Revision Questions – Second Year Physics

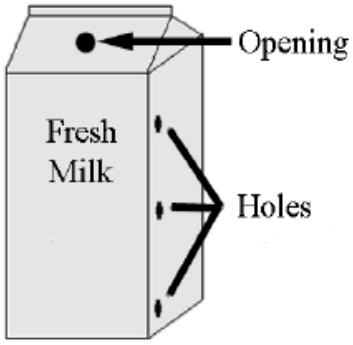
The damage to the railway tracks shown in this image was caused by an environmental factor. Name the factor and explain how it caused the damage.

Name _____

Explain _____

_____

Three holes were made in a carton of milk at the same time. From which hole will the milk pour out at the greatest rate? Give a reason for your answer.

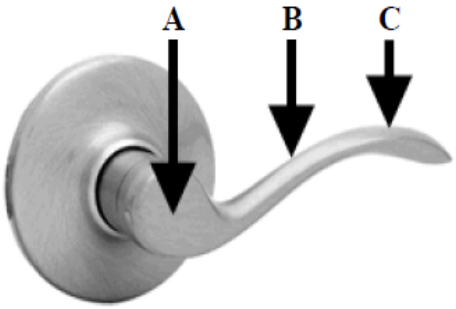


Which? _____

Reason _____

The door handle is an application of a lever.

The labels and arrows show three points.



Which of the points **A**, **B** or **C** represent

(*i*) the fulcrum (turning point),

(*ii*) the point where the smallest force will open the door lock.

(*i*) _____ (*ii*) _____

Explain the term *friction*. How can friction be reduced?

Explain _____

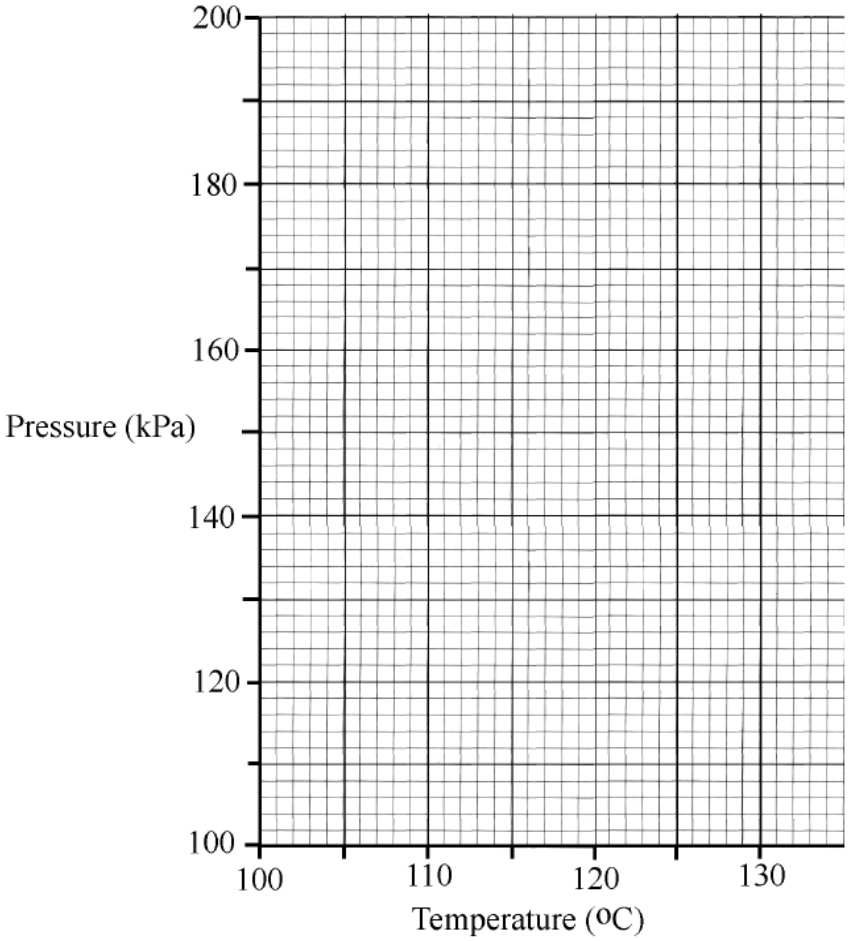
How? _____

Define pressure._____ (3)

An experiment was performed to investigate the effect of pressure on the boiling point of water. The data from the experiment is given in the table below.

