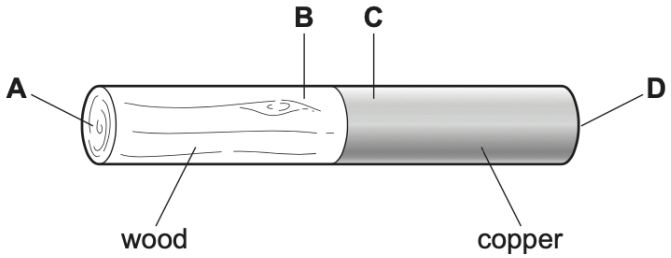
1.

A rod is made up of copper and wood joined together.

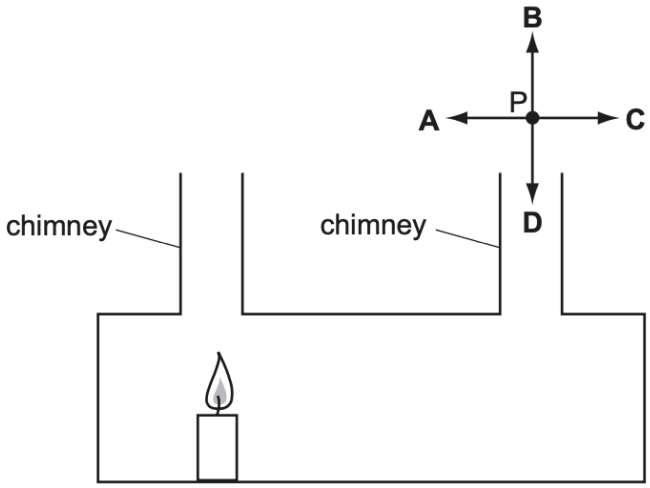
After the rod is heated at the join in the centre for about a minute, where would the lowest temperature be?



2.

A teacher demonstrates convection currents using a box with two chimneys and a lighted candle. She holds a smoking taper at point P.

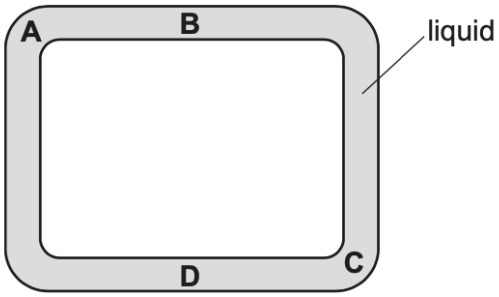
In which direction does the convection current cause the smoke to move?



3.

A heating element is positioned in a narrow sealed tube of liquid.

What would be the best place to position the heating element in order to obtain the best circulation of the liquid through the tube?

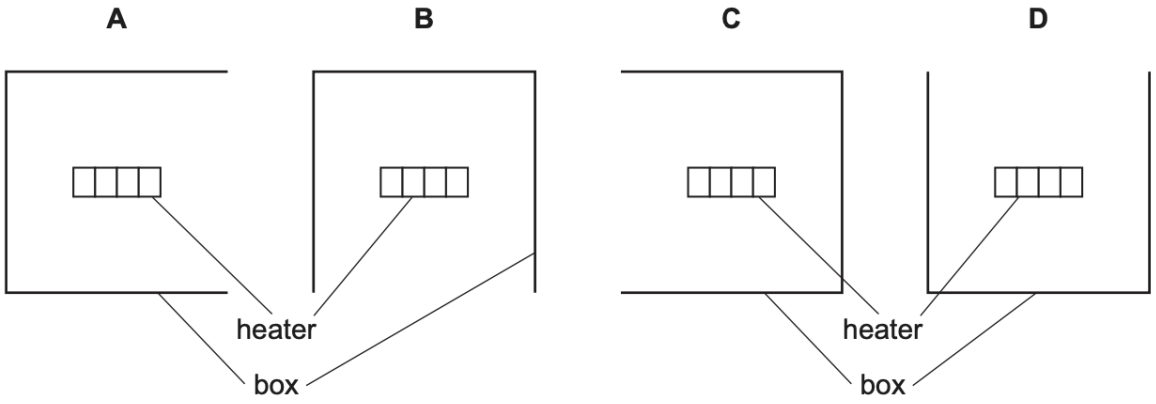


4.

