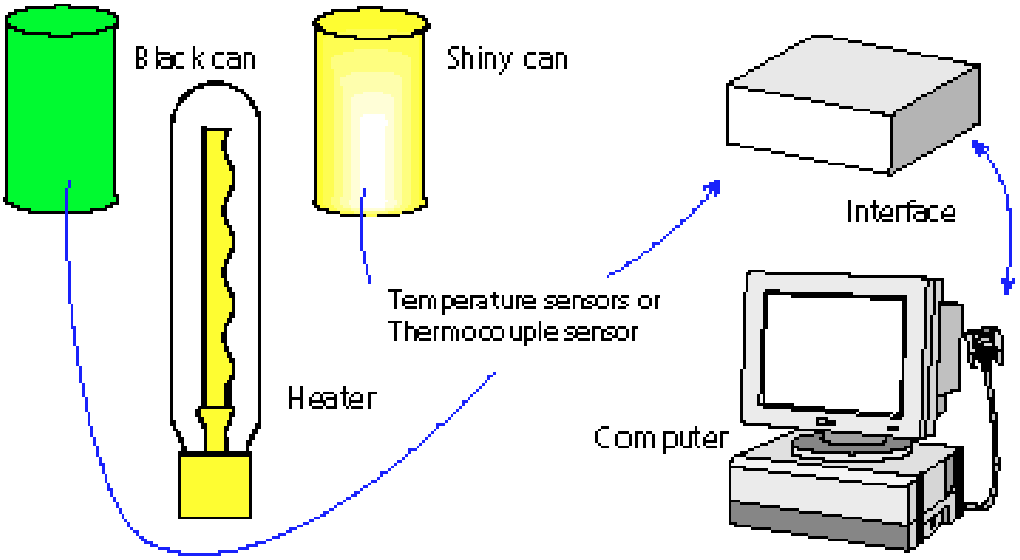
Absorption of thermal radiation



A shiny surface and a black surface absorb heat differently. Using temperature sensors or thermocouple probes it is possible to compare the temperatures on two these different surfaces. Either the temperatures will be plotted against time on the computer or in the case of the thermocouple, the graph will rise as the difference between its two probes increases.

Apparatus

Radiant heater, two metal containers - one shiny, one black, interface, temperature sensors or thermocouple probe/sensor.

Setting up

Connect the sensor to the interface.

The software needs to know that you have connected this sensor and some systems will do this for you. If the thermocouple sensor is adjustable, adjust it to expect a suitable difference (say 10 to 20°C) between the two probes.

Recording the data

Record for 5 minutes. When the temperature difference falls to zero, switch on the radiant heater.

Using the results

If the sensor shows the difference in temperatures, what does the graph tell you when it moves up the screen?

What does the graph tell you when it moves down the screen?

Does the graph tell you which container is hottest?

What does your graph tell you about the temperatures of the two containers?

Does you graph stop changing at any point? What does this tell you?

Save your data on disc and print the graph.