

- 8** The resistance of a metal wire increases with temperature.
The variation with temperature θ of the resistance R is thought to be

$$R = R_0(1 + \alpha\theta)$$

where R is the resistance at a temperature of θ (in $^{\circ}\text{C}$) and R_0 the resistance at 0°C . The constant α depends on the type of metal.

You are provided with wires of different metals. You may also use any of the other equipment usually found in a Physics laboratory.

Design an experiment to determine the value of α for different metals in the temperature range **0°C to 200°C** .

You should draw a labelled diagram to show the arrangement of your apparatus. In your account you should pay particular attention to

- (a) the identification and control of variables,
- (b) the equipment you would use,
- (c) the procedure to be followed,
- (d) how the constant α is determined and compared for each of the metals available,
- (e) any precautions that would be taken to improve the accuracy and safety of the experiment.

Diagram