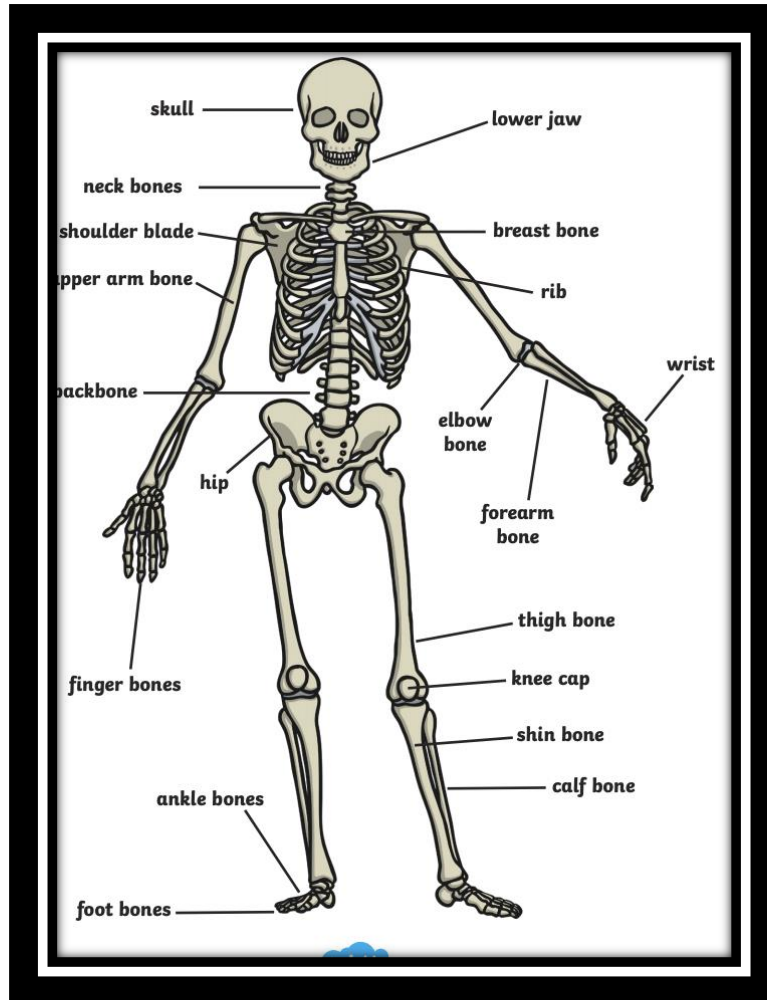




The Human Body



Science Year 3 Autumn 1

Unit learning journey:

