

Different edges
of leaves

Different shapes
of leaves



Checklist for living things

- M = Moving
- R = Reproducing
- S = Sensing
- B = Breathing
- F = Feeding
- E = Excreting
- G = Growth

THE SEVEN LIFE PROCESSES

growth	sensing	moving
excreting	breathing	
feeding	reproducing	

Vocabulary

Adapt	To change because of new conditions
Cells	Tiny parts of living things that carry everything needed for life
Change	To become different
Develop	To grow or expand
Energy	The ability to do work or to make a change
Living	Alive now or once was alive
Non-living	Not alive now and never was alive
Reproduce	To make another living thing of the same kind
Respond	To react to something that happens
Alive	Living right now
Nurse log	A fallen, dead tree that provides a home and food for other living things
Characteristic	Any feature that helps identify something
Dead	No longer alive

Vocabulary

Environment	All of the conditions that affect a living thing
Hair	Thin strands that grow from the skin of a person or animal
Grow	To get bigger
Nail	A thin, hard covering at the tip of a finger or toe
Skin	The body covering of a person or animal

What is it called?	
Habitat in water	Habitat on land

Habitat

The natural home
of a plant or an
animal

Biodiversity

Plants and animals
that have always
lived in a certain
area

Indigenous

The variety of all
the plants and
animals on the
Earth

Shelter

A place that gives
protection from
bad weather and
danger

Cheetah Adaptations - Built for speed

Structure	Adaptation	Function
Tail		
Paws		
Spine		
Heart		
Body		

Tail	Long and narrow	Balance and steering
Paws	Semi-retractable claws Grooves in pad	Better traction for acceleration and faster movement
Spine	Flexible	Increases the stride by allowing the body to stretch out further
Heart	Enlarged	Increased oxygen supply to muscles
Body	Slender, long-legged, streamlined, light	Less wind resistance, and longer stride therefore increased speed

	Non-living things that animals and plants need in their habitats to survive (like air, water, soil)
	To move away from each other
	A plant that provides food, water and shelter for another plant
	Two or more things that depend on each other

An exoskeleton is thick and hard	
Where is the only place that it is thin and soft?	Why is it thin and soft in this place?

Animals with exoskeletons are called...	What is an exoskeleton made of?	Where is cartilage found?

Exoskeletons	
Advantages	Disadvantages

Facts about endoskeletons

There are five groups of animals that have an endoskeleton: mammals, birds, fish, reptiles and amphibians. They all have a backbone made of small bones called vertebrae. An endoskeleton is covered by muscles and soft body tissue. It does not protect an animal as well as an exoskeleton does, but it can support larger sizes and more weight. An endoskeleton grows with the animal. Moulting does not take place.

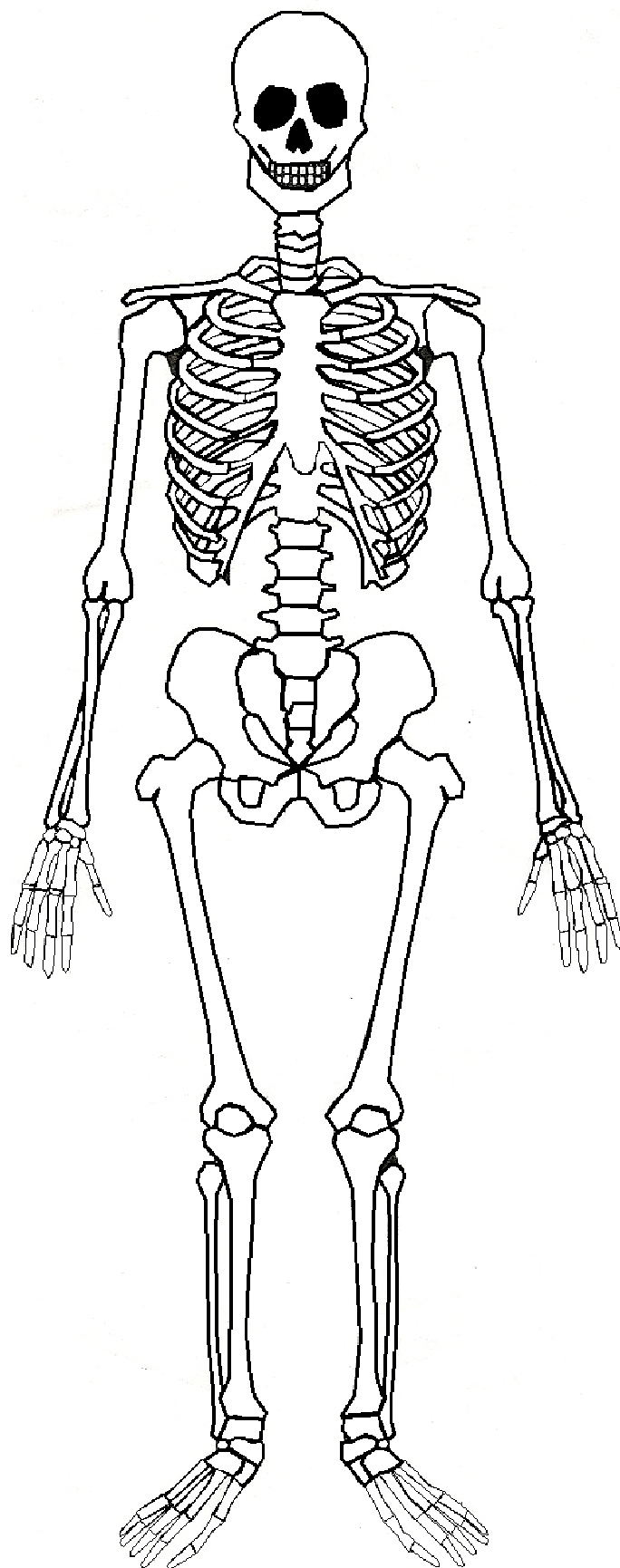
Animals with
endoskeletons
are called...

