



JUNIOR SCIENCE SELF-ASSESSMENT

Junior Science 2013 |

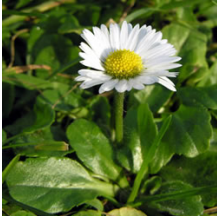

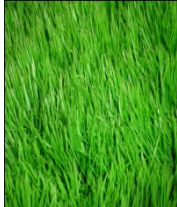

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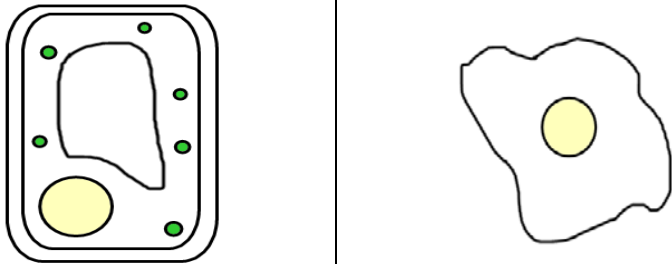
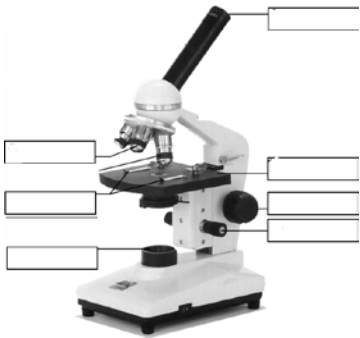
Biology Self-Assessment

Revise Living things, Cells and the Microscope

Assess your learning - Living Things

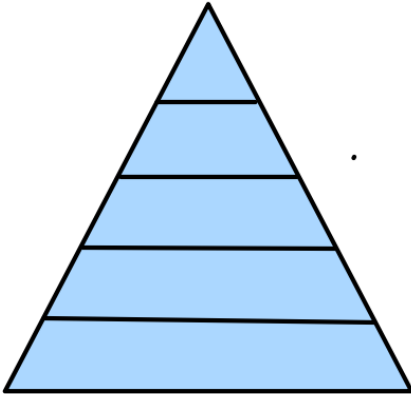
Where is your learning at?	Red	Orange	Green
<i>Can you answer the following questions?</i>			
List the seven characteristics of Living things			
Describe each of the seven characteristics			
What is a vertebrate?			
What is an invertebrate?			
What is the difference between vertebrates and invertebrates?			
Classify the animals below as either a vertebrate or an invertebrate			
Snail, blackbird, fox, earthworm, snake, salmon, spider, crab			
Describe 3 differences between animals and plants			
What is a key?			
Describe how you would identify living things using a KEY			
Name 5 animals and 5 plants found in your local environment			
Design a key for the following plants			
 Daisy	 Dandelion	 Grass	 Clover

Assess your learning - Animal Cells, Plant Cells and the Microscope

Where is your learning at?	Red	Orange	Green
<i>Can you answer the following questions?</i>			
Draw and label an animal cell and a plant cell			
Which is one of these is an animal cell?			
			
Can you label the cell membrane, cytoplasm, nucleus, vacuole, chloroplasts and the Cell wall on the plant cell above			
State the function of the cell membrane, the cytoplasm, the nucleus, the chloroplast and the cell wall			
Which cell organelles are found only in plant cells?			
Label the parts of the microscope below			
			
Give the function of each part of the microscope			
What is the formula for magnification?			
Calculate the magnification of the microscope if the objective lens is 4X and the eyepiece lens is 10X			
Describe in detail how you would prepare and examine onion cells			
What stain do you use to stain animal cells?			
What stain do you use to stain plant cells?			
Why do you use a cover slip?			
Describe how you put a cover slip on a slide?			
Name 4 types of cells and give their function			
Define a tissue, an organ and an organ system			
Give an example of a tissue, an organ and an organ system			

Revise Food and Digestion

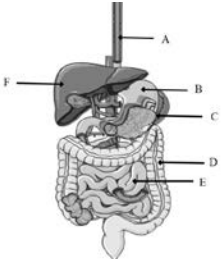
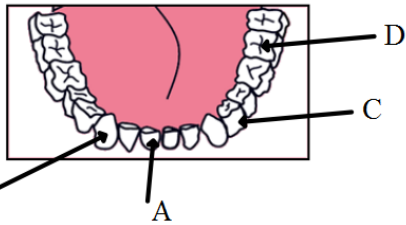
Assess your learning – A Balanced Diet

Where is your learning at?	Red	Orange	Green								
<i>Can you answer the following questions?</i>											
Can you name some of the reasons we need food?											
What is meant by a “Balanced diet”?											
What are the six constituents of a balanced diet?											
Can you match each food group with its function? <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <tr> <td style="padding: 5px;">Carbohydrates</td> <td style="padding: 5px;">Growth and Repair</td> </tr> <tr> <td style="padding: 5px;">Fats</td> <td style="padding: 5px;">Provide Energy</td> </tr> <tr> <td style="padding: 5px;">Vitamins + Minerals</td> <td style="padding: 5px;">Insulation</td> </tr> <tr> <td style="padding: 5px;">Proteins</td> <td style="padding: 5px;">Essential for good health</td> </tr> </table>	Carbohydrates	Growth and Repair	Fats	Provide Energy	Vitamins + Minerals	Insulation	Proteins	Essential for good health			
Carbohydrates	Growth and Repair										
Fats	Provide Energy										
Vitamins + Minerals	Insulation										
Proteins	Essential for good health										
Can you match each type of food with the food group it belongs to? <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <tr> <td style="padding: 5px;">Fish and Meat</td> <td style="padding: 5px;">Carbohydrates</td> </tr> <tr> <td style="padding: 5px;">Cheese</td> <td style="padding: 5px;">Fats</td> </tr> <tr> <td style="padding: 5px;">Potatoes</td> <td style="padding: 5px;">Vitamins + Minerals</td> </tr> <tr> <td style="padding: 5px;">Fruit and Vegetables</td> <td style="padding: 5px;">Proteins</td> </tr> </table>	Fish and Meat	Carbohydrates	Cheese	Fats	Potatoes	Vitamins + Minerals	Fruit and Vegetables	Proteins			
Fish and Meat	Carbohydrates										
Cheese	Fats										
Potatoes	Vitamins + Minerals										
Fruit and Vegetables	Proteins										
Can you fill in the following food pyramid in the correct order? <div style="text-align: center;">  </div>											
Name 2 vitamins and give examples of foods that contain these vitamins											
Name 2 minerals and give examples of foods that contain these minerals											

Why would an athlete need to eat more food than a person who doesn't exercise?			
Name foods that you eat that contain mainly <ol style="list-style-type: none"> 1. Carbohydrate 2. Protein 3. Fats 4. Vitamins 5. Minerals 			
Fibre is an important part of a balanced diet. What do we need fiber for?			
Can you name a good source of fibre in the human diet?			
Why is water so important for the Human Body?			
Drinking water is a good way to ensure you are getting enough water but how else may you include water in your diet?			

Describe how to do an experiment to test for <ol style="list-style-type: none"> 1. Starch 2. Glucose 3. Protein 4. Fats <ul style="list-style-type: none"> • These are separate experiments and need to be learned individually • List the apparatus and chemicals used – include the foods used • What safety precautions did you take? • What was used as a control? • Do you know what each chemical is used for? • What was the colour of each solution at the start? • What colour indicates a positive result? 			
Describe how you performed an experiment to measure the amount of chemical energy in food <ul style="list-style-type: none"> • List the apparatus and chemicals used – include the foods used • Do you know what each chemical is used for? • How did you set up the experiment? • What safety precautions did you take? • How did you measure the energy released? 			

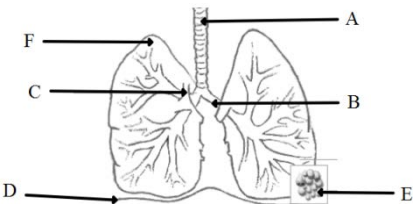
Assess your learning – Digestion

Where is your learning at?	Red	Orange	Green								
<i>Can you answer the following questions?</i>											
Can you label all the parts of the Human digestive system in the following diagram? 											
Can you describe the function of the following? Oesophagus, Stomach, Small Intestine, Large Intestine											
<i>Can you describe the function of the liver and the pancreas?</i>											
What are the 5 stages of nutrition and what happens at each stage?											
What is the difference between physical and chemical digestion?											
In the following table place the letter C next to each example of chemical digestion and the letter P next to each type of physical digestion											
<table border="1" data-bbox="375 1075 901 1377"> <tbody> <tr> <td>Chewing food in the mouth</td> <td></td> </tr> <tr> <td>Saliva mixing with food in the mouth</td> <td></td> </tr> <tr> <td>Stomach juices and enzymes mixing with food in the stomach</td> <td></td> </tr> <tr> <td>The stomach churning around to ensure all the food is mixed</td> <td></td> </tr> </tbody> </table>	Chewing food in the mouth		Saliva mixing with food in the mouth		Stomach juices and enzymes mixing with food in the stomach		The stomach churning around to ensure all the food is mixed				
Chewing food in the mouth											
Saliva mixing with food in the mouth											
Stomach juices and enzymes mixing with food in the stomach											
The stomach churning around to ensure all the food is mixed											
Can you label the 4 types of teeth in the following diagram? 											
What is the function of each type of tooth named above?											
Are enzymes responsible for chemical digestion or physical digestion?											
What is an enzyme?											
In the following sentence place the letter E above the enzyme, the letter S above the substrate and the letter P above the product Amylase works on foods such as potatoes and bread to break down starch into smaller units called maltose											
Where in the body is amylase found?											
Describe an experiment to show the action of amylase on Starch											

<ul style="list-style-type: none">• What did you use for the enzyme?• What did you use for the substrate?• What did you use as the control?• What temperature did you keep the experiment at?• What chemical did you use to test to see if the starch was broken down?• What product was produced?			
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Revise the Respiratory System

Assess your learning – The Respiratory System

Where is your learning at?	Red	Orange	Green												
<i>Can you answer the following questions?</i>															
What is aerobic respiration?															
Can you fill give the word equation for respiration?															
What are the products of respiration?															
Can you name the chemical used to test for the presence of Water?															
How could you use this chemical to show that water is produced by aerobic respiration in your body?															
Can you name the chemical used to test for the presence of carbon dioxide?															
How could you use the chemical you named above to show that carbon dioxide is made by aerobic respiration in your body?															
Can you label the parts of the respiratory system in the following diagram?															
															