Pressure (kPa)	100	120	140	160	180	200
Temperature (°C)	100	105	109	114	119	124

(*i*) Draw a graph of pressure against temperature using the grid below. (9)



(*ii*) What two pieces of information can be drawn from the graph about the relationship between the boiling point of water and pressure. (6)

1 _____

2 _____

(*iii*) What effect would reducing the pressure on water below normal atmospheric pressure, about 100 kPa, have on its boiling point? (3)

What? _____

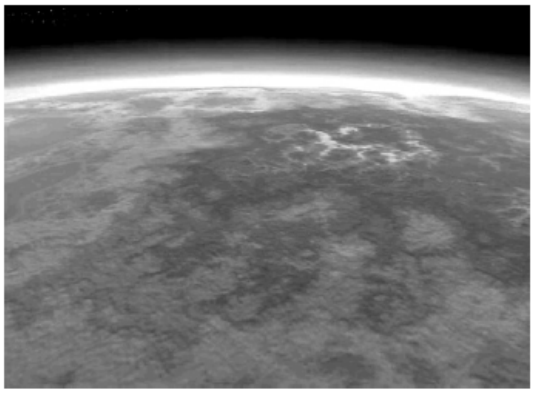
The photo shows a hot air balloon.

Why does the balloon rise when the air inside is heated?

Why? _____

_____

The Earth's atmosphere seen from space is the thin curve at the top of the photo.



(*i*) Name the force that holds the atmosphere to the Earth.

Name _____

This force gives the atmosphere weight and causes atmospheric pressure.

(*ii*) Define pressure and give the unit for pressure.

Define _____ Unit _____

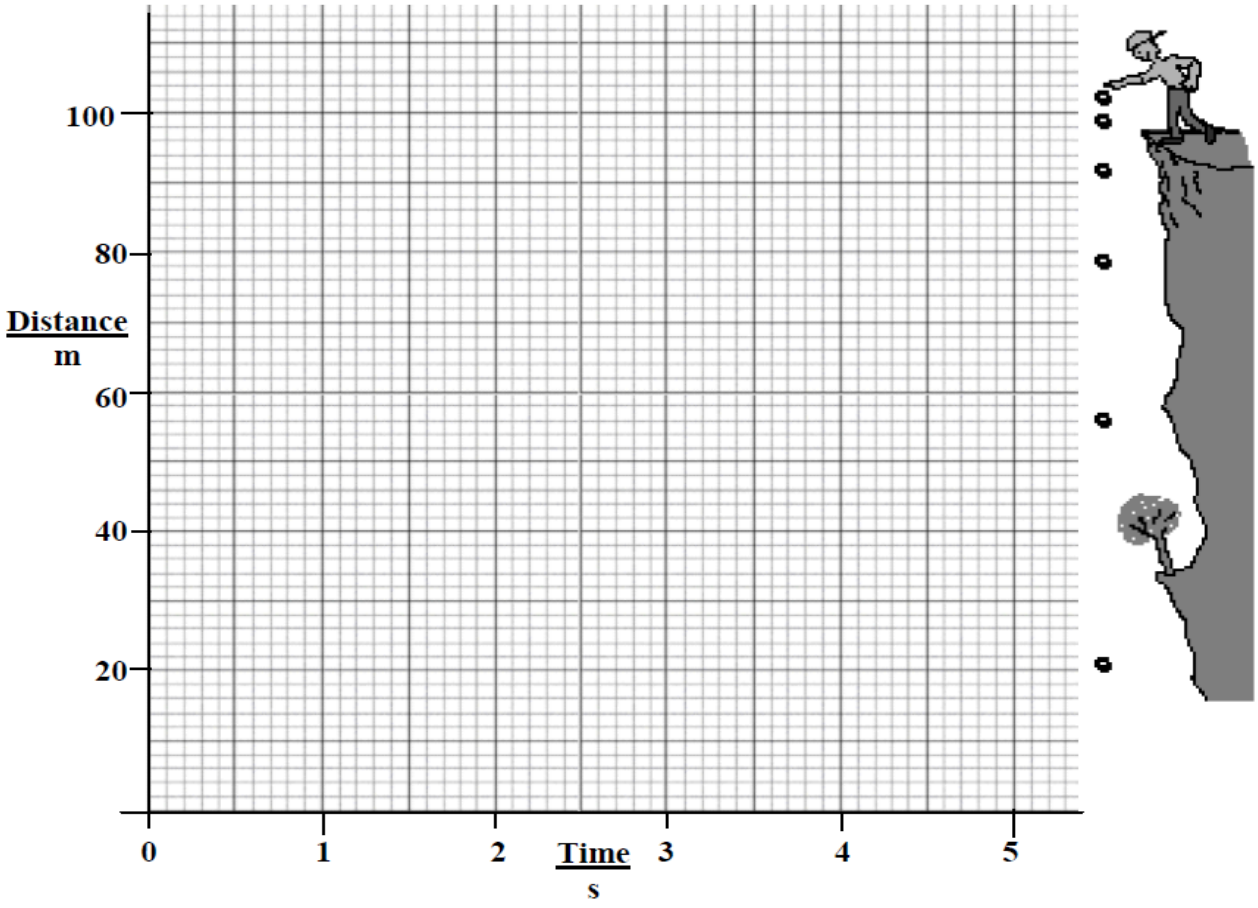
(*iii*) Why does atmospheric pressure decrease with height?

