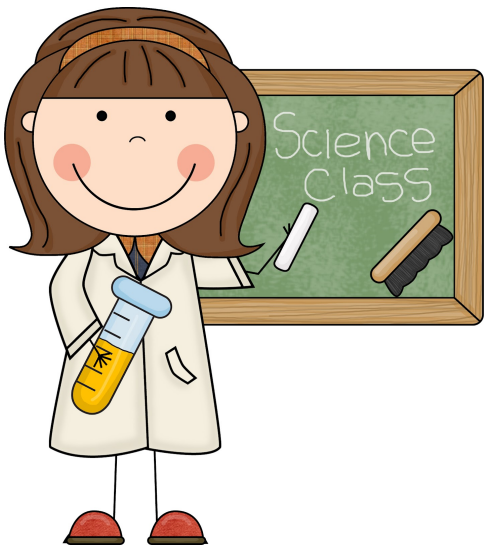
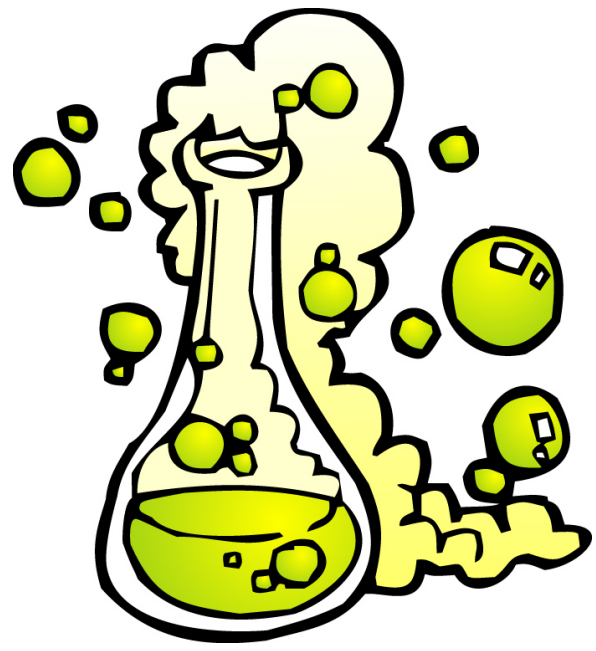




Science End of Year Revision
First year.
Part 2

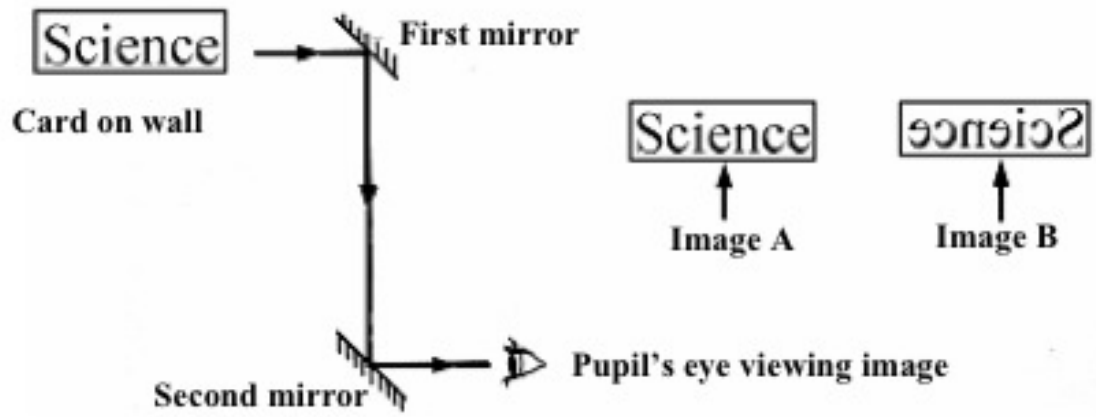
Physics Question1

(*a*) (*i*) Why is the word **Ambulance** painted in reverse on the front of many ambulances? (3)

Why? _____

_____

(*ii*) A pupil made a ***simple periscope*** using two plane (flat) mirrors. The mirrors were arranged as shown in the diagram. The pupil looked through the periscope at the word 'Science' written on a card pinned to the laboratory wall.