How does the diaphragm help us breathe?															
Why are the rings of cartilage on the trachea important?															
What are the tiny blood vessels that surround the alveoli called?															
Using the words from the box can you complete the following passage?															
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 5px;">Inhale</td> <td style="padding: 5px;">Bronchi</td> <td style="padding: 5px;">Alveoli</td> <td style="padding: 5px;">Heart</td> </tr> <tr> <td style="padding: 5px;">Exhale</td> <td style="padding: 5px;">Capillaries</td> <td style="padding: 5px;">Carbon Dioxide</td> <td></td> </tr> <tr> <td style="padding: 5px;">Bronchiole</td> <td style="padding: 5px;">Aerobic respiration</td> <td style="padding: 5px;">Trachea</td> <td></td> </tr> </table>	Inhale	Bronchi	Alveoli	Heart	Exhale	Capillaries	Carbon Dioxide		Bronchiole	Aerobic respiration	Trachea				
Inhale	Bronchi	Alveoli	Heart												
Exhale	Capillaries	Carbon Dioxide													
Bronchiole	Aerobic respiration	Trachea													
<p>Oxygen enters the body when we _____ through the nose and mouth. It then travels down the _____ and passes into each lung through two branches called _____. From here it travels through smaller branches called _____ until it arrives at tiny round structures called _____. These have very thin walls and are surrounded by tiny blood vessels called _____. The oxygen passes through the thin walls into the blood stream where it is taken to the _____ to be pumped all around the body. The oxygen is used to give energy in a process called _____. A toxic substance called _____ is made in this process and needs to be removed from the body. It is brought back to the lungs in our blood stream and passes into the lungs through the thin walls of the alveoli. It leaves the body</p>															

through the mouth and nose when we _____. All this is constantly happening in the body in fact it happens every time we breathe in and out!			
What two gases are exchanged in the alveoli?			
How does smoking affect the lungs? <i>Make sure to be specific in this answer, it is not sufficient to say that smoking is bad for the lungs you need to say what smoking does to the lungs and how this stops the lungs performing well.</i>			
What effect does exercise have on breathing rate?			
Why does exercising have this effect on breathing rate?			
Can you describe an experiment to show that exhaled air contains more Carbon dioxide than inhaled air? <ul style="list-style-type: none"> • What apparatus did you use? • What chemical did you use to test for carbon dioxide? • What colour did the limewater turn? • What happened in the tube that you inhaled? • What happened in the tube that you exhaled? 			

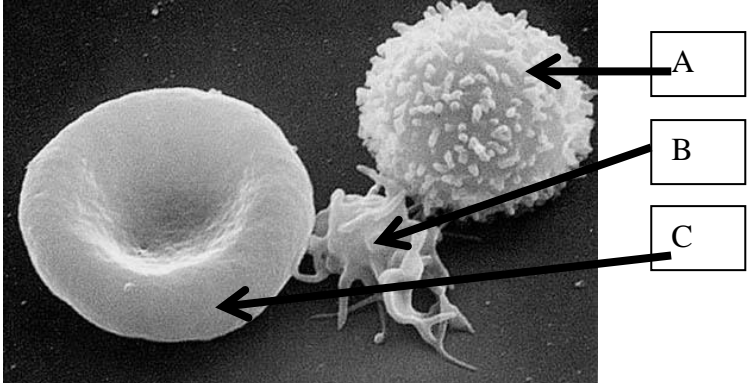
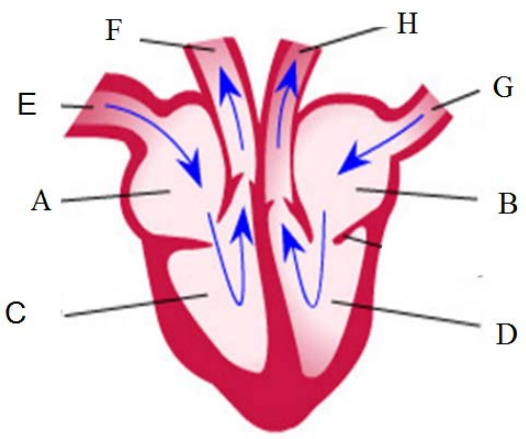
Revise The Excretory System

Assess your learning – The Excretory System

Where is your learning at?	Red	Orange	Green
<i>Can you answer the following questions?</i>			
What is excretion?			
<p>There are 6 items in the box on the right only three of them are the main products of excretion in the human body can you circle them correctly?</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> <p>Water/sweat Tears Saliva Carbon Dioxide Urine Ear wax</p> </div>			
What are the three main organs responsible for excretion?			
What does each of the organs you named above excrete?			
<p>Can you label the following diagram of the urinary system?</p> <div style="text-align: center;"> </div>			
Can you state a function for each of the parts of the urinary system you labelled above?			
<p><i>Can you complete the following sentences?</i></p> <p><i>Kidneys remove waste from the blood by F.....</i></p> <p><i>These wastes are mainly S..... and U..... and together with water form U.....</i></p>			
Where is urine stored before it is released from the body?			
What is the normal temperature of the Human body?			
<i>If we get too hot the skin excretes sweat to help us cool down, can you name the two components of sweat?</i>			

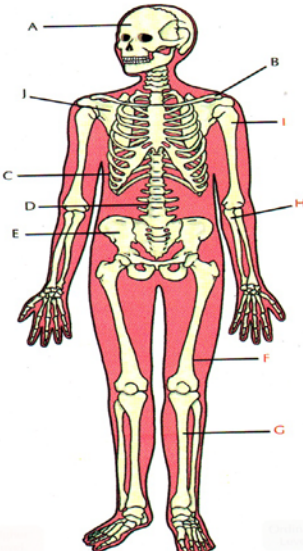



Revise The Circulatory System

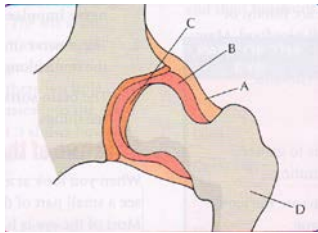
Assess your learning – The Circulatory System

Where is your learning at?	Red	Orange	Green
<i>Can you answer the following questions?</i>			
List the four components of blood <input type="checkbox"/>			
<i>Component means something that makes up the blood</i>			
Identify the types of blood cells in the picture below?			
			
What is the function of each of the parts of blood you named in the first question?			
What is the function of the heart?			
Label the following diagram of the human heart to show the Right and Left Atria, Right and Left Ventricle <i>Pulmonary artery and vein, the Vena Cava and the Aorta</i>			
			
How many chambers are in the heart?			
Why does the left side of the heart have a thicker wall than the right side?			
What type of blood vessel carries blood towards the heart?			
What type of blood vessel carries blood away from the heart?			
What is the difference between oxygenated and deoxygenated blood?			
What type of blood vessel carries deoxygenated blood?			
What type of blood vessel carries oxygenated blood?			

Revise the Skeleton, the Nervous System and Senses

Assess your learning – The Skeleton

Where is your learning at?	Red	Orange	Green				
<i>Can you answer the following questions?</i>							
Name the three functions of the human skeleton							
<p>Can you label the following parts of the human skeleton in the diagram below</p> <p style="text-align: center;">Skull, ribs, Collarbone, Pelvis, Shoulder blade, Vertebrae <i>Humerus, Radius, Ulna, Tibia, Fibula, Femur</i></p> <div style="text-align: center;">  </div>							
<p>For each of the body parts listed below name the bone that protects it</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr><td>Brain</td></tr> <tr><td>Heart</td></tr> <tr><td>Lungs</td></tr> <tr><td>Spinal Cord</td></tr> </table>	Brain	Heart	Lungs	Spinal Cord			
Brain							
Heart							
Lungs							
Spinal Cord							
<p>Can you complete the following sentence;</p> <p>Bone is made of _____ and _____ cells.</p> <p>C _____ is a mineral that is very important to give our bones strength.</p>							
<p>What is a place where bones meet called?</p> <p><i>For each of the following diagrams state whether it is a fused joint, a hinge joint or a ball and socket joint</i></p> <div style="display: flex; justify-content: space-around; align-items: flex-end;"> <div style="text-align: center;">  <p>A</p> </div> <div style="text-align: center;">  <p>B</p> </div> <div style="text-align: center;">  <p>C</p> </div> </div>							

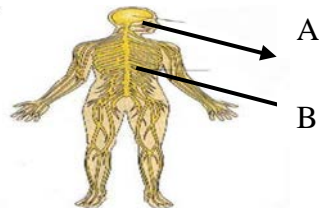
Which of the following are moveable joints? Fused Joint Hinge Joint Ball and Socket Joint			
Complete the following sentence Moveable joints are also known as S_____ joints as they contain S_____ fluid			
What are the fibres that connect bone to bone called?			
What are the fibres that connect muscle to bone called?			
Label the parts of the joint in the diagram below 			
What is the function of the synovial fluid and cartilage?			
What is the function of muscle?			
What are two pairs of muscles that work together to move bones called?			
Complete the following passage The B_____ and T_____ are examples of A_____ muscles found in our upper arms. When we want to raise our arm the _____ contracts to pull the arm up. When we want to _____ our arm the _____ contracts to pull the arm back down			

Assess your learning – The Nervous System and Senses

Where is your learning at?	Red	Orange	Green
<i>Can you answer the following questions?</i>			
Name the five sense organs found in the human body			
What is a stimulus?			
For each of the organs you named above can you name its stimulus? Eg. The eye is responsible for sight			
Once our sense organs detect information from our surroundings			

where is this information carried to?