Why? _____

(*a*) A stone was dropped from the top of a cliff and the distance that it fell was measured at the intervals of time as given in the table below.

Distance (m)	0	5	20	45	80	**100**
Time (s)	0	1	2	3	4	**4.5**

(*i*) Draw a graph of distance against time in the grid below.
A smooth curve through the plotted points is required. (9)



(*ii*) Use the graph to find how far the stone had fallen in 3.5 s. (3)

_____

(*iii*) Calculate the average speed of the falling stone between the second and the fourth second. Give the unit with your answer. (6)

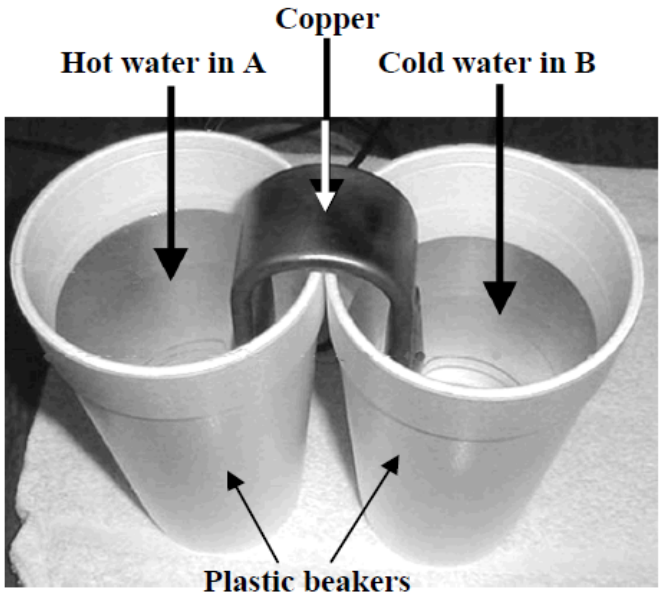
_____

(*iv*) In this experiment is distance fallen directly proportional to time?
Justify your answer. (6)

_____

_____

The experiment shown in the photograph was set up by a student.



(*i*) What changes take place to the water in the beakers **A** and **B** as time passes? (3)

_____

_____

_____

(*ii*) Explain why these changes occur. (6)

_____

_____

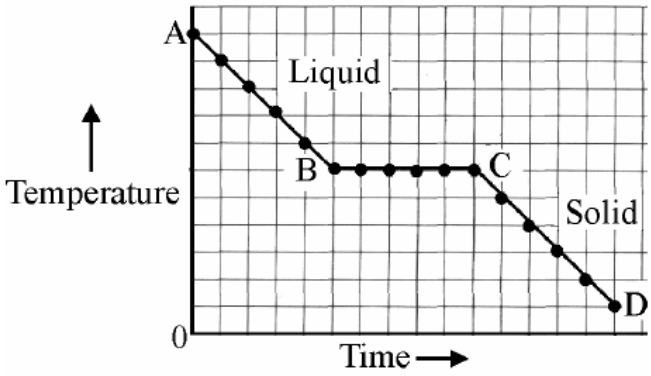
(*iii*) What instrument would be used, in this experiment, to monitor the changes? (3)