Lesson 1: The muscular system

Lesson 2: The skeletal system

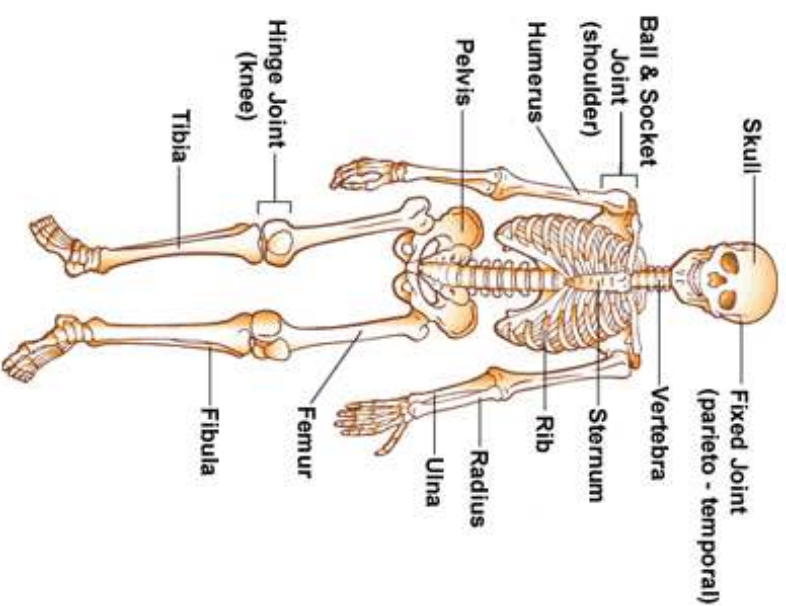
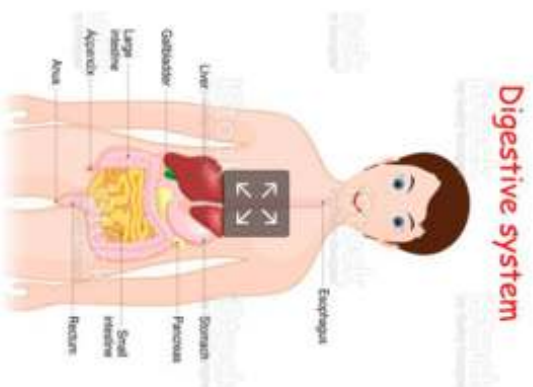
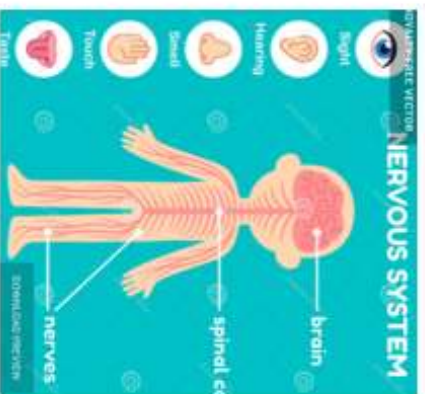
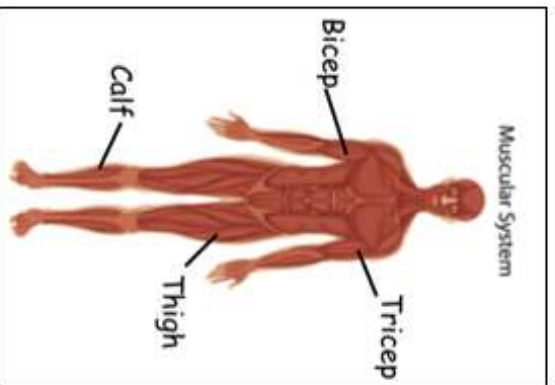
Lesson 3: The nervous system

Lesson 4: Preparing to eat

Lesson 5: The digestive system

Knowledge Organiser - Science Year 3 - The Human Body

Key Vocabulary	Definition
Voluntary	Something we choose to do
Involuntary	Something we cannot choose to do; it happens without us thinking
Joint	The place where two bones come together, connected by tissue called ligaments
Spinal Cord	The bundle of nerves that run down the spine connecting almost all of our body to our brain
Reflex	An action that is performed by our body without us thinking about it, for example, moving our hand away from a thorn when we've pricked our finger on it
Oesophagus	A long muscular tube that connects our mouth to our stomach
Incisor	The narrow-edged teeth at the front of our mouth, used for cutting food
Canine	The pointed teeth located next to the incisors, used for tearing food