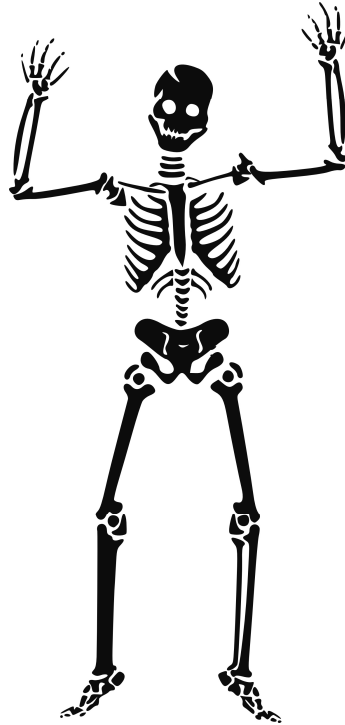
	Shell or hard covering on the outside of animals
	An animal that does not have a backbone made of bone
	To shed the outer covering to grow a new, bigger one
	Skeleton found inside an animal's body
	An animal with a bony backbone
	Small bones in a backbone
	Flexible, tough substance that cushions bones at the joints

Scientists who study animals are called...	What is taxonomy?	What is Binomial Nomenclature?

scapula / shoulder blade
vertebral column / spine
clavicle / collarbone
tarsals / ankle bones
humerus / upper arm
patella / kneecap
femur / thigh bone
radius / lower arm
pelvis / hip bone
tibia / shin bone
cranium / skull

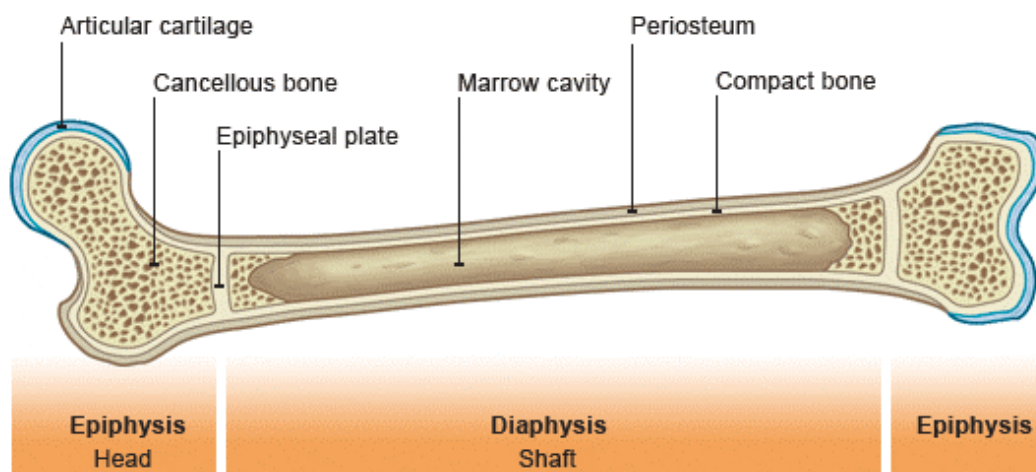
The two-named Latin system that scientists use to write scientific names of animals, which refers to the animal's genus and species.





Busy Bones

What goes on inside a bone?

