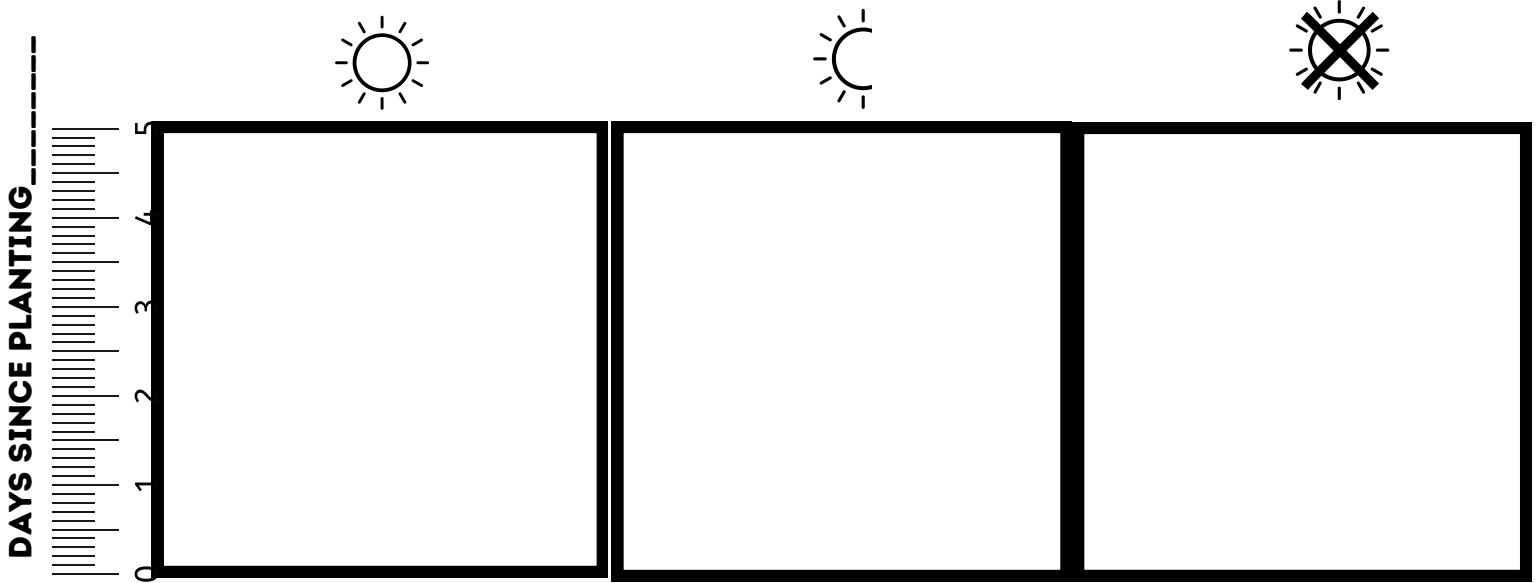
Compare and contrast the difference in groups and how the amount of energy (sunlight) effects plant growth. Students should record observations 2-3 times per week.



GERMINATION LOG

Name: _____ Date: _____

Instructions: Use this worksheet to record observations about the plants in each group. Draw a picture in each box of what you saw.

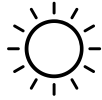


GERMINATION LOG (PAGE 2)

Name: _____ Date: _____

Instructions: continue to record your observations.

DAYS SINCE PLANTING

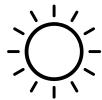
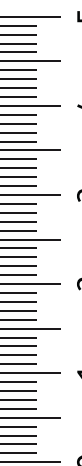


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DAYS SINCE PLANTING



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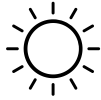
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GERMINATION LOG (PAGE 3)

Name: _____ Date: _____

Instructions: continue to record your observations.

DAYS SINCE PLANTING

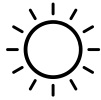
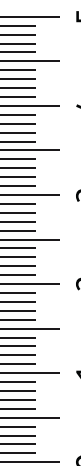


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DAYS SINCE PLANTING



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PLANTING PROCESS

Name: _____ Date: _____

Instructions: Use this worksheet to record the steps your group took to plant the seeds and protect your trays.

Supplies:

Step 1:

Step 2:

Step 3:

Step 4:

Step 5:

HYPOTHESIS

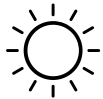
Name: _____ Date: _____

Instructions: Hypothesis is a scientific term for guessing what might happen in a science experiment. Use this paper to guess what will happen to the plants your class planted.

1. Which plants will germinate first?



2. Which plants will grow the tallest?



3. Do you think the plants will be different colors?

YES

NO

4. Do you think different plants needs different amounts of light?

YES

NO

5. Is it possible to have too much light?

YES

NO

PLANTS AND LIGHT

For healthy growth, plants need the right amount of light, water, air, nutrients and space. These five requirements are the basic needs for all plant life. This learning activity focuses light.

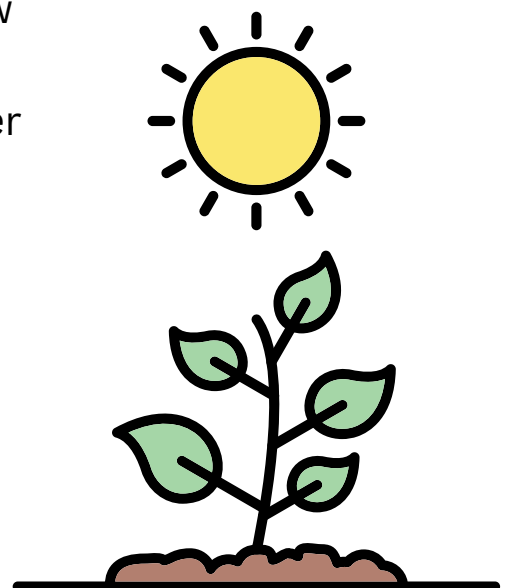
Light is critical to plant growth. Plants capture light energy and use this energy for photosynthesis. Photosynthesis is the process plants use to make their own food by converting carbon dioxide from the air and water into carbohydrates. Other living things like humans and animals rely on the food plants produce too.

