



**Remember!**

- Each section of questions gets harder as you go through (higher level questions at the end of each section).
- Try **all** questions. Write down an idea even if you're not sure – you might get a mark!
- Answer in pen.
- Use a ruler for drawing lines.

**1 hour  
71 marks**

# Year 8 Assessment

Autumn Term 2 2012





Name \_\_\_\_\_

Class \_\_\_\_\_

Science Teacher \_\_\_\_\_

**Food and Digestion**

**Q1.** The card shows the amounts of fat and fibre in some types of food and drink from a café.

Chez Jean Café				
	fat in g	fibre in g		
<b>type of burger</b>				
single burger	17	0.8		
double burger	38	1.2		
cheeseburger	21	1.0		
<b>type of drink</b>				
strawberry milkshake	8	0		
medium cola	0	0		
medium orange juice	0	0		
<b>type of potato</b>				
regular fries	15	3		
baked potato	0	9		

(a) From the card above, choose a meal consisting of a burger, a drink and some potato, to give:

(i) the least fat;

1 mark

(ii) the most fibre.

1 mark

Write your answers in the table below.

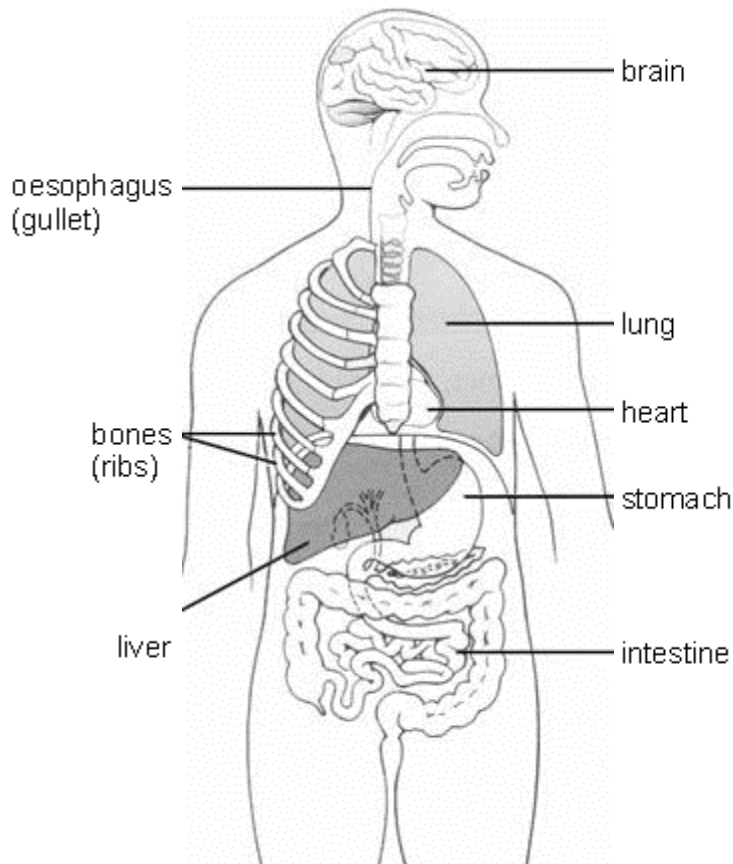
Food and drink	meal with the least fat	meal with the most fibre
type of burger		
type of drink		the drinks do <b>not</b> contain fibre
type of potato		

(b) Draw a line from each nutrient to the main reason why it is needed.  
 Draw only **four** lines.

nutrient		main reason why the nutrient is needed
		<ul style="list-style-type: none"> <li>• to keep the intestine working properly</li> </ul>
calcium	•	<ul style="list-style-type: none"> <li>• for healthy teeth and bones</li> </ul>
fibre	•	<ul style="list-style-type: none"> <li>• for insulation</li> </ul>
protein	•	<ul style="list-style-type: none"> <li>• to provide energy</li> </ul>
sugar	•	<ul style="list-style-type: none"> <li>• for growth and repair</li> </ul>

4 marks  
 Maximum 6 marks

**Q2.** The diagram shows some of the organs of the human body.



(a) Give the names of **two** labelled parts where food is digested.

..... and .....

1 mark

(b) Why do we need to chew our food and mix it with saliva?

.....  
.....  
.....

2 marks

(c) (i) Draw **one** line from each bad habit to the organ it harms.