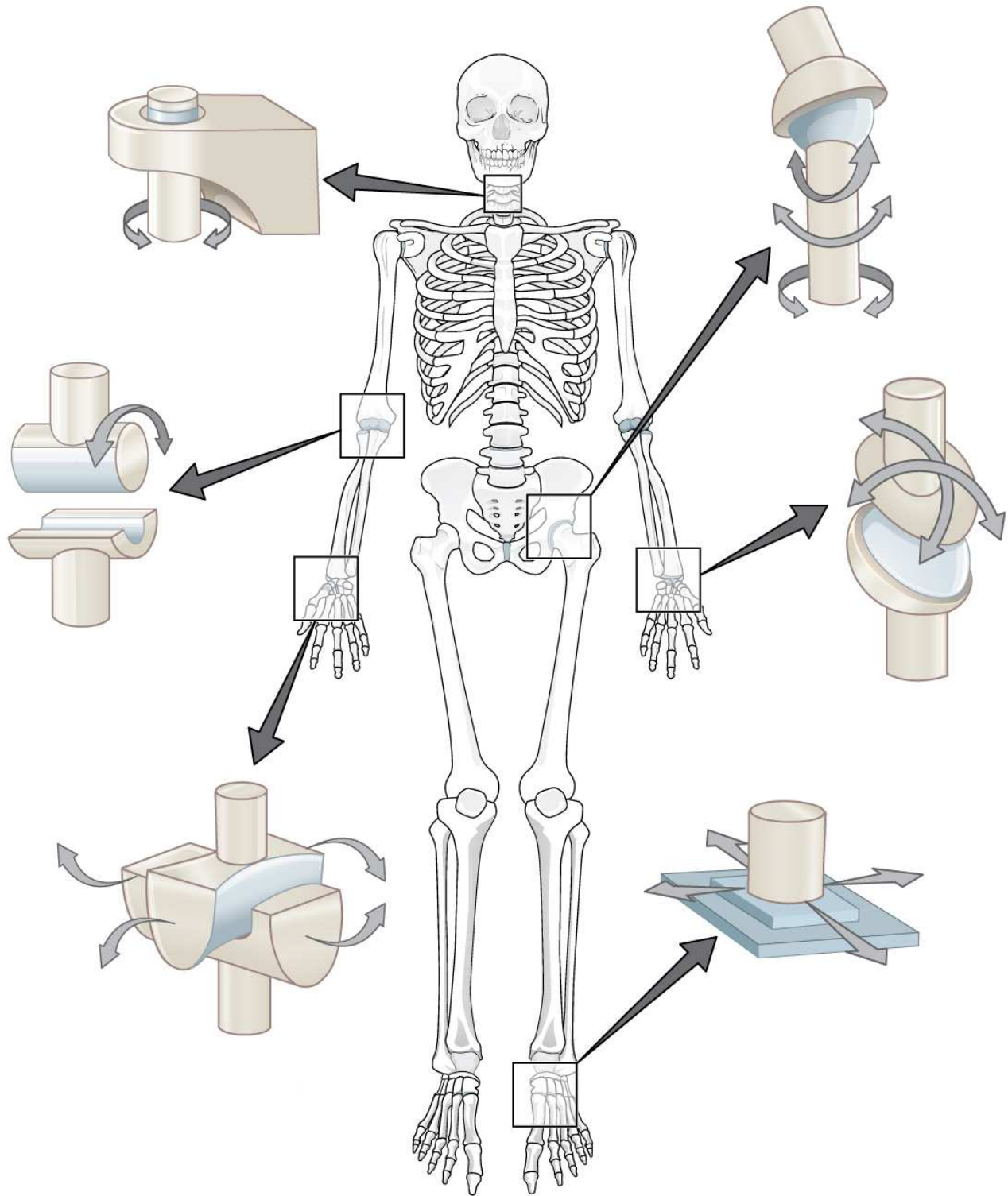


Mountain Fold

Valley Fold

- **Hyaline cartilage** - covers the ends of the bones, stops them rubbing together and absorbs shock.
- **Cancellous bone** - spongy bone that stores the red bone marrow; where blood cells are made.
- **Epiphyseal plate** - the area where bones grow in length.
- **Compact bone** - hard, dense bone. It gives strength to the hollow part of the bone.
- **Periosteum** - a protective layer where there is no hyaline cartilage. Ligaments and tendons attach to the periosteum.
- **Medullary cavity/marrow cavity** - contains the yellow bone marrow; where white blood cells are made.

DIFFERENT TYPES OF JOINTS



Pivot joints Found in the elbow and knee. They allow one bone to turn around another bone.	Condyloid joints Found in the wrist. They allow plenty of movement, but not a complete turn.
Gliding (plane) joints Found in the wrist, foot, spine and clavicle. Allows only gliding or sliding movements.	Ball and socket joints Found in the hips and shoulders so you can move your arms and legs around freely. They allow a wide range of movement.
Hinge joints Found in the fingers. They allow bones to move in just one direction, forwards and backwards.	Saddle joints Found in the thumb. Allows lots of movement but not total rotation.

Different types of joints

How many joints are in the human body?



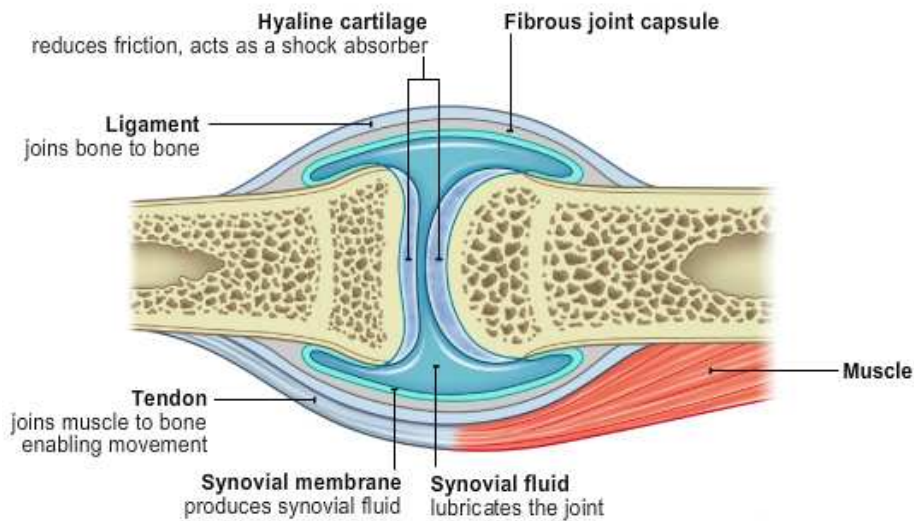
their functions

Fold up
bottom flap

Fold down
top flap

Joints and

A joint is where two or more bones meet. The hip is a typical synovial joint. All synovial joints have the same components:



Synovial joints

- Cartilage reduces friction. Acts as a shock absorber.
- Synovial fluid lubricates the joint.
- Synovial membrane produces synovial fluid.
- Tendon joins muscle to bone enabling movement.
- Ligament joins bone to bone, stabilising the joint.

Limbs move in different directions using joint actions.

Limb movements

Movement	Description
Abduction	Movement away from the mid-line of the body
Adduction	Movement towards the mid-line of the body
Extension	Straightening limbs at a joint
Flexion	Bending the limbs at a joint.
Rotation	A circular movement around a fixed point

Bones in the trunk



Skull

The bones of your skull create a closed space that protects the brain. These bones also form slots for the sense organs. Your jaw enables you to chew.

Jaw

This bone is quite peculiar. It articulates with the skull so you can chew. It has holes in it for your bottom teeth.

Ribs

Although they do not form such an enclosed space as the skull, your ribs protect your lungs, heart and important blood vessels.

Lumbar vertebrae

Your five lumbar vertebrae are the lower ones. They are not connected to your ribs.

