

MN State Science Olympiad

Experimental Design

Most people take water for granted, however all life depends on it. Water is a major component of the earth's surface and without it, life as we know it could not exist. Compared with compounds of similar size and organization, water has many unique properties.

TASK: Design an experiment relating to a property of water.

Some examples include: ionization/pH, solvent properties, influence of solutes, temperature effects, fluidity... or anything else you can think of. (Hint: the above are example topic areas, NOT statements of problem!!!!). If you are uncertain whether your experiment relates to the task, just ask.

Possible Materials:

At Desk

Masking Tape
3 Styrofoam Cups
Plastic Box
Graduated Culture Tube
Thermometer
3 Straws
Parafilm
Scissors

At distribution center

Graduated Cylinders
RT Water
Ice
Hot Water
Bromylthiol Blue pH indicator (pH 6-8)
200mM HCl (Max 20 ml)
200mM NaOH (Max 20 ml)
Sugar
Salt
Flour
Tris

Your report should include all of the following parts (clearly labeled!!!) (Hint: pay attention to point values!)

Statement of Problem (4 pts)
Hypothesis (4pts)
Variables (10 pts)
 Independent, Dependent, Controlled
Standard of Comparison (3 pts)
Materials and Procedure (8 pts)
Qualitative Observations (4 pts)
Quantitative Results
 Data Table (6 pts)
 Graph (6 pts)
 Statistics (4 pts)
Analysis and Interpretations of Results (10 pts)
Possible Experimental Errors (3 pts)
Conclusion (4 pts)
Recommendations for further experimentation/Practical Applications (4 pts)

Clean up: Be sure to wash all test tubes and plastic boxes. Graduated cylinders should be washed immediately after use so others can use them. Leave the masking tape, scissors, clean plastic box, and thermometer on your desk. Return all other re-useable items to the distribution center.