Deducing Specific Heat Capacity of Water

## Aim

To find the specific heat capacity of water

## Theory

### The equation for specific heat capacity

The equation used to find specific heat capacity is as follows:

However, using and rearranging for , *E* may be substituted with *Pt*, giving a new equation of:

As we will measure temperature per time, the slope of the line will be , so some slope will be reciprocal of . Hence, the equation can be rewritten as:

# Results

Table 1. Temperature of water at intervals

of 10s, room temperature was 23˚C

|  |  |
| --- | --- |
| Time (s) ± 1 | Temperature (˚C) ± 1 |
| 0 | 22 |
| 10 | 23 |
| 20 | 25 |
| 30 | 28 |
| 40 | 31 |
| 50 | 32 |
| 60 | 35 |
| 70 | 37 |
| 80 | 40 |
| 90 | 42 |
| 100 | 45 |
| 110 | 47 |
| 120 | 49 |
| 130 | 51 |
| 140 | 54 |
| 150 | 56 |
| 160 | 58 |
| 170 | 60 |

Chart 1. Temperature in Celsius, in relation to time

# Discussion

## Analysis

Using the slope of the line provided by *Chart 1*, and the final equation in *Theory*, the specific heat capacity can be found:

P = 500W

m = 0.40045 Kg

The experimentally found heat capacity was 29% greater than the conventionally accepted one, this is likely due to loss to the environment.