Sternum

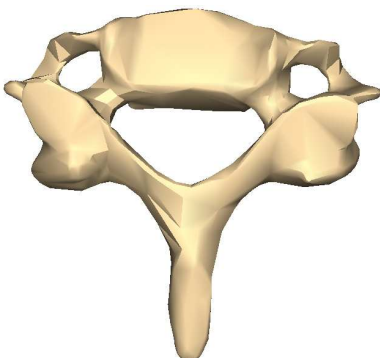
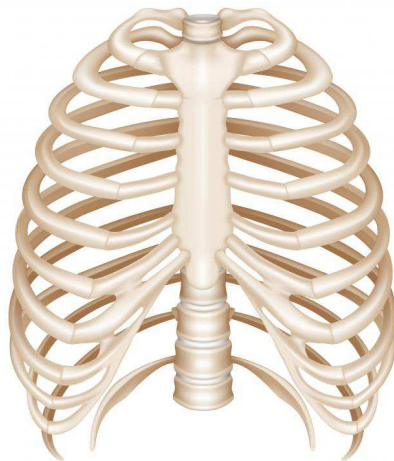
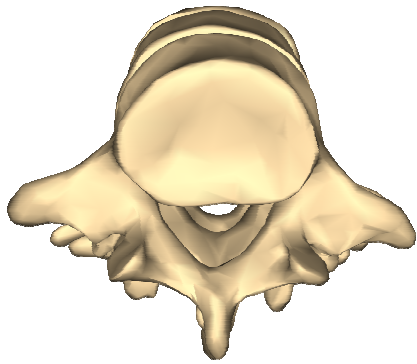
This long flat bone articulates with the ribs using cartilage. The breastbone is one of the hardest bones of your body

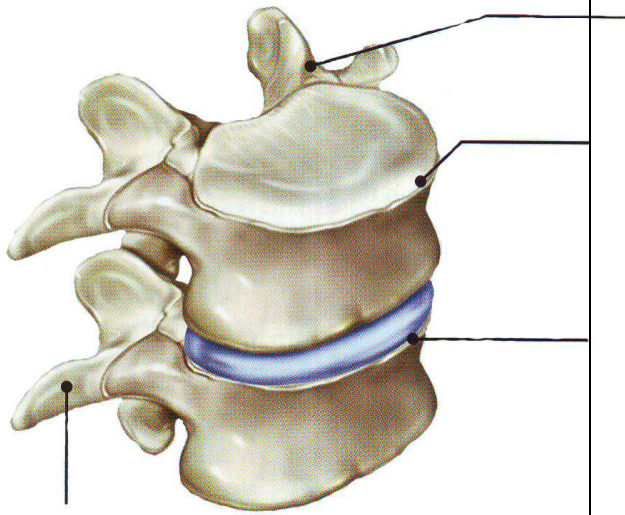
Cervical vertebrae

The first seven vertebrae of your spine are called cervical vertebrae. They are designed to enable you to turn your head.

This last piece of your spine is formed by four or five small fused vertebrae. In lots of other mammals the coccyx is the start of the tail.

Coccyx





VERTEBRAE AND DISCS

protective casing for the spinal cord

the front of the spine

Made of cartilage;
Keep the vertebrae together and
allowing them to move;
Acts as shock absorbers.

Process

Neural Arch

Vertebral body

Intervertebral
disc

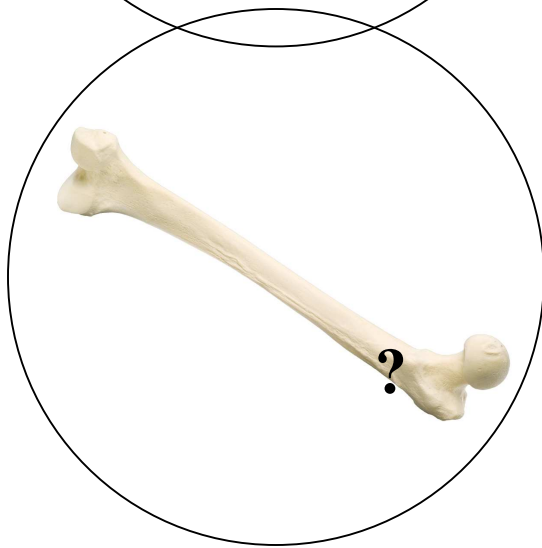
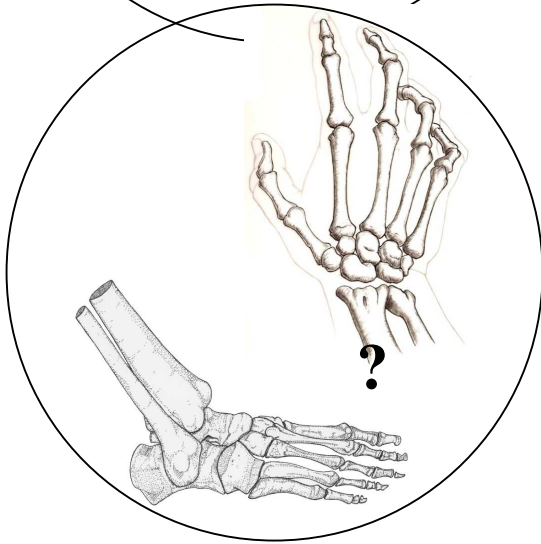
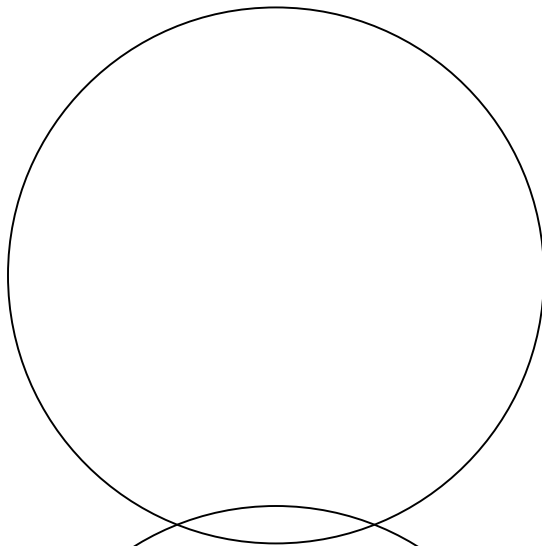
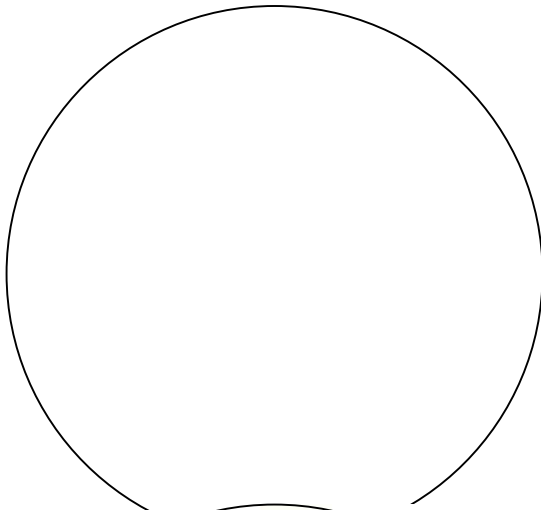
Sticks out from the neural arch
The muscles of the back, neck and
abdomen attaches to it

Instructions:

Cut the booklet out and fold in half.