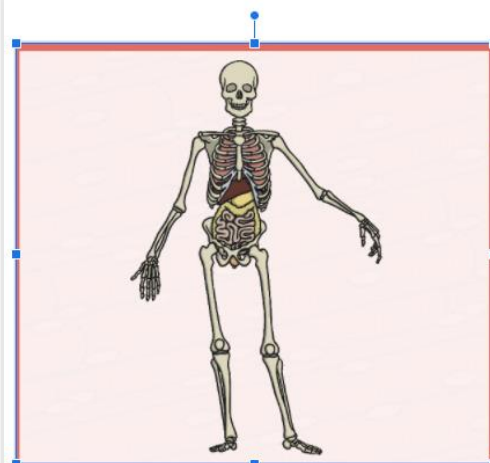
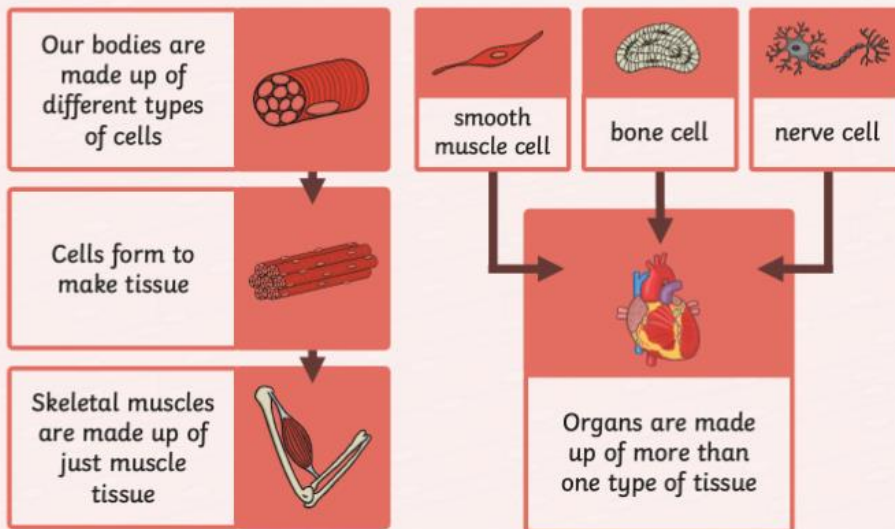


Lesson 1: The muscular system

Vocabulary Definition

bicep	a large muscle of the front of the upper arm
intestine	Intestines are organs, or body parts, that are shaped like long tubes
heart	the heart is the organ, or body part, that pumps blood through the body
contract	to shorten; to become reduced in size
relax	to make loose or to make less close
independent	working by itself
voluntary	to do something by choice
involuntary	to do something not by choice and without control

What are Muscles?



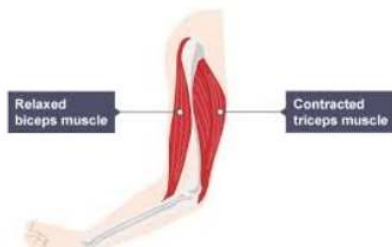
Skeletal muscles are attached to bones and enable movement.

Muscles

Muscles are attached to **bones** by **tendons** and help them to move.

When a muscle contracts (bunches up), it gets shorter and so pulls on the bone it is attached to. When a muscle relaxes, it goes back to its normal size.

Muscles can only pull and cannot push. Therefore muscles have to work in pairs to move a joint. One muscle will contract and pull a joint one way and another muscle will contract and pull it the other.



Voluntary and Involuntary

Some muscle movement is voluntary and we can control it. Other muscle movement is involuntary and we don't have control over it.

Look at the pictures to the right:
Which shows voluntary muscle movement and which shows involuntary?

Discuss with your partner and explain why you made your choice.

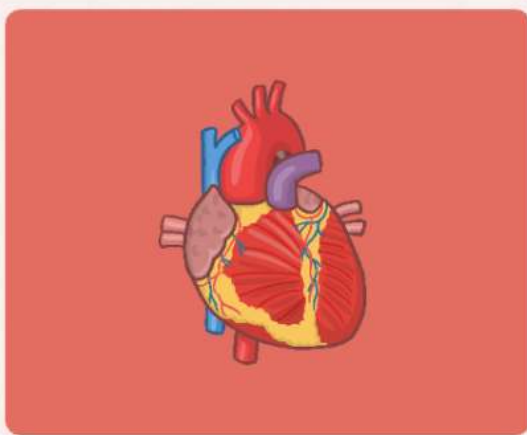


When we kick a ball, we choose to. We are telling our muscles to move our legs and kick the ball



What muscles are we using when we catch a ball?