Did the pupil see **image A *or* image B** when she looked through the periscope? Give a ***reason*** for your answer. (9)

Image? _____

Reason _____

_____

(*b*) Describe an experiment to show the ***expansion of water*** when it ***freezes***. You may include a labelled diagram if you wish. (9)

_____

_____

_____

_____

_____

_____

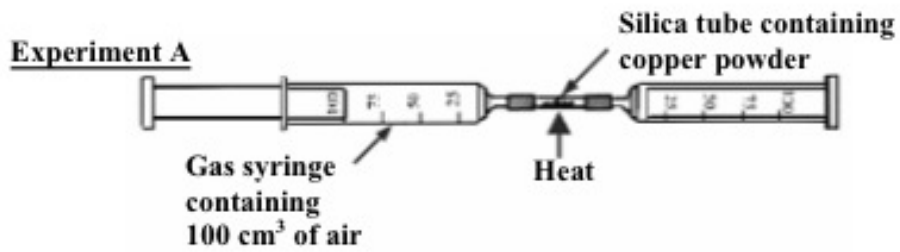
_____

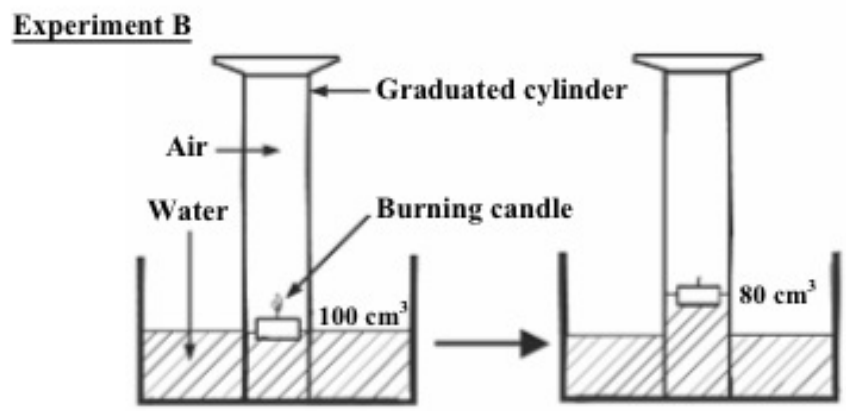
_____

Optional labelled diagram

Chemistry Question 2

(*a*) The composition of air can be investigated in different ways.
Two experiments are shown in the diagram.





In **Experiment A** the air was pushed repeatedly over the heated copper powder and only 79 cm^3 of gas remained at the end of the experiment.

(*i*) Why is it necessary to let the apparatus cool down before measuring the volume of the remaining gas? (3)

_____

(*ii*) Why did the volume of gas decrease and then remain steady? (3)

_____

(*iii*) What is the remaining gas mainly composed of? (3)

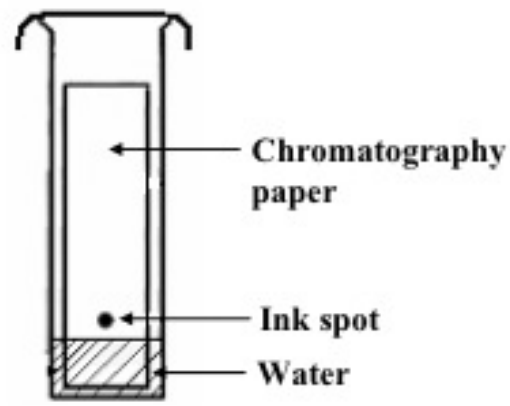
_____

(*iv*) Experiment **B** is less accurate than Experiment **A**.
Give a reason why this is so. (6)

_____

Chemistry Question 3

(*c*) A spot of water-soluble ink was put on a piece of chromatography paper and set up as shown in the diagram. The ink used was a ***mixture*** of different coloured dyes.



