



2nd Grade Radish Experiment

Objective:

Students collect data in the garden on radish growth rates and weather and then graph that data to learn about variation among individuals of a species, as well as develop their investigatory science and graphing skills.

California State Content Standards:

1. Science—Life Science

- 2d: Understand there is variation among individuals of one kind within a population.
- 4b: Measure length, weight, temperature, and liquid volume with appropriate tools and express those measurements in standard metric system units.
- 4c: Compare and sort common objects according to two or more physical attributes (e. g., color, shape, texture, size, weight).
- 4d: Write or draw descriptions of a sequence of steps, events, and observations.
- 4e: Construct bar graphs to record data, using appropriately labeled axes.
- 4f: Use magnifiers or microscopes to observe and draw descriptions of small objects or small features of objects.
- 4g: Follow oral instructions for a scientific investigation.

2. Math—Measurement and Geometry

- 1.0 Students understand that measurement is accomplished by identifying a unit of measure, iterating (repeating) that unit, and comparing it to the item to be measured.
 - 1.1 Measure the length of objects by iterating (repeating) a nonstandard or standard unit.
 - 1.2 Use different units to measure the same object and predict whether the measure will be greater or smaller when a different unit is used.
 - 1.3 Measure the length of an object to the nearest inch and/or centimeter.
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Materials:

Popsicle sticks
Rulers
Clipboards
Pencils
Student Data Observation Worksheet (sample attached)
Teacher Data Observation Worksheet (sample attached)
Weather Description Handout (attached)
Soil Thermometer
Weather Thermometer

Teacher Directions:

Once the seeds germinate, students go into the garden weekly or every other week for to record their observations. Ideally, the students continue their observations until the radish plants flower (approximately 3 months). Working alone or in small groups, students collect data and fill out their Data Observation worksheets for that day. Teacher should fill out her own master data observation worksheet. The teacher can have students use data from the master worksheet for graphing at the end or use the master data for filling in information in individual student worksheets where students have been absent or have incomplete or incorrect data.

Preparation:

1. Place popsicle stick, labeled with the plant name, next to one of each type of radish plant. Instruct students to observe the same plant every time.
2. Place soil thermometer in vicinity of the two labeled radish plants (but far enough away so that groups of students can be doing soil temperature observation at same time as others are doing radish observation) for measuring soil temperature. Ideally, the thermometer stays in the garden at all times, or it can be placed early on the day of the observation. The thermometer will need to be in place for some time before students come out in order for it to reflect the temperature accurately.
3. Place an outdoor weather thermometer in the garden for measuring air temperature.
4. Have blank worksheets on clipboards for students.
5. Have students bring a pencil into the garden.
6. Have several Weather Description handouts available for students to review in the garden (preferably laminated or protected in plastic covers).

Instruction:

1. In classroom, review how to fill out the worksheet and explain the procedures. A good system is to have students do their observations as a rotation between 4 stations: Radish Observation, Soil Thermometer and Air Thermometer, wildlife observation. Divide students among the stations to begin, and then call out rotation times in the garden to keep students on task. Students that finish early can explore the garden and add any additional wildlife observations to the worksheet.
2. In the garden, instruct students on how to read the thermometers and how to use a ruler to measure the height of the radish plants.
3. In the garden, review how to use the weather description handout to describe weather. Students should choose at least one word from three of the four columns (three words total).
4. Once students are finished collecting data, the teacher can teach them to graph the radish growth, soil and air temperature data. By reviewing the graphs of the radish growth and the variations in soil and air temperature, students can make a number of connections: (1) see that there is variation among individuals of a species, (2) significant changes in temperature (heat waves or cold fronts) can correspond with faster or slower growth, and (3) soil temperature changes over time.

Student name: _____

Today's date: _____



GARDEN OBSERVATIONS

PLANTS



Radish #1

1. Stage in life cycle: _____

2. How many weeks old? _____

3. Plant Height: _____

Radish #2

1. Stage in life cycle: _____

2. How many weeks old? _____

3. Plant Height: _____

4. Detail drawing with labels:

ANIMALS



1. What animals did you see in the garden today?

2. Where did you find animals?

3. Draw an animal you found:

WEATHER



1. Air temperature: _____

2. Soil temperature: _____

3. Describe the weather today:

Garden Observation Data



Rm: _____ Teacher: _____

Date of plantings: _____

| Date | Time | Soil Temp | Air Temp | Radish #1 | Radish #2 |
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Weather Descriptions



hot

calm

dry

sunny

warm

breezy

moist

partly cloudy

cool

windy

drizzly

cloudy

cold

rainy

foggy