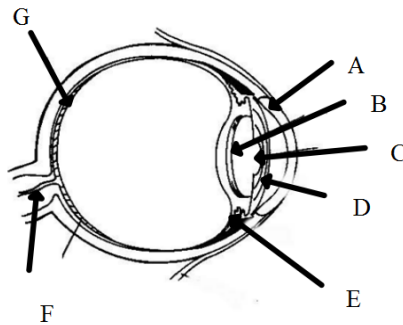
Label the two major parts of our Central nervous system in the diagram below



Complete the following sentences

_____ nerves carry messages to our brain.
 _____ nerves carry messages away from our brain.

Label the following diagram of the eye to show **iris, lens, pupil, retina, optic nerve, cornea and ciliary muscle**


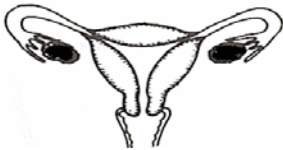


In the table below match one of the parts you labelled with its function

Carries messages from the eye to the brain	
Detects light	
Controls the amount of light entering the eye	
Allows light enter the eye	
<i>*Changes the shape of the lens</i>	
Focuses the light onto the back of the eye	
<i>*Protects the eye and helps focus</i>	

Revise the Human Reproductive System

Assess your learning – The Human Reproductive System

Where is your learning at?	Red	Orange	Green
<i>Can you answer the following questions?</i>			
Label the diagram to identify the following parts of the male reproductive system <i>testes, scrotum , sperm ducts and penis</i>			
			
Can you give the function of the <i>testes, scrotum , sperm ducts and penis</i>			
Label the diagram to identify the following parts of the female reproductive system the uterus, the fallopian tube, the cervix, the vagina and the ovaries			
			
Give the function of the uterus, the fallopian tube, the cervix, the vagina and the ovaries?			
What is the average length of the menstrual cycle?			
Describe the following stages of the menstrual cycle Menstruation, Development of lining of womb, Ovulation			
What is the fertile period of the menstrual cycle?			
At what stage does the fertile period occur in the menstrual cycle?			
What is sexual intercourse?			
What are the male and female gametes in humans?			
What is fertilisation?			
What does the fertilisation of the sperm and egg result in?			
What does a zygote develop into?			
What happens during implantation?			
Define Pregnancy			
How long does the average pregnancy last?			
What is the placenta and what is its function?			
Describe what happens during birth- Remember to include Contractions, waters breaking, cervix dilating, birth canal and birth			
Describe what happens after birth – Remember to include Contractions, removal of placenta and umbilical cord			
Describe the growth of the baby after birth			


What is puberty?			
What is contraception?			
What are the two main types of contraception?			
List 3 different methods of contraception			

Assess your learning – Human Genetics

Where is your learning at?	Red	Orange	Green
<i>Can you answer the following questions?</i>			
Define genetics			
What are inherited characteristics?			
Give examples of inherited characteristics			
What controls our inherited characteristics?			
What are non-inherited characteristics?			
Give examples of non-inherited characteristics			
<i>What is a chromosome?</i>			
<i>Where are chromosomes found in the cell?</i>			
<i>Draw a labelled diagram of a chromosome and show where the genes are located on the chromosome</i>			
<i>What is the standard number of chromosomes in a human?</i>			
<i>What are the two substances that chromosomes are made of?</i>			

Revise Plant Structure and Transport

Assess your learning – Plant Structure and Transport

Where is your learning at?	Red	Orange	Green
<i>Can you answer the following questions?</i>			
<p>Can you identify the following parts of a plant? <i>Stem root leaf and flower</i></p> 			
Give the functions of the leaf, stem, root and flower			
Can you list the 3 things that are transported around a plant			
<i>Can you name the tissue that transports water and nutrients from the roots to the leaves?</i>			
What direction does water travel in a plant?			
<i>Can you name the tissue that transports food from the leaves to the rest of the plant?</i>			
Can you give the definition for transpiration			
Why do plants need to transpire?			
What 4 things affect the transpiration rate in a plant?			
How does water get removed from a plant?			
What cells in the leaf allow gas exchange?			
<p>Can you describe an experiment to show that water moves up the plant through the xylem?</p> <ul style="list-style-type: none"> • What plant did you use? • What did you do to the plant to make sure that the water was absorbed? • What did you use to colour the water? • How long did you leave the plant? • What was the result? 			
<p>Can you describe an experiment to show that water is lost from leaves through transpiration?</p> <ul style="list-style-type: none"> • What plant did you use? • What did you use to cover the plant? • How long did you leave the plant? • What was the result? • How did you test for water? 			
Can you describe an experiment to show that water is taken in			


from the soil through the roots? <ul style="list-style-type: none"> • What plant did you use? • How did you set up the experiment? • Why did you use oil on top of the water? • What did you use as a control? 			
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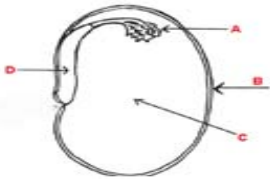
Assess your learning – Photosynthesis and Plant Responses

Where is your learning at?	Red	Orange	Green
<i>Can you answer the following questions?</i>			
What is the definition of photosynthesis?			
Why is photosynthesis so important for us and other animals?			
What part of the plant does photosynthesis take place in?			
What is the chemical in leaves that allows photosynthesis take place?			
What substances do plants need for photosynthesis?			
What are the tiny holes on the leaf that allow gas exchange called?			
What gases do they allow in and out?			
How does water get into the leaf?			
What do plants make in photosynthesis?			
Can you write a balanced equation for photosynthesis?			
Can you describe an experiment to prove that starch is made by a photosynthesising plant? <ul style="list-style-type: none"> • How did you destarch the plant? • How did you ensure that no light got on some of the leaves? • Where did you put the plant? • How did you kill and soften the leaves? • Why did you put the leaves in hot alcohol? • How did you test the leaves for starch? • What was the result? 			
How do plants respond to their surroundings?			
What is a tropism?			
What is phototropism?			
Can you describe an experiment to show phototropism? <ul style="list-style-type: none"> • What seeds did you use? • How did you germinate the seeds? • Where did you place the germinated seeds? • What was the result? • Can you draw a diagram? 			
<i>What is Geotropism?</i>			
Can you describe an experiment to show geotropism? <ul style="list-style-type: none"> • What seeds did you use? • How did you germinate the seeds? • How did you place the germinated seeds? • What was the result? • Can you draw a diagram? 			

Revise Plant Reproduction

Assess your learning – Plant Reproduction

Where is your learning at?	Red	Orange	Green
<i>Can you answer the following questions?</i>			
Name the two ways that plants can reproduce			
Define sexual reproduction			
Define asexual reproduction			
What are the differences between sexual and asexual reproduction?			
Can you give an example of asexual reproduction in plants?			
Can you label the following parts of a flower and state what each part does? sepals, petals, carpel, stamen, <i>stigma</i> , <i>style</i> , <i>ovary</i> , <i>anther</i> and <i>the filament</i>			
			
What are the male and female gametes in a plant called?			
What part of the plant produces the egg cell?			
What part of the plant produces pollen?			
What is pollination?			
What is formed when the pollen fertilises the egg cell?			
What does the zygote develop into?			
What are the differences in the petals, pollen, stamens and carpels between insect pollinated and wind pollinated flowers ?			
Can you name 2 examples of insect pollinated and 2 examples of wind pollinated flowers?			
Can you describe what happens in fertilisation? <i>Use a diagram to help you explain</i>			
How is a seed formed?			


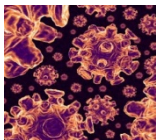

<p><i>Label and describe the following structures in a seed</i> <i>the testa, food supply, radicle and plumule</i></p> 			
What are the 4 methods of seed dispersal?			
Describe each method of seed dispersal			
Give an example of a type of plant for each method of seed dispersal you have named.			

Assess your learning – Germination

What is germination?			
Why is germination necessary?			
What 3 conditions are needed for seeds to germinate?			
<p>Describe an experiment to show the conditions necessary for germination <i>Remember you need to set up an experiment for each of the following</i></p> <p><i>All conditions present; Lacking Water; Lacking Oxygen; Cold</i></p> <ul style="list-style-type: none"> • <i>How did you remove the oxygen?</i> • <i>How did you remove the water?</i> • <i>Where did you place the seeds so that they were cold?</i> • <i>Include a diagram for each condition</i> 			
Can you draw or outline in words the life cycle of a flowering plant?			

Revise Microbiology and Biotechnology

Assess your learning – Microbiology and Biotechnology

Where is your learning at?	Red	Orange	Green
<i>Can you answer the following questions?</i>			
What is microbiology the study of?			
What are the 3 types of micro-organism?			
Can you identify the three types of micro-organisms in the pictures below?			
<div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;"> <p>A</p>  </div> <div style="text-align: center;"> <p>B</p>  </div> <div style="text-align: center;"> <p>C</p>  </div> </div>			
Name three suitable conditions that micro-organisms need to grow successfully?			
In the laboratory what do you use to grow micro-organisms?			
Are all micro-organisms harmful?			
Give examples of some useful micro-organisms			
Give 3 examples of diseases/illnesses caused by bacteria			
What are antibiotics?			
Do antibiotics kill viral infections?			
Give 3 examples of diseases/illnesses caused by viruses?			
How does our body fight viral infections?			
What are fungi?			
Give 2 examples of beneficial fungi			
Give 2 examples of harmful fungi			
What are decomposers?			
Give 2 examples of decomposers found in the soil			
What is meant by biotechnology?			
Give examples of organisms used in biotechnology and what they are used to produce.			
State two uses of biotechnology in industry			
State two uses of biotechnology in medicine			
<p>Describe experiments to show that there are micro-organisms in the air and in the soil</p> <ul style="list-style-type: none"> • What dishes did you use to grow the micro-organisms? • What was the food that was used in these dishes? • What control did you use? • Where did you leave the dishes? • How long did you leave them for? • What was the result? 			

Chemistry Self-Assessment

Assess your learning – Matter and Separating Mixtures

Where is your learning at?	Red	Orange	Green
<i>Can you answer the following questions?</i>			
Give the definition for Matter			
What are the 3 states of matter?			
Can you describe the different properties of solids, liquids and gases?			
Can you describe the arrangement of molecules in a solid, a liquid and a gas			
Can you draw the arrangement of molecules in a solid, a liquid and a gas?			
What causes matter to change state?			
What is meant by evaporation? Give an example			
What is meant by condensation? Give an example			
What is meant by freezing? Give an example			
What is meant by melting? Give an example			
Describe an experiment to separate insoluble solids from liquids Filtration can be used E.g., Sand and Water <ul style="list-style-type: none"> • How did you set up the apparatus? • What did you put in the filter funnel? • How did you collect the water? • What was the result? 			
What is the filtrate?			
What is the residue?			
Describe an experiment to separate soluble solids from liquids Evaporation can be used E.g. Salt and water <ul style="list-style-type: none"> • How did you set up the apparatus? • What safety precautions did you take? • What was left in the evaporating dish? • Where did the water go? • What was the result? 			
Describe an experiment to separate liquids from liquids Distillation can be used <ul style="list-style-type: none"> • How did you set up the apparatus? • What safety precautions did you take? • What liquid did you put in the flask? • How was the gas cooled back into liquid? • What did you collect in the beaker? 			
Describe an experiment to separate the different dyes in an ink Chromatography can be used <ul style="list-style-type: none"> • How did you set up the apparatus? • What type of paper did you use? • How did you apply the dyes to the paper? • What liquid did you put the paper in? • What was the result? 			

