Name _____ Date _____ Period _____

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One Species, Six Vegetables

Biology

Work with your group. Record every measurement with its unit. Answer questions in complete sentences.

Draft lab. This lab has not been tested in a classroom yet. Your teacher may change some steps, times or amounts.

The Puzzle

Broccoli, cauliflower, cabbage, Brussels sprouts, kale, and kohlrabi look like six different plants. They are all one species, *Brassica oleracea*, the same species as wild cabbage, a scraggly plant from the coasts of Europe. Over thousands of years, farmers saved seed from the plants they liked best. Each crop is a different plant part that farmers made bigger.

Question

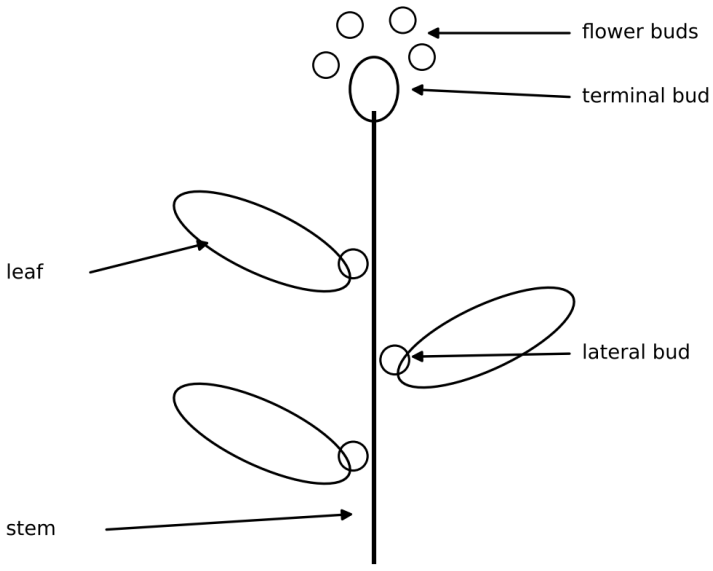
Which part of the wild plant did farmers select to enlarge in each crop, and what evidence shows it?

Safety

- Do not eat anything in the lab.
- Only your teacher uses the knife. Handle cut vegetables with care.

Materials

- Six stations: broccoli, cauliflower, cabbage (whole and cut in half top to bottom), Brussels sprouts (whole and cut in half), kale, kohlrabi
- Ruler, hand lens, paper towels



The parts of a wild Brassica plant.

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Procedure

1. At each station, look closely at the vegetable with the hand lens. Compare it with the plant parts in the diagram.
2. Decide which plant part is enlarged: terminal bud, lateral buds, leaves, stem, or flower buds.
3. Write the clues you used. Look for veins, leaf scars, buds at the base of leaves, a central stem, or tiny flower buds.
4. Measure the enlarged part: its widest diameter or its length, in cm.
5. Move to the next station when your teacher signals (about 5 minutes each).

Data

Table 1. Selection map

Crop	Enlarged plant part	Evidence (clues you saw)	Size (cm)
Broccoli			
Cauliflower			
Cabbage			
Brussels sprouts			
Kale			
Kohlrabi			

Analysis

1. What does it mean that all six crops are the same species?

2. Describe how farmers could have produced kale from wild cabbage. Use the words **variation**, **select**, and **generations**.

3. Cabbage is an enlarged terminal bud and Brussels sprouts are enlarged lateral buds. Use the cut halves to explain how they are alike.

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4. Farmers did not create any new plant parts. Explain why selection can enlarge a part but cannot make a part from nothing.

5. How is artificial selection like natural selection? How is it different?

6. Claim, evidence, reasoning: Can selection produce large changes in a population?

Claim

Evidence

Reasoning

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