Growing Your Own Clones

**What You Need**
- four clear, plastic cups or jars
- onion
- geranium plant
- pie tin
- garlic bulb
- white potato
- very damp sand
- carrot
- potting soil
- gravel
- water
- metric ruler
- toothpicks

**Find Out**
Do this activity to see how plants can reproduce without seeds.

**Process Skills**
- Predicting
- Measuring
- Observing
- Communicating

**Time**
- 45 minutes the first day
- 5 minutes every day for three weeks
- 5 additional minutes every other day
5. Cut a small branch close to the stem from the geranium plant. This is called a cutting. Place the cutting in a cup or jar of water.

6. Place 8 cm of wet sand in a cup or jar. Cut a slice of white potato that contains an eye. Put the potato slice in the sand. Keep the sand very damp.

7. Stick toothpicks around the center of the onion. Suspend it in a jar and add water so that it is partially submerged. Keep the water at this level.

8. Set up two recording charts, one for each week.

9. **Observe** each plant part every day. Look for changes and **record** your observations.

10. Every other day, draw a picture of how each plant part looks. **Measure** the new growth. **Record** the measurements on your drawings.

**Safety!** Be careful when cutting hard objects.
## Observing Plant Reproduction

<table>
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<tr>
<th>Observations</th>
<th>Carrot</th>
<th>Geranium</th>
<th>Garlic</th>
<th>Potato</th>
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Conclusions

1. Describe what happened to each of the plant parts.

2. How many parents were needed for reproduction?

3. Was the reproduction due to mitosis or meiosis?

New Questions

1. The carrot plant will eventually produce seeds. How could this be helpful to a person who only has one carrot?

2. Write a new question you have about how plants reproduce without seeds being planted.
NAME __________________________________________


ACTIVITY

Looking at Cells

**Draw** and **label** the onion cell parts you **observe** under the microscope at low power.

**Draw** and **label** the onion cell parts you **observe** under the microscope at high power.
Activity Journal
Lesson 1 • Cells

Name _________________________________

Conclusions

1. **Compare** your drawing with the diagram of plant cells in your text. What structures did you see? What structures were not visible?

2. **Explain** why you did not see chloroplasts in the onion skin.

Asking New Questions

1. What would you expect to see if you placed part of the growing tip of the onion under the microscope?

2. Why do you think you needed to use cell stain to see the onion cells?
Modeling Mitosis

Draw a sketch of what your model looked like at the end of Step 1.

Draw a sketch of what your model looked like at the end of Step 6.
Activity Journal
Lesson 2 • Heredity

Name ____________________________________

Conclusions

1. What did the construction paper represent?

2. What parts of the cell did the yarn represent?

3. What parts of the cell did the string represent?

4. Describe the process of mitosis.

Asking New Questions

1. What kind of a cell did the model most closely represent?

2. What would be true about two cells formed from mitosis joining to form a zygote?