**bad habit**

**organ**

drinking too much alcohol

liver

**not** eating enough fibre

lung

smoking cigarettes

ribs

intestine

3 marks

(ii) Which organ in the list below can be harmed if we eat too much fat?  
Tick the correct box.

brain

heart

lung

ribs

1 mark

Maximum 7 marks

**Q3.** Carbohydrate, fat and protein are three types of nutrient.

(a) Give the names of **two** other types of nutrient needed for a balanced diet.

1. ....

2. ....

2 marks

A balanced diet contains a variety of foods. Some food groups are shown in the table. They are labelled A to D.

		percentage of each substance in the dry mass		
food group	example	carbohydrate %	fat %	protein %
A meat and fish	liver	5	23	72
	beef	2	45	53
	cod	21	26	53
B dairy products	milk	42	33	25
	ice-cream	55	34	11
	yoghurt	68	11	21
C nuts	peanuts	9	58	33
	almonds	5	68	27
	coconut	8	83	9
D cereals and vegetables	wheat	84	2	14
	corn	86	3	11
	potatoes	90	1	9

(b) Which food group contains the highest percentage of the nutrient used by the body for growth and repair?

Tick the correct box.

A       B       C       D

1 mark

(c) Fibre is not digested but helps the digestion process. Which food group contains the most fibre?

Tick the correct box.

A       B       C       D

1 mark

(d) Use the information in the table to suggest why milk is better for babies than ice-cream.

.....  
 .....

1 mark

- (e) 100 g of dried coconut has more energy stored in it than an equal mass of dried potato.

Give the reason for this.

.....  
 .....

1 mark  
 Maximum 6 marks

**Q4.** Table 1 gives information about 100 g of five different foods.

food	energy per 100 g of food (kJ)	nutrients per 100 g of each food			
		protein (g)	fat (g)	carbohydrate (g)	calcium (mg)
banana	403	1.2	0.3	23.2	6
wholemeal bread	914	9.2	2.5	41.6	54
butter	3031	0.5	81.7	0	15
cheese	1708	22.5	34.4	0.1	720
milk	275	3.2	3.9	4.8	115

**table 1**

- (a) Look at **table 1**.
- (i) Which of the four **nutrients**, protein, fat, carbohydrate or calcium, provides most of the energy in the cheese?  
 .....
- (ii) Which of the four **nutrients** provides most of the energy in the wholemeal bread?  
 .....
- (iii) Which of the four **nutrients** is needed for growth and repair?  
 .....

3 marks

- (b) The recommended daily amount of protein for a woman is 45 g. Look at **table 1**. How many grams of cheese would provide 45 g of protein? Tick the correct box.

50 g  100 g  150 g  200 g

1 mark

(c) **Not** all the types of nutrients needed for a balanced diet are shown in **table 1**.

Give the name of **one** of the missing types of nutrient.

.....

1 mark

(d) **Table 2** shows the recommended daily amount of calcium for a person in four stages of the human life cycle.  
We need calcium for healthy teeth and bones.

person	recommended daily amount of calcium (mg)
a baby aged 6 months	600
a woman before she is pregnant	500
a pregnant woman	1200
a breast-feeding woman	

**table 2**

(i) Use information in **table 2** to estimate how much calcium a breast-feeding woman should have each day.

..... mg

(ii) Explain why she would need this amount of calcium.

.....

.....

2 marks  
maximum 7 marks

**Atoms and Elements**

**Q5.** The list below shows properties that different elements can have.

- magnetic
- can be compressed
- very high melting point
- very low melting point
- good conductor of heat
- poor conductor of heat
- good conductor of electricity
- poor conductor of electricity

(a) Which **two** properties from the list above make aluminium suitable for saucepans?

1. ....

2. ....

2 marks

(b) Which property in the list above explains why:

(i) copper is used in the cable of a television?

.....

1 mark

(ii) a lot of oxygen gas can be pumped into a very small container?

.....

1 mark

Maximum 4 marks



**Q6.** (a) The table below shows information about five elements.

element	melting point (°C)	boiling point (°C)	conducts electricity	colour
A	-7	59	no	brown
B	-218	-183	no	colourless
C	1535	2750	yes	silvery
D	113	445	no	yellow
E	1083	2567	yes	orange

(i) Which **two** of these elements are likely to be metals?

Write the letters.

..... and .....

1 mark

(ii) Which element in the table is liquid at room temperature?

Write the letter.

.....

1 mark

(b) What is the chemical symbol for copper?

Tick the correct box.