Involuntary muscle movement



Some muscle movement is involuntary and we don't have control over it. They keep us alive. We do not decide when our heart should beat; it carries on doing its job even when we are asleep

Relaxed biceps muscle

Contracted triceps muscle

Feel your biceps and triceps as you bend and straighten your arm

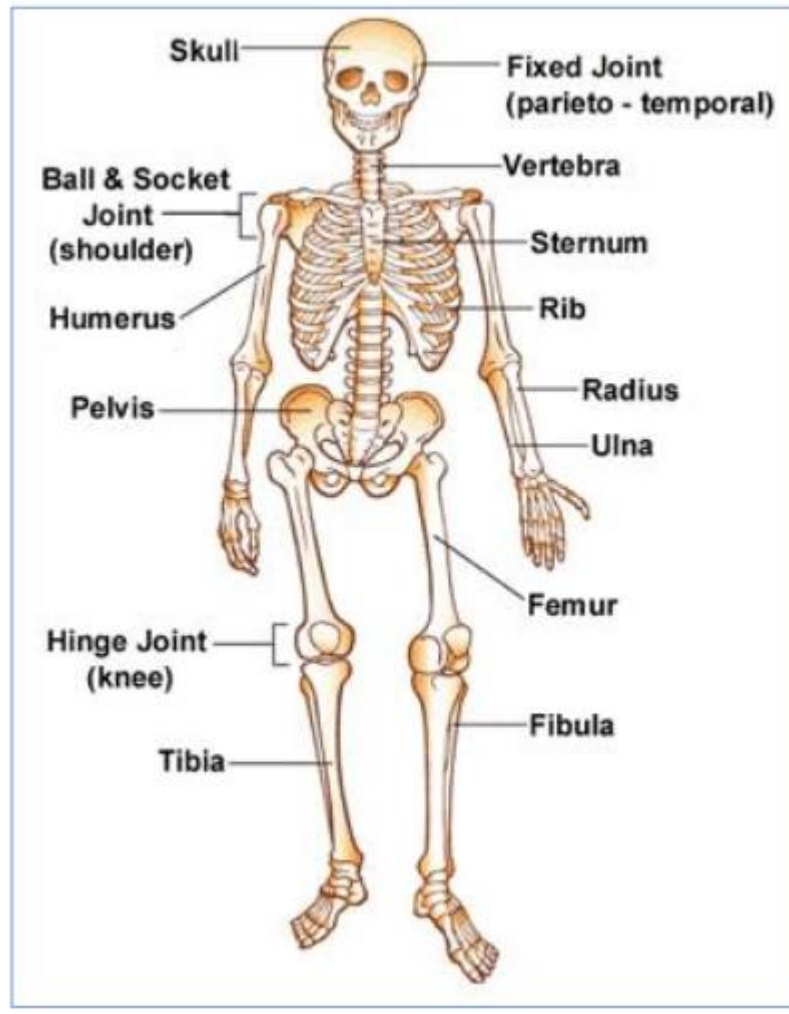
Which muscle contracts (gets smaller) when?

When I bend my arm my _____ muscle contracts.....

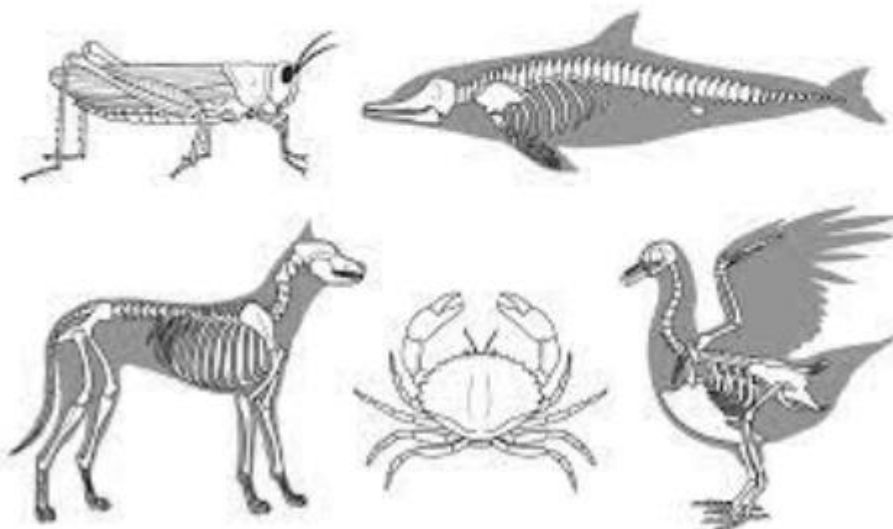
When I straighten my arm....