An electric heater is placed inside a metal box which has one side open. The diagram shows four possible positions for the box.

The heater is switched on for several minutes.

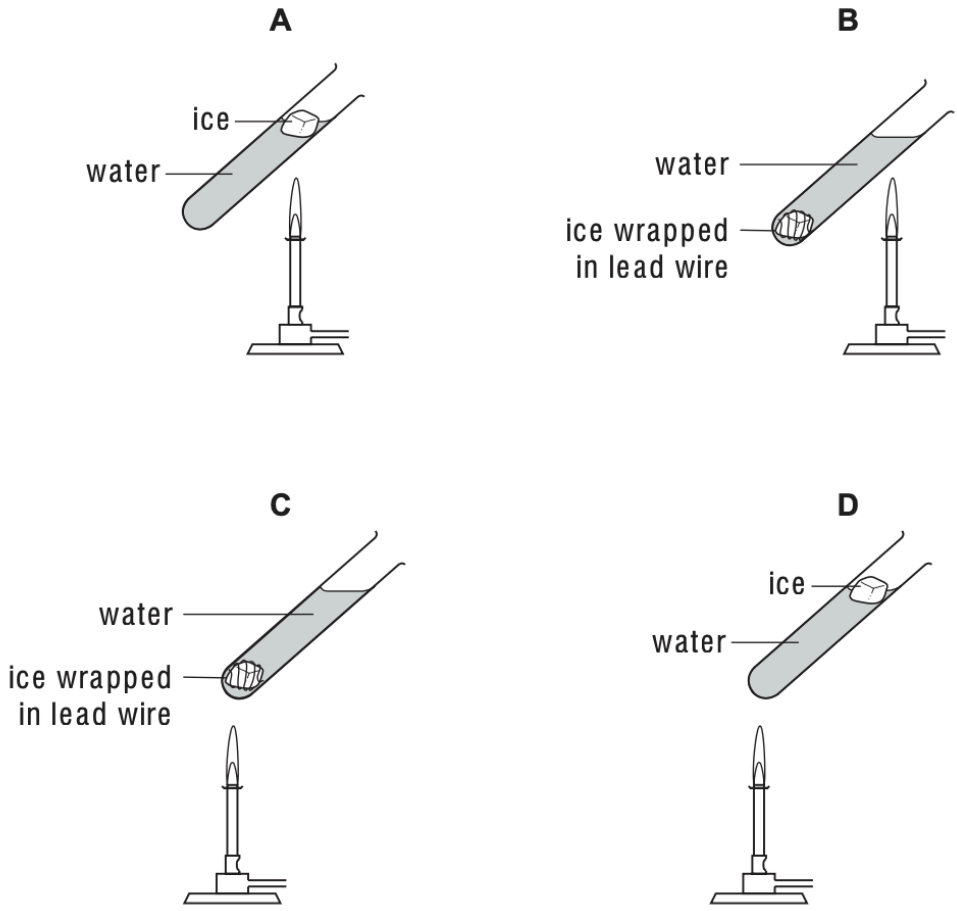
In which position does the box become the hottest?



5.

The diagrams show four identical pieces of ice that are heated in test-tubes of water.

In which test-tube will the ice take the longest time to melt?



6.

Food is kept in a cool-box which uses two ice packs to keep it cool.

Where should the ice packs be placed to keep all the food as cool as possible?

A both at the bottom of the box

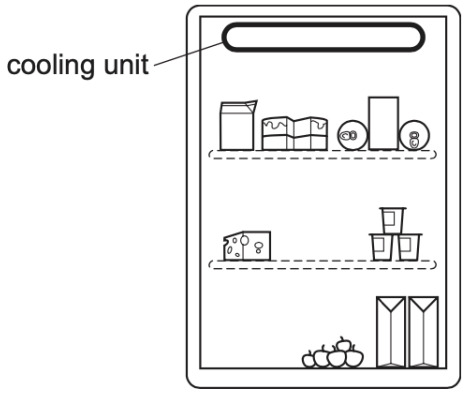
B both at the top of the box

C one at the front and one at the back of the box

D one on the left and one on the right of the box

7.

