

(c) What is the function of Set-up A?

Answer:

- (a) The limewater turns chalky.
 (b) Limewater turns chalky in the presence of carbon dioxide.
 (c) To use as a control and ensure that it is a fair test.

SMART TIPS:

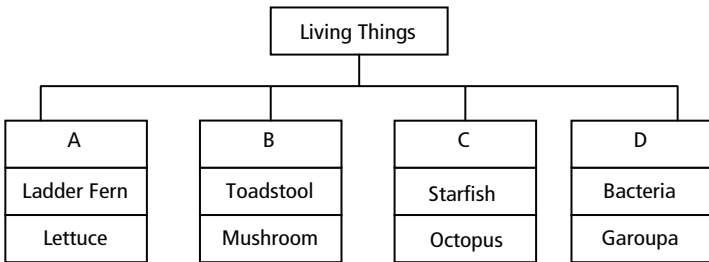
- Carbon dioxide causes limewater to turn chalky. It is used to test for the presence of carbon dioxide.
- A control is a test, set-up or group in your experiment that you can use to compare with the other groups you are testing.
- In a control, the variable that you are studying is kept constant. All, the other variables are the same as in other groups.
- A control is necessary in an experiment because it shows that any changes that take place in the experiment are due to the variable tested.
- Example: The set-ups below are used to investigate if temperature affects the growth rate of a seedling.

Variables	Set-up A	Set-up B	Set-up C
Amount of soil	600g	600g	600g
Volume of water given everyday	30ml	30ml	30ml
Type of seeds	5	5	5
Location of set-up	In a freezer at 0°C	In an oven at 40°C	In a classroom at normal temperature

Set-up C is the control, as the temperature is kept at normal room temperature.

10. Skill : Classifying
 Theme : Diversity
 Topic : Classification – Living Things

Study the classification table below carefully.



- (a) Which item above was grouped **wrongly**?

- (b) In which group must the item mentioned in (a) be placed instead?

- (c) What is the difference between the items in Group A and Group C in terms of the way they obtained their nutrition?

- (d) Give a suitable heading for Group D.

Answer:

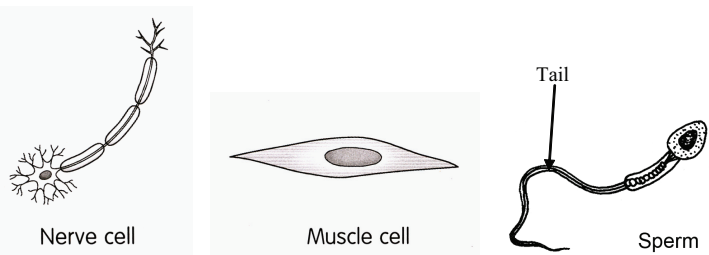
- (a) Garoupa
 (b) Group C
 (c) Group A makes its own food. Group C does not make its own food / hunt for its food.
 (d) Micro-organism

SMART TIPS:

- Classification helps us to identify living things and study them.
- We can classify living things into groups such as :
 - Animals: Animals can be further classified into mammals, birds, fishes and insects.
 - Plants: All green plants make their own food, as they contain chlorophyll. Examples include balsam, mango, hibiscus.
 - Fungi: Fungi do not contain chlorophyll, so they cannot make their own food. Examples include mushroom and bracket fungi.
 - Micro-organisms: Micro-organisms are living things that cannot be seen by our naked eyes. They can only be seen under a microscope. Examples include bacteria, amoeba, yeast.

11. Skill : Observation / Comparing
 Theme : Cycles
 Topic : Unit of life - cells

Examine the diagrams below.



- (a) These 3 cells are found in 3 different parts of a man's body. Why do all 3 cells have different shapes?

- (b) The sperm cell has a long tail. What does this tail do?

- (c) Based on your knowledge of cells, state one difference between the cells shown above and a cell taken from a leaf.

Answer:

- (a) They do not have a cell wall to give them a regular shape
 (b) It enables the sperm to swim easily / It helps to propel the sperm forwards. It makes the sperm mobile.