(*i*) What happens to the ink spot as the water moves up the paper? (3)

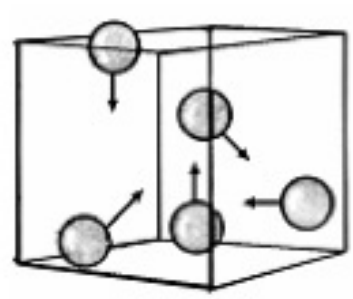
_____

_____

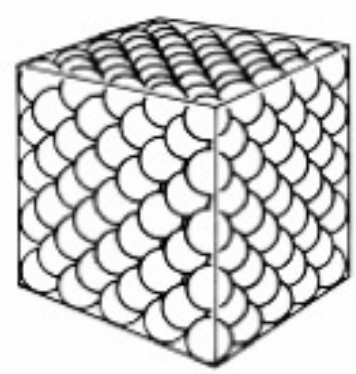
(*ii*) What would happen to a spot of water-soluble ink consisting of a ***single coloured dye*** if it were used in the above experiment? (3

_____

(*d*) Study the diagram carefully. It ***shows the ways that the particles of gases and solids occupy space***.



Particles of a gas



Particles of a solid

The particles of ***gas*** have ***lots of space*** and ***move randomly*** at high speeds in three dimensions and ***collide*** with each other and with their container. The arrows represent the velocities of the gas particles.
The particles of a ***solid*** are ***packed closely together*** and ***cannot move around*** but they can ***vibrate***.

Give **one** ***property of a gas*** and **one** ***property of a solid***, that you have observed, and is consistent with (matches) this micro-view of these states of matter. (6

One property of a gas _____

One property of a solid _____

4

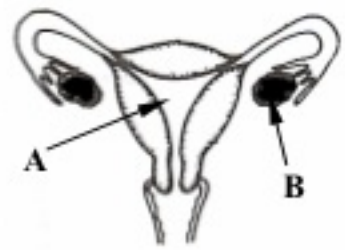
Biology Question 4

(*e*) The diagram shows the **female reproductive system**.

In the table write the letter **A** beside the **name** of the part labelled **A**.

Write the letter **B** beside the name of the **gamete produced** by **B**.

	Egg
	Ovary
	Sperm
	Womb



(*f*) Choose **one vertebrate** and **one invertebrate** from the list of animals on the right.

Invertebrate _____

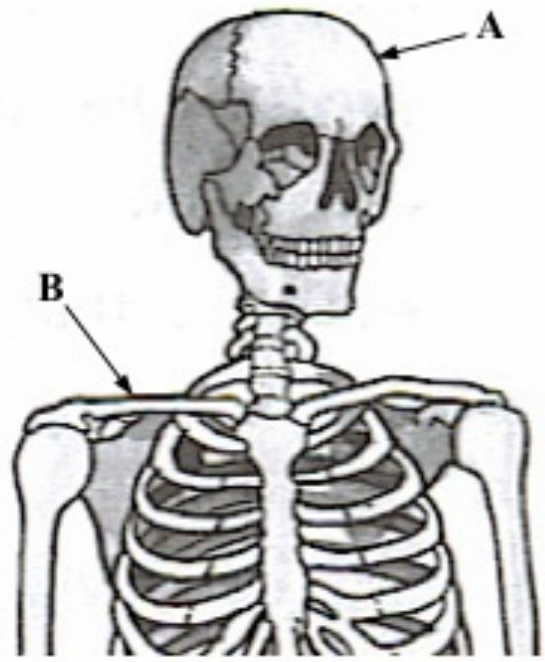
Vertebrate _____

SNAIL
FROG
THRUSH
EARTHWORM

(*b*) The diagram shows part of the human skeleton.

Answer the following questions on the human skeleton. (12)

Name the bones of the skeleton labelled **A** and **B** in the diagram.



