

Cooling Curves

What science says

The scientific model (Stefan's Law) says that the rate at which a black body cools by radiation is proportional to the temperature.

Rate of cooling = $C \cdot T^4$

Where:

T is the difference between the temperature of the object and that of the surroundings and

C is a constant which depends on the substance

Capturing the data

What temperatures do you need to measure?

Over what period of time?

What assumptions are you making in taking these measurements?

What shape do you expect the cooling curve to have?

Modelling the data

What variable will you use for your model?

What variable(s) will you empirically adjust?

Why might the model not fit your data?

Extensions

What might you (or children) expect to affect the rate of cooling that does not appear in the model?

How could you test whether this/these variables really do have no effect?

Use the model to make a prediction - then test this empirically.

What would you expect the effect of using 'forced cooling' (i.e. a fan) to have?