

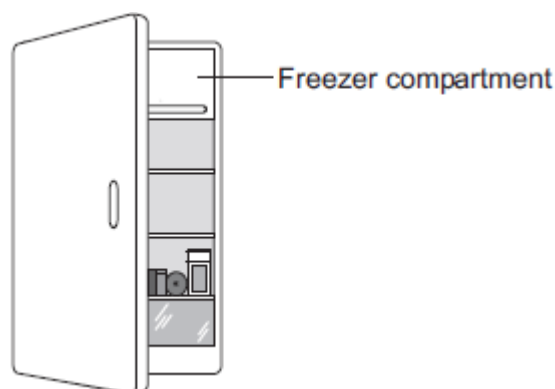
Name of the Student: _____

Max. Marks : 18 Marks

Time : 18 Minutes

Q1.

- (a) The figure below shows a fridge with a freezer compartment.

The temperature of the air inside the freezer compartment is -5°C .

Use the correct answer from the box to complete each sentence.

Each answer may be used once, more than once or not at all.

decreased	unchanged	increased
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When the air near the freezer compartment is cooled, the energy of the air particles is _____.

The spaces between the air particles are _____.

The density of the air is _____.

(3)

- (b) The table below shows some information about three fridges,
- A**
- ,
- B**
- and
- C**
- .

The efficiency of each fridge is the same.

Fridge	Volume in litres	Energy used in one year in kWh
A	232	292
B	382	409
C	622	524

- (i) Which fridge, **A**, **B** or **C**, would cost the least to use for 1 year?

Give **one** reason for your answer.

(2)

- (ii) A householder looks at the data in the table above.

What should she conclude about the pattern linking the volume of the fridge and the energy it uses in one year?

(1)

- (iii) The householder could not be certain that her conclusion is correct for all fridges.

Suggest **one** reason why not.

(1)

(Total 7 marks)

Q2.

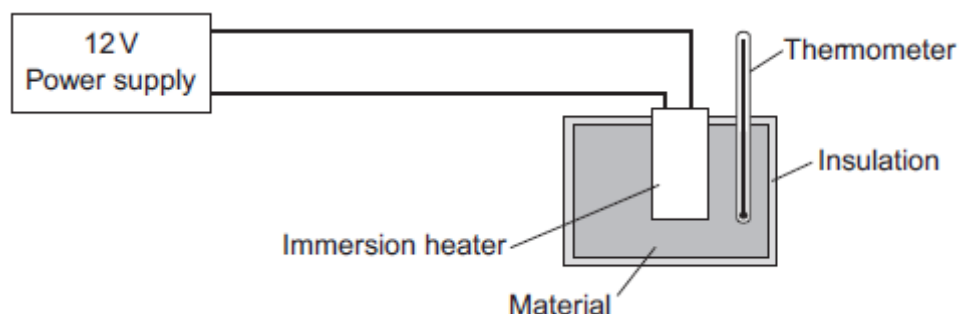
A student used the apparatus in **Figure 1** to compare the energy needed to heat blocks of different materials.

Each block had the same mass.

Each block had holes for the thermometer and the immersion heater.

Each block had a starting temperature of 20 °C.

Figure 1



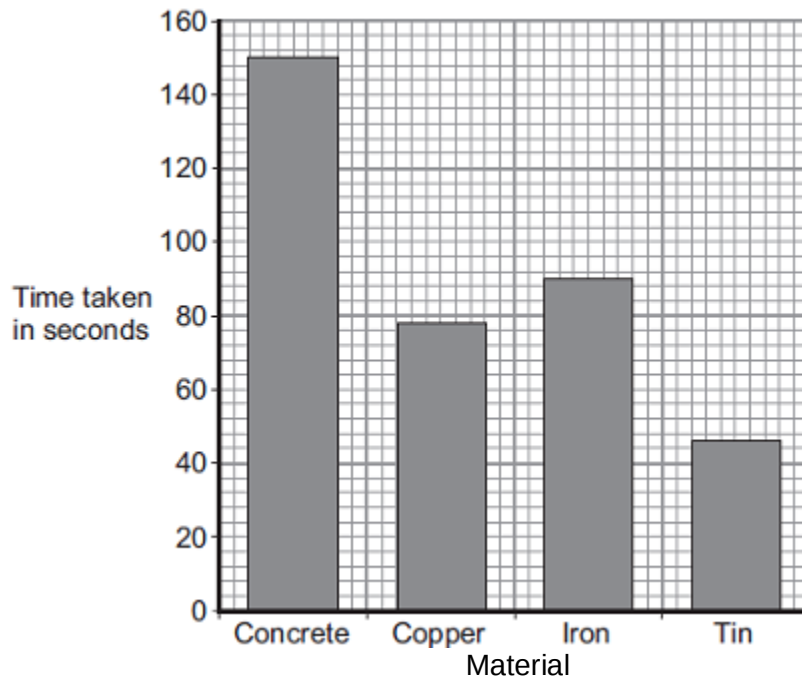
The student measured the time taken to increase the temperature of each material by 5 °C.