Cr       Cu       C       Co       Ca

1 mark

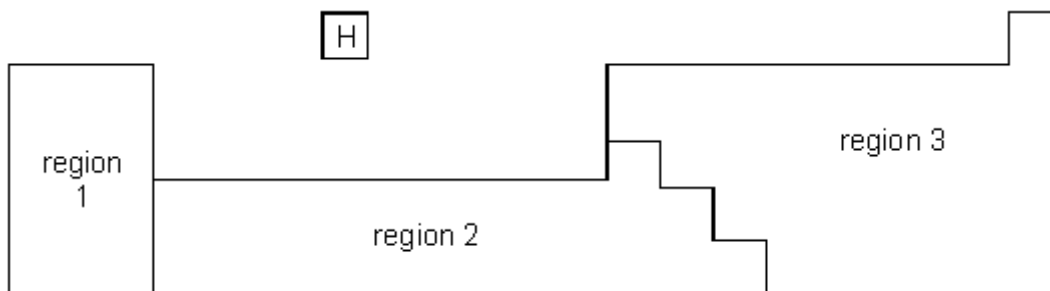
(c) How many atoms of iron and oxygen are there shown in the formulas for FeO and Fe<sub>2</sub>O<sub>3</sub>?

Complete the table below.

compound	number of atoms of iron	number of atoms of oxygen
FeO		
Fe <sub>2</sub> O <sub>3</sub>		

2 marks  
maximum 5 marks

**Q7.** The diagram shows an outline of part of the Periodic Table of Elements.



(a) What is the name of the element with the symbol H?

.....

1 mark

(b) In which regions of the Periodic Table are the following types of element found?

(i) non-metals (such as oxygen and chlorine);

region .....

1 mark

(ii) very reactive metals (such as sodium and potassium);

region .....

1 mark

(iii) less reactive metals (such as copper and zinc).

Region .....

1 mark

(c) Why is copper sulphate **not** found in the Periodic Table?

.....  
 .....

1 mark

(d) An iron nail is placed into some blue copper sulphate solution. A reaction takes place between the iron and the copper sulphate.

(i) Complete the word equation for the reaction.

iron + copper sulphate → ..... + .....

1 mark

(ii) Describe **one** change you would see on the surface of the nail.

.....  
 .....

1 mark

Maximum 7 marks

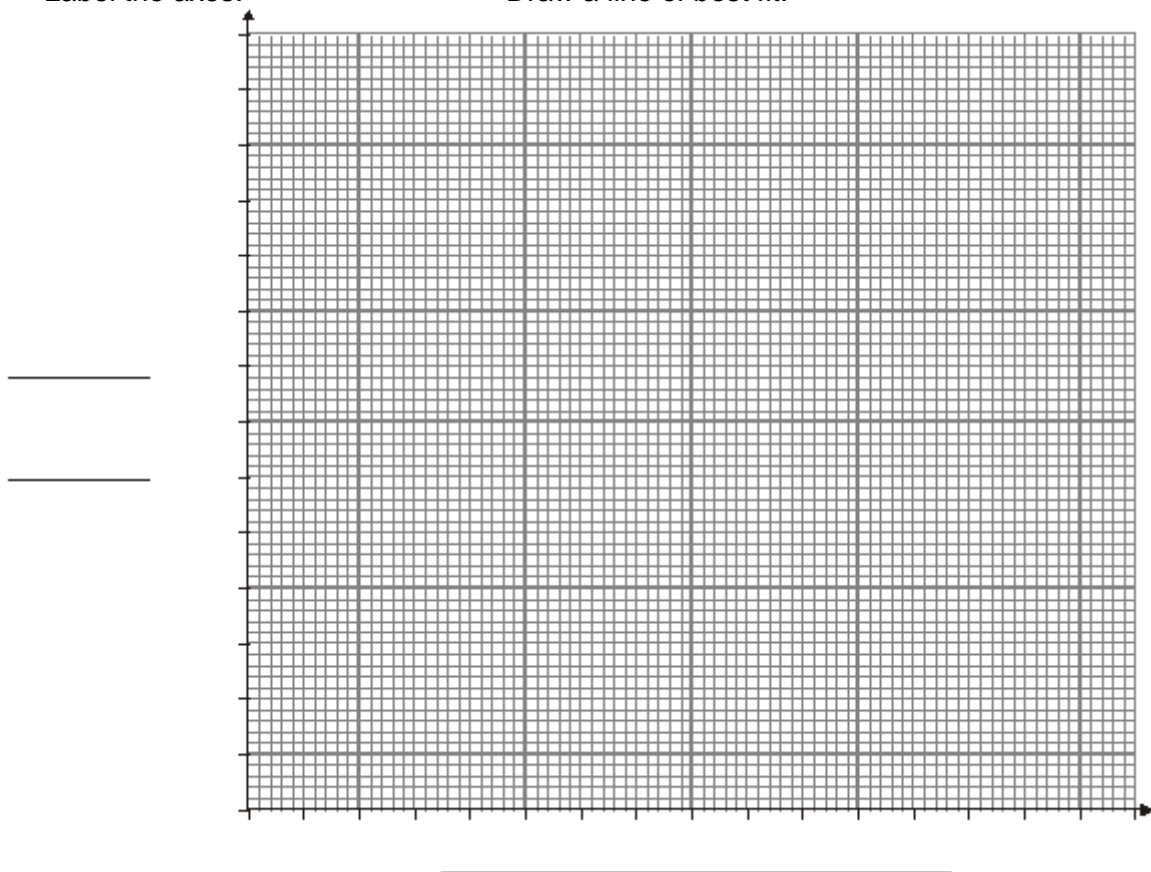
**Q8.** Six groups of pupils burned magnesium in air. The magnesium reacted with oxygen to form magnesium oxide.

