OCR
Oxford Cambridge and RSA

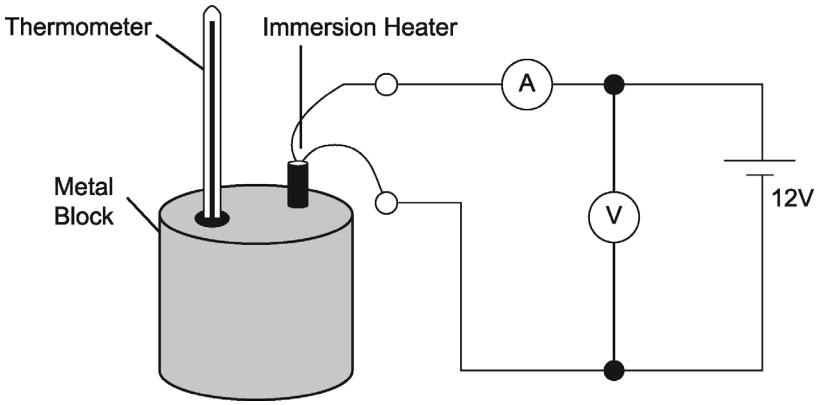
# Gateway Science Physics A

**J249/01** Paper 1 Foundation Tier

## Question Set 23

**16** A student does an experiment to find the specific heat capacity of a metal block.

The diagram shows the apparatus used.




**(a) (i)** The student measures the voltage and current.

Suggest **three** other measurements he needs to take.

1. temperature change
2. mass
3. time the heater is on for

**[3]**

**(ii)** Describe how these measurements could be used to find the specific heat capacity of the metal.

use $P = IV$ to find power then $Pt = E$ to find energy transfered then use $\frac{E}{m\Delta\theta} = C$ to calculate specific heat capacity

**[2]**

**(b)** The specific heat capacity obtained from the experiment is much larger than expected.

- Suggest **two** reasons for this difference.
- Suggest **two** improvements to the method that might give a more accurate value for the specific heat capacity.

REASONS
1. Heat escapes to surroundings
2. Part of the heater is outside the block.

**[4]**

IMPROVEMENTS
1. insulate the metal block
2. make sure all of the heater is in the block.

**Total Marks for Question Set 23: 9**