- (a) (i) State **two** variables the student controlled.

1. _____

Figure 2 shows the student's results.

Figure 2



- (ii) Why was a bar chart drawn rather than a line graph?

(1)

- (iii) Which material was supplied with the most energy?

Give the reason for your answer.

(2)

- (iv) The iron block had a mass of 2 kg.

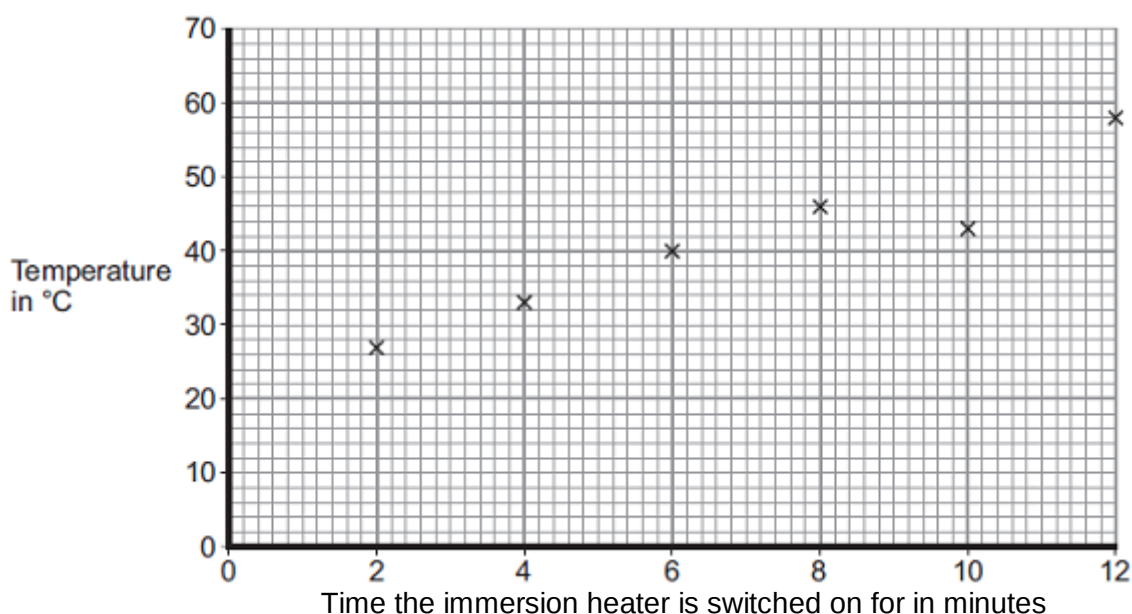
Calculate the energy transferred by the heater to increase the temperature of the iron block by 5 °C.

The specific heat capacity of iron is 450 J / kg °C.

Energy transferred = _____ J

- (b) The student used the same apparatus to heat a 1 kg block of aluminium.
 He recorded the temperature of the block as it was heated from room temperature.
 The results are shown in **Figure 3**.

Figure 3



- (i) One of the student's results is anomalous.

Draw a ring around the anomalous result.

(1)

- (ii) Draw the line of best fit for the points plotted in **Figure 3**.

(1)

- (iii) What was the temperature of the room?

Temperature = _____ °C

(1)

- (iv) What was the interval of the time values used by the student?

Interval = _____ minutes

(1)

(Total 11 marks)