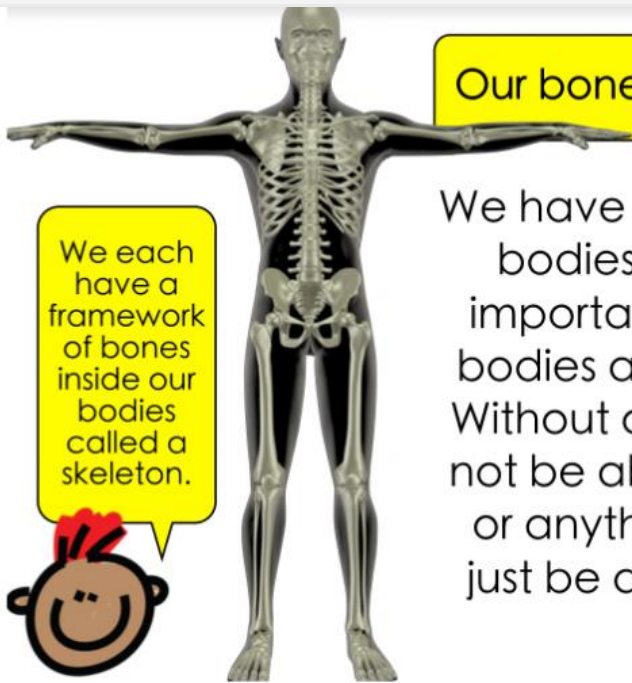
The diagram illustrates the contraction of the biceps and triceps muscles in the arm. On the left, the arm is bent at the elbow, and the biceps muscle is shown in a relaxed state. On the right, the arm is straightened, and the triceps muscle is shown in a contracted state. Labels with arrows point to each muscle. To the right of the diagram, there is a text box containing a question and two prompts for the student to complete.

Lesson 2: The skeletal system



endoskeleton
an internal skeleton





Our bones are very important!

We each have a framework of bones inside our bodies called a skeleton.



We have bones to support our bodies, to protect all the important organs inside our bodies and to help us move. Without our bones, we would not be able to stand, walk, sit or anything else. We would just be a puddle of skin and muscle!

Feel the bones in your hands and wrists. Try feeling them when your fingers are straight and when they are bent.



What are the bones like?

What can you feel?

Did you know...
There are 27 bones in the human hand!



There are a total of 206 bones in the human body. These bones are collectively known as the human skeleton. The longest, largest and hardest bone in the human body is the thigh bone, also known as Femur.



The smallest bone in your body is found in your ear. It's called the stapes and is smaller than a pea



Joints

Without joints connecting our bones we would not be able to move the way we do. We would not be able to bend, jump, skip to name a few movements. There are 3 different types of joints in the body.

ball and socket



Ball and socket joints allow the most freedom of movement. One example in the human skeleton is the joint between the pelvis (hip) and femur (upper leg bone).

hinge



Hinge joints allow flex and extend movements. One example in the human skeleton is between the humerus (upper arm bone) and radius/ulna (lower arm bones).

gliding



Gliding joints are also known as 'plane' joints. The bones are shaped to glide over one another and allow for small limited movements in different directions. One example in the human skeleton is the wrist bones.

The ribcage is a part of the skeleton of humans and some animals. It is made up of curved bones called ribs. The rib cage is found in the chest area.

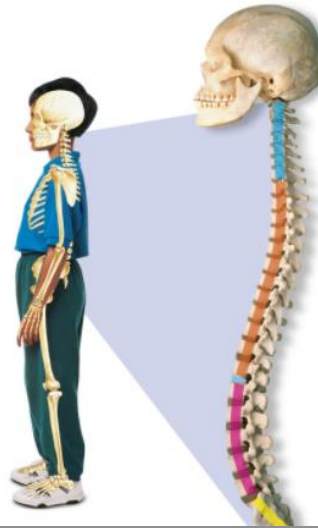
It protects a person's internal organs from damage.

Most humans have 12 pairs of rib bones with one from each pair on each side of the chest.

