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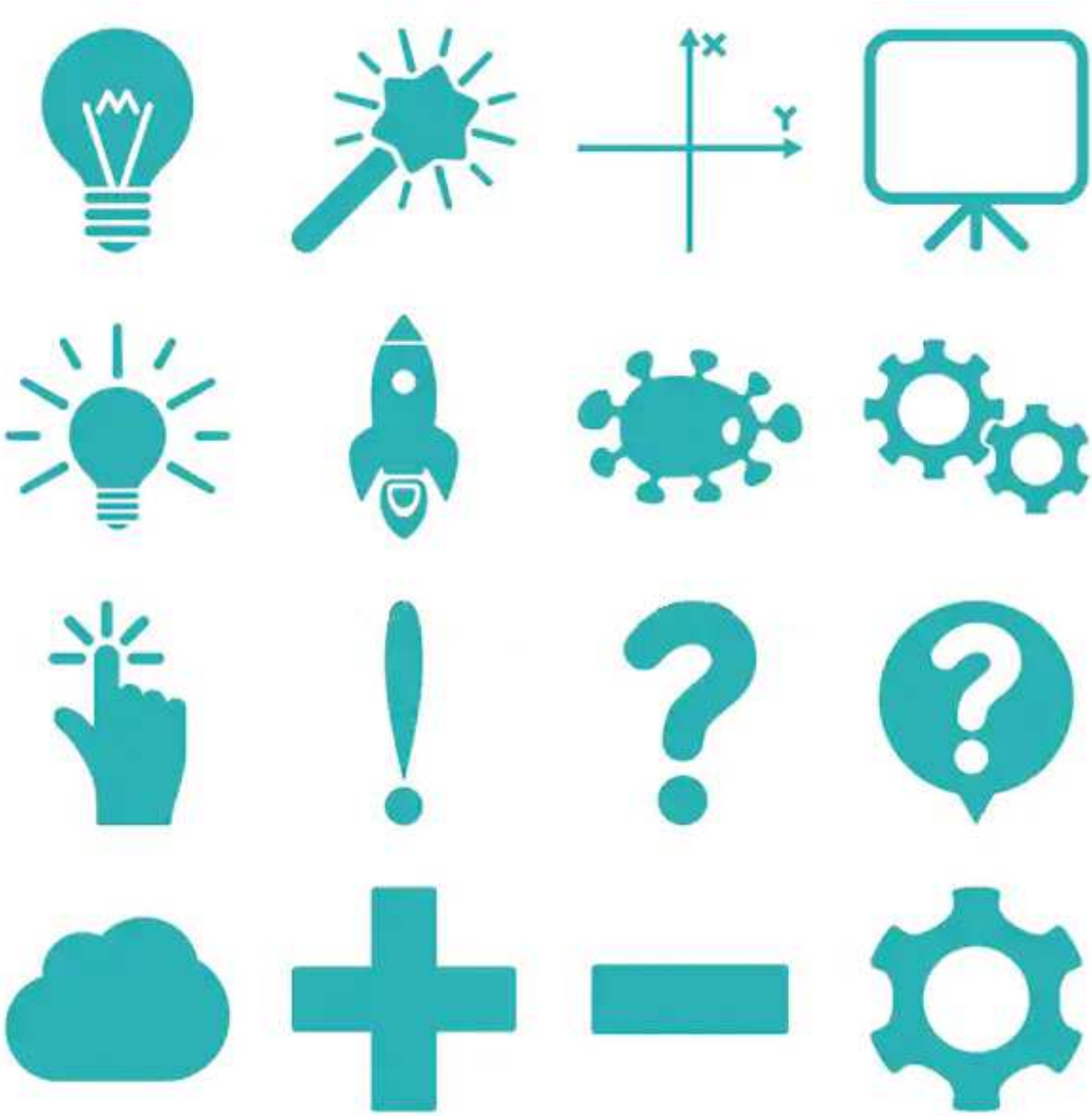
ACADEMY NORTH
WHERE STARS ARE BORN



