## Heat and Temperature Introduction Models

1. There are three temperature scales that you will encounter commonly; Fahrenheit, Celsius, and Kelvin. The Fahrenheit scale is based on water freezing at $32^{\circ}$ and boiling at $212^{\circ}$. The Celsius scale is uses $0^{\circ}$ for water freezing and $100^{\circ}$ for water boiling. The Kelvin scale is an absolute scale of temperature with 0 K equal to $-273^{\circ} \mathrm{C}$ (approx.) with a temperature difference of 1 K being the same as $1^{\circ} \mathrm{C}$.
a. Draw a graph of ${ }^{\circ}$ Fahrenheit vs ${ }^{\circ}$ Celsius. The relationship between the scales is linear. Draw the line on the graph and determine the equation that relates the quantities.
b. Draw a graph of Kelvin vs ${ }^{\circ}$ Celsius. The relationship between the scales is linear. Draw the line on the graph and determine the equation that relates the quantities.
2. Use your equations from above to determine the Celsius and Kelvin equivalents for the following Fahrenheit temperatures:
a. $70^{\circ} \mathrm{F}$
b. $98.6^{\circ} \mathrm{F}$
c. $0^{\circ} \mathrm{F}$
3. Touch the four objects at the front of the room.
a. Rank the objects from lowest to highest temperature. Explain how you know.
b. Draw a diagram (or series of diagrams) that demonstrate how you are able to judge the temperature of an object.
4. Use the boxes below to draw diagrams that show the differences between a solid, a liquid and a gas at the molecular level. Explain what you are representing in your diagrams.

Solid


Liquid


Gas
$\square$
5. Describe what is necessary to change the phase of an object.
6. Describe the difference between heat and temperature.