Plants get light from two sources: plants grown outdoors get light from the sun and indoor plants get light from artificial lighting, like fluorescent or LED light bulbs.

Plants vary in the amount of light they require and that can change at different stages of growth. Some plants grow best with full sun, while others prefer partial sun or some shade. Some plants have special adaptations that allow them to survive with different amounts of light. Think of a rain forest which has different layers of plants and each layers gets a different amount of sun, yet all the plants are happy.

What happens to plants if they do not get enough light? You may notice that when plants don't get enough light they grow differently than the same type of plant that is getting enough light. These plants may have larger leaves, longer stems, slower growth, and fewer flowers.

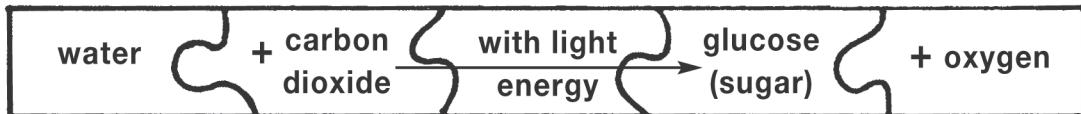
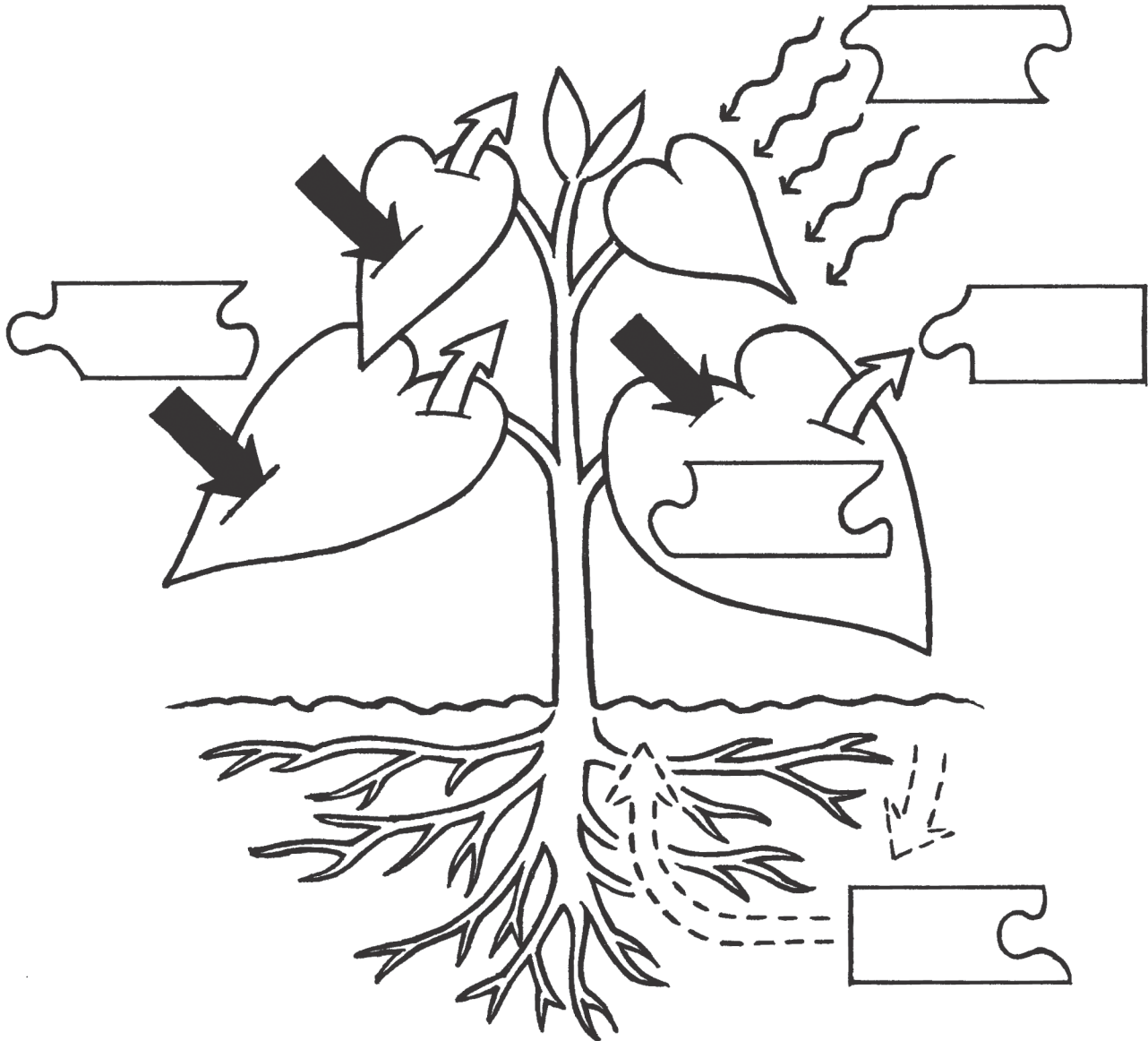
Plants can also get too much light and get sunburned. If too much light is combined with other factors like, lack of water or high temperatures, then they can dry out and if those conditions persist, the plants may die.



Puzzled by Photosynthesis

Name: _____ Date: _____

Directions: Write the correct words on each puzzle piece.



Notes: _____