Science

Preparing for Y7

NO LIMITS | RESPECT | SUPPORT | BROADENING HORIZONS | COMMUNITY

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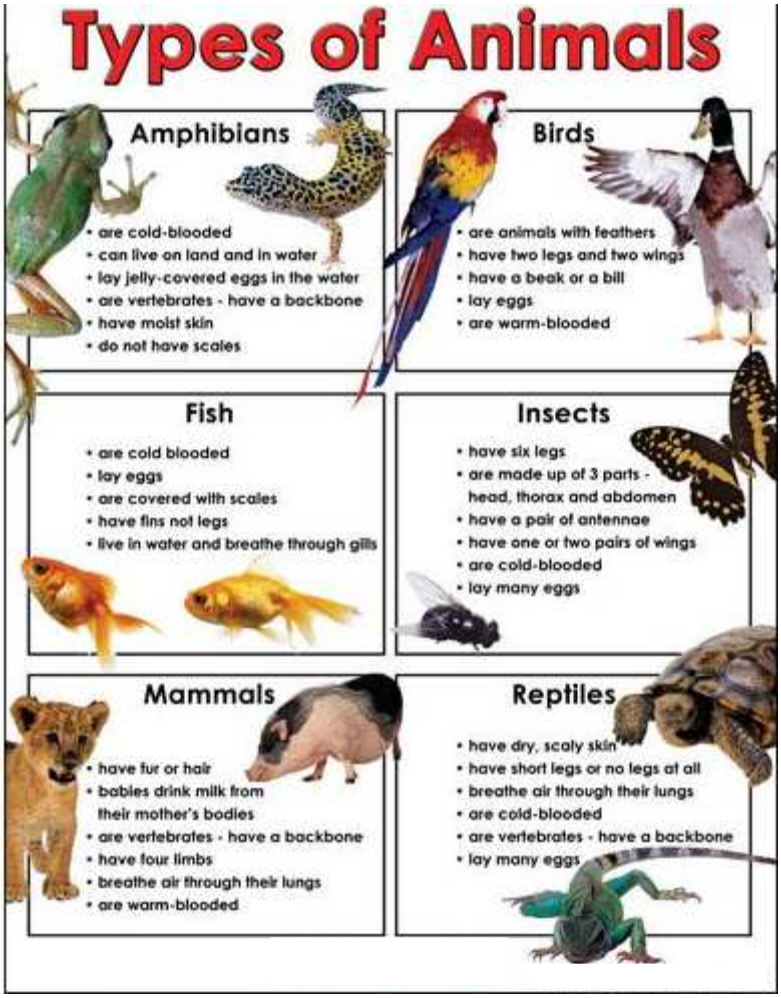
Grouping animals - Key Facts

Grouping Animals



Animals can be grouped in many ways, some of the groups they can be put into are shown in this picture.

Animals can also be put into groups depending on what they eat. Carnivores, such as wolves, eat other animals to stay alive. Herbivores, such as cows, eat plants to stay alive. Omnivores, such as humans, eat a mixture of plants and other animals to stay alive.

Sometimes the groups have things in common, and sometimes they have characteristics that are unique (only they have). For example a unique characteristic of birds are that they have feathers.

Knowledge Check	
Name 6 categories of animal	
What do herbivores eat?	
What features do fish and reptiles share?	
What features are unique to mammals	
Only birds lay eggs?	True / False

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Organ Systems - key facts

The Human body has many **organ systems**, groups of organs that work together to perform a specific function.

Digestive system

The digestive system plays an important role in keeping us alive. It is responsible for breaking down the food that we eat so that the nutrients can be used by our bodies.

Circulatory system

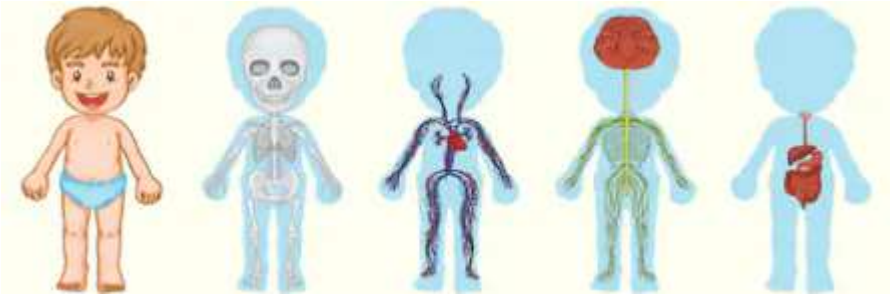
Our circulatory system is the heart, blood and vessels (tubes) which carry the blood. The blood has an important function in transporting different substances around our bodies and fighting disease.

Skeletal and muscular systems

The skeletal system has 4 main roles : Protection, support/shape, blood production and movement. Our muscles work alongside the skeletal system to allow us to move.

Reproductive system

Our bodies change throughout our lives as we grow up and reach sexual maturity. The reproductive system is the organ systems which allows us to produce offspring.



