

## Organic Chemist Recording Guide for Extracting Natural Dyes Using Water

**\*\* Safety glasses should be worn at all times! \*\***

### ORGANIC MATERIAL

1. Gather materials (organic material, food chopper or rubber mallet, bag, hot plate, large beaker, safety glasses, storage bag, glove, digital scale and paper towels)
2. Prepare organic material by exposing as much of the surface area as possible. Place the material in 1 gallon Ziploc bag and wrap with a dish towel prior to mashing; or use a food chopper to grind the material.
3. Record total mass with units of organic matter: \_\_\_\_\_
4. To prepare the dye, you will need to mix water and organic material using a 2:1 ratio of tap water to material.
  - a. Using a proportion, determine how much water you will need if you use all of your organic matter.
  - b. What is the constant of proportionality of water to material?
  - c. What equation expresses the relationship for water needed ( $y$ ) to organic materials used ( $x$ )?
  - d. Determine how much water and organic material you can realistically use given the beaker size. Show either your proportion or equation process to prove your decision is correct for both the water to material ratio and your beaker size.
5. Mix water and organic material in your beaker and bring mixture to a boil, then simmer (suggest 1 hour or as time allows). If available, use a glass cover to avoid splattering.
6. Using a glove or oven mitt, strain liquid into a beaker. Be careful, liquid will be hot!
  - a. How much liquid dye did you extract?
  - b. What is your ratio of dye extracted compared to organic material used?
  - c. What is your unit rate?
  - d. What equation expresses the relationship between organic material ( $x$ ) and dye extracted ( $y$ )?
7. Pour dye into storage bag, label with name of organic matter and your group's name and store dye in a dark, cool place for use in class tomorrow.