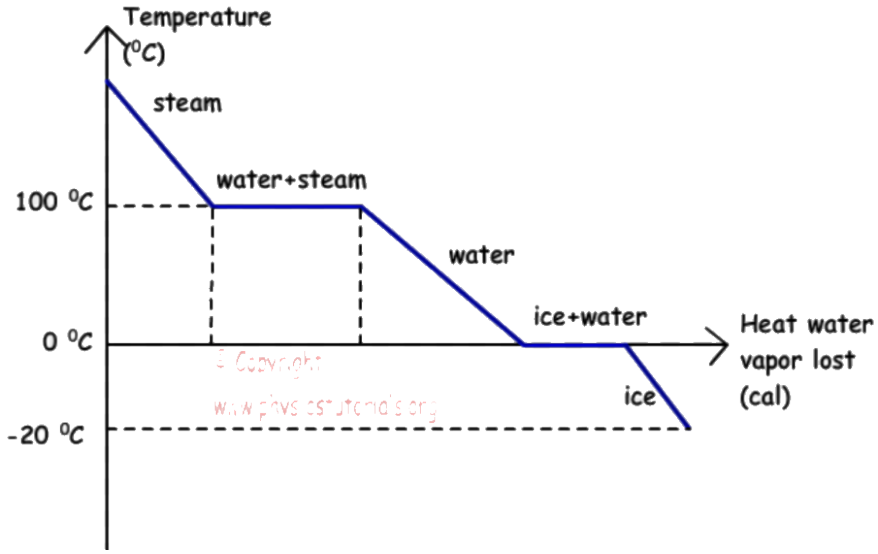
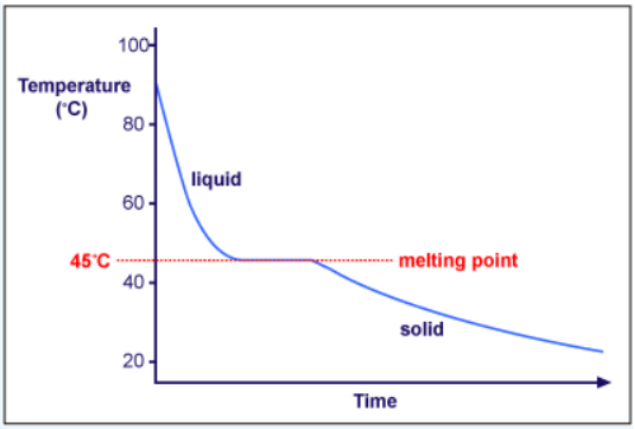
Cooling Curves

Heating curves show how the temperature changes as a substance is heated up. Cooling curves are the opposite. Cooling curves show how the temperature changes as a substance is cooled down. Just like heating curves, cooling curves have horizontal flat parts where the state changes from gas to liquid, or from liquid to solid. These are mirror images of the heating curve.



Example of Lucric Acid

Lauric acid has a melting point of about 45°C and is easily melted in a test tube placed in a beaker of hot water. The temperature can be followed using a thermometer or temperature probe connected to a data logger. The liquid may be cooled by putting the boiling tube in a beaker of cold water or just leaving it in the air.



*****Note- The melting and freezing occur at the same temperature.** During freezing, energy is removed and during melting, energy is absorbed.

Energy Changes

Since Temperature is a measure of "Average Kinetic Energy", any change in temperature is a change in Kinetic Energy. All of the diagonal line segments on a heating or cooling curve show a temperature change and therefore a change in kinetic energy. During these regions, a single state of matter exists and the sample is either getting hotter or cooler.

During the horizontal line segments, there is no change in temperature, so kinetic energy remains constant. However, all the energy that is absorbed or released is related to changes in potential energy.

Remember the 3 Ps:

Plateau,

Phase change

Potential Energy Change