The diagram shows a refrigerator. The cooling unit is placed at the top. The cooling unit cools the air near it.



What happens to the density of this air as it cools and how does it move?

	density of the air	movement of the air
A	decreases	moves down
B	decreases	stays where it is
C	increases	moves down
D	increases	stays where it is

8.

A beaker of water is heated at its base.

Why does the water at the base rise?

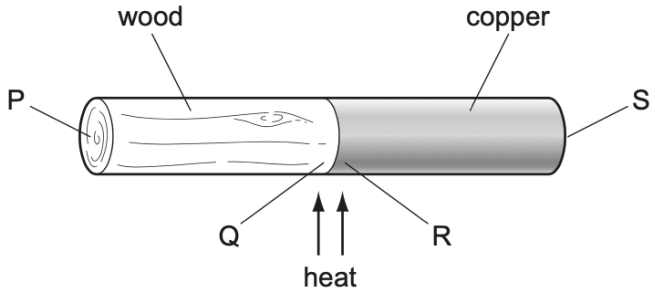
A It contracts and becomes less dense.

B It contracts and becomes more dense.

C It expands and becomes less dense.

D It expands and becomes more dense.

9. A rod is made of copper and wood joined together.



The rod is heated at the join in the centre for about a minute.

At which labelled point will the temperature be lowest, and at which point will it be highest?

	lowest temperature	highest temperature
A	P	Q
B	P	R
C	S	P
D	S	R

10. Why does convection take place in a liquid when it is heated?

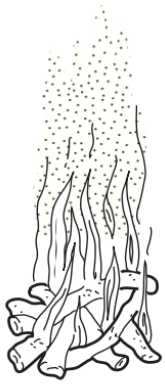
A Liquids expand when they are heated.

B Liquids start to bubble when they get close to boiling point.

C Molecules in the liquid expand when they are heated.

D Molecules near to the surface of the liquid escape into the air.

11. The diagram shows a fire.



Why does the smoke rise above the fire?

A Smoke evaporates more quickly at higher temperatures.

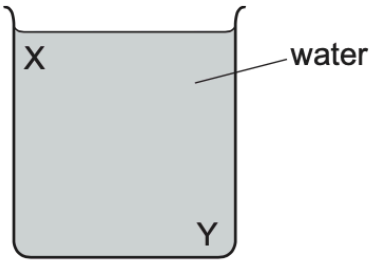
B Smoke molecules diffuse more quickly at higher temperatures.

C The density of the air is lower at higher temperatures.

D The pressure of the air is greater at higher temperatures.

12.

A beaker contains water at room temperature.



How could a convection current be set up in the water?

A cool the water at X

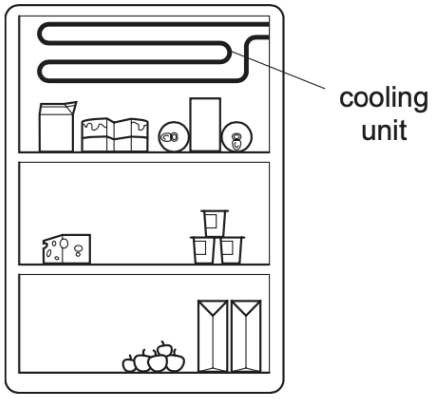
B cool the water at Y

C stir the water at X

D stir the water at Y

13.

The diagram shows a cooling unit in a refrigerator.



Why is the cooling unit placed at the top?

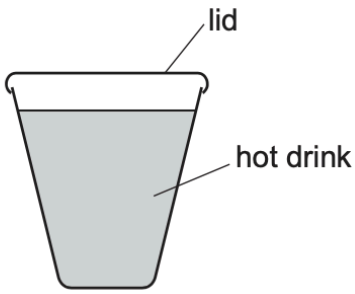
A Cold air falls and warm air is displaced upwards.

B Cold air is a bad conductor so heat is not conducted into the refrigerator.