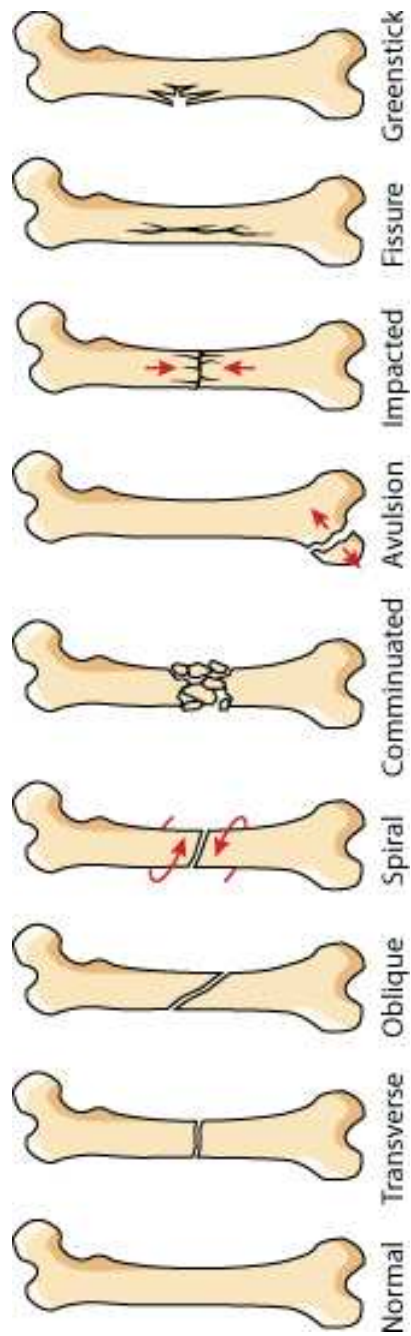
Cut and match the names and descriptions to the right place on the picture; paste it.

Cut & paste the title to the front of the book, colour it.



<p>After the break</p>	<p>Fracture When a break happens, it becomes inflamed (swollen) and bleeds. That quickly stops and within a few hours a clot forms. This protects the area of the breakage straight away. All the cells within the clot die, except those of the weave nearby that keep it isolated.</p>
<p>A few days later</p>	<p>Forming a callus After a few days the cells of the fractured bone are growing into cartilagnious cells and cartilage. Osteoblasts develop which form a delicate bony network that hasn't yet miniralised.</p>
<p>After one or two weeks</p>	<p>Bony weave repairing The young bone continues ossifying until it nears the texture of bone. At the same time, the other parts of a bone are created, such as the bony marrow. The fracture has already repaired, although only with soft spongy bone.</p>
<p>Two or three months later</p>	<p>Reforming the bone The final healing phase happens when the osteoclasts destroy the spongy bone in the callus and the osteoblasts fill that space with compact bone. The bulk that forms the callus reduces in size little by little and the bone returns to a shape similar to its original one.</p>

How our bones heal



Vocabulary

Joint	The place where two or more bones meet
Frame structures	Framework of struts that are joined in triangular shapes
Vital organs	Organs in the body that are absolutely necessary for life
Limb	Leg, arm or tail
Trunk	The body of an animal excluding the head or the limbs
Shoulder girdle	Set of bones where front limbs attach
Hip girdle	Part of the skeleton made up of hip bones that support the hindlimbs
Characteristic	Something to help identify or tell things apart
Muscles	Masses of tough, elastic tissue that pull our bones when we move
Tendons	Tough cords that attach muscles to bones
Ligaments	Bands that connect bone to bone and strengthens the joint
Adaptation	Changes in a body over time to suit the environment
Synovial fluid	The fluid that fills the membrane and allows bones to slide easily

AMPHIBIANS



	Strong structures that can support a lot of weight
	A structure that has a strong layer on the outside that holds itself up

When sperm and egg join together to form a new life	A fertilized egg

The process of paper making

Chips go into the pulp mill.