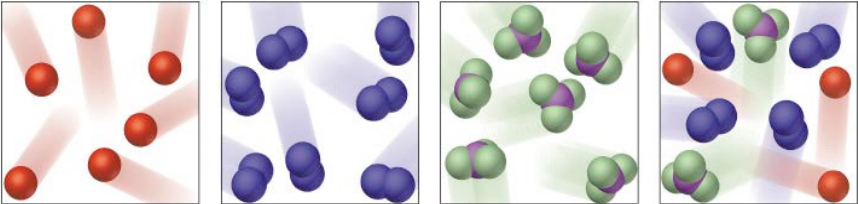
Revise Solutions and Crystallisation

Assess your learning

Where is your learning at?	Red	Orange	Green
<i>Can you answer the following questions?</i>			
What is meant when we say that a substance dissolves?			
Give the definition for solution			
Give the definition for a solute and solvent and give examples			
What is meant by soluble and insoluble?			
What is a suspension?			
What is meant by the terms concentrated and dilute?			
Can you describe a concentrated solution in terms of the amount of solute and solvent that it contains?			
Can you describe a dilute solution in terms of the amount of solute and solvent that it contains?			
What is a saturated solution?			
Can water dissolve all solutes? Can you name some other solutes?			
<i>Describe how you would test the solubility of various substances in water</i>			
<ul style="list-style-type: none"> • How did you set up the apparatus? • What solutes did you use? • How did you decide if the solutes dissolved? 			
<i>Describe how you would test the effect of temperature on solubility</i>			
<ul style="list-style-type: none"> • What apparatus and chemicals did you use? • How much water did you put in the beaker? • What temperature did you start at? • How much solute did you add each time? • How did you heat the solution? • What temperature did you finish at? • What was the result? 			
Can you draw a solubility curve?			
Define crystallisation			
Describe the experiment to grow crystals			
<ul style="list-style-type: none"> • What apparatus did you use? • What chemical did you use to grow crystals? • How much water did you put in the beaker? • How did you heat the solution? • What temperature did you heat the solution to? • How did you measure the mass of solute added? • How did you cool the solution? • How did you separate the crystals from the solution? • What was the result? 			

Revise Atoms, Elements, Compounds and the Periodic Table

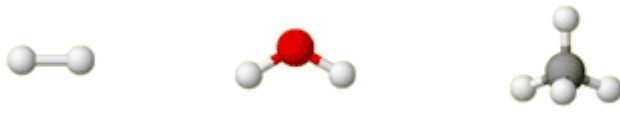
Assess your learning

Where is your learning at?	Red	Orange	Green
<i>Can you answer the following questions?</i>			
Give the definition for an element and a compound ?			
Give the definitions for an atom and a molecule?			
Name some common elements?			
Name and give the symbols for the first 20 elements plus Calcium, zinc, aluminium, Iron, Silver and Gold			
Give the definition for an isotope?			
Give an example of an isotope?			
Identify a compound, an element, a molecule and a mixture from the following diagrams:			
			
Describe the experiment to make the compound Iron Sulphide by heating iron with sulphur? <ul style="list-style-type: none"> • List the apparatus needed including all the chemicals • Give a detailed method including any safety measures • Remember to include the result of the experiment 			
Can you give the properties of iron, sulphur and iron sulphide			
Can you show how the properties of the Iron Sulphide differ from that of the individual elements of iron and sulphur?			
Can you compare the properties of the following compounds to their individual elements – H ₂ O, CO ₂ , MgO ?			
Can you draw the Bohr diagrams for the first 20 elements?			
Can you write the electronic configuration for the first 20 elements?			
Can you give the definition for atomic number?			
Who was the inventor of the periodic table?			
Can you identify groups 1 to 8 on the periodic table?			
Can you identify periods 1 to 7 on the periodic table?			
Can you give the names for group 1, group 2, group 7 and group 8			
Can you describe why group 8 elements do not react with other elements?			
Can you list the symbols for the metallic elements copper, zinc, aluminium, iron, silver and Gold?			
Can you draw the line on the periodic table that separates the metals from the non metals?			

Revise Chemical Bonding

Assess your learning

Where is your learning at?	Red	Orange	Green
<i>Can you answer the following questions?</i>			
What is a compound?			
Give examples of compounds			
Why do atoms combine to form compounds?			
What are the two ways that atoms can combine to form compounds?			
What is an ionic bond?			
Why do compounds form ionic bonds?			
What groups in the periodic table form ionic bonds together?			
<i>How do compounds form ionic bonds?</i>			
<i>Can you draw diagrams to show ionic bonding in NaCl and MgO</i>			
<i>How many electrons does sodium want to lose when it bonds with chlorine?</i>			
<i>How many electrons does chlorine want to gain when it bonds with sodium?</i>			
<i>How many electrons does magnesium want to lose when it bonds with oxygen?</i>			
<i>How many electrons does oxygen want to gain when it bonds with magnesium?</i>			
Sodium is in group 1 and Magnesium is in group 2 Correctly label the following diagrams as either NaCl or MgO			
<p style="text-align: center;">A</p>			
<p style="text-align: center;">B</p>			
What is a covalent bonds?			
Why do compounds form covalent bonds?			
How do compounds form covalent bonds?			
What groups in the periodic table form covalent bonds together?			
<i>Can you draw diagrams to show covalent bonding in H₂O, O₂, H₂ and CH₄ ?</i>			
<i>How many electrons does hydrogen want to share when it bonds covalently? Why?</i>			
<i>How many electrons does oxygen want to share when it bonds</i>			

<i>covalently?</i>			
<i>How many electrons does carbon want to share when it bonds covalently?</i>			
<p><i>Can you identify the following molecules? H_2O, H_2 and CH_4</i></p> <div style="text-align: center;">  </div> <p><i>What are the differences between ionic and covalent substances?</i></p>			
<p><i>Describe an experiment to show whether a substance is ionic or covalent?</i></p> <ul style="list-style-type: none"> <i>• List the apparatus and chemicals that you will use</i> <i>• Draw a diagram of the apparatus</i> <i>• What test substances will you use</i> <i>• How did you show if a substance was ionic or covalent?</i> <i>• What was the result of this experiment?</i> 			

Revise Metals

Assess your learning

Where is your learning at?	Red	Orange	Green
<i>Can you answer the following questions?</i>			
What are the symbols for the following metals? copper, zinc, aluminium, iron silver and gold			
What are the symbols for the following non metals? carbon, oxygen, nitrogen sulphur and hydrogen			
Describe the physical properties of metals			
What do the <i>terms lustrous, malleable, ductile</i> and <i>conductive</i> mean?			
How are alkali metals and mercury different to other metals?			
Can you describe an experiment to show that metals are good conductors of heat			
<ul style="list-style-type: none"> • What apparatus and metals did you use? • How did you set up the apparatus? • How did you compare the conductivity of each of the metals? • What were the results? 			
What are group 1 metals called?			
Describe the general properties of group 1 metals			
<i>Write balanced equations for the reactions of the following alkali metals with air;</i> <i>Lithium, Sodium, Potassium</i>			
<i>Write balanced equations for the reactions of the following alkali metals with water;</i> <i>Lithium, Sodium, Potassium</i>			
What are group 2 metals called?			
Are the metals in group 2 as reactive as group 1 metals?			
Describe the reactions of metals with HCL			
Describe how you test for Hydrogen gas			
Describe how you would investigate the reactivity of metals with water			
<ul style="list-style-type: none"> • What apparatus and metals did you use? • How did you set up the apparatus? • How did you compare the reactivity of each of the metals? • What were the results? 			
<i>Describe how you would investigate the reactivity of metals with water</i>			
<ul style="list-style-type: none"> • <i>What apparatus and metals did you use?</i> • <i>How did you set up the apparatus?</i> • <i>What safety precautions did you take?</i> • <i>How did you compare the reactivity of each of the metals?</i> • <i>What were the results?</i> 			
<i>Write a balanced equation for the reaction of Zinc and Hydrochloric Acid</i>			
<i>Arrange the following metals in order of their reactivity Ca, Mg, Zn and Cu</i>			

Define an alloy			
Give examples of alloys			
Give uses of the following alloys – brass, bronze, steel and solder			
List the conditions necessary for rusting to occur			
Describe how you would demonstrate the conditions necessary for rusting			
List ways of preventing rust			

Revise the Atmosphere

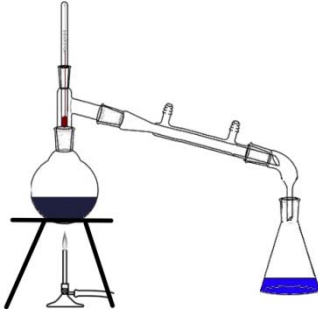
Assess your learning

Where is your learning at?	Red	Orange	Green
Can you answer the following questions?			
List the 5 gases that air is made up of			
State how much of each of the following gases is present in air <i>Carbon dioxide, Nitrogen and Oxygen.</i>			
Describe an experiment to show that air is one fifth oxygen <i>Remember there are different ways to do this experiment</i> <ul style="list-style-type: none"> - <i>The candle and the bell jar</i> - <i>The syringes filled with copper</i> - <i>Steel wool and the graduated cylinder</i> Which one did you do?			
Why does air rise?			
What chemicals do you need to make oxygen gas?			
What is a catalyst? Give an example			
Describe an experiment to make oxygen gas <ul style="list-style-type: none"> • <i>Can you draw a diagram of the apparatus?</i> • <i>List the chemicals and equipment needed</i> • <i>What method did you use?</i> • <i>How did you collect the oxygen?</i> • <i>How did you test that it was oxygen?</i> 			
Write a word equation for making oxygen gas			
<i>Write a balanced chemical equation for making oxygen gas</i>			
Give two uses for oxygen			
Describe how you test a gas to see if it is oxygen			
What are the chemicals you need to make Carbon Dioxide gas?			
Describe an experiment to make carbon dioxide gas <ul style="list-style-type: none"> • <i>Can you draw a diagram of the apparatus?</i> • <i>List the chemicals and equipment needed</i> • <i>What method did you use?</i> • <i>How did you collect the carbon dioxide?</i> • <i>How did you test that it was carbon dioxide?</i> 			
<i>Write a word equation for making carbon dioxide gas</i>			
<i>Can you write a balanced chemical equation for making carbon dioxide gas</i>			
How do you test a gas to see if is Carbon Dioxide?			
Explain how you would compare the density of carbon dioxide to air <ul style="list-style-type: none"> • <i>Is carbon dioxide heavier or lighter than air?</i> • <i>How did you show this?</i> 			
Describe how to test the pH of carbon dioxide and oxygen			
Describe the experiments to test the reaction of carbon dioxide with limewater and with moist litmus paper <i>Remember you need to know the results of these tests</i>			
Can you write the word equation for the reaction of carbon dioxide and limewater?			
<i>Can you write a balanced chemical equation for the reaction of</i>			

<i>carbon dioxide and limewater</i>			
Describe and explain what happens when magnesium is burned in air			
Describe and explain what happens when carbon is burned in air			