_____

(*iv*) Name a material to replace copper in this experiment that will not allow these changes to occur. (3)

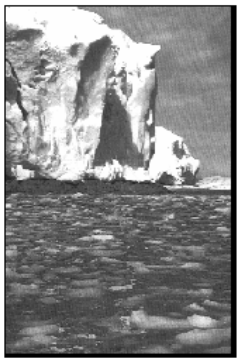
_____

A substance that is a solid at room temperature was heated above its melting point and then allowed to cool at a steady rate. The temperature was taken at regular intervals. The data is in the graph. Why is ***there no drop in temperature*** between B and C?



Why? _____

Why do icebergs ***float*** on water?

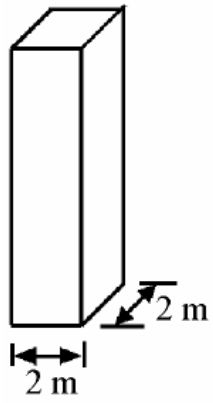


Why? _____

_____

_____

The diagram shows a tank full of water. The mass of the water in the tank is 48 000 kg. Calculate the ***approximate pressure*** that it exerts on the base of the tank. Give the ***units*** of pressure with your answer.



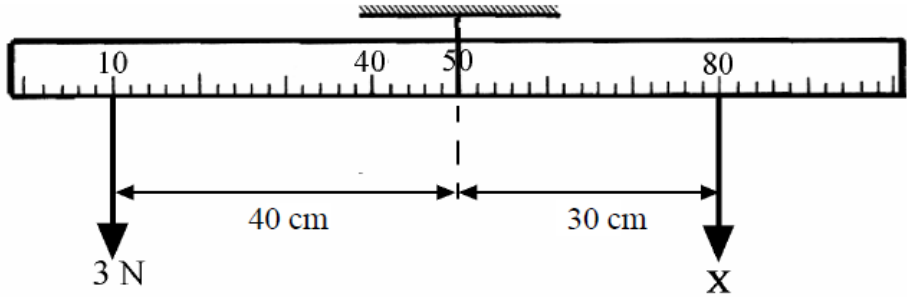
Calculate _____

_____

Give **two *differences*** between heat and temperature.

One _____

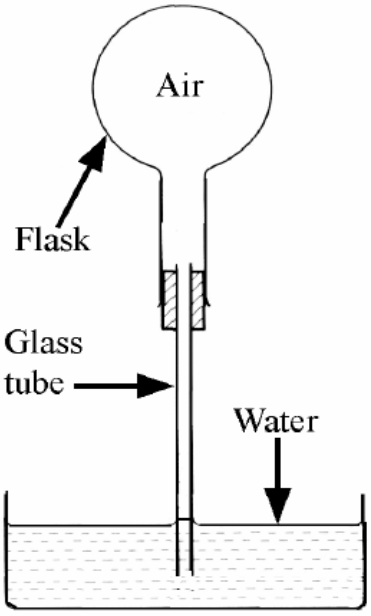
Two _____



A uniform metre stick, suspended at its mid-point is balanced as shown. Calculate ***force*** X.

Calculate _____

The apparatus shown in the diagram was used to investigate the expansion and contraction of a gas.



(*i*) What is ***observed*** when the flask is ***heated***? (3)

What? _____

_____

(*ii*) Explain your ***observation*** when the flask is ***heated***? (3)

