

## **MAKE A RED-BLUE CARNATION**

**A. Question:** *Is it possible to change the color of a flower?*

**B. Materials Needed:**

1. A white carnation (with a long stem)
2. Red food coloring and blue ink
3. Two small beakers or cups

**C: Procedure:**

1. Take the carnation and cut the stem so that it is about 25 cm long.
2. Carefully split the stem in half. Start the cut with a knife and further split the stem along the fibers. However, be careful not to break them. An adult should assist with this part.
3. Fill the two small beakers or cups with water. Place red food coloring in one and blue ink in the other.
4. Place each half of the stem in a different beaker and observe the flower.

**D: Anticipated Results:**

The white flower will turn red on one side and blue on the other.

**E: Thought Questions for Class Discussion:**

1. What was the purpose of splitting the stem in half?
2. Did the whole white carnation get colored?
3. Is it possible to color only part of the flower and leave the other part white?
4. How would the stem have to be split to obtain three colors in the flower. For example, red, white, and blue?
5. What force is pulling the colored solution up the stem?
6. Would leaves be able to be colored the same way?

**F: Explanation:**

The colored water is drawn up the stem of the carnation by osmosis and capillary action. The water molecules diffuse through the fiber membranes from a lower to a higher concentration of plant sap; this is osmosis. The fibers are so tiny that the adhesive force in combination with the osmotic pressure sucks the water up to the flower.

When the stem is split three ways, it is very likely that the flower will be three colored. This shows that the fibers must somehow run all the way from the stem to the petals of the flower.