Revise Water

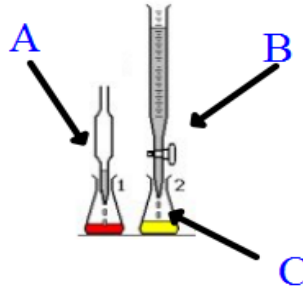
Assess your learning

Where is your learning at?	Red	Orange	Green
<i>Can you answer the following questions?</i>			
Is water a compound or an element?			
What elements make water?			
How can you test a substance to see if it is water?			
What is the freezing point of water?			
What is the boiling point of water?			
What is the density of water?			
Why does ice float on water?			
Water is a good solvent. Why is this important?			
Can you name and draw the 5 stages of the water cycle?			
Can you name and describe the 5 stages of water treatment?			
What is the purest form of water?			
Describe and experiment to show that there are dissolved solids in water <ul style="list-style-type: none"> • What apparatus did you use? • How did you evaporate off the water? • What was left in the evaporating dish? 			
Describe an experiment to show how you distil a sample of sea water <ul style="list-style-type: none"> • What is this process called? • How do you set up the apparatus? • Where did you connect the cold tap? • What did you put in the flask? • What did you end up with in the beaker? 			
Can you label the apparatus in the diagram and show which part gets connected to the cold tap? <div style="text-align: center; margin-top: 10px;">  </div>			
What is hard water?			
What is soft water?			
What compounds are found in hard water?			
When you boil water what do you remove?			
How does an ion exchange resin get rid of hardness in water?			
Name 3 advantages of hard water			

Name 3 disadvantages of hard water			
Describe an experiment to show how you test water for hardness <ul style="list-style-type: none"> • What apparatus and chemicals did you use? • What type of water samples did you use? • How did you measure the hardness of water? • What were the results? 			
What is electrolysis?			
Describe an experiment to show the electrolysis of water <ul style="list-style-type: none"> • What do you call the apparatus used? • What did you put in the voltameter? • What did you add to the water? • How can you identify the cathode? • How can you identify the anode? • Where is oxygen produced? • Where is hydrogen produced? • What is the ration of hydrogen to oxygen produced? 			

Revise Acids and Bases

Assess your learning – Acids and Bases

Where is your learning at?	Red	Orange	Green
<i>Can you answer the following questions?</i>			
Give examples of acids that you use at home			
What taste do these acids generally have?			
Give examples of acids that you use in the lab			
Write the formula for hydrochloric acid and sulphuric acid			
What is the pH range for acids?			
Give examples of bases that you use at home			
Give examples of bases that you use in the lab			
What is the pH range for bases?			
What is the pH of a neutral substance?			
What is an indicator?			
What colour does litmus paper turn in an acid?			
What colour does litmus paper turn in a base?			
Describe and experiment to test whether something is an acid or a base <ul style="list-style-type: none"> • What apparatus and chemicals did you use? • How much of each chemical did you use? • What safety precautions did you take? • What indicator did you use? • What were the results? 			
What is the pH scale and how do you use it?			
State the names and chemical formula for sulphuric acid, hydrochloric acid, Sodium hydroxide and calcium hydroxide			
Identify the above compounds as acids or bases			
Describe what happens when an acid reacts with a base.			
What is the reaction between an acid and a base called?			
What is produced when an acid is neutralised by a base?			
What are the pieces of equipment A, B and C called and what is their function? 			
Describe an experiment to show the neutralisation of an acid by a base <ul style="list-style-type: none"> • What apparatus and chemicals did you use? • What safety precautions did you take? • What acid did you use? 			

<ul style="list-style-type: none"> • What base did you use? • What indicator did you use? • What was the initial colour? • How did you add the acid to the base? • What was the final colour? 			
<p>Write out the word equations for the reaction of</p> <p>(i) hydrochloric acid and sodium hydroxide</p> <p>(ii) hydrochloric acid and calcium carbonate</p>			
<p><i>Complete and balance the following chemical equations</i></p> <p>HCL + NaOH \longrightarrow _____ + _____</p> <p>HCL + CaCO₃ \longrightarrow _____ + _____</p>			
<p>What is a titration?</p>			
<p>Describe an experiment to titrate HCl against NaOH to produce NaCl</p> <ul style="list-style-type: none"> • What apparatus and chemicals did you use? • What safety precautions did you take? • Where did you put the acid and how did you do this? • Where did you put the base and how did you do this? • How did you know that the solution was neutralised? • How did you separate the salt from the water? 			

Revise Chemistry in Everyday Life






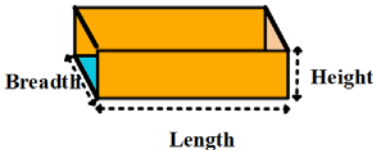
Assess your learning – Fossil Fuels and Plastics

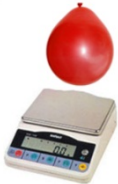
Where is your learning at?	Red	Orange	Green
<i>Can you answer the following questions?</i>			
What do we need fuels for?			
What are fossil fuels?			
Give examples of fossil fuels			
What are they a source of?			
What do fuels need to burn?			
What two things do they produce when they are burned?			
Can you draw a fire triangle?			
What is natural gas made of?			
Can you describe an experiment to demonstrate that fossil fuels produce Carbon dioxide and water when burned? <ul style="list-style-type: none"> • What apparatus and chemicals did you use? • How did you set up the apparatus? • What safety precautions did you take? • What source of hydrocarbon did you use? • How did you test for water? • How did you test for Carbon Dioxide? • What were the results? 			
What is the greenhouse effect?			
What gas causes the greenhouse effect?			
What is acid rain?			
<i>What acids cause acid rain and where do they come from?</i>			
What are the effects of CO ₂ and SO ₂ on the environment?			
What is the effect of acid rain on limestone and on plants?			
What are plastics?			
What are they made of?			
Outline the role of crude oil in the production of plastics			
Can you give examples of different types of plastics?			
Give the properties of the different types of plastics			
Give the uses of the plastics named in everyday life			
Discuss the impact of plastics on the environment			
What role does chemistry play in the pharmaceutical industry?			
What role does chemistry play in medicine?			
What role does chemistry play in the production of food?			

Physics Self-Assessment

Revise Measurement, Density and Flotation

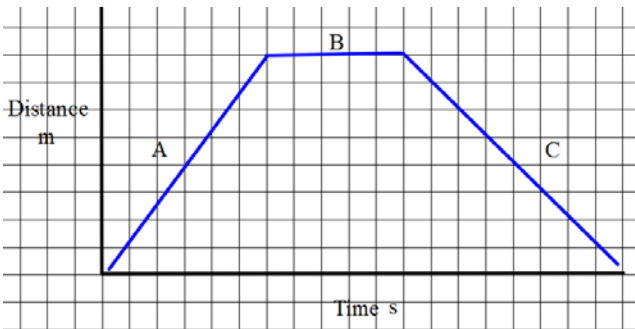
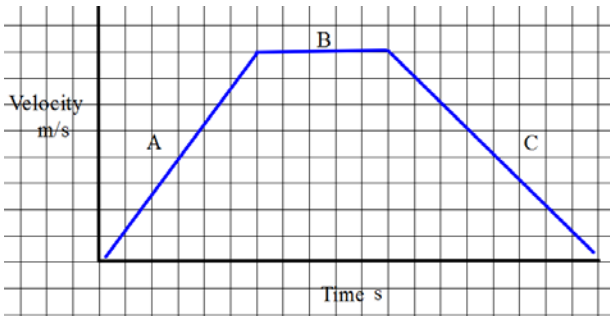
Assess your learning

Where is your learning at?	Red	Orange	Green
<i>Can you answer the following questions?</i>			
What are SI units?			
Why is it important to have a standard system of measurement?			
What are the SI units for Length, Mass, Time, Temperature Area and Volume			
Describe 4 different ways to measure length			
What piece of equipment would you use to measure mass?			
What piece of equipment would you use to measure time?			
What piece of equipment would you use to measure temperature?			
Can you identify the following pieces of equipment and give their function? <div style="display: flex; justify-content: space-around; align-items: center;">      </div>			
How do you measure the area of a regular object? What formula would you use for a rectangle, a triangle and a circle?			
How do you measure the area of an irregular object for example you hand?			
Define volume			
Describe an experiment to measure the volume of a regular object? <ul style="list-style-type: none"> • What apparatus did you use? • What object did you use? • What formula did you use? • What unit is volume measured in? <div style="text-align: center;">  </div>			
Describe an experiment to measure the volume of a larger irregular object for example a stone? <ul style="list-style-type: none"> • What apparatus did you use? • What object did you use? • How did you calculate the volume? 			
Describe an experiment to measure the volume of a small irregular object for example a stone? <ul style="list-style-type: none"> • What apparatus did you use? • What object did you use? • How did you calculate the volume? 			
Describe how you would measure the volume of liquids? <ul style="list-style-type: none"> • What apparatus did you use? • How did you calculate the volume? 			
What is density?			
What is the formula for density?			
What unit is density measure in?			

<p>Describe an experiment to find the density of an irregularly shaped objects</p> <ul style="list-style-type: none"> • What apparatus did you use? • What object did you use? • How did you measure the mass of the object? • How did you measure the volume of the object? • What formula did you use? 			
<p><i>Describe an experiment to find the density of a liquid</i></p> <ul style="list-style-type: none"> • <i>What apparatus did you use?</i> • <i>What liquid did you use?</i> • <i>How did you measure the mass of the liquid?</i> • <i>How did you measure the volume of the liquid?</i> • <i>What formula did you use?</i> 			
<p>Why do solids float?</p>			
<p><i>Why do liquids float?</i></p>			
<p>Is solid A or solid B the most dense? Why?</p>			
<p><i>Is liquid A or B the most dense?</i></p>			
<p>Describe an experiment to show that air has mass and occupies space</p> <ul style="list-style-type: none"> • What apparatus did you use? • What did you put the air in? • How did you measure the mass of the air? • How did you show that air occupies space? 			