Name of bone **A** _____

Name of bone **B** _____

Give any **two** functions of the human skeleton.

1 _____

2 _____

Physics Question 5

(*b*) A student set up the apparatus drawn below to **investigate how sound travels through air**.

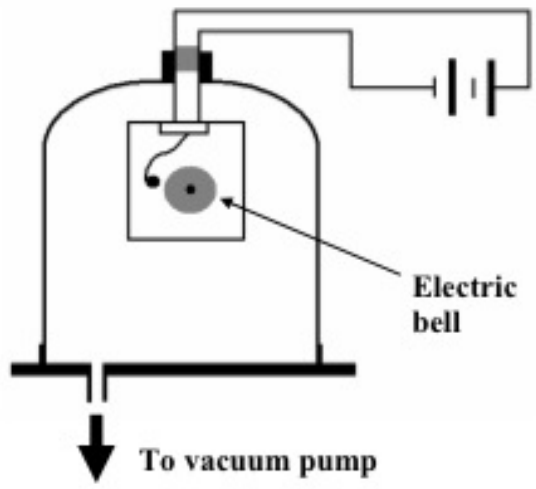
An electric bell was placed inside a bell-jar as shown in the diagram.

The bell rang and it could be heard clearly.

The vacuum pump was then switched on.

The bell could be seen ringing but it made less noise as time passed.

After 5 minutes the bell could no longer be heard but it could still be seen ringing.



(*i*) What **conclusion** could be drawn from these observations? (6)

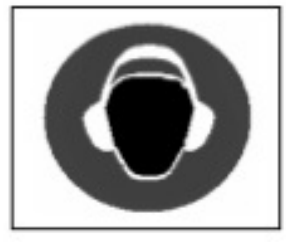
(*ii*) Even though the bell could still be seen ringing it could not be heard.

What **difference** between light and sound does this show? (6)

(*c*) The soldier in the diagram has **safety goggles** on his hat.

Give **one reason** why safety goggles should be used in the laboratory. (3)

The sign on the right is found displayed at shooting ranges and in many factories.

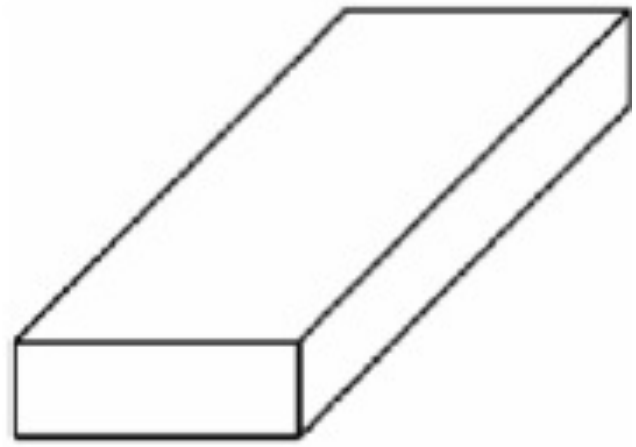


What **instruction** does this sign give? (3)

Why is it important to obey the instruction given by this sign? (3)