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Organ Systems

Knowledge Check - Organ Systems	
Name 4 human organ systems.	
What is the main job of the digestive system?	
Name an organ in the digestive system.	
Name the 3 organs in the circulatory system.	
State 1 thing the circulatory system might transport around in our blood.	
Name the 4 main roles of the skeletal system.	
What do our bones work alongside to allow us to move?	
What is the reproductive system for?	
How is the reproductive system different to the body's other organ systems?	

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Lifestyle Factors - Literacy

Effect of lifestyle factors on health

Lifestyle factors are things which we **choose** to do with our/to our bodies which may affect our health. Some lifestyle factors can be good for us and our health but some may affect our health in a negative way. Examples of lifestyle factors include:

Diet—If we choose to eat a healthy balanced diet our health could be improved. A poor diet, however, can cause health problems such as obesity, diabetes and heart disease.

Exercise—If we choose to regularly exercise our health could be improved. Lack of exercise and too much time sitting in from of the television, computer or games console can cause obesity and heart disease.

Smoking—If we choose to smoke there is an increased risk of developing lung diseases, such as cancer, which can be fatal (cause death). Smoking while pregnant can damage the unborn baby.

Alcohol—Although many people drink small amounts of alcohol IF you drink too much/too often there is an increased risk of developing liver disease. Drinking alcohol while pregnant can

Name 4 lifestyle factors that can affect your health	
What could a poor diet lead to?	
What factors could increase the risk of obesity?	
What does it mean if something is fatal?	
Which two factors have the biggest impact on unborn babies?	
What possible effects are there of consuming alcohol?	

Using this - what advice would you give someone aiming to live a healthy lifestyle?	

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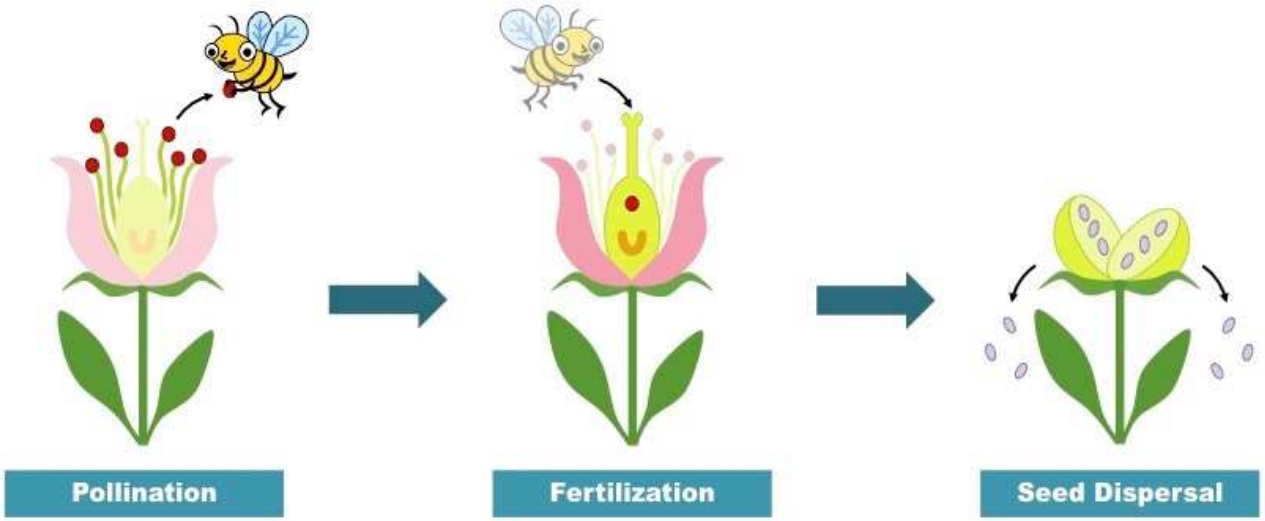
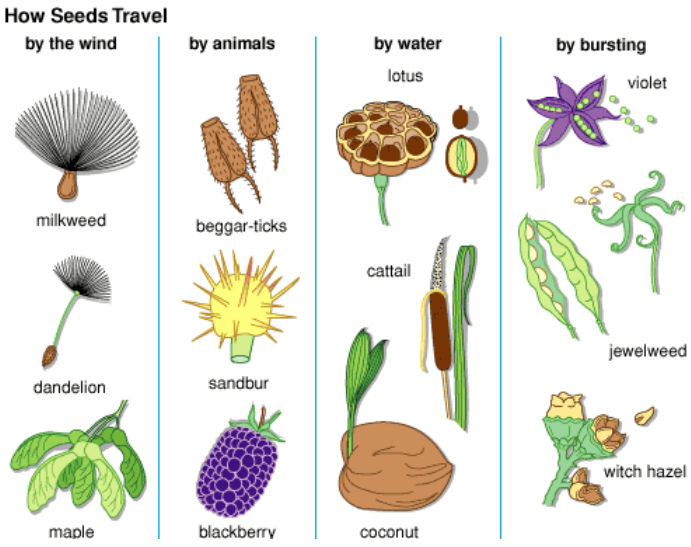
Plants - Ordering steps