They recorded the mass of magnesium used and the mass of magnesium oxide formed. Their results are shown in the table.

group	mass of magnesium (g)	mass of magnesium oxide (g)
A	3.2	5.2
B	3.8	6.5
C	4.2	7.0
D	4.9	8.6
E	5.4	8.0
F	6.1	10.7

(a) Use their results to draw a graph below.

- Decide the scale for each axis.
- Label the axes.
- Plot the points.
- Draw a line of best fit.



4 marks

(b) (i) Which group's results do **not** fit the general pattern?  
Give the letter. 1 mark

(ii) How should the class deal with this 'odd' result?  
.....  
.....

(c) Use the graph to predict the mass of magnesium oxide that will be formed by burning 7.0 g of magnesium. 1 mark

..... 9 1 mark

(d) The results show the relationship between the mass of magnesium and the mass of magnesium oxide formed.

What conclusion could you draw about this relationship?

.....  
.....  
.....  
.....

1 mark  
maximum 8 marks

**Heating and Cooling**

**Q9.** (a) The diagrams below show how much heat is lost from different parts of a house every second.



Through which part of the house above is most heat lost?

..... 1 mark

- (b) Part of the house is insulated to reduce the loss of heat. This is shown below.



- (i) Which part of the house has been insulated?

.....

1 mark

- (ii) Explain your answer.

.....  
 .....

1 mark

- (c) The table below gives information about three fossil fuels that can be used to heat a house.

fuel	physical state	energy released when 1g is burned (J)	Does the fuel produce these substances when burned?	
			water	sulphur dioxide
coal	solid	25000	yes	yes
oil	liquid	42000	yes	yes
methane	gas	55000	yes	no

- (i) Which fuel in the table releases the **least** energy when 1 g is burned?

.....

1 mark

- (ii) Methane **can** be compressed.

Which information in the table shows that methane can be compressed?

.....

1 mark

- (iii) Sulphur dioxide causes acid rain.

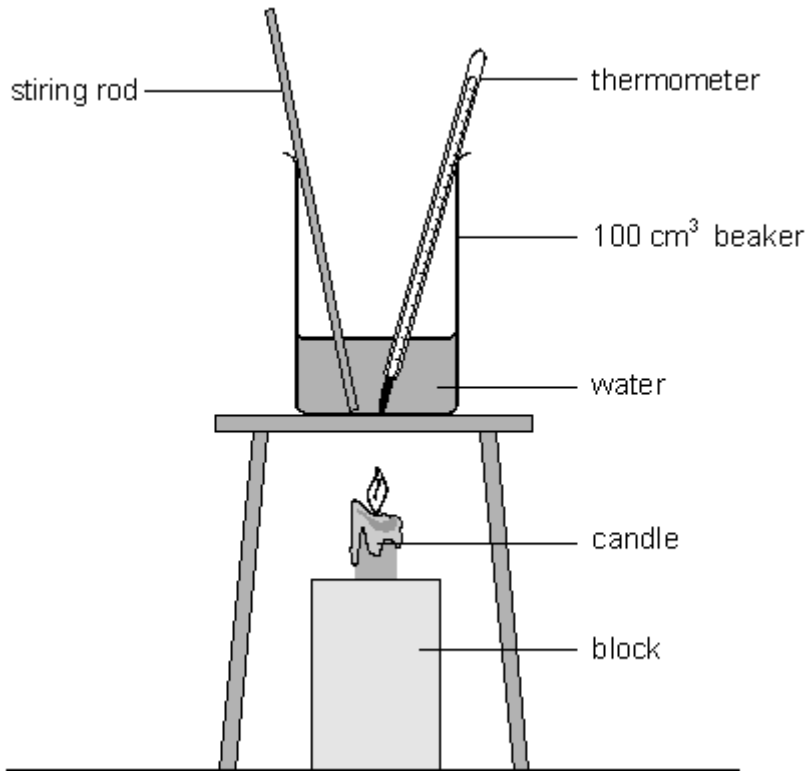
Use the table to explain why burning methane does **not** produce acid rain.