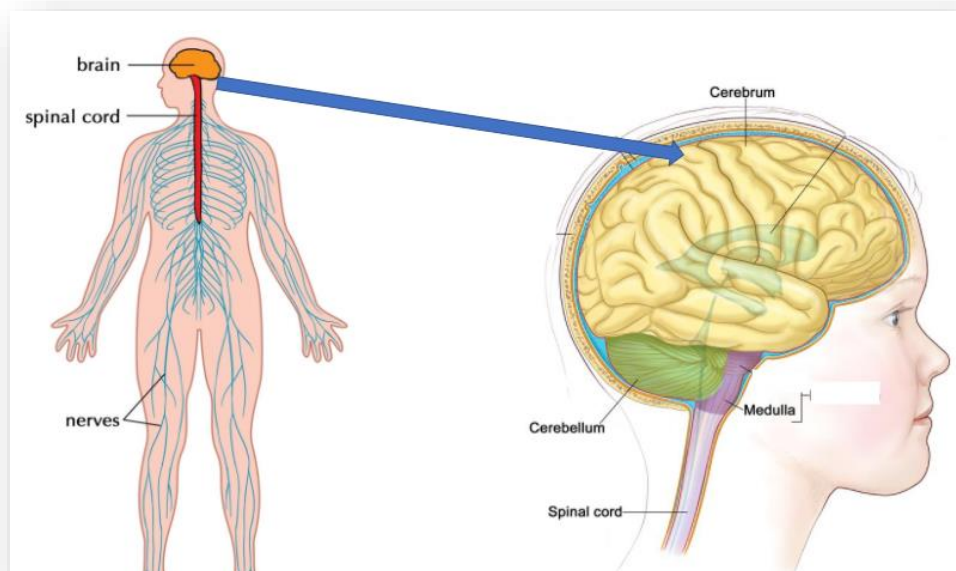


The spine

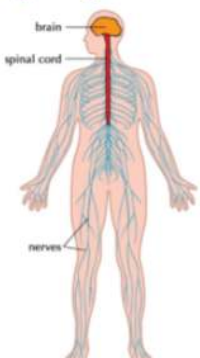
Your spine is a column of bones running down the back of your body. Without it, you couldn't hold up your head and body, or make any sort of movement. It consists of 26 bones called vertebrae. The bottom two vertebrae consist of fused bones, five in the upper one and four in the lower one. Each vertebra has a strong, stubby section that supports your weight, and a hole for the spinal cord to pass through.



Lesson 3: The nervous system

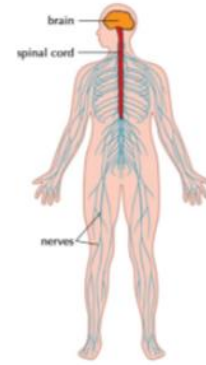
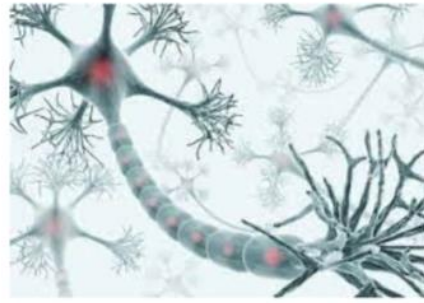


The nervous system is made up of the brain, the spinal cord, and a large network of nerves that covers all parts of the body. Together the nervous system helps different parts of our body communicate and allows our brain to control what is going on. Without the nervous system our brain would be mush. It wouldn't know anything that was going on in the outside world and wouldn't be able to control our body.

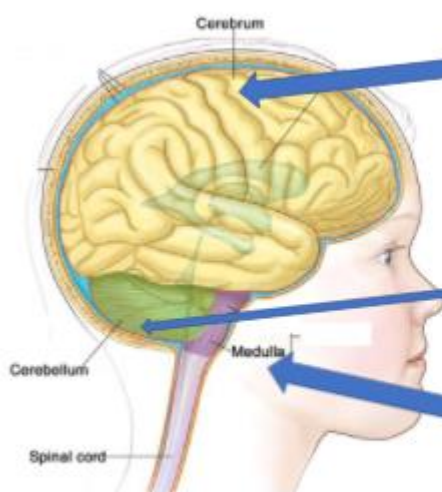


The brain and the spinal cord make up what is called the central nervous system. The rest of the nerves together are called the peripheral nervous system.