One of the key plant organs is the flower. This is important for most plants to be able to reproduce.



Use the pictures to describe how plants are pollinated:

1)
2)
3)
4)



Name 4 ways that seeds can be spread	
Name a type of seed that is spread by the wind	
What do seeds spread by bursting have in common?	
How do you think seeds are spread by animals?	

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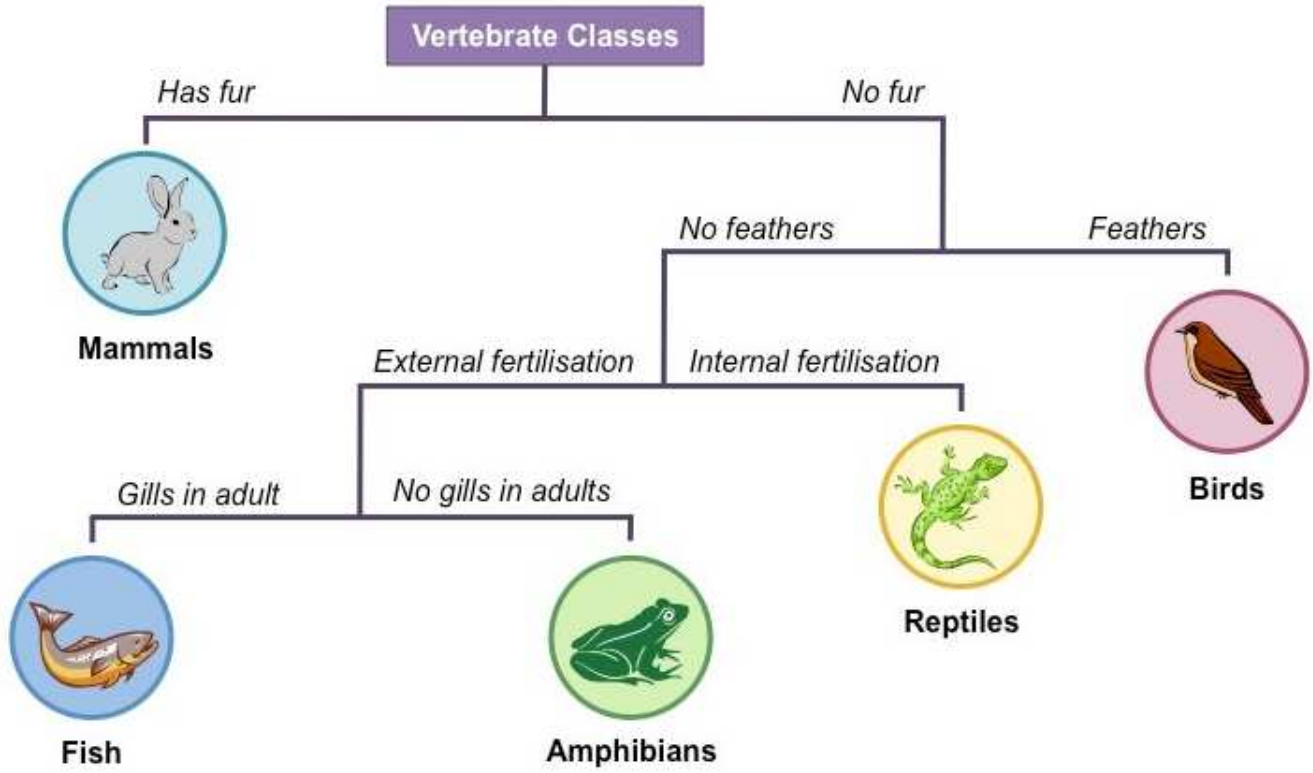
Key Skill - Identification Keys

Identification keys

When scientists are studying a habitat they may not know the names of all of the different living things found there. They may need to make and use



