

Group Lab – Cooling Water Experiment

I. Cooling Water

1. Use a thermometer to measure the air temperature in the room. Record this on the data sheet.
2. Place a 100-mL beaker containing a thermometer and 50 mL of water on a ring stand over a Alcohol Lamp.
3. Light the Alcohol Lamp and heat the water to about 80°C. Extinguish the Alcohol Lamp.
4. Without stirring or removing the beaker from the ring stand, allow the water to cool to 75°C.
5. When the water has cooled to 75°C, start recording the temperature at intervals of 2 minutes. Use a wall clock, wrist watch, or stop watch to keep track of the time. Record the temperatures to the nearest 0.5 degree.
6. Continue making measurements until the water has cooled to about 35°C.

II. Constructing Graphs

1. Select a convenient set of units on the horizontal (x) axis, starting at zero, to cover the number of minutes over which you made measurements.
2. Select a convenient set of units on the vertical (y) axis to cover the temperature range 35 to 75°C.
3. Proceed as in Part I to plot the points. Use pencil. Make small dots and draw a small circle around each one.
4. It is unlikely that these values will exhibit a straight line. Draw the best curve you can through the points. (Your instructor may demonstrate some tricks for drawing a smooth curve.)

This exercise was adapted from the following reference:

Stratton, W., Steehler, G., Pienta, N., & Middlecamp, C. (2003). Laboratory Manual for Chemistry in Context, 4th Edition. McGraw Hill Higher Education, Boston, MA. pp. 67-73.