Explain _____

_____

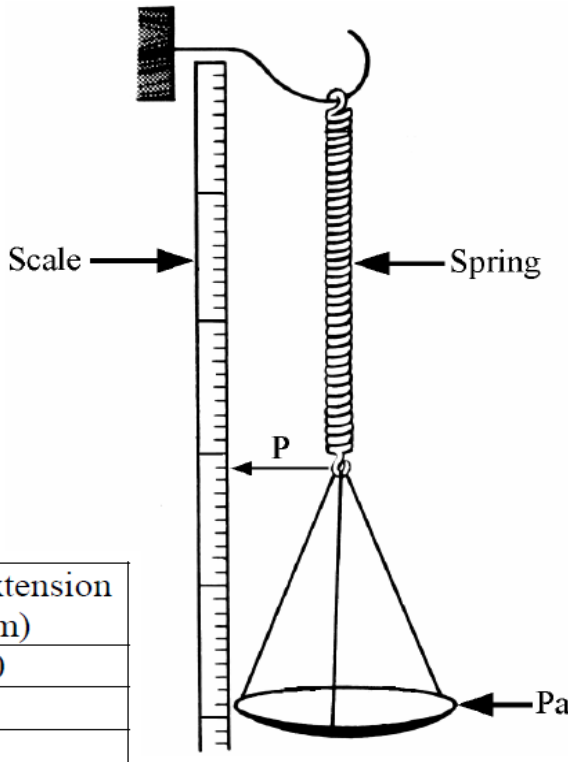
(*iii*) What is ***observed*** when the flask is allowed to ***cool***? (3)

What? _____

(*iv*) Explain what you ***observe*** as the flask ***cools***. (3)

Explain _____

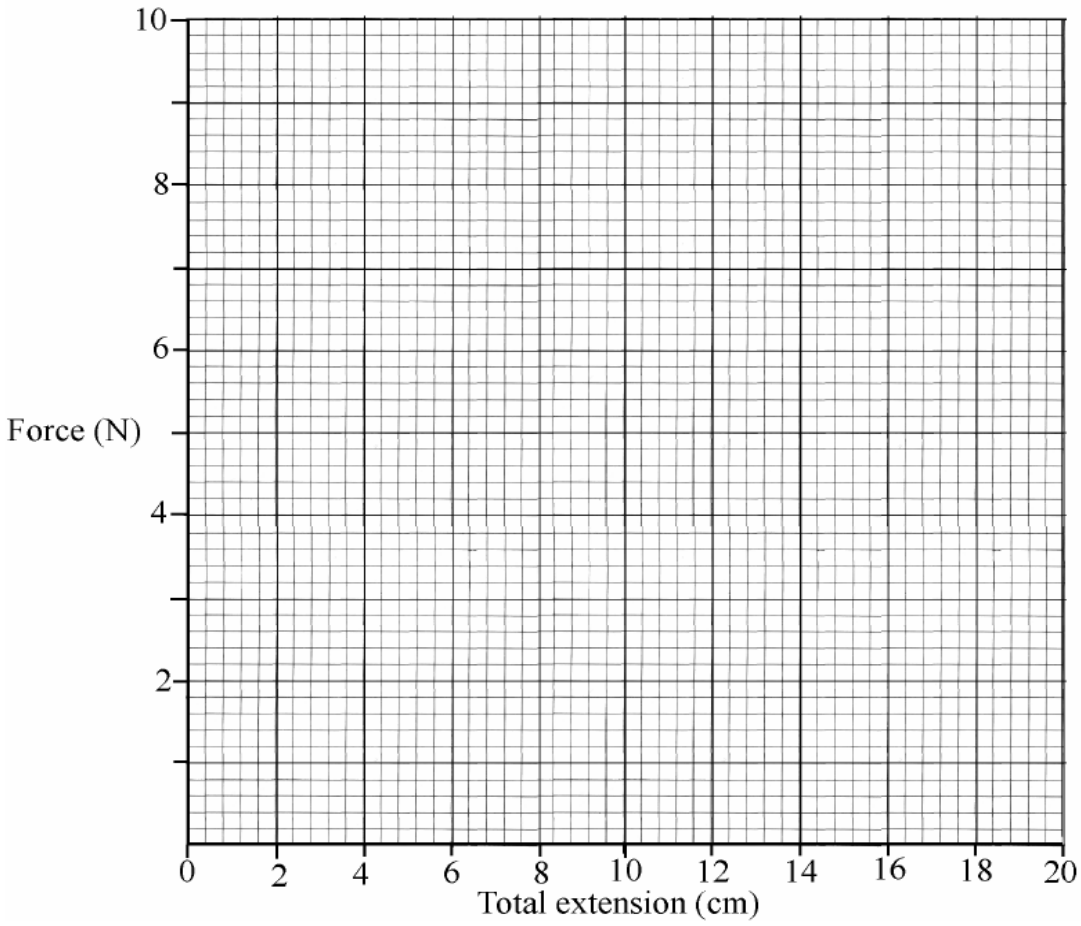
(*a*) A pupil used the apparatus shown in the diagram to investigate the relationship between the force applied and the extension produced in the spring by that force.
Pointer, P, was used to read the scale.
Weights were added to the pan to apply forces to the spring.
The data recorded is in the table.