.....

.....1 mark

maximum 6 marks

**Q10.** Luke investigated the heating of water. He predicted that the rise in temperature would depend on the volume of water. The diagram shows the apparatus he used.



Luke recorded his results in a table as shown below.

beaker	volume of water, in cm <sup>3</sup>	temperature at start, in °C	temperature after 2 minutes, in °C
A	25	18	30
B	50	18	24
C	75	18	22

(a) Why did Luke need to know the temperature of the water at the beginning and at the end of the experiment?

.....  
 .....

1 mark

(b) Did Luke's results support his prediction? Explain your answer.

.....  
 .....

1 mark

- (c) Luke stirred the water during the experiment. How did this make his results more reliable?

.....  
 .....

1 mark

- (d) Which of the following statements about the energy transferred to the beakers is correct?  
 Tick the correct box.

Much more energy went into beaker 'A' because its temperature increased the most.

The same amount of energy went into all three beakers.

Beaker 'C' received the most energy because there was more water to heat.

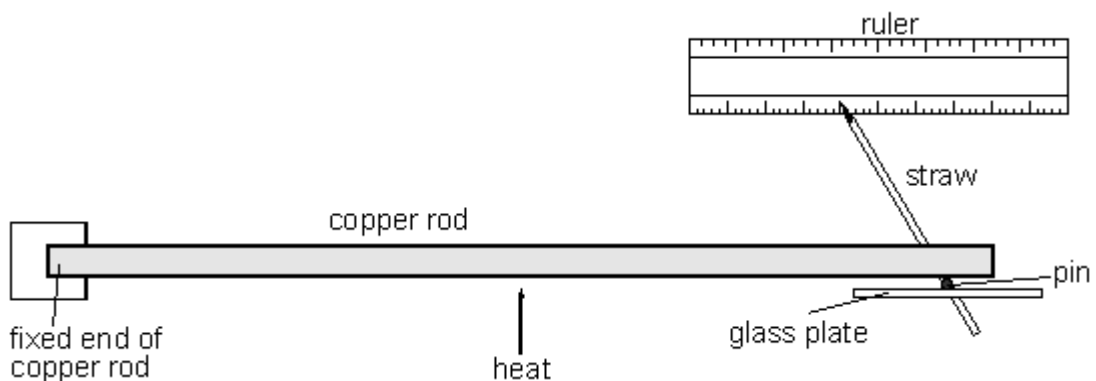
1 mark

- (e) After a time, all three beakers cooled down to room temperature. What happened to the thermal energy in the beakers as they cooled down?

.....  
 .....

1 mark  
 Maximum 5 marks

- Q11.** Sarah wanted to find out how the length of a copper rod changes when it is heated. She fixed one end of the rod and allowed the other end to roll on a pin which had been put on a glass plate. A drinking straw, attached to the pin, showed the movement of the end of the rod.



(a) (i) What happens to the motion of the copper atoms in the rod as it is heated?

.....  
 .....