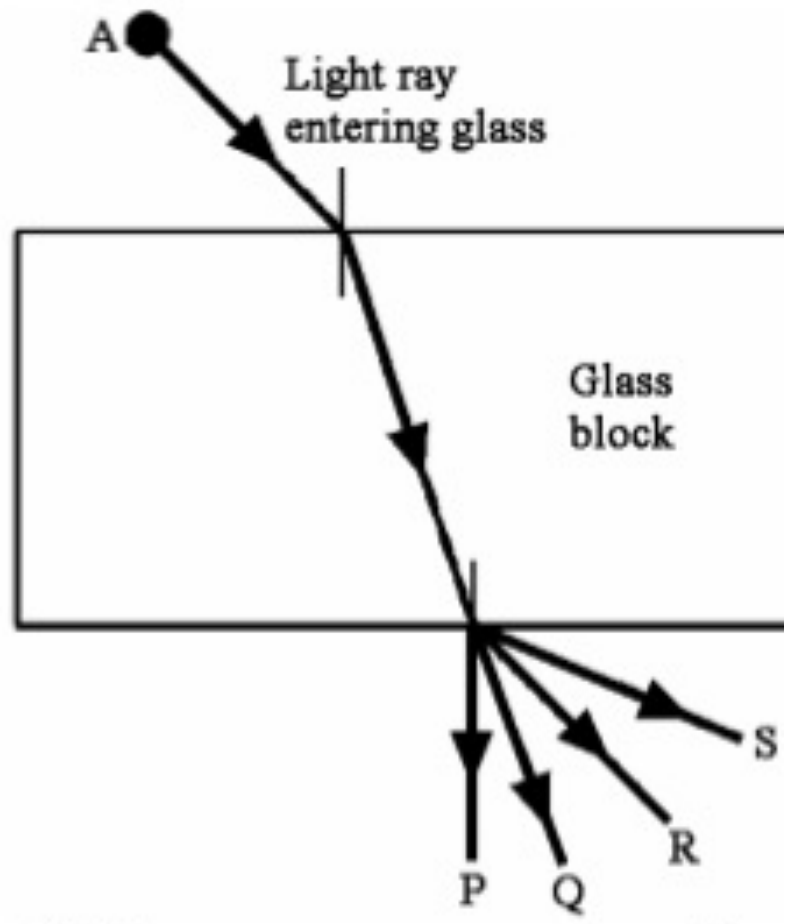
Physics Question 6

A glass block like the one shown in the diagram was used in an experiment in which a narrow beam (ray) of light was shone through it. The light passed from air to glass, on entry, and glass to air, on exit.



The path of this light ray is shown in the second diagram.

The light ray from **A** bends both on entering and on leaving the glass block.



(*i*) What is this ***bending of light*** called? (3)

What? _____

(*ii*) Pick, from '***rays***' **P**, **Q**, **R** or **S** the path taken by the light ray leaving the glass. (3)

Ray _____

(*iii*) Give an ***application*** of this bending of light. (3)

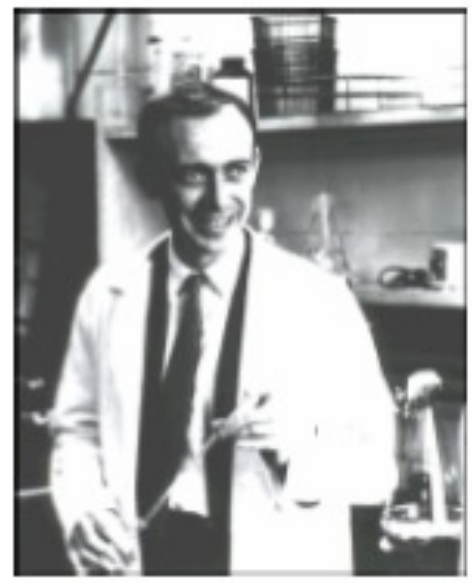
Application _____

(*iv*) Name ***another way*** in which the direction of a light ray can be changed. (3)

Name _____

Biology Question 7

(*e*) The photograph is of James Dewey Watson who together with Francis Crick published the molecular structure of DNA in 1953.
Where is DNA ***located*** in cells?



Location _____

Name a second ***substance*** associated with DNA.

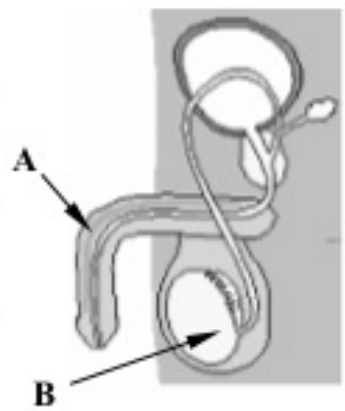
Second substance _____

(*e*) The diagram shows the **male reproductive system**.