(*i*) Calculate the ***total extension*** for each force and enter them in the table. (6)

Force (N)	Scale reading (cm)	Total extension (cm)
0	31.0	0
2	35.0	
4	39.0	
6	43.0	
8	47.0	
10	51.0	

(*ii*) Draw a ***graph*** of force against total extension in the grid below. (6)



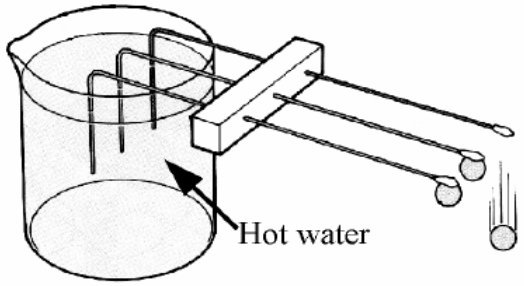
(*iii*) What ***conclusion*** can be drawn from the graph regarding the relationship between the force applied to the spring and the extension produced by it? (6)

What? _____

(*iv*) Use the graph to ***determine the weight*** of a stone that produced an extension of 14 cm in the spring. (3)

Use _____

Copper, aluminium and iron rods are set-up as shown in the diagram. A metal ball is attached by wax to the end of each rod. Hot water is poured into the beaker. The ball falls from the copper rod first. What ***conclusion*** can be drawn from this observation?

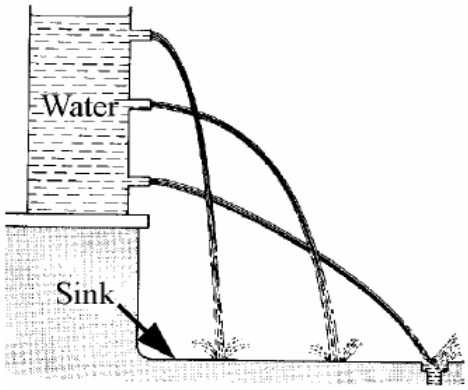


Conclusion _____

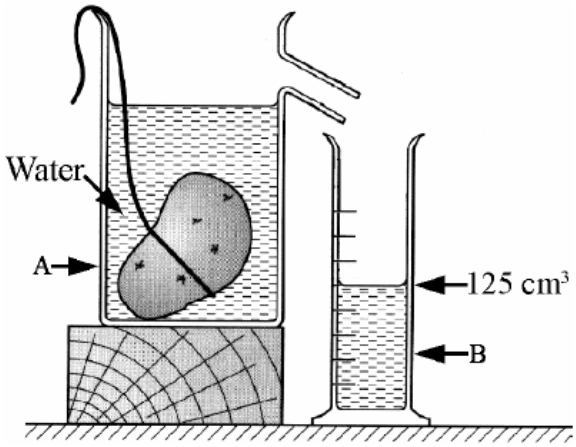
The diagram shows a container with three spouts. The container is filled with water. Jets of water pour out of the spouts. Why does the ***jet of water from the bottom spout travel the furthest out from the container***?

Why? _____

_____



A pupil measured the volume of a potato using the items of laboratory equipment, labelled **A** and **B** as shown in the diagram. (6)



(*i*) Name ***the items labelled*** **A** ***and*** **B**.