C Cold air is a good conductor so heat is conducted out of the refrigerator.

D Cold air stops at the top and so prevents convection.

14. A cup with a lid contains a hot drink.



When the lid is removed, the rate of heat loss from the drink increases.

What causes this?

A convection only

B evaporation only

C both convection and evaporation

D neither convection nor evaporation

15.

(a) **(i)** Name the process by which [thermal] energy is transferred through a metal rod.

..... [1]

(ii) Describe how this process occurs.

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..... [2]

(b) An iron rod and a copper rod of equal length are each held by hand at one end, with the other end in the flame from a Bunsen burner, as shown in Fig. 4.1.

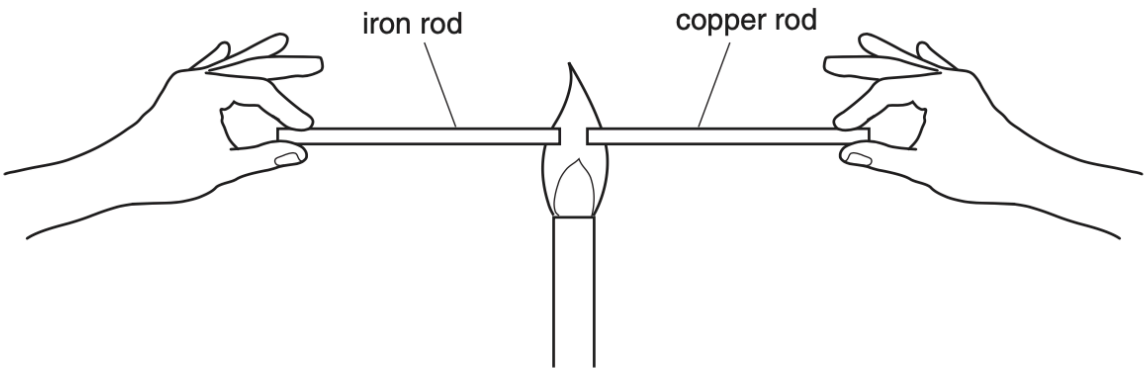

Fig. 4.1

The copper rod becomes too hot to hold much sooner than the iron rod.

What does this information tell you about iron and copper?

..... [1]

(c) Gas has to be above a certain temperature before it burns.

Fig. 4.2 shows two similar wire gauzes, one made of iron wire and one made of copper wire. Each is held over a Bunsen burner. When the gas supply is turned on and ignited below the gauze, the effect is as shown in Fig. 4.2.

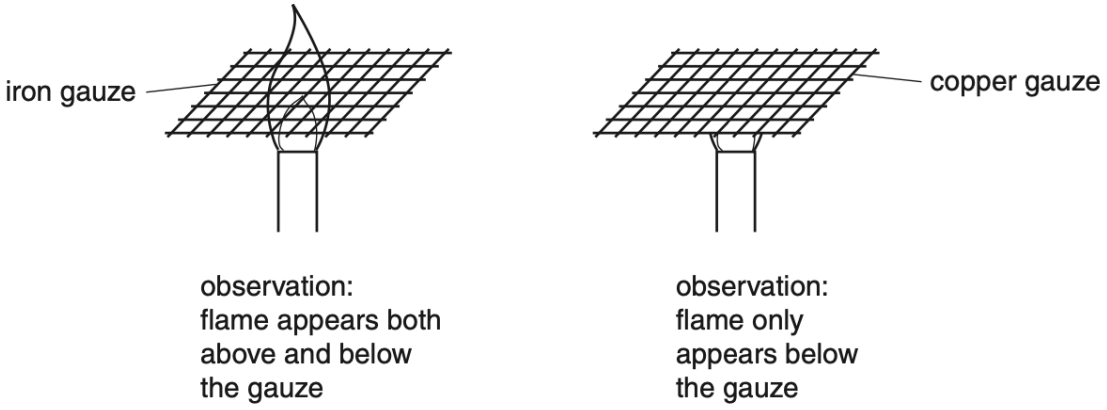

Fig. 4.2

How can these observations be explained?

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..... [4]

[Total: 8]