

Regents Chemistry

Ms. Randall

Lab Activity: Heat

Background:

Chemists identify substances on the basis of their chemical and physical properties. One intensive physical property is specific heat (c) – the amount of heat energy needed to raise the temperature of one gram of a material by one degree Celsius. In this lab, a calorimeter will be used in order to calculate a heat change. **If the law of conservation of energy is true, heat released by a hot object (metal) must be equal to the absorbed by a cool object (water in calorimeter).**

Research Question: *Which substance transfers more heat, aluminum or copper?*

Your Task:

Using a calorimeter, you will determine which substance (aluminum or copper) transfers more heat energy. The mathematical model below will be used in your calculations. Remember that heat lost by the metal is equal to heat gained by the water.

Mathematical Model: $q = mc\Delta T$

$q =$ heat

$m =$ mass

$c =$ specific heat of water

$\Delta T =$ the change in temperature

Procedure:

1. As a group, make a prediction for the research question.
2. As a group, develop a model/explanatory hypothesis in your notebook that you will test through experimentation to support your claim. Include particle arrangements of each item. Remember to get feedback on your model from other groups and Ms. Randall.
3. In your lab notebook, determine your variables, constants and construct a data table(s) to collect your data (evidence).
4. You will use a calorimeter as demonstrated. **Have Ms. Randall check your notebooks before conducting your experiment. Every member of the group must have a complete notebook!!!**
5. Conduct your experiment and collect data (evidence) that you will use to support your claim.
6. Using your evidence, make a claim and justify it with scientific reasoning.
7. Present your argument (CER) to the class. Each group will make one positive comment and 1 critique for each group CER.
8. As a group, determine if you need to make any adjustments to your model and or claim based upon the feedback from the class.
9. Complete your lab conclusion which includes a CER summary.