Skill Check - Identification Keys	
What is an identification key used for?	
How are mammals different to other vertebrates?	
List the stages in identifying a fish.	
Name 2 animals that would be in the reptile category.	
Name one drawback of this identification key	

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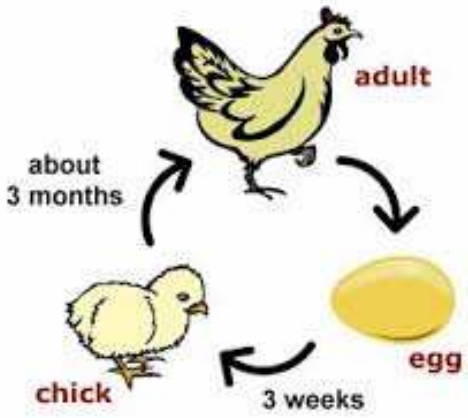
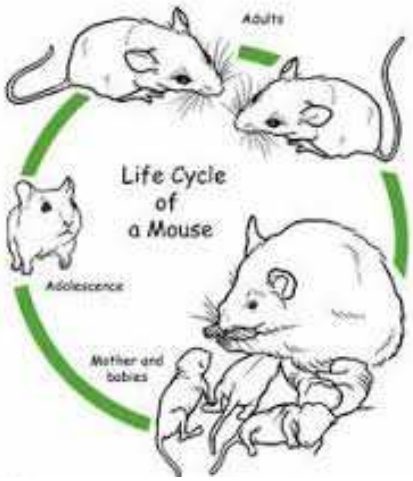
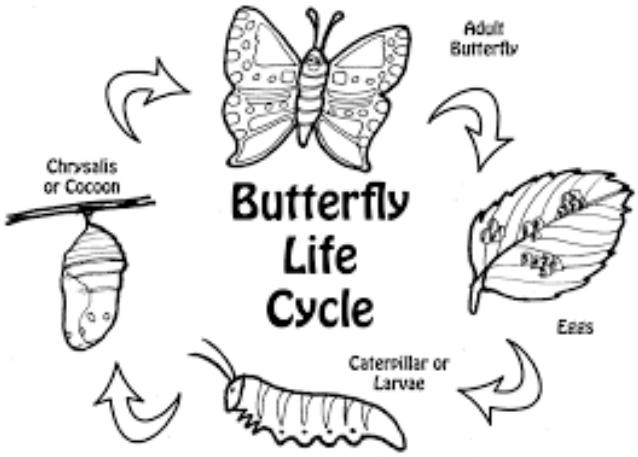
Lifecycles - Comparing

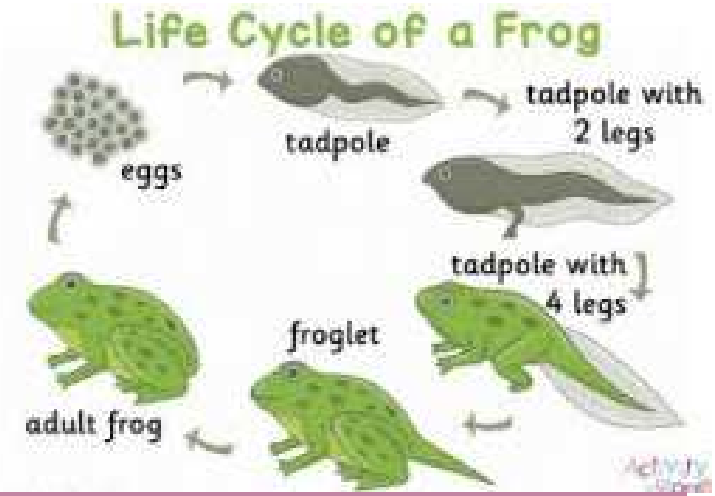
Life cycles

A life cycle is the series of changes an animal goes through during its lifetime, this includes how it reproduces. Different groups of animals have different life cycles.









What are the **similarities** between a butterfly and a frog's lifecycle?	
What is the main **difference** between a chicken and a mouse's lifecycle?	
Compare the lifecycle of a mouse to that of a frog.	

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Materials - Key Knowledge

Secure the Basics
A material is any substance that has a name, such as: chalk; paper; wood; iron or clay.
Everything is made up of materials and we need to choose the best material for each use.
We choose materials based on their properties such as: hardness; solubility; transparency or conductivity.
Materials can be classified as solids, liquids or gases.