Nerves are a little like wires that carry communication signals or impulses around the body. Inside each nerve is a bundle of nerve fibres. Some nerves are really long, like the ones that go all the way from your feet to your spinal cord. **Nerve cells are called neurons.**



When a neuron is stimulated – by heat, cold, touch, sound vibrations or some other message – it begins to generate a tiny electrical pulse which sends a message to the brain.



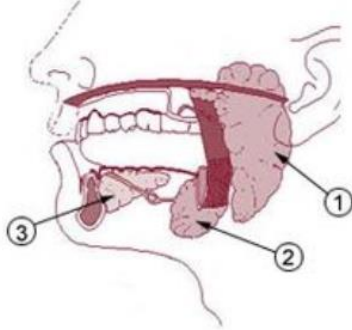
Cerebrum- This part of the brain is used for understanding speech and storing memories

Cerebellum controls movement and balance

Medulla controls heartbeats, breathing and digestion

Lesson 4: Preparing to eat

The **salivary glands** make saliva. Saliva keeps the mouth and other parts of the digestive system wet and slippery. They also help break down the food when you are chewing. This helps food go down the throat to the stomach.



Types of teeth

Humans have three main types of teeth:

1. Incisors

Incisors help you bite off and chew pieces of food.

2. Canines

These teeth are used for tearing and ripping food.

3. Molars

These help you crush and grind food.



Our teeth will change with age. So, the teeth you have when you are a baby aren't the same as the one's you will have as an adult.

Digestion

The food we eat has to be **broken down** into other substances that our bodies can use. This is called digestion.

Without digestion, we could not **absorb** food into our bodies and use it.

Digestion happens in the **digestive system**. This is a series of organs that break the food down so it can be absorbed into our bloodstream.



When we see something we want to eat our brain sends signals to the stomach to prepare it for digestion

The brain sends a signal to your mouth to realise saliva.

This makes your food soft, and this process starts to break down food

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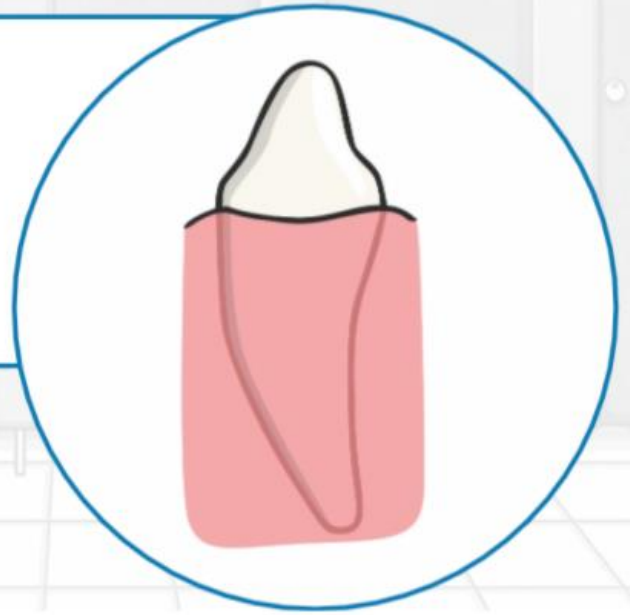
Incisors

Incisors are used for biting and cutting food. Think about biting into an apple. It is your incisors that bite into the apple and cut it up. They are at the front of your mouth and you have eight of them, four at the top and four at the bottom.