Revise Force and Motion


Assess your learning

Where is your learning at?	Red	Orange	Green
<i>Can you answer the following questions?</i>			
Define speed			
How can you measure speed?			
What are the units of speed?			
Can you draw a graph of distance travelled against time?			
Which points on the graph represent an object speeding up, slowing down, stopping?			
 <p>A distance-time graph on a grid. The vertical axis is labeled 'Distance m' and the horizontal axis is labeled 'Time s'. The graph consists of three segments: Segment A is a straight line with a positive slope; Segment B is a horizontal line; Segment C is a straight line with a negative slope.</p>			
<i>Define velocity</i>			
Define acceleration			
How can you measure acceleration? What are the units of acceleration?			
Which points on the graph represent an object accelerating, going at a constant velocity, decelerating?			
 <p>A velocity-time graph on a grid. The vertical axis is labeled 'Velocity m/s' and the horizontal axis is labeled 'Time s'. The graph consists of three segments: Segment A is a straight line with a positive slope; Segment B is a horizontal line; Segment C is a straight line with a negative slope.</p>			
What is a force?			
Describe a force and its effect			
What types of forces are there?			
What is Friction?			
What are advantages and disadvantages of Friction?			
What can we use to reduce friction?			
Describe an experiment to investigate friction			
<ul style="list-style-type: none"> • What apparatus did you use? • What surfaces did you use to vary friction? • How did you measure friction? • What were the results? 			
What is Hooke's Law?			

<p>Describe an experiment to show the extension of a spring is proportional to the force applied to it (this is Hookes Law)</p> <ul style="list-style-type: none"> • What apparatus did you use? • How did you hold the spring in place? • How much weight did you add each time? • How did you measure the extension in the spring? • What graph of your results did you plot? 			

Revise Forces 2

Assess your learning – Weight, Gravity, Levers and Pressure

Where is your learning at?	Red	Orange	Green
<i>Can you answer the following questions?</i>			
What is the difference between mass and weight?			
What is the unit of weight?			
<i>How do you calculate a person's weight?</i>			
Why do people have different weights on the moon and in outer space?			
What is the formula for a moment of a force?			
What is a lever?			
Define the law of the lever			
What experiment could you do to prove the law of the lever? <ul style="list-style-type: none"> • What equipment did you use? • How did you set the equipment up? • At what point did you suspend the metre stick? • Where did you hang the two weights? • Where did you measure the distance to the weight from? • What formula did you use? • What was the result? 			
Give two everyday uses of levers			
What is the centre of gravity?			
What is stable, neutral and unstable equilibrium			
Match the objects with the state of equilibrium			
			
Stable Unstable Neutral			
Describe an experiment to find the centre of gravity of an irregular thin sheet. <ul style="list-style-type: none"> • What equipment did you use? • Where did you hang the cardboard? • How did you suspend the plumb line? • What lines did you draw? • How did you get the centre of gravity • Where was the centre of gravity? 			
What is pressure?			
What units is pressure measured in?			
What is the relationship between pressure, force and area?			
Give the formula for this relationship			

How does pressure vary with depth in liquids?			
Describe an experiment to show that pressure varies with depth <ul style="list-style-type: none"> • What equipment did you use? • Where did you put the holes in the bottle? • How did you plug the holes? • What happened when the water flowed out the holes? • What conclusion did you draw from this? 			
What is atmospheric pressure?			
How does atmospheric pressure vary with height?			
Where is pressure greatest – at the top of a mountain or at sea level?			
Describe an experiment to show the effect of atmospheric pressure <ul style="list-style-type: none"> • What equipment did you use? • How much water did you put in the can? • Why did you boil the water? • What happened to the can when you put it in a basin of cold water? • What conclusion did you draw from this? 			
How can you measure pressure?			
<i>What is an isobar?</i>			
<i>When the pressure is high what will our weather be like?</i>			
<i>When the pressure is low what will our weather be like?</i>			
<i>When the isobars are very close together on a weather chart what does this mean for the weather?</i>			

Revise Heat

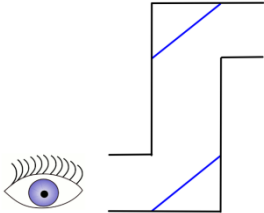
Assess your learning- Heat



Where is your learning at?	Red	Orange	Green
<i>Can you answer the following questions?</i>			
What is heat?			
Give examples of heat being converted into other forms of energy			
Describe an experiment to show what happens when solids are heated <ul style="list-style-type: none"> • This is the ball and ring experiment? • How did you heat the ball? • How did you cool the ball? 			
Describe an experiment to show what happens when liquids are heated <ul style="list-style-type: none"> • What apparatus did you use? • How did you show that the liquid expanded? 			
Describe an experiment to show what happens when gases are heated <ul style="list-style-type: none"> • What apparatus did you use? • What did you use to heat the gas? • How did you show that the gas expanded? 			
Describe what happens to water when it freezes <ul style="list-style-type: none"> • What happens when you put a bottle of water in the freezer? 			
Describe how a bimetallic strip works and how it is made <ul style="list-style-type: none"> • What two metals made up the bi metallic strip? • Where did you heat the strip? • What happened to the strip when it was heated? 			
What is temperature?			
What instrument measures temperature?			
Explain the difference between temperature and heat			
Describe an experiment to show the effect of changing pressure on the boiling temperature of water <ul style="list-style-type: none"> • What apparatus did you use? • What did you use to heat the water? • How did you measure the temperature of the water? • How did you decrease the pressure? • What happened when the pressure was reduced? 			
Describe experiments to measure the temperature of the melting point of ice and the boiling point of water			
What is the boiling point and melting point of water			

What happens when substances change state?			
What happens when substances freeze?			
What is condensation?			
<i>What is Latent heat?</i>			
<i>Describe an experiment to show the change in the state of a substance</i> <ul style="list-style-type: none"> • <i>What apparatus did you use?</i> • <i>How did you melt the solid?</i> • <i>What did you use to measure the temperature?</i> • <i>How often did you measure the temperature?</i> • <i>What was the result?</i> 			
<i>How can you identify Latent heat on a graph?</i>			
What is an insulator? What substances are good and bad insulators?			
<i>Describe experiments to show conduction in solids</i> <ul style="list-style-type: none"> • <i>What apparatus did you use?</i> • <i>What did you attach the tacks to the metals?</i> • <i>What was your source of heat?</i> • <i>What was the result?</i> • <i>What was the conclusion?</i> 			
<i>Describe experiments to show convection in water</i> <ul style="list-style-type: none"> • <i>What apparatus did you use?</i> • <i>What did you use to dye the water?</i> • <i>How did you heat the water?</i> • <i>What was the result?</i> • <i>What was the conclusion?</i> 			
Describe experiments to show the transfer of heat by radiation <ul style="list-style-type: none"> • <i>What apparatus did you use?</i> • <i>What colour cans did you use?</i> • <i>What was your source of heat?</i> • <i>How did you measure the temperature?</i> • <i>What was the result?</i> • <i>What was the conclusion?</i> 			
Define the terms conduction , convection and radiation			

Revise Light

Assess your learning- Light

Where is your learning at?	Red	Orange	Green
<i>Can you answer the following questions?</i>			
Define light			
Can you give examples of light being converted to other forms of energy			
Describe the difference between luminous and non luminous objects			
Can you describe how light travels?			
Describe an experiment to show that light travels in straight lines <ul style="list-style-type: none"> • What apparatus did you use? • How did you set up the apparatus? • How did you show that light travels in straight lines? • What was the result? 			
Explain why shadows are formed			
What is an eclipse?			
<i>What is dispersion?</i>			
Describe how you show dispersion in the laboratory <ul style="list-style-type: none"> • What apparatus did you use? • How did you set up the apparatus? • What did you use a source of light • What did you use to disperse the light? • Which colour was refracted the most? 			
What colours is white light made up of?			
How is a rainbow formed?			
Define reflection			
Describe an experiment to show reflection in a mirror <ul style="list-style-type: none"> • What apparatus did you use? • What did you use as a source of light? • How did you set up the apparatus? • How did you record the incident ray and the reflected ray? • What was the result? 			
Fill in the path that they ray of light travels in the periscope <div style="text-align: center;">  </div>			
Define refraction			
Can you draw a diagram to show how light bends in blocks of glass?			

<p><i>Describe an experiment to demonstrate refraction from air to glass to air</i></p> <ul style="list-style-type: none"> • <i>What apparatus did you use?</i> • <i>What did you use as a source of light?</i> • <i>How did you set up the apparatus?</i> • <i>How did you record the incident ray and the reflected ray?</i> • <i>What was the result?</i> 			
<p><i>Describe how you could show refraction from air to water and from water to air</i></p>			
<p><i>Draw a diagram to show refraction of light through a convex lens</i></p> 			
<p><i>Give a use for a convex lens</i></p>			
<p><i>Draw a diagram to show refraction of light through a concave lens</i></p> 			
<p><i>Give a use for a concave lens</i></p>			
<p><i>Describe the operation of a magnifying glass</i></p>			





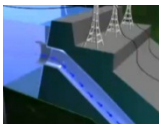
Revise Sound

Assess your learning - Sound

What is sound			
Describe an experiment to show that sound is a form of energy What apparatus did you use? What was the source of sound? What object did you use to show the vibration of sound?			
How does sound travel?			
Describe an experiment to prove that sound needs a medium to travel through What apparatus did you use? What was the source of sound? How did you remove the air? What was the result?			
What is an echo and how are they produced?			
Which is faster the speed of sound or the speed of light?			
How do we hear sound?			
What is sound measured in?			
Why should we wear ear protection if listening to sounds about 70dB			
Explain why you see light and then hear sound as in thunder and lightning or at a fireworks display			

Revise Work, Energy and Power


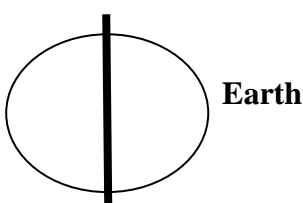
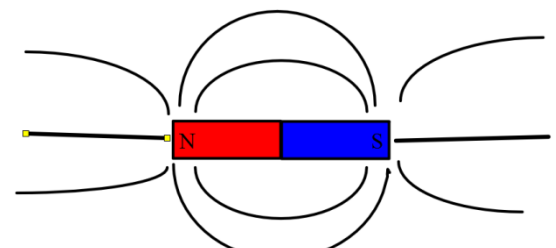
Assess your learning –