Master the Topic
Hardness measures whether a material can be easily dented or scratched
Solubility describes whether or not it is possible to dissolve a material, e.g. salt is soluble in water
Transparency is a way of describing whether light can pass through a material to allow us to see through it
Conductivity describes the way that heat or electricity is transferred through the material.
A material can change state, e.g. from a solid to a liquid, by changing the amount of thermal energy (heating it up)

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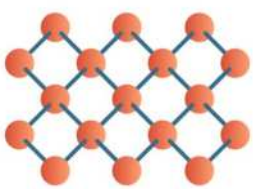
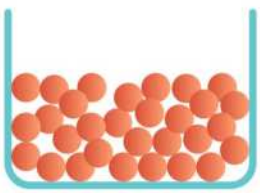
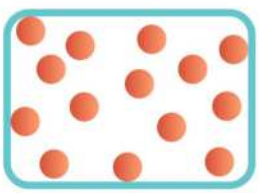
Materials - Knowledge check

Secure the Basics	
Name some materials	
What is made of materials?	
Name some 3 material properties	
How can materials be classified?	

Master the Topic	
Define the term hardness	
Define the term solubility	
Define the term transparent	
Define the term conductivity	
What might cause a material to change state?	







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Planning an Investigation— Skills Check

A good experiment plan outlines exactly what you are trying to find out and how you plan on doing so. It has enough detail that someone else following your plan could copy your experiment perfectly and get the same results.

Key question: Does more salt dissolve in hot or cold water?

Hypothesis
I think…
Independent variable (what will you change?)
Dependent variable (what will you measure?)
Control variables (what will you keep the same?)

Diagram of set up

Method:

1)

2)

3)

4)

5)

6)

Table of Results

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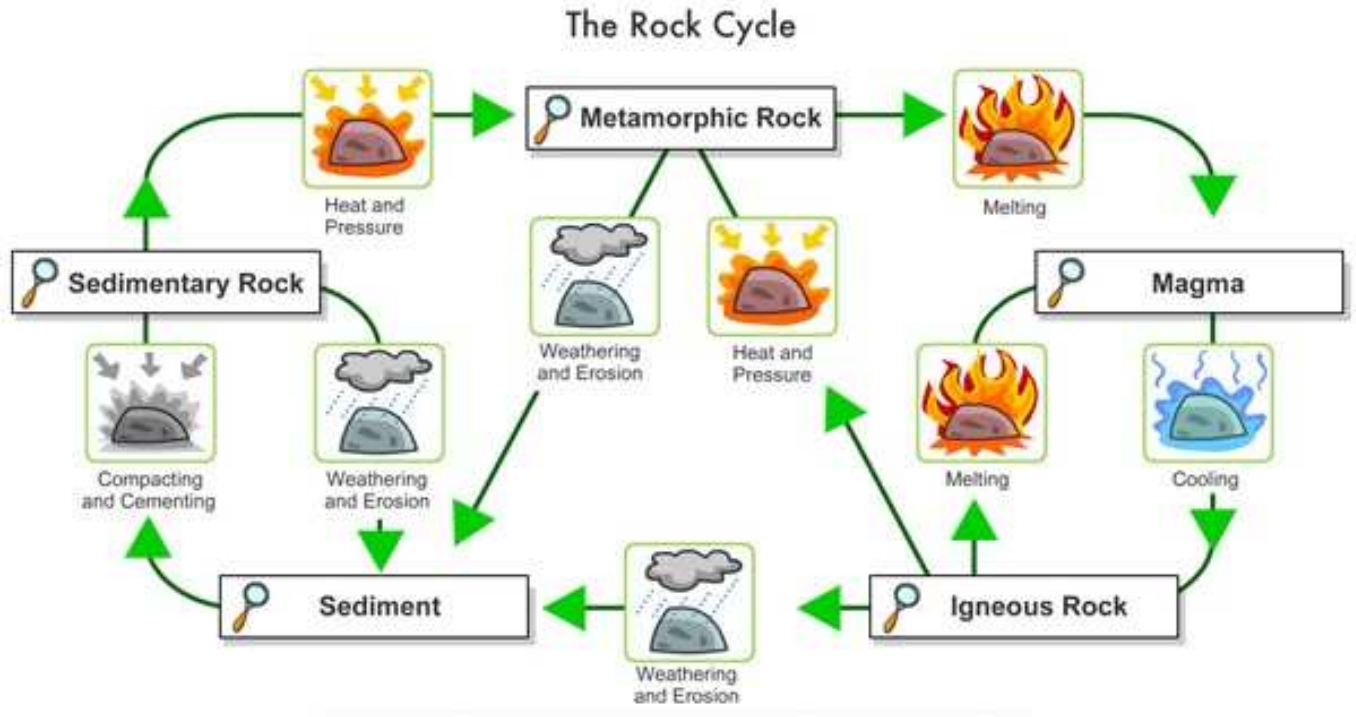
Transforming Information - The Rock Cycle