Wood logs are transported by trucks

The pressed and dried pulp is rolled or cut into sheets as paper

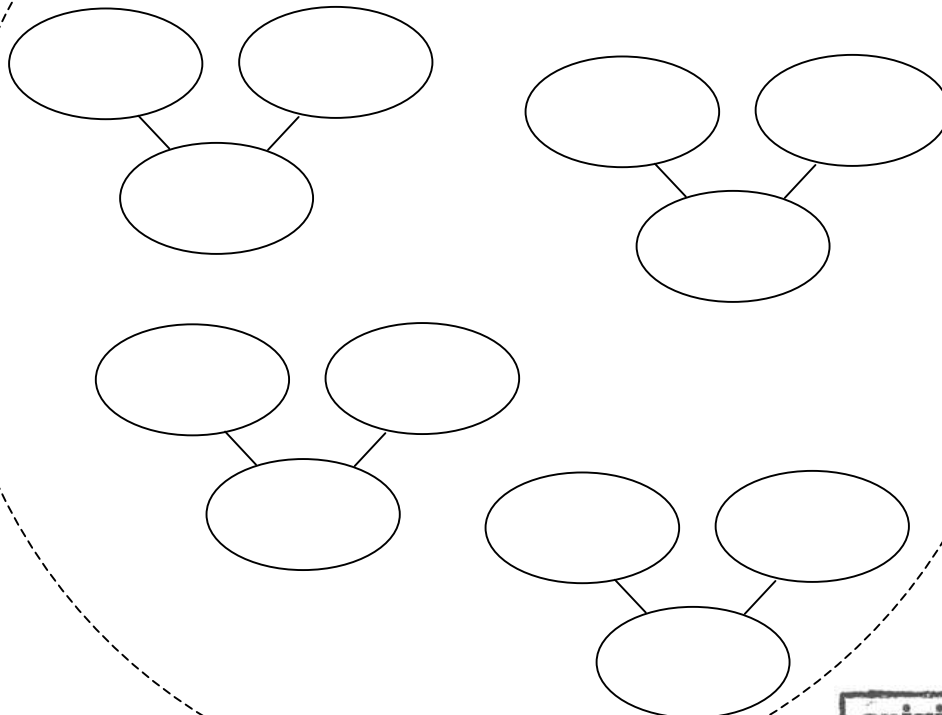
Pulp flows to the paper mill

Paper is transported to buyers who make other paper products

Pulp is washed, bleached and cleaned and dried

Wood is harvested from trees growing in a plantation

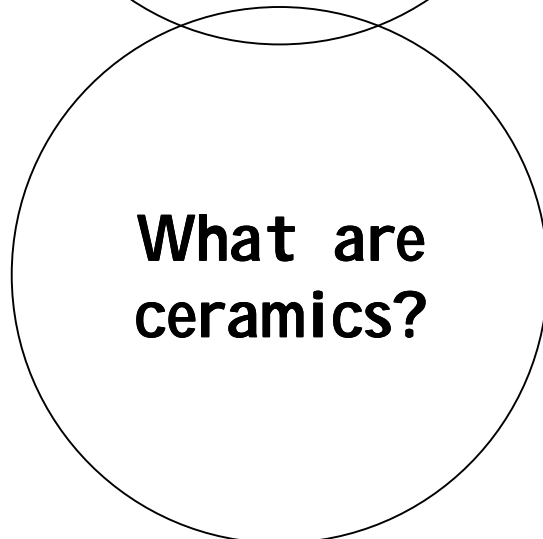
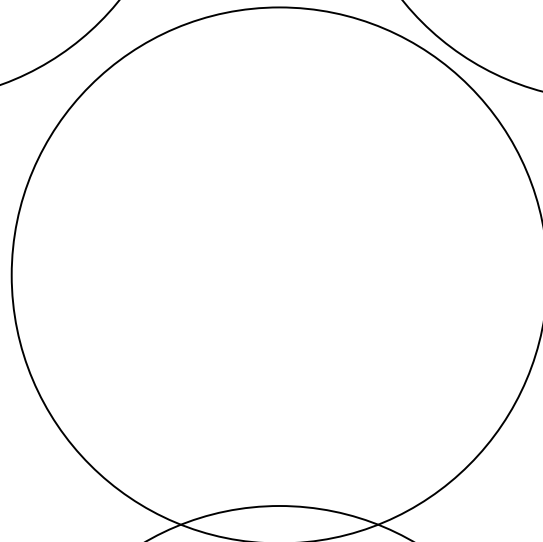
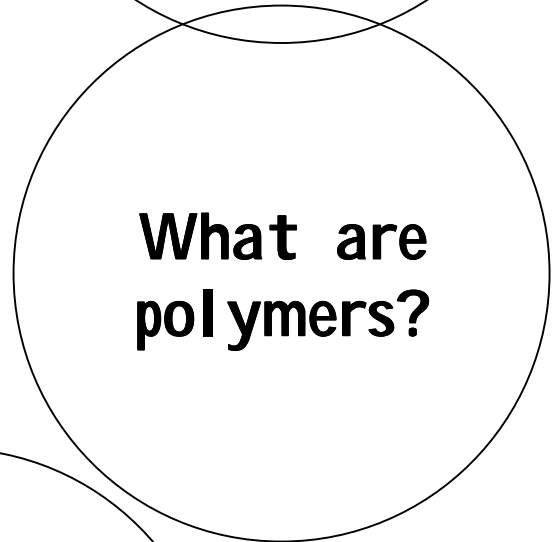
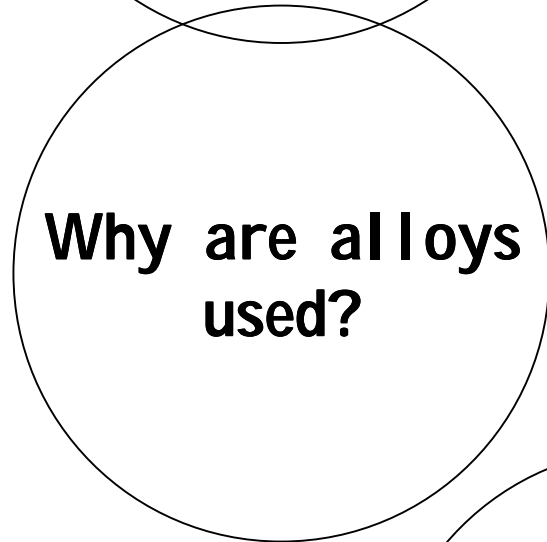
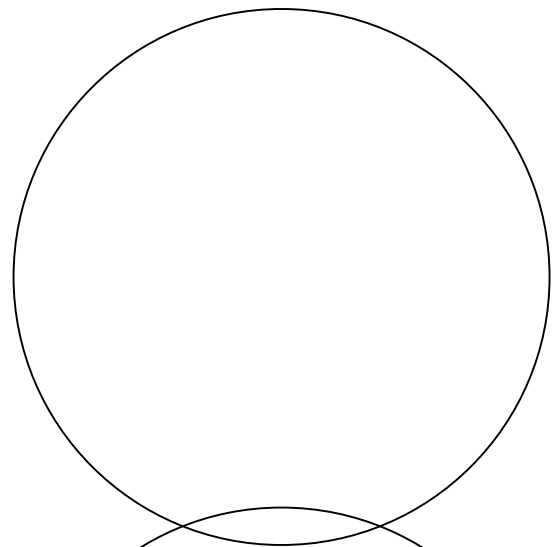
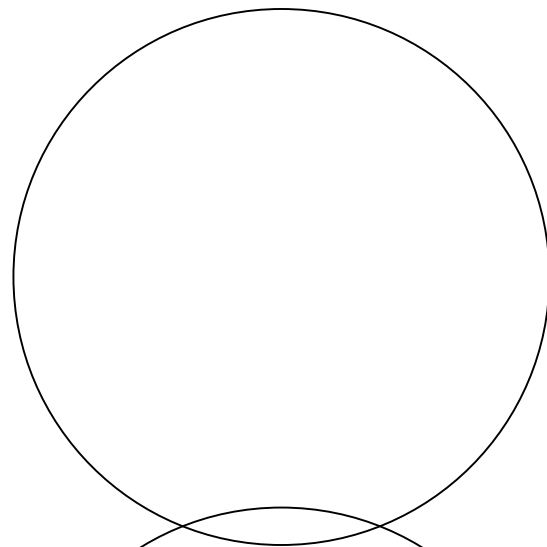
ALLOYS



