

Name: _____ Class: _____ Date: _____

Carnation Wonder / Celery Super Highway

Learner Outcomes:

- Describe the process of diffusion, osmosis, conduction of fluids, transpiration, photosynthesis and gas exchange in plants

Key Terms:

Osmosis

Permeable

Transpiration

Diffusion

Conduction

Background Information: Water and nutrients are absorbed by the roots of plants. A primary function of stems is to transport this water and nutrients between the leaves and roots.

Investigation Question: What happens to a carnation flower / celery stalk when the stem is immersed in a food coloring solution?

Hypothesis: Form a hypothesis about what you expect to see in the

Materials:

3 Test tubes

Blue food coloring

Knife

Test tube holder

4 carnations or celery

Red food coloring

stalks

Procedure:

1. Set up 3 test tubes, one with clear colorless water, one with red food coloring and water and one with blue food coloring and water.
2. Place a carnation/ celery stalk into each test tube.
3. Take a fourth carnation / celery stalk and split the stem in half. Place it in both the red and blue test tube.
4. Make a prediction about what will happen to each flower top after 24 hours.

This investigation / activity has been adapted from:

Bullard J, Krupa G, Krupa M, et al. *Science Focus 7*. Toronto, ON: McGraw-Hill Ryerson.

Observations:

Analysis:

A: Short Answer

1. What was the manipulated variable in this lab?
2. What was the responding variable in this lab?
3. What were some of the control variables in the lab?
4. Why was one flower left in clear colorless water?
5. What vessels are moving the water up the stem of the plant?
6. How does water move from cell to cell?

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7. How is it possible for half of the flower to be one color and the other half to be another color? What does this tell us about the transport vessels?

8. How is the movement of water in the carnation, like drinking a liquid through a straw?

Conclusion:

Extension:

1. Given what we have seen in this lab, describe what you must consider when...
 - a. creating an effective fertilizer

 - b. you are growing plants in hot, dry conditions

2. Instead of having to dye flowers after they have grown, describe how you could grow plants that are unnatural colors?

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