Interpreting Diagrams - The Rock Cycle	
What are the 5 different stages in the rock cycle?	
What process happens at 3 different points in the cycle?	
What type of rock does magma form as it cools?	
How is sedimentary rock turned into metamorphic rock?	
Why do you think this isn't a linear (one loop) cycle?	
Identify one way the environment would affect this cycle.	

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Light - Literacy Task

How we see

Light travels in rays in straight lines from a source such as the Sun or a lightbulb. It can be **reflected**, **transmitted** or **absorbed** by surfaces that it comes into contact with. We see objects when light reflects off them into our eyes.

Reflected means that the light ray bounces off the surface, at the same angle. Mirrors are smooth and so they reflect all rays at the same angle, creating an image.

Transmitted means that the ray passes through the material. Transparent materials allow all light to pass through so 100% of it is transmitted. Translucent materials allow some of the light to pass through, and opaque materials do not transmit any light.

Light can also be **absorbed** by a material like a sponge absorbs water, taking it in and holding it.

When we see colours, such as a red t-shirt, it is because the red light has been reflected but the other colours have been absorbed. If something looks black in colour all of the light has been absorbed.

What 3 things can light do when it hits a surface?	
How do we see objects?	
What does translucent mean?	
Why do opaque objects cast shadows?	
Why do we see an image in a mirror?	
What proportion of light is transmitted by a transparent material?	

Why does grass look green?	
When do you think something would look white?	

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Forces and Magnetism Key Knowledge

Secure the Basics
Forces can be push, pull or twist.
We can categorise forces as being contact forces or non-contact forces.
Examples of contact forces would be: friction; air resistance; buoyancy and thrust.
Examples of non-contact forces would be: gravity; magnetism and electrostatic force.
Magnets attract magnetic materials such as iron; nickel; steel and cobalt.
Magnets have a North pole and a South pole.

Master the Topic
A contact force needs to be touching an object to act on it.
A non-contact force acts through a field and so will act upon an object as long as the object is within the field.
The field gets weaker the further you are from the source.
Magnets attract if opposite poles are placed next to each other, but repel if like poles are placed next to each other.
The field around a magnet points from the North to the South pole.

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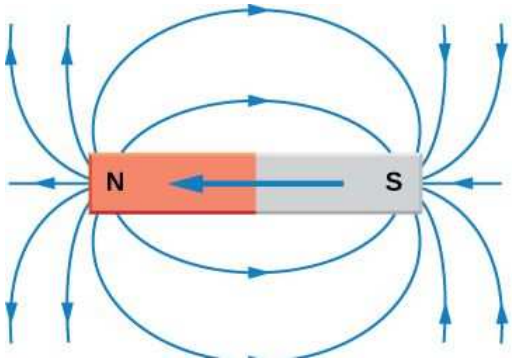
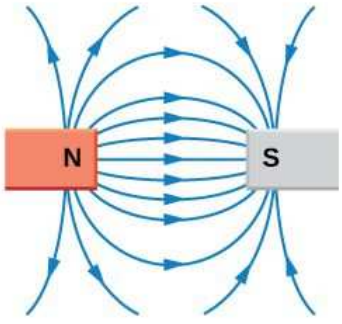
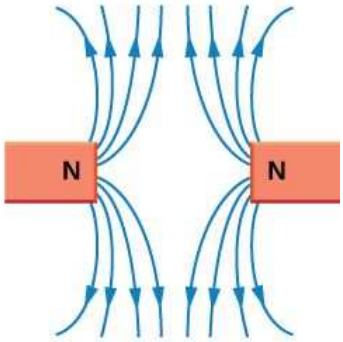
Forces and Magnetism Knowledge check

Secure the Basics	
What 3 things can forces be?	
How can we categorise forces?	
Name 3 contact forces.	
Name 3 non-contact forces.	
Name 3 magnetic materials.	
What are the two poles of a magnet?	

Master the Topic	
How do contact forces act on objects?	
How do non-contact forces act on objects?	
Where is the field strongest?	
What happens if opposite or like poles are placed next to each other?	
Which direction does the magnetic field point?	