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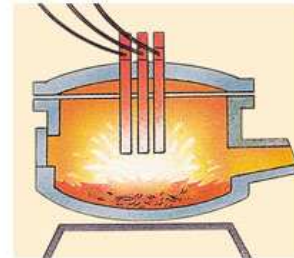
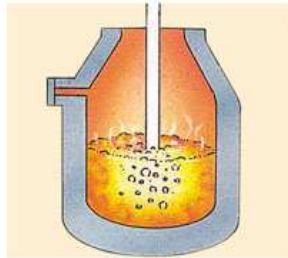
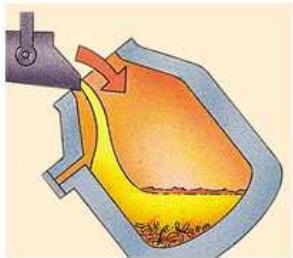


Converting iron to steel

To convert iron to steel, molten iron is poured into a furnace called a converter.

A high-pressure jet of almost pure oxygen is blasted into the converter. The oxygen combines with the carbon, forming carbon monoxide

Steel is also made by melting down scrap steel in an electric arc furnace. The metal is melted by a powerful current of electricity.



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	Lustre/lustrous
	Ore
	Properties
	Malleable
	Ductile
	Rust
	Conducts
	Alloy
	Plated

The "shine" we see when light reflects off the surface of a metallic object such as a key or a coin	Able to be drawn into wires
A type of rock that contains minerals and metals	The reddish-brown layer formed when iron combines with air and water
Qualities or characteristics of matter and materials	Carries heat or electricity
Able to be beaten or hammered into shapes without breaking	Two or more metals mixed together, or a metal mixed with non-metal
A metal coated by another metal	



hot dip galvanizing



continuous galvanizing

The process whereby fabricated steel, structural steel, castings, or small parts, including fasteners, are immersed in a kettle or vat of molten zinc, resulting in a metallurgically bonded alloy coating that protects the steel from corrosion.

Applying a zinc coating to the surface of a continuous ribbon of steel sheet as it passes through a zinc bath

Vocabulary

Combine	To mix together
Ingredients	The list of raw materials that are selected to go into the mixture
Process	Change in different ways to get new materials or products with new properties
Products	Something new and useful coming out of a process
Mixture	Something that is made by mixing things together
Cement	A product made from clay and limestone that becomes hard when mixed with water
Concrete	A mixture of sand, gravel, cement and water
Reinforced	Strengthened with additional material
Plaster of Paris	A white powder that quickly becomes a hard solid when mixed with water
Paste	A thick mixture of a solid and a liquid
Rural	Far from big, modern cities where people live off what is available in nature
Dissolve	Mixes completely with water

Raw or processed

Bread	Minerals from a mine	Sausage
Rice	Metal furniture	Wheat
Maize Meal	Wooden furniture	Animal skin
Toothpaste	Leather shoes	Honey
Vegetables	Petrol	Crude oil
Meat	Necklace made of shells	Mealies
Wood	Metal from a mine	Vegetable soup

Vocabulary

Processed materials	Materials that have been processed in some way
Fire-resistant	A material that is not easily damaged by fire
Durable	Something that will last for a long time
Waterproof	Will not let water pass through
Fabric	Material made from yarn or fibres by weaving or knitting
Heat-resistant	A material that is not easily damaged by heat
Absorbent	Able to take in or soak up liquids easily
Texture	The way a surface or material feels when you touch it
Paint	A liquid used to give colour or texture or protect surfaces and objects
Pigment	A dry, coloured powder that is mixed with oil or water to make paint

<p>The process of making something by crossing strips or threads under and over each other</p>	<p>Using thread to sew or join two materials together</p>
<p>To roll material into a spiral shape</p>	<p>To twist three strands over and under each other to form one thicker strand</p>

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PROPERTIES OF MATERIALS



PLASTER OF PARIS



CONCRETE



FABRIC



CERAMICS & GLASS

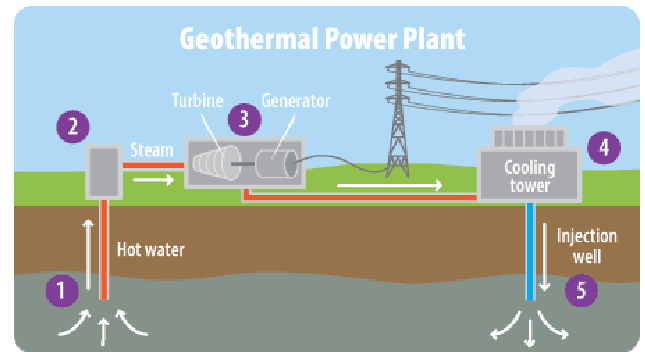
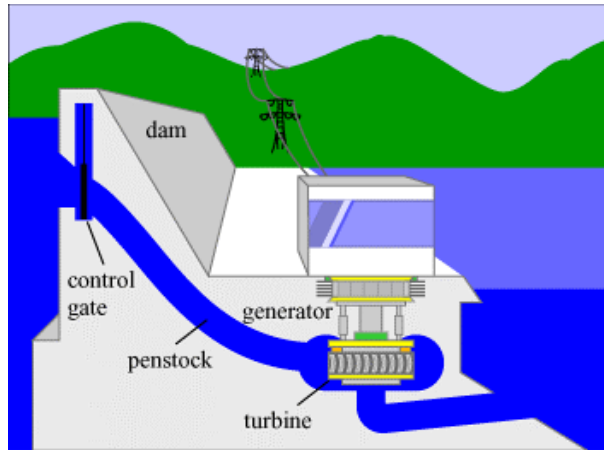