A _____

B _____

(*ii*) The potato had mass 175 g and volume 125 cm^3.
Calculate the ***density*** of the potato.
Give the ***units of density*** with your answer. (6)

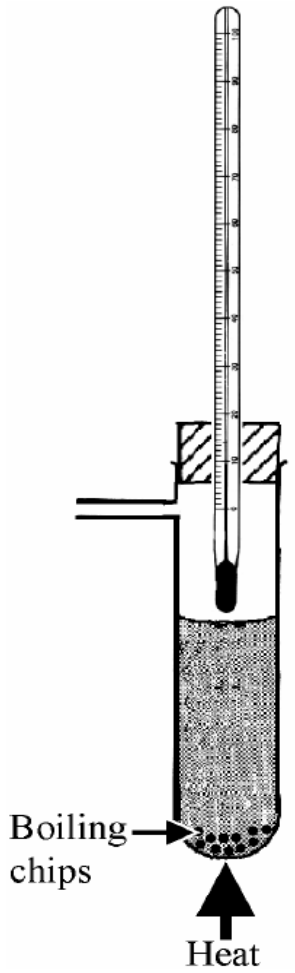
_____

_____

(*iii*) Why did the potato ***sink*** in the water? (3)

_____

The ***boiling point of water*** can be determined using the apparatus shown in the diagram.



(*i*) Why are ***boiling (anti-bumping) chips*** added to the water? (3)

Why? _____

(*ii*) At what ***temperature*** does ***water boil***, at ***standard*** (normal) ***atmospheric pressure***? (3)

What? _____

(*iii*) What ***effect*** does the ***raising of pressure*** have on the ***boiling point*** of water? (3)

Effect of raising pressure _____

(*iv*) What ***effect*** does the ***lowering of pressure*** have on the ***boiling point*** of water? (3)

Effect of lowering pressure _____

The photograph shows a solar panel being installed. Water passing through the panel is heated by the sun.

(*i*) How does ***heat*** from the ***sun travel***, through the ***vacuum of space***, to the earth? (3)

How? _____

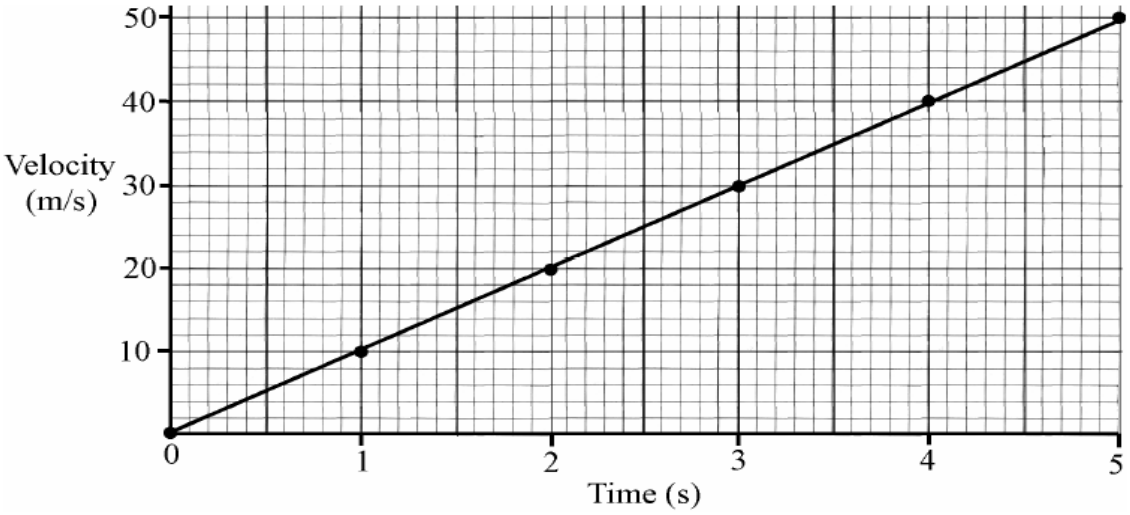
(*ii*) Give ***one advantage <u>or</u> one disadvantage*** of fitting solar panels to your home? (3)

Advantage _____

<u>Or</u>

Disadvantage _____

A stone was dropped from the top of a tall cliff. The stones approximate velocity was measured each second as it fell. The data collected during this experiment is given in the graph.



(*i*) Define ***velocity***. (6)

(*ii*) Use data from the graph to ***estimate the acceleration of the stone*** as it fell. Give the ***units of acceleration*** with your answer. (6)

(*iii*) Name the ***force*** that caused the stone to fall. (3)

Name _____

(*iv*) The stone had a mass of 2 kg.
What was the ***weight*** of the stone on earth? Give the unit. (6)