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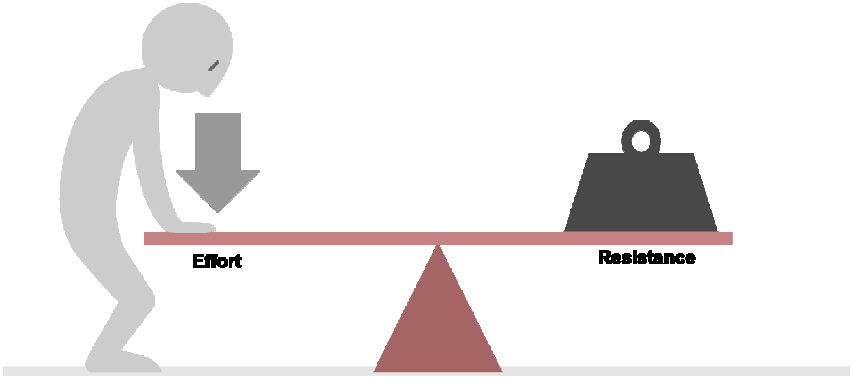
Maths Skills - Moments

Levers are used so that a smaller force can have a greater effect. The longer the level the greater the turning force, called a **moment**.



Example:

A 5N force is 2m from the pivot point, what moment does it generate?

Moment = force x distance

= 5 x 2

Question	Working	Answer
A 10N weight 3m from the pivot.		
A 4N weight 0.5m from the pivot.		
One 1N weight 2m from the pivot and another 1N weight 3m from the pivot on the same side.		
One 3N weight 0.5m from the pivot and one 2N weight 4m from the pivot on the opposite side.		

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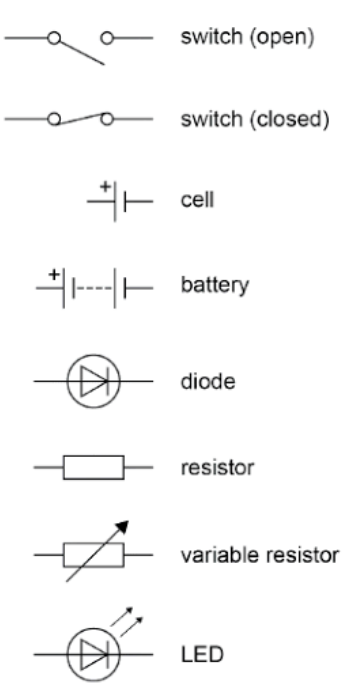
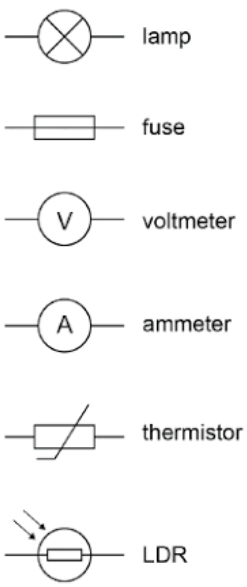
Circuit Symbols
Look, cover, check

A circuit must be a closed loop for a current to flow and the components to work. We use circuit symbols joined together with lines to represent wires to show this. You must **learn** the following circuit symbols.





Draw them yourself:

switch (open)
switch (closed)
cell
battery
diode
resistor
variable resistor
LED
lamp
fuse
voltmeter
ammeter
thermistor
LDR

How is the battery similar to the cell?	
What is the difference between the battery and the cell?	
What do the resistor, thermistor, variable resistor and LDR have in common?	
How is the LED different to the diode?	
What do the ammeter and voltmeter have in common?	
Can you guess from the symbol what a fuse is?	

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Earth and space
Scientific Models

In Primary school you will have made some sort of model of our Solar System, with the **Sun** at the centre and planets orbiting it.

You may have even tried to show the distances between the planets and the Sun using a **scale**.

We use scientific models to represent things we cannot see or touch, to help us understand how they work.

Other things we model include **DNA**, **atoms** and **electricity**.

Scientific models change over time as scientists discover **new evidence** from experiments, for example, we used to think everything went around the Earth!

We now know that the Earth orbits the Sun once every 365 and a quarter days, giving us **a year**, and rotates on it's axis once every 24hours, giving us **a day**.

Knowledge check - Modelling the Solar System	
What is at the centre of our Solar system?	
Why do we use scientific models?	
Name 3 things that we model in science.	
Why do scientific models change?	
What causes one day on Earth?	
What causes one year on Earth?	