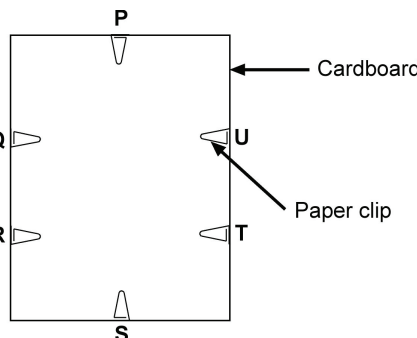
(c) The cells shown above do not have chloroplast, but cells taken from a leaf has chloroplast.

SMART TIPS:

Cell part	Functions	Plant cell	Animal cell
Nucleus	> Controls all the activities that happen inside the cell > Contains information that is passed on from one generation to another	Present	Present
Cytoplasm	> Allows substances to move around within the cell	Present	Present
Cell membrane	> Controls the movement of materials going in and out of the cell	Present	Present
Chloroplast	> Captures sunlight for plants to make food	Present	Not Present
Sap	> Keeps the cell firm, which helps the plant to stand upright	Present	Not Present
Cell wall	> Gives the plant cell its shape	Present	Not Present

12. Skill : Analysing
 Theme : Systems
 Topic : Electricity

The circuit board below is made up of a cardboard and six paper clips, P, Q, R, S, T and U.

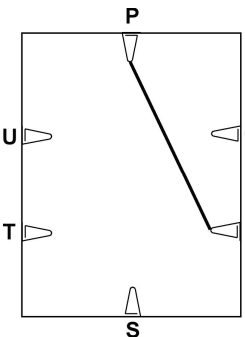


Some of the paper clips are joined at the back by **three** wires. When tested with a circuit tester, the results are as follows:

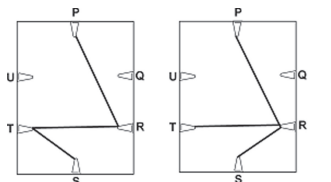
	P	Q	R	S	T	U
P			✓	✓	✓	
Q						
R	✓			✓	✓	
S	✓		✓		✓	
T	✓		✓	✓		
U						

✓ means the bulb lit up

One wire is drawn for you. Draw **two** possible arrangements of the other two wires at the back of the circuit board.



Answer:



SMART TIPS:

- An electric circuit may be closed or open.
- An electric current can only flow if the circuit is closed or complete.
- When the components of the circuit are joined to form a complete path for electric current to flow through, the circuit is called a closed circuit.
- When the components of a circuit are not properly connected, there may be a break or a gap in the circuit.
- When that happens, electric current cannot pass through the gap.
- The path that the electric current flows through is broken and the circuit is an open circuit.

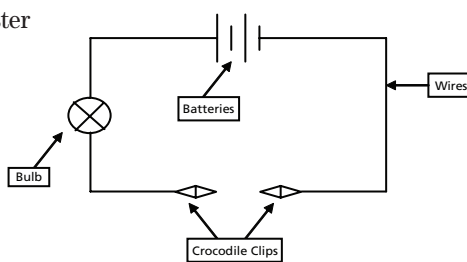
13. Jessie was asked to conduct an experiment to test if the following materials are good conductors of electricity:

- Aluminium foil
- Paper clip
- Handkerchief
- Ice-cream stick

In the box below, **draw** and **explain** the set-up of the experiment that she has to conduct to achieve her aim.

Answer:

Drawing : Circuit tester



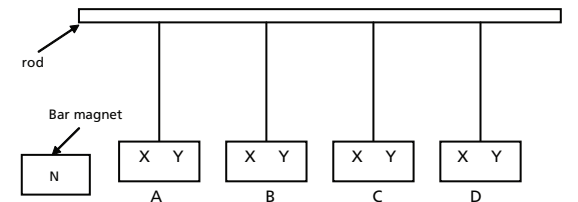
- (i) Clip the crocodile clips onto the different materials (aluminium foil, ice-cream stick, paper clip and handkerchief) one at a time.
 (ii) If the bulb lights up, that material is a good conductor of electricity. Otherwise, it is not.