In the table on the right write the letter **A** beside the name of **the part** labelled **A**.

Write the letter **B** beside the name of a **substance produced** by **B**.

	Egg
	Penis
	Testes
	Sperm



(*f*) Choose **one vertebrate** and **one invertebrate** from the list of animals on the right.

Invertebrate _____

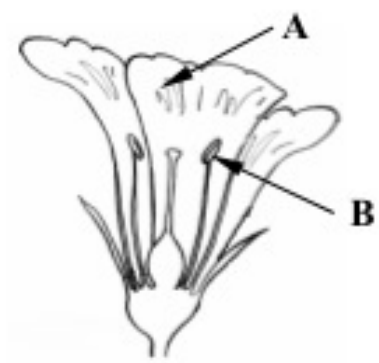
Vertebrate _____

SNAIL
MOUSE
FOX
EARTHWORM

(*g*) Name the parts labelled **A** and **B** in the diagram of the flower.

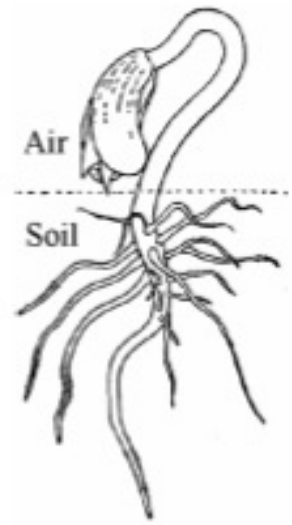
Name of part **A** _____

Name of part **B** _____



Biology Question 8

(*a*) The diagram shows a young seedling grown from a germinated seed.



(*i*) List **three *conditions necessary*** for seeds to germinate. (9)

Condition 1 _____

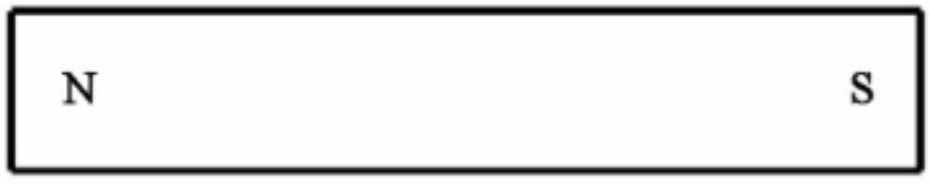
Condition 2 _____

Condition 3 _____

(*ii*) Describe, using labelled diagrams in the box provided, an investigation to show that any **two** of the ***conditions*** that you have given are required for seeds to germinate. The investigation must have a ***suitable control***. (12

Physics Question 9

(*a*) The diagram shows the outline of a bar magnet.
Draw **two *magnetic field lines*** one on each side of the bar magnet. (6)



What are the ***parts*** labelled **N** and **S** in the diagram called? (3)

What? _____

(*b*) The driver of a moving car applied the brakes. The brakes produced an average stopping force of 8 kN (8000 N) and the car stopped having travelled 20 m after the brakes were applied. Calculate the ***work done*** in stopping the car.
(6)

_____

_____

_____

When work is done energy is converted from one form to another.
Identify one ***energy conversion*** that occurred when the car braked. (6)

_____

_____

Biology Question 10

(*a*) Plants produce a wide variety of seed types which need to be dispersed (scattered) in order to avoid competition.

Identify how the seeds **A** and **B** in the diagram are dispersed. (6)

