

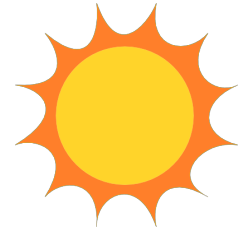


UW-MADISON EXTENSION

# FROM THE GROUND UP

## 4-H PLANT SCIENCE LESSON

YOUTH WILL OBSERVE HOW PLANTS RESPOND TO GRAVITY AND SUNLIGHT. THIS ACTIVITY WILL REQUIRE DAILY OBSERVATIONS FOR ONE WEEK TO COMPLETE .



### Project Skills:

Youth will observe how plants respond to gravity and sunlight

### Life Skills:

Decision making  
WI Academic Standards:  
Science F.4. Life And Environmental Science

### Time:

30-35 minutes on the first day. Five minutes a day for a week.

### Supplies:

- 4 clear plastic cups per youth
- 8 paper towels per youth
- Medium size bag of potting soil
- 1 package each of four different types of seeds (radish, lima beans, corn, pumpkin)
- Water pitcher
- Marker
- Access to a water supply
- Access to a sunny and a dark location to store the experiments for a week
- From the Ground Up worksheet
- 1 pencil per youth

### Getting Ready:

1. Soak all of the seeds overnight.
2. Make one copy of the From the Ground Up Worksheet for each youth.

## WHAT TO DO

### Experiment One – Upright Cup

1. Have youth count off one-two so each youth is either a one or a two.
2. Give each youth a clear plastic cup. Write their name and #1 on the outside of their cup.
3. Line the bottom and sides of the cup with a paper towel.
4. Add one inch of water to the bottom of each cup. Allow the paper towel to absorb the water.
5. Select one of each type of seed and carefully wedge them between the sides of the cup and paper towel. Space them evenly around the cup. Place the cup in an upright position.
6. Have youth that are a one place their cup in a warm, sunny place such as a window ledge. Have youth that are a two place their cup in a warm, darkened closet or cabinet.
7. Check seeds every day. Keep about an inch of water in the bottom of each cup.
8. Use the From the Ground Up Worksheet to record observations daily for one week.

### Experiment Two – Cup Turned on Its Side

1. Complete steps 1-7 from Experiment One, except write #2 on the outside of their cups.
2. When the seed stems are about one inch long, pour off any excess water from the cups.
3. Turn the cups on their sides and put them back in the same location they were.
4. In 1-2 days (two days if possible), observe and record their observations.

### Experiment Three – Soil & Light

1. Complete steps 1-2 from Experiment One, except write #3 on the outside of their cups.
2. Fill each cup with about one inch of soil. Pat the soil firmly and equally space eight seeds in the soil (two of each type) around the outer edge where they can be seen through the plastic cup.
3. Repeat this process two more times. You should end up with three layers of seeds and soil. Moisten the soil with water, trying not to disturb the top layer of seeds.
4. Place the cups in upright positions in a warm and sunny place such as a window ledge.
5. Check seeds every day. Keep the soil moist but not saturated with water.
6. Have only youth that are a one rotate their cups ½-turn every other day. Youth that are a two should not rotate their cups.
7. Use the From the Ground Up Worksheet to record observations daily for one week.

### Experiment Four – Soil & Dark

1. Give each youth a clear plastic cup. Write their name and #4 on the outside of each cup.
2. Complete steps 2-3 from Experiment Three.
3. Place the cups in an upright position in a warm and darkened closet or cabinet.
4. Check seeds every day. Keep the soil moist but not saturated with water.
5. Use the From the Ground Up Worksheet to record observations daily for one week.

## TALK IT OVER

Have youth express their observations and experiences.

### Reflect:

- What type of responses did the plant make to no light and to turning the cup on its side?
- How did exposing some seeds to different conditions help you learn about seed germination?
- Why is it important to learn about seed germination?

### Apply:

- What did you learn about how living things respond to their environment?
- What are some examples of how changing our environment could affect living things?
- How do you think living in darkness for several years would effect people?

# From the Ground Up Worksheet



NAME \_\_\_\_\_

Each day, record your observation under each Experiment Column. Write down what you see has changed since the previous day's observation. If the experiment runs over a weekend, note this as part of your observations. For experiment 1-3, circle your experimental group condition.

	<b>Experiment One</b> <b>Upright Cup</b> Circle one Light or Dark	<b>Experiment Two</b> <b>Cup Turned on its Side</b> Circle one Light or Dark	<b>Experiment Three</b> <b>Soil and Light</b> Circle one Rotated or Not Rotated	<b>Experiment Four</b> <b>Soil and Dark</b> Circle one Rotated or Not Rotated
Day 1				
Day 2				
Day 3				
Day 4				
Day 5				



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