SMART TIPS:

- A circuit tester is used to distinguish between conductors and insulators of electricity.
- A circuit tester is a simple closed electric circuit with a bulb.
- To test whether a material is a conductor or an insulator, add the object to the circuit.
- When a conductor of electricity is added to the circuit, electricity is allowed to flow through it, so the bulb lights up.
- But when an insulator is added to the circuit, the bulb does not light up, because electricity cannot flow through an insulator.

14. Four metal bars, A, B, C and D, are hung from a horizontal rod as shown below. The north pole of a bar magnet is brought near X and

then Y of each metal bar.



The table below shows the observations made during the experiment.

Metal Bar	Observations	
	North Pole and X	North Pole and Y
A	Repelled	Attracted
B	Nothing happened	Nothing happened
C	Attracted	Attracted
D	Attracted	Repelled

(a) Which of the metal bars are magnets?

(b) Which metal bar is possibly made of iron?

Answer:

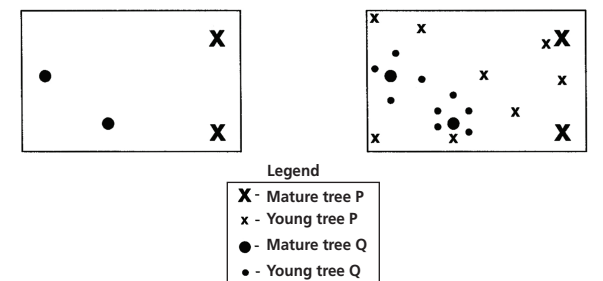
- (a) A & D
 (b) A, C and D

SMART TIPS:

- Magnets are special objects that attract or pull objects that are made of some metals such as iron and steel.
- A magnet is able to attract some metals like iron, steel and nickel. Such metals are considered magnetic.
- Some metals cannot be attracted to a magnet. Such metals are considered non-magnetic. Examples are gold, aluminium, silver and copper.
- All non-metals such as glass, wood, rubber, plastic and clay are non-magnetic.

15. Skill : Inferring
 Theme : Cycles
 Topic : Reproduction in plants – seed dispersal

Elaine and her friends went to a field at the beginning of the year. They marked the position of the trees as shown in Figure A. At the end of the year, they visited the field again. They observed that there were a number of young plants in the field and marked their positions in Figure B.



(a) Which one of the plants above is most likely dispersed by splitting of the fruit?

(b) Explain your answer in (a).

Answer:

(a) Young tree Q

(b) Seeds that are dispersed by splitting of the fruit will most likely grow around the parent plant.

SMART TIPS:

- Seeds need to be dispersed or scattered away from the parent plants to prevent overcrowding. Overcrowding can lead to competition for space, light, water and nutrients.
- Seeds can be dispersed by wind, animals, water and splitting of the fruit.
- Seeds dispersed by splitting of the fruit will tend to grow around the parent plant.

16. Skill : Investigating
 Theme : Interaction
 Topic : Matter / Magnet

Bala was given the following materials and apparatus for an experiment: a glass beaker containing a mixture of salt solution, sand and iron filings, a piece of filter paper, a conical flask, a funnel, a powerful magnet and some red beans.

Describe, in four steps, how you would help Bala to separate sand, iron filings and dry salt from one another.

Step 1:

Step 2:

Step 3:

Step 4:

Answer:

Step 1: Insert a folded piece of filter paper into the funnel and place the funnel in a conical flask.

Step 2: Pour the mixture into the funnel and allow some time for the salt solution to be collected.

Step 3: Use a powerful magnet to attract the iron filings from the sand. Hence, sand is separated from iron filings.

Step 4: Leave the salt solution until all the water has evaporated and salt is left behind.

SMART TIPS:

- Salt**
 - Salt dissolves in water to form salt solution.
 - Salt can be obtained from salt solution if all the water in it has completely evaporated.
- Magnet**
 - Magnets attract objects made of steel, iron, nickel or cobalt.
- Sand**
 - Sand neither dissolves in water nor can be attracted by a magnet.