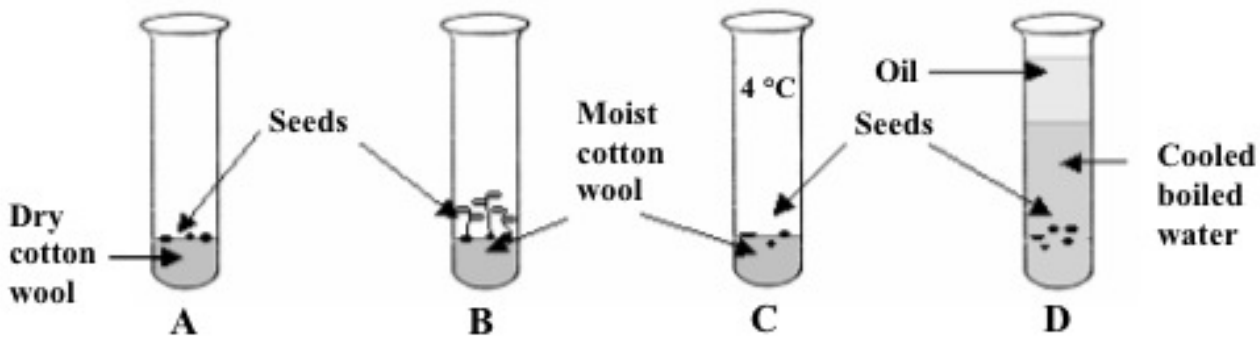
Seed A _____

Seed B _____

Name one resource that seeds must compete for with the parent plant. (3)

Resource _____

(*b*) A number of cress seeds were set up as shown in the diagram and left for a few days to **investigate the conditions necessary for germination**. Test tubes **A**, **B** and **D** were kept in the laboratory at room temperature. Test tube **C** was placed in the fridge at 4 °C.



(*i*) Why do only the seeds in test tubes **B** germinate? (3)

Why? _____

(*ii*) **Why** is the water in test tube **D** boiled before use? (3)

_____

(*iii*) **Explain** why the seeds in test tube **C** failed to germinate. (3)

_____

(*iv*) Why is this investigation considered to be a **"fair test"**? (3)

_____

_____

Physics Question 11

(e) The diagram shows a magnet freely suspended from a wooden stand.
Complete the statements below using the correct word from the list on the right in each case.

When the **north pole** of another magnet is brought **close to the north pole** of the hanging magnet they will _____ each other.

When the **south pole** of another magnet is brought **close to the north pole** of the hanging magnet they would _____ each other.

Repel
Attract

(f) **Nuclear energy** could be used to solve Ireland's energy shortage.
Give **one advantage** and **one disadvantage** of nuclear energy.

Advantage _____

_____

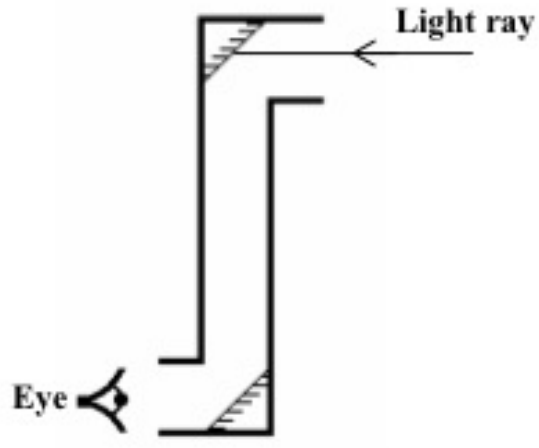
Disadvantage _____

_____

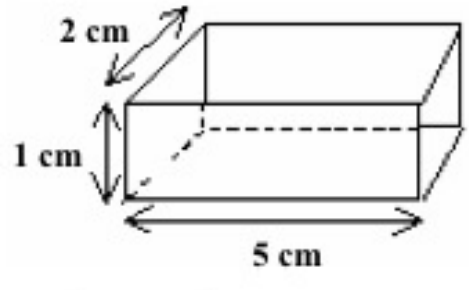
_____

(g) The diagram shows a ray of light shining onto a plane mirror in a periscope.

Complete the path taken by the ray in the diagram.



(h) A block of metal has the measurements shown on the right.
The mass of the metal block is 21 g.



Write the letter **V** beside the value of of the **volume** of the block.

Write the letter **D** beside the value of of the **density** of the block.

	8 cm^3
	10 cm^3
	2.1 g cm^{-3}
	210 g cm^{-3}