1.1 What is energy?

1. Use the words from the box to complete the sentences below.
Use each word once, more than once, or not at all.

~~joules~~	~~energy~~	0.001	fuels	~~food~~	newtons	1000

The ..Energy..... that we need every day comes from the .....food..... that we eat.

Your body needs .....energy..... to keep warm, and to keep your body working. ...Food.....

and ....fuels..... are stores of energy. Energy is measured in ....joules..... or kilojoules.

One kilojoule is .....1000..... .....joules.....

2. Here is the energy content of 1 g of some different fuels.

Fuel	Energy (kJ)
coal	20
oil	45
gas	40
wood	15

a. Name the fuel that stores the most energy.

Oil.....

b. Name the fuel that stores the least energy.

wood.....

c. Calculate the energy in *joules* in 1 g of coal.

20 x 1000 = 20,000.....

d. Calculate the mass of wood that has the same energy as 1 g of oil.

3g...wood = 45 kj.....3g.....

3. a. Explain why your body needs energy even when you are not moving.

So...you...can...breath, blink...and...for...your...brain

you

b. Cycling uses 25 kJ each minute. Calculate the number of minutes you would need to cycle for to use 100 kJ.

25 x 4 = 100. ...4 minutes...for...100 kJ.....

c. Explain why children need more energy than they use for the activities that they do each day.

Because...their...brain...is...still...developing...so...they...think...about...more...stuff

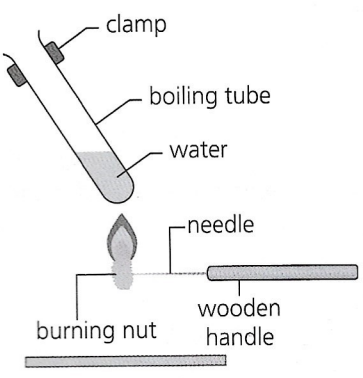
Extension

A student wants to measure the energy stored in some foods. He uses a small amount of each food to heat a test tube of water. He measures the temperature of the water before and after he burns the food.

a. State the variables that the student will need to control in this experiment.

b. Predict the link between the energy content of the food and the temperature increase.

The student works out from the temperature rise that there are 25 000 J in 1 g of peanuts. He realises that not all the energy from the food is heating the water.



c. Explain why all of the energy from the food does not heat the water.

d. Is the number that he has worked out bigger or smaller than the actual value of the energy stored? Explain your answer.