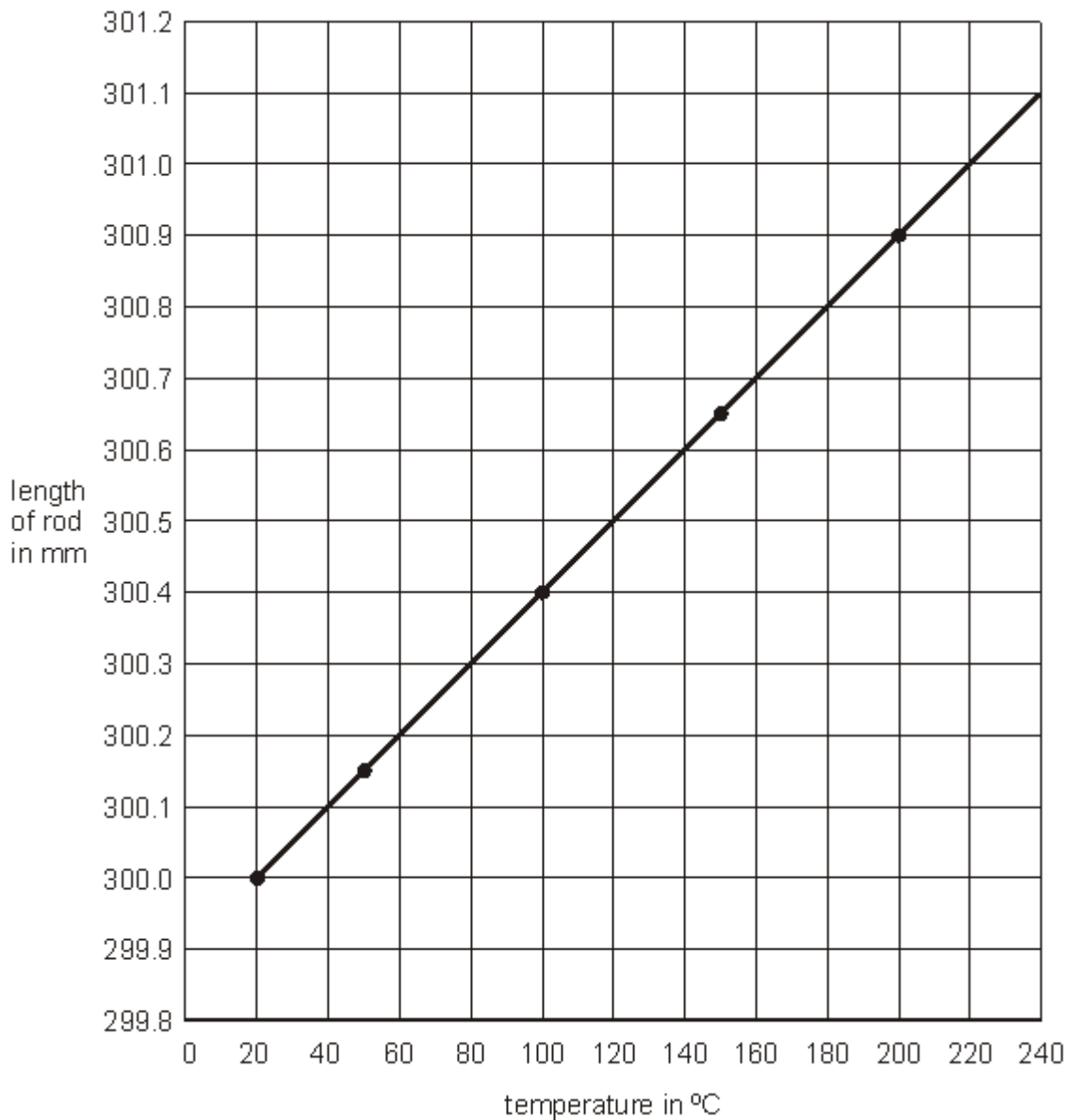
1 mark

(ii) What happens to the average distance between the atoms of copper when the rod is heated?

.....  
 .....

1 mark

(b) The graph shows the length of a copper rod at different temperatures. The rod was 300.0 mm long at room temperature.





(i) At what temperature has the rod increased its length by 1.0 mm?  
..... °C  
1 mark

(ii) The rod was 300.0 mm long at room temperature. What will its length become if it is placed in melting ice at 0°C?  
..... mm  
1 mark  
Maximum 4 marks

**Q12.**

(a) In an iron rod the particles vibrate. If one end of an iron rod is heated, the vibrating particles transfer energy to neighbouring particles which are **not** vibrating so violently.  
What is this process called?  
.....  
1 mark

(b) An electric immersion heater is put at the bottom of a large tank of water.  
The water next to the heater becomes warm.

(i) What will happen to the warmed water next to the heater?  
Give a reason for your answer.  
.....  
.....  
.....  
2 marks

(ii) Why can heat **not** be transferred in this way in an iron rod?  
.....  
.....  
1 mark

(c) In a liquid, some of the particles have enough kinetic energy to escape from the surface.  
This process happens even when the liquid is well below its boiling point.

(i) What is this process called? .....  
1 mark

(ii) How will this affect the temperature of the liquid left in the container?  
.....  
1 mark  
Maximum 6 marks