PLASTICS

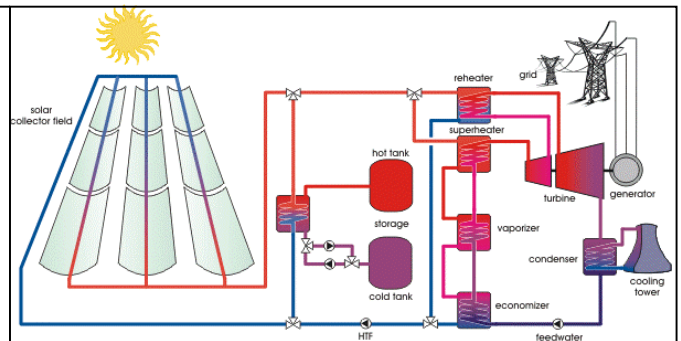
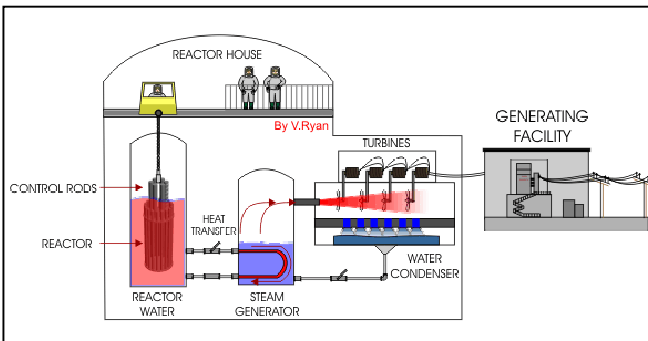


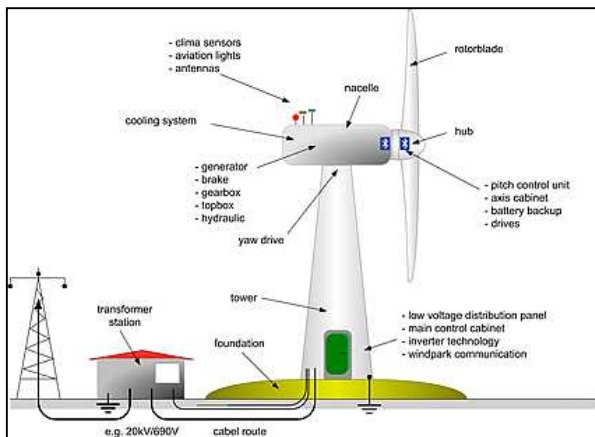
PAINT

<p>People who are trained to help put out uncontrolled fires</p>	<p>To put something out</p>	<p>Another word for burning</p>


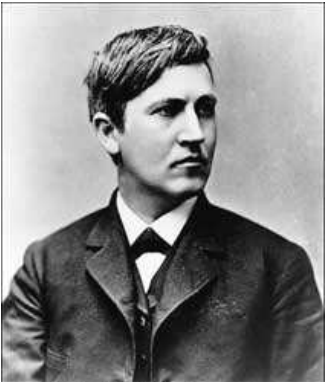



POWER STATIONS





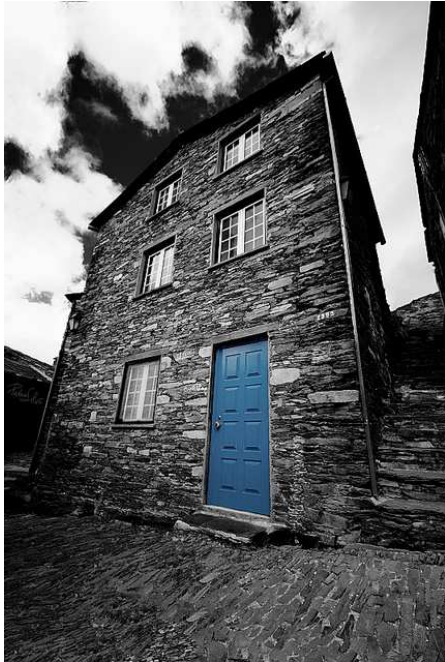
Timeline entries

 <p>Alessandro Volta invents the Zinc-carbon voltaic pile in 1800</p>	 <p>Thomas Edison supplies people with electricity – DC (1882)</p>	 <p>John Boyd Dunlop invented the first air-filled or pneumatic tires in 1888</p>
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Vocabulary

Orbit	The path of one object in space around another, such as the path of the Earth around the Sun
Revolution	The movement of an object in space around another object, such as the movement of the Earth around the Sun
Axis	An imaginary line passing through the center of an object
Rotation	The movement of an object around itself, such as the movement of the Earth around its own axis

<p>Ways rocks break up in nature</p>	<p>Bigger rocks break up into smaller rocks</p>
<p>Water breaks up the surface of rocks</p>	<p>Stones rub together, and their surfaces break up</p>



Shale building



Fine sandstone masoned bullring window and keystone garage heads, to complement limestone walling

DIFFERENT TYPES OF SEDIMENTARY ROCK IN BUILDINGS

Matjieshuis



	Two or more parts that work together to carry out a function
	Parts of a machine that do specific jobs
	A rod attached to a wheel
	Centre point
	A system in which the axle turns together with the wheels