Topic: Heat
Burning Candle and rising water

Aim: To test the requirement of oxygen for burning a candle.

Materials: Wine glass, a glass of water, candles, match/lighter, food colouring and a plate.

Procedure:

1. Add two drops of food colouring into a glass half-filled with water and stir until dissolved.
2. Stand the candle on the plate and light it.
3. Pour the water with food colouring into the plate.
4. Place the glass onto the lit candle.
5. What happened to the coloured water and the flame of the candle?

Record your observation: what did you see?

Observation and understanding:
When we light the candle the flame started to heat the air in the glass. The air expands and it is now warm inside. The flame goes out after the oxygen in the air inside the wineglass has been used up. The space created allows water from outside the glass to enter into the glass.

Inference: Oxygen was used for burning the candle. After oxygen was used up the candle was put off and the space created was filled with coloured water.

Topic: Heat
Melting Chocolate

http://www.sciencekids.co.nz/experiments/chocolate.html

Enjoy this simple melting chocolate experiment for kids. You've no doubt experienced chocolate melting on a hot day, so let's do some experiments to recreate these conditions as well as a few others before comparing results and coming to some conclusions.

At what temperature does chocolate go from a solid to a liquid? Is it different for white and dark chocolate? Give this fun science experiment a try and find out!

What you'll need:

•Small chocolate pieces of the same size (chocolate bar squares or chocolate chips are a good idea)
•Paper plates
•Pen and paper to record your results

Instructions:

1. Put one piece of chocolate on a paper plate and put it outside in the shade.
2. Record how long it took for the chocolate to melt or if it wasn't hot enough to melt then record how soft it was after 10 minutes.
3. Repeat the process with a piece of chocolate on a plate that you put outside in the sun. Record your results in the same way.
4. Find more interesting locations to test how long it takes for the chocolate pieces to melt. You could try your school bag, hot water or even your own mouth.
5. Compare your results, in what conditions did the chocolate melt? You might also like to record the temperatures of the locations you used using a thermometer so you can think about what temperature chocolate melts at.

What's happening?
At a certain temperature your chocolate pieces undergo a physical change, from a solid to a liquid (or somewhere in between). On a hot day, sunlight is usually enough to melt chocolate, something you might have unfortunately already experienced. You can also reverse the process by putting the melted chocolate into a fridge or freezer where it will go from a liquid back to a solid. The chocolate probably melted quite fast if you tried putting a piece in your mouth, what does this tell you about the temperature of your body? For further testing and experiments you could compare white chocolate and dark chocolate, do they melt at the same temperature? How about putting a sheet of aluminium foil between a paper plate and a piece of chocolate in the sun, what happens then?

Topic: Heat
Water Molecules on the Move

http://www.sciencekids.co.nz/experiments/movingmolecules.html

This experiment is great for testing if hot water molecules really move faster than cold ones. Pour some water, drop in some food coloring and compare results.

What you'll need:

- A clear glass filled with hot water
- A clear glass filled with cold water
- Food coloring
- An eye dropper

Instructions:

1. Fill the glasses with the same amount of water, one cold and one hot.
2. Put one drop of food coloring into both glasses as quickly as possible.
3. Watch what happens to the food colouring.

What's happening?

If you watch closely you will notice that the food coloring spreads faster throughout the hot water than in the cold. The molecules in the hot water move at a faster rate, spreading the food coloring faster than the cold-water molecules which mover slower.

Topic: Heat
Steel Wool & Vinegar Reaction (Exothermic reaction)

http://www.sciencekids.co.nz/experiments/steelwoolvinegar.html

Soak steel wool in vinegar and watch what happens as the iron in the steel begins to react with the oxygen around it. This fun science experiment for kids is great for learning about chemical reactions.

What you'll need:

•Steel Wool
•Vinegar
•Two beakers
•Paper or a lid (something to cover the beaker to keep the heat in)
•Thermometer

Instructions:

1. Place the steel wool in a beaker.
2. Pour vinegar on to the steel wool and allow it to soak in the vinegar for around one minute.
3. Remove the steel wool and drain any excess vinegar.
4. Wrap the steel wool around the base of the thermometer and place them both in the second beaker.
5. Cover the beaker with paper or a lid to keep the heat in (make sure you can still read the temperature on the thermometer, having a small hole in the paper or lid for the thermometer to go through is a good idea).
6. Check the initial temperature and then monitor it for around five minutes.

What's happening?

The temperature inside the beaker should gradually rise, you might even notice the beaker getting foggy. When you soak the steel wool in vinegar it removes the protective coating of the steel wool and allows the iron in the steel to rust. Rusting (or oxidation) is a chemical reaction between iron and oxygen, this chemical reaction creates heat energy which increases the temperature inside the beaker. This experiment is an example of an exothermic reaction, a chemical reaction that releases energy in the form of heat.