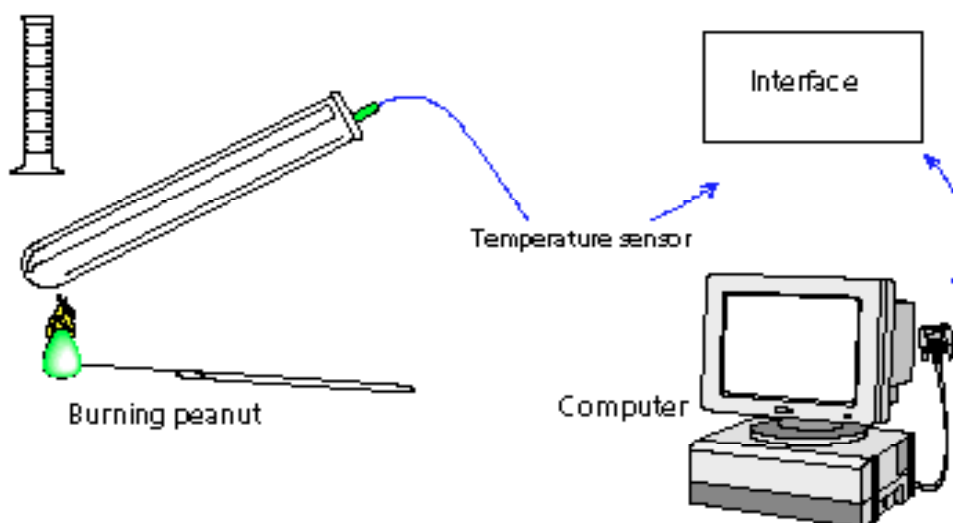


Energy in food



As food burns it releases energy. This energy can be used to heat up a known volume of water and so calculate its energy content. The temperature change can be easily monitored using a temperature sensor. Furthermore, if the food stops burning too soon, the graph will show how much the water cools and you can add this temperature change into your calculations.

Apparatus

Clamp, stand, boiling tube, balance, food (e.g. a peanut), a mounted needle, interface, temperature sensor.

Setting up

Connect the temperature sensor to the first socket on the interface.

Weigh the food sample and add 30 cm³ water to the boiling tube.

Some systems recognize the sensors you attach automatically, in others you do this yourself. If the sensor has a range control, use a suitable range e.g. from 0-100.

Recording the data

Record for 5 minutes. Heat the food in a Bunsen flame to light it. Heat the tube of water with the food until it has completely burnt, relight the food if necessary.

Repeat with another food.

Using the results

How does the graph tell you how much energy is in the food?

Did your food extinguish before burning?

Did the water lose heat as a result?

Did you burn equal amounts of each food?

If not, how will you compare the results from different foods?

Did the food give all of its energy to the water?

Use the software to read temperature values from the graph.

Save your data on disk. Print the graphs.

Use a spreadsheet to help with any calculations you need to do. (The IT in Secondary Science book shows how).