Where is your learning at?	Red	Orange	Green
<i>Can you answer the following questions?</i>			
What is energy?			
What units is energy measured in?			
Name the different forms of energy E.g. Light Energy,			
State the Principle Of Conservation of Energy			
<p>The following pictures are examples of energy conversions that happen around us every day. For each picture state the energy conversion/s that is/are taking place. The first example is done for you.</p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;">  <p>The car converts the chemical energy from the petrol into kinetic energy to move the car</p> </div> <div style="text-align: center;">  </div> </div> <div style="display: flex; justify-content: space-around; align-items: flex-start; margin-top: 10px;"> <div style="text-align: center;">  </div> <div style="text-align: center;">  </div> </div> <div style="display: flex; justify-content: space-around; align-items: flex-start; margin-top: 10px;"> <div style="text-align: center;">  </div> </div>			
What is meant by Renewable Energy ?			
What is meant by Non- Renewable Energy ?			
Name 2 advantages and 2 disadvantages to renewable energy sources			
Name 2 advantages and 2 disadvantages to non-renewable energy sources			
Place an R next to the renewable energy			
What is Nuclear energy?			
Name 2 advantages and 2 disadvantages to nuclear energy			
Where does all the energy on earth come from?			
Now describe 3 ways the sun's energy is used to provide other			

sources of energy Hints; <ul style="list-style-type: none"> • How has the sun's energy allowed fossil fuels such as coal and oil develop? • How does the sun's energy provide wind and biomass energy? • How does the sun provide solar energy? 			
Describe 3 experiments to show the conversion of (a) Chemical Energy to Electrical Energy to Heat Energy (b) Electrical Energy to Magnetic Energy to Kinetic Energy and (c) Light Energy to Electrical Energy to Kinetic Energy <ul style="list-style-type: none"> • What apparatus did you use? • How did you set up the apparatus? • What was the result? 			
What is work?			
What units is work measured in?			
What is the formula for calculating the amount of work done?			
If a person moves an object whose force is 40 newtons over a distance of 5 meters how much work did that person do?			
What is Power?			
What units is power measured in?			
What is the formula for calculating power?			
If a machine gets 2000 joules of work done in 10 seconds what is the power of that machine?			
A woman who weighs 560 N climbs a 3000m high mountain in 2 hours. Calculate (a) The work done (b) her power			

Revise Static Electricity and Magnetism

Assess your learning – Static Electricity and Magnetism





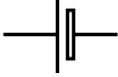

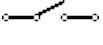




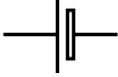

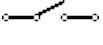




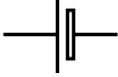

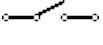
Where is your learning at?	Red	Orange	Green
<i>Can you answer the following questions?</i>			
Name 3 metals that can be magnetised			
Give 3 everyday uses for magnets			
What are the opposite ends of a magnet called?			
Complete the following sentence; Like poles R_____ while unlike poles A_____			
Explain why the magnets in the diagram appear to float			
			
What instrument can be used to find the directions North, South, East and West?			
What is meant by the magnetic field of the Earth?			
Identify the geographic north/south and draw in the magnetic north/south on the diagram of the earth below			
			
What is meant by the magnetic field of a magnet?			
Describe an experiment you could perform to show the magnetic field of a bar magnet <i>Did you use iron fillings or compasses to show the magnetic field?</i> <i>What was the result?</i>			
What direction do magnetic field lines always travel in?			
Can you show the direction of magnetic field lines using arrows in the diagram below			
			

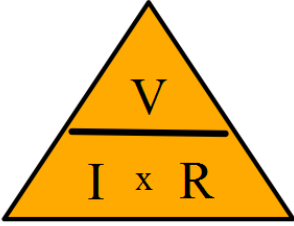
Assess your learning – Static Electricity

Where is your learning at?	Red	Orange	Green
<i>Can you answer the following questions?</i>			
Give 2 examples of static electricity?			
Describe how you can produce static electricity <ul style="list-style-type: none"> • What apparatus did you use? • What type of object did you use to charge? • What type of cloths did you use to provide charge? • How did you show that the object was now charged? 			
How does a substance become negatively charged?			
How does a substance become positively charged?			
What will happen between like charges?			
What will happen between unlike charges?			
Describe an experiment to demonstrate force between charged objects <ul style="list-style-type: none"> • What apparatus did you use? • What type of object did you use to charge? • What type of cloths did you use to provide charge? • How did you show the force between the charged objects? 			
Draw diagrams to show how things are attracted or repelled from each other by static electricity			
What is a conductor? Name 2 examples			
What is an insulator? Name 2 examples			
Describe an experiment to determine whether something is a conductor or an insulator <ul style="list-style-type: none"> • What apparatus did you use? • Can you draw a circuit diagram? • What was the purpose of the light bulb in the circuit? • What conductors and insulators did you use? 			
What is earthing?			
Can you give 2 common examples of earthing and describe how they work?			

Revise Current Electricity




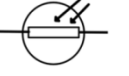


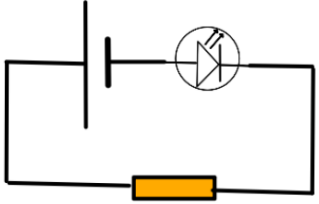
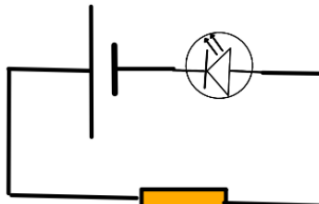
Assess your learning – Current Electricity

Where is your learning at?	Red	Orange	Green																
<i>Can you answer the following questions?</i>																			
What is an electric current?																			
What unit is current measured in?																			
What is the symbol for current?																			
What instrument measures current?																			
What is potential difference or voltage?																			
What unit is voltage measured in?																			
What is the symbol for voltage?																			
What instrument measures voltage?																			
What is resistance?																			
What unit is resistance measured in?																			
What is the symbol for resistance?																			
What instrument measures resistance?																			
What do the following symbols represent?																			
<table style="width: 100%; border: none;"> <tr> <td style="text-align: center;">A</td> <td style="text-align: center;">B</td> <td style="text-align: center;">C</td> <td style="text-align: center;">D</td> </tr> <tr> <td style="text-align: center;"></td> <td style="text-align: center;"></td> <td style="text-align: center;"></td> <td style="text-align: center;"></td> </tr> <tr> <td style="text-align: center;">E</td> <td style="text-align: center;">F</td> <td style="text-align: center;">G</td> <td></td> </tr> <tr> <td style="text-align: center;"></td> <td style="text-align: center;"></td> <td style="text-align: center;"></td> <td></td> </tr> </table>	A	B	C	D					E	F	G								
A	B	C	D																
																			
E	F	G																	
																			
What is the function of the following components in a circuit? Battery, switch, resistor, voltmeter, ammeter																			
What is Ohm's law?																			
Describe an experiment to demonstrate Ohm's Law <ul style="list-style-type: none"> • What apparatus did you use? • Can you draw a circuit diagram? • Where did you place the ammeter? • Where did you place the voltmeter? • How did you adjust the readings on the voltmeter? • What meter did you use to read the current? • What did you plot on your graph? • How did you calculate the resistance from the graph? 																			
Can you draw a simple circuit to demonstrate Ohm's law?																			
What is the formula for Ohm's Law?																			

Can you use the following triangle to do calculations			
			
What is meant by a series circuit?			
Draw a circuit diagram for a series circuit.			
Explain what happens if one bulb in the series circuit blows			
What is meant by a parallel circuit?			
Draw a circuit diagram for a parallel circuit.			
Explain what happens if one bulb in the parallel circuit blows			
What happens to bulbs in a parallel circuit if one goes out?			
Describe how you would show the Heating effect of an electric current? <ul style="list-style-type: none"> • What apparatus did you use? • Can you draw a circuit diagram? • What did you use to show the heating effect? • What was the result? 			
Describe how you would show the magnetic effect of an electric current? <ul style="list-style-type: none"> • What apparatus did you use? • Can you draw a circuit diagram? • What did you use to show the magnetic effect? • What was the result? 			
Describe how you would show the electrical effect of an electric current? <ul style="list-style-type: none"> • What apparatus did you use? • Can you draw a circuit diagram? • What did you use to show the electrical effect? • What was the result? 			
Give an everyday use for the heating, electrical and magnetic effect of an electric current			
What is direct current?			
What is alternating current?			
Can you distinguish between direct and alternating current?			
What is the voltage of the mains supply?			
What is the unit of electricity?			
An electrical kettle has a power rating of 2kW, and is used to boil water for three hours every day. What is the cost of running the kettle for a week?			
Describe how to wire a plug correctly			
Explain the role of the fuse both in a plug and a circuit breaker			

Revise Electronics

Assess your learning – Electronics

Where is your learning at?	Red	Orange	Green
<i>Can you answer the following questions?</i>			
Draw the symbols for a switch, a resistor, a light bulb, a diode, a light dependent resistor and a light emitting diode			
Identify the diode, a light emitting diode, light dependent resistor, a resistor, a buzzer and a lamp from the following symbols <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>A</p>  </div> <div style="text-align: center;"> <p>B</p>  </div> </div> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>C</p>  </div> <div style="text-align: center;"> <p>D</p>  </div> </div> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>E</p>  </div> <div style="text-align: center;"> <p>F</p>  </div> </div>			
What is the function of each of the components A to F above?			
Why do you need a resistor in series with an LED in a circuit?			
In which of these circuits A or B will the light turn on? <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>Circuit A</p> </div> <div style="text-align: center;">  <p>Circuit B</p> </div> </div>			
In which circuit is the diode forward biased?			
In which circuit is the diode reverse biased?			
Explain why the light only turns on in one circuit			
State the advantage of an LED over a light bulb			
Give a definition for a LDR			
Describe how you can Measure the resistance of an LDR			
<ul style="list-style-type: none"> • What apparatus did you use? • Draw a circuit diagram • How did you vary the light? • What was the result? 			
Give every day uses of an LDR			

Last Minute Revision

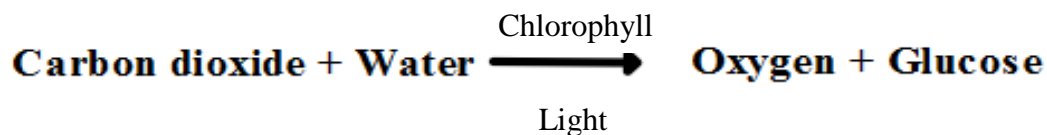
Biology Definitions that you need to know

