Chapter Science Investigation Name _____

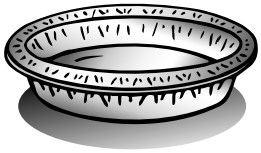
Growing Your Own Clones

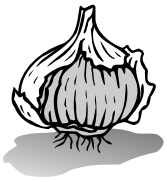
What You Need

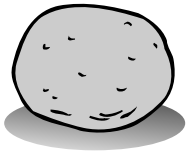

four clear, plastic cups or jars

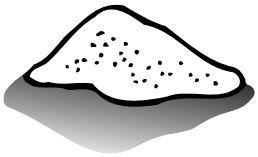

onion

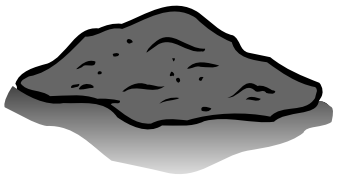

geranium plant

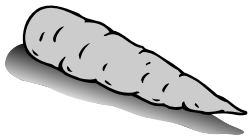

pie tin


garlic bulb


white potato


very damp sand


potting soil


carrot


toothpicks


gravel


water


metric ruler

Find Out

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

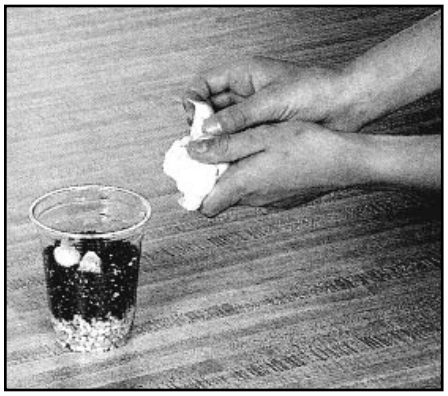
Process Skills

Predicting
Measuring
Observing
Communicating

Time

- 45 minutes the first day
- 5 minutes every day for three weeks
- 5 additional minutes every other day

What to Do



1. **Predict** different ways that different plants could reproduce without seeds.

2. Cover the bottom of a cup or jar with gravel. Fill the rest of the cup or jar with moist soil.

3. Break the garlic bulb apart. Plant two cloves about 3 cm deep in the soil. Keep the soil moist but not wet.

4. **Measure** 2 cm from the top of the carrot. Cut the top off. Place the carrot top cut-side-down in the pie pan filled with water. Keep water in the pie pan.

Safety! ***Be careful when cutting hard objects.***

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.

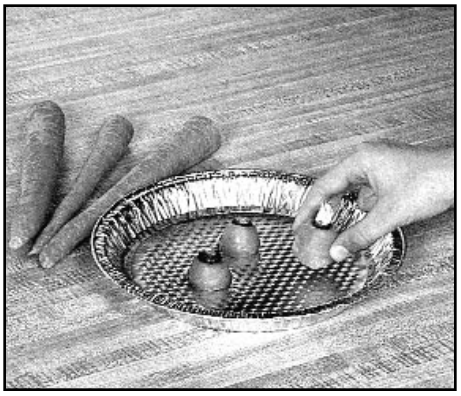
6. Place 8 cm of wet sand in a cup or jar. Cut a slice of white potato that contains an eye. Put the potato slice in the sand. Keep the sand very damp.

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.



Observing Plant Reproduction				
Observations	**Carrot**	**Geranium**	**Garlic**	**Potato**
Day 1				
Day 2				
Day 3				
Day 4				
Day 5				

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.

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?

Name _____

ACTIVITY

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.

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?