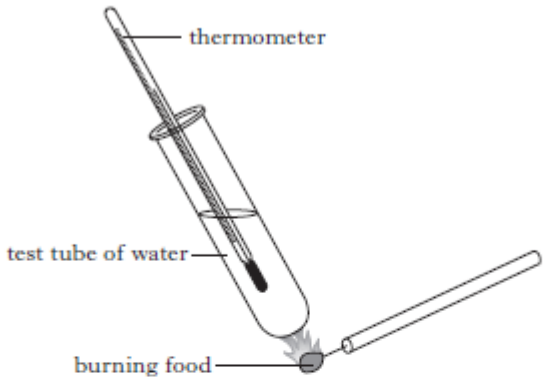
Homework 1- Respiration

1.

(*a*) The diagram shows a method used to investigate the energy content of a variety of foods.



The rise in temperature can be used to calculate the energy content of each food in kilojoules.

The results are shown in the table.

Type of food	*mass* (g)	*energy content* (kilojoules)
cheese	1·0	17·0
fish	1·0	0·5
steak	1·0	13·9
carrot	1·0	1·8
apple	1·0	2·5

(i) State **two** factors, not already mentioned, that should be kept constant for a valid comparison to be made between the foods.

1 _____

2 _____ **2**

(ii) Suggest why the energy contents found in the investigation might not have been as high as expected.

_____

_____ **1**

(iii) The energy content of each food was calculated using the following formula.

Energy content (kilojoules) = temperature rise × 0·21

Calculate the energy content of 1g of chicken, if it raised the temperature of the water by 30 °C.

Space for calculation

_____ kilojoules per gram **1**

(*b*) Give **one** reason, other than providing heat, why cells need energy from food.

_____ **1**

(*c*) Which component of food provides most energy per gram?

_____ **1**

2.

3. Hummingbirds use a lot of energy to get their food from flowers during the day.

The graph below shows the rate of oxygen consumption of a hummingbird from 12 noon (1200) one day to 12 noon the next day.

(*a*) Name the cell process which uses the oxygen taken in by the hummingbird.

_____ **1**

(*b*) (i) State the times that the rate of oxygen consumption was lowest.

Between _____ and _____ hours. **1**

(ii) Explain the relationship between the rate of oxygen consumption and the activity of the hummingbird.

_____

_____

_____ **1**

(*c*) Predict the effect of colder weather on the rate of oxygen consumption by the hummingbird.

Give a reason for your answer.

Prediction _____ **1**

Reason _____

_____ **1**