Aerobic Respiration	The release of energy from food which requires oxygen
Antagonistic muscles	Muscles that work in opposition to each other
Asexual Reproduction	Reproduction that involves one parent only
Average body temperature	The average body temperature is 37°C
Average pulse rate	The average pulse rate is 70 beats per minute
Balanced diet	A diet that contains all the nutrients required by the body in the correct proportions
Chromosomes	Chromosomes are found in the nucleus of cells and are made up of protein and DNA
Competition	Living things competing for resources that are in short supply such as light, food, shelter and space
Contraception	the prevention of pregnancy
Digestion	The breakdown of food
Enzyme	An enzyme speeds up a reaction in living things e.g. amylase
Excretion	The removal of waste from the body
Fertile Period	Day 11 to day 16 of the menstrual cycle when an egg can be fertilised by sperm
Fertilisation	The fusion of an egg and a sperm cell to form a zygote
Food Pyramid	Helps you chose a variety of foods in the quantities that you need
Genes	The part of a chromosome that carries the code for inherited characteristics
Geotropism	Geotropism is the growth response of plants to gravity
Germination	The growth of a seed into a new plant when conditions are favourable
Inheritable characteristics	Characteristics that are carried on our genes
Invertebrate	Animals that have no spine (backbone)
Interdependence	Plants and animals that depend on each other for example bees get food from sunflowers and in return the pollinate the plant
Key	As series of questions used to identify plants or animals
Ligaments	Ligaments join bone to bone
Menstruation	The breakdown of the lining of the womb that occurs approximately every 28 days in a human female
Motor nerves	Motor nerves send signals from the brain to the muscles
Non inheritable characteristics	Characteristics that are not carried on our genes but are acquired or learned
Organ	A group of tissues working together form an organ
Organ System	A group of organs working together form an organ system
Phloem	The tissue that transports food around the plant
Phototropism	The growth response of a plant to light
Puberty	The stage at which hormonal changes occur and the body is

	able to reproduce
Sensory nerves	Sensory nerves carry signals from the nerves to the brain
Sexual Intercourse	Is where the penis of a male is placed in the vagina of a female
Sexual Reproduction	Is the fusion of two sex cells to form a zygote. It involves two parents
Substrate	The substance on which an enzyme acts e.g. starch
Tendons	Tendons join muscle to bone
Tissue	A tissue is a group of similar cells acting together
Transpiration	Is the loss of water from a plant
Vertebrate	Animals that have a spine (backbone)
Xylem	The tissue that transports water and minerals from the roots to the leaves in a plant
Food Web	A series of interconnecting food chains
Producer	Green plants that produce their own food
Consumer	Living things that eat other organisms
Decomposer	Organisms that feed on dead animals and plants e.g.: microorganisms, worms, beetles
Conservation	The protection and good use of our natural resources
Pollution	The addition of waste materials to our environment causing damage

Biology Equations that you need to know

The word equation for **Photosynthesis** is



The word equation for **Aerobic Respiration** is:

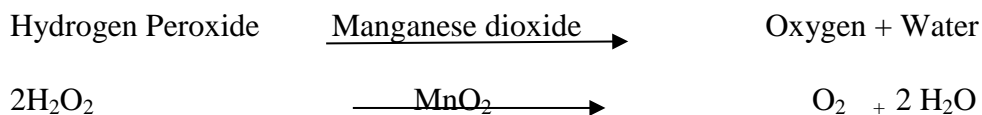


Chemistry Definitions that you need to know

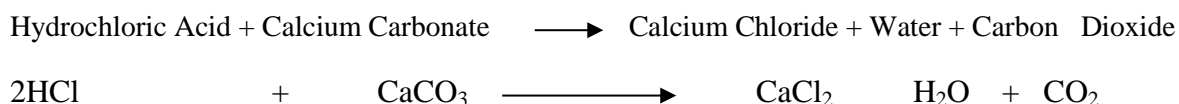
Acid	A substance which has a pH of less than 7
acid rain	Rain that has sulphur dioxide or carbon dioxide dissolve in it
alkali	A soluble base
Alloys	A mixture of metals such as bronze, brass, solder
Atomic number	The number of protons in an atom
Base	A substance which has a pH of more than 7
catalyst	A substance that can speed up a reaction without taking part e.g. manganese dioxide for making oxygen
Composition of air	Air is made up of 78% nitrogen, 21% oxygen and <1% carbon dioxide
Compounds	Two elements that are chemically combined together
Concentrated solution	A solution that has a lot of solute and a small amount of solvent
covalent bond	A bond where electrons are shared between two atoms
Dilute solution	A solution that has a lot of solvent and a small amount of solute
Distillation	The separation of two liquids that have different boiling points
Ductile	The property of a metal that allows it to be stretched
electrolysis	The chemical breakdown of a substance by using an electric current for e.g.: breaking water into hydrogen and oxygen
Elements	A substance that is made up of only one type of atom
Fossil fuels	Fuels that are made from the remains of dead plants and animals: Coal oil and Gas
ionic bond	A bond that is form between two atoms electrons are lost and gained
Lustrous	The property of a metal that allows it to shine
isotope	Atoms of the same element with the same number of protons but different numbers of neutrons
Malleable	The property of a metal that allows it to be beaten into shape
Mixtures	Two elements that are physically mixed together bit not chemically combined
Neutral	A substance that has a pH of seven
neutralisation	A reaction where an acid neutralises a base to form a salt and water
Plastics	A long lasting material that is made from hydrocarbons (crude oil)
Solute solvent and	A solute is the solid that dissolves in a liquid to form a solution
Solution	A solution is formed when a solute dissolves in a solvent
Solvent	A solvent is the liquid part of the solution
States of matter	The 3 states of matter are solids, liquids and gases
Water hardness	Hardness in water is caused by ions of calcium and magnesium

Chemistry Equations that you need to know

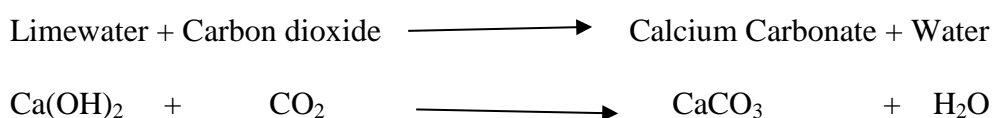
Preparation of Oxygen



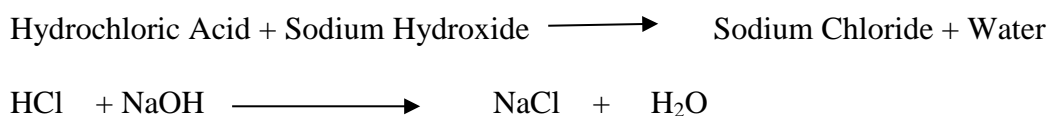
Preparation of Carbon Dioxide



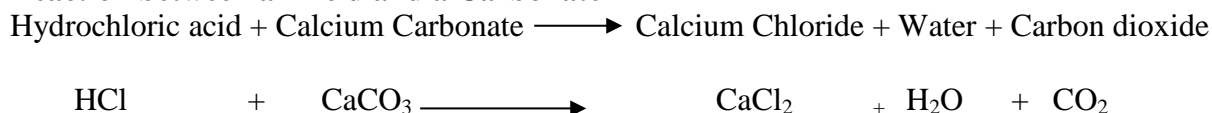
Reaction between Limewater and Carbon dioxide



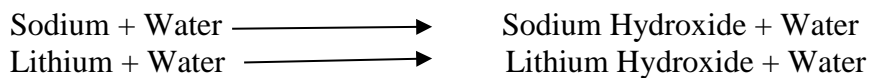
Reaction between an Acid and a Base



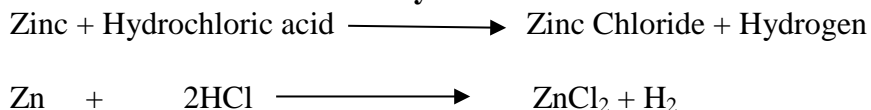
Reaction between an Acid and a Carbonate



Reactions between Alkali Metals + Water



Reaction between Zinc and Hydrochloric acid



Physics Definitions that you need to know

Acceleration	Is the rate of change in velocity of an object divided by the time taken for the change. It is measured in MS^{-2}
Centre of Gravity	Is the point in a body where all the weight of the body appears to be concentrated
Conduction	The transfer of energy through a solid without any movement of the particles
Conservation of energy	Energy cannot be created or destroyed only converted from one form into another
Convection	The transfer of heat through a liquid caused by the movement of its particles
Current	The movement of an electric charge between two points. It is measured in Amperes
Density	Density is the mass per unit volume of an object. It is measured in g/cm^3 or kg/m^3 .
Dispersion	The breaking up of white light into its constituent colours
Energy	Is the ability to do work
Flotation	Is when a less dense object floats in a liquid more dense than the object.
Force	A force is a push or a pull which causes a change in the velocity of an object. It is measured in Newtons
Friction	Friction is the force of resistance to motion between two surfaces that are in contact with each other
Fulcrum	The point around which a lever pivots or turns
Hooke's Law	The extension in a spring is proportional to the weight applied to it
Latent heat	Is the amount of heat energy that causes a change in state without causing a change in temperature
Law of the lever	When a lever is in equilibrium the sum of the clockwise moments are equal to the sum of the anti clockwise moments
Magnetic field	The space around a magnet where a magnetic force can be felt
Mass	The amount of matter in an object. It is measured in Kg
Non renewable energy	This is the energy supplied by fossil fuels. They cannot be replenished in a short space of time.
Ohms law	The current is proportional to the voltage in a conductor $V = IR$
Power	The amount of work done divided by the time. It is measured in Watts
Pressure	The force that an object exerts over unit area. It is measured in Pascals
Radiation	Heat transfer by waves even through a vacuum eg heat radiation from the sun
Reflection	The bouncing of light from a reflective surface
Refraction	The bending of light as it travels from one medium to another
Renewable energy	Energy that is in continuous supply and comes from natural resources
Speed	Is the distance travelled in unit time. It is measured in ms^{-1}

Temperature	The measure of how hot or cold an object is. It is measured in degrees Celsius
Velocity	Is speed in a given direction. It is measured in ms^{-1}
Weight	Is the force on an object caused by gravity. It is measured in Newtons
Work	Work is done when a force moves an object. It is measured in Joules

Formulae

Item	Formula	Units
Speed	Speed = $\frac{\text{Distance}}{\text{Time}}$	m/s or ms-1
Velocity	This is speed in a given direction and is calculated in the same way as speed above	m/s or ms-1
Acceleration	Acceleration = $\frac{\text{Speed/Velocity 2} - \text{Speed/Velocity 1}}{\text{Time Taken}}$	m/s/s or m/s ²
Weight	Weight = Mass(Kg) X 10	N (Newtons)
Moment	Force applied (N) x perpendicular distance from the fulcrum(m)	Nm(Newton metres)
Pressure	Pressure = $\frac{\text{Force (N)}}{\text{Area(m}^2\text{)}}$	Pa(Pascals) or N/m ²
Voltage	Current(A) X Resistance(Ω)	Volts (V)
Current	$\frac{\text{Voltage(V)}}{\text{Resistance } (\Omega)}$	Amps (A)
Resistance	$\frac{\text{Voltage(V)}}{\text{Current (A)}}$	Ω (ohms)
Measure of Electricity	Kilowatts(kW) X Hours(h)	kWh (Kilowatt hours)
Density	Density = $\frac{\text{Mass(g)}}{\text{Volume (cm}^3\text{)}}$	g/cm ³
Work	Force (N) X Distance(m)	Joules (j)
Power	Power = $\frac{\text{Work done (j)}}{\text{Time taken (s)}}$	Watts (W)