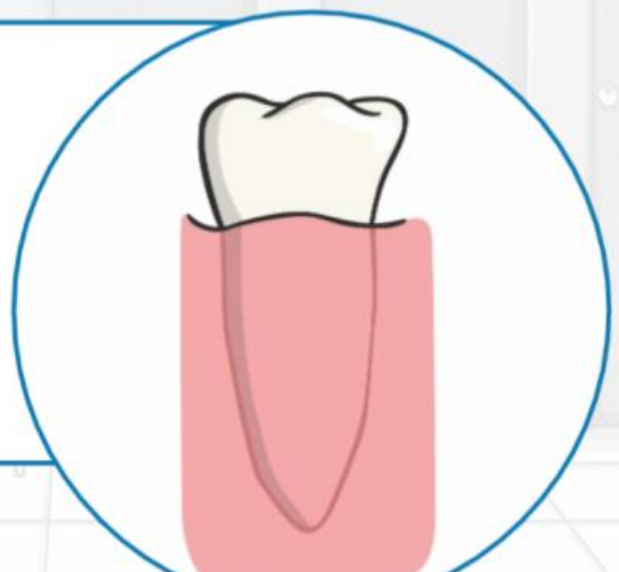
Canines

Canines are used for ripping and tearing food. Your canines are either side of your incisors and you have four of them. The word 'canine' means 'something connected to dogs'. As you can see, canine teeth are often pointy, a bit like the teeth of a dog or wolf.

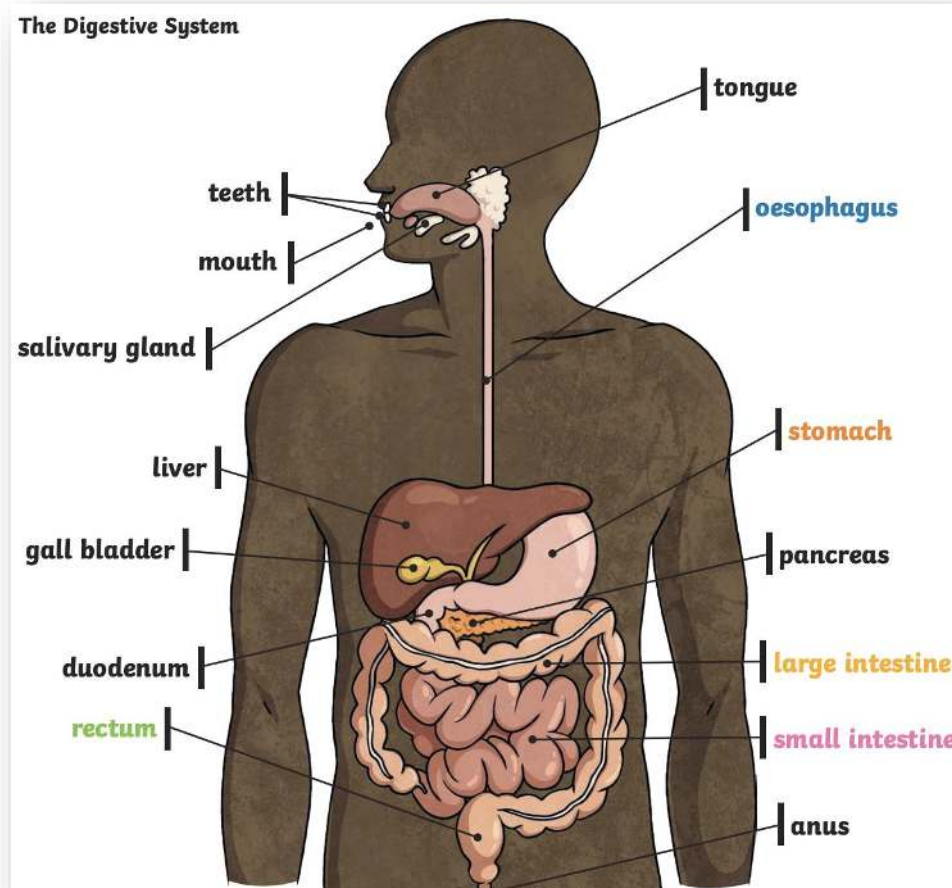


Premolars and Molars

Premolars and molars are towards the back of your mouth. They are bigger and wider than incisors and canines and this is because of their functions. Premolars are used for holding and crushing food. At the very back of the mouth, are molars (bigger versions of premolars). They chew and grind up food, working with your tongue to prepare food for swallowing.



Lesson 5: The digestive system



We need to eat to get the nutrition we need to move and to grow. Plants can make their own food by changing sunlight into sugars but humans and other animals have to eat to get the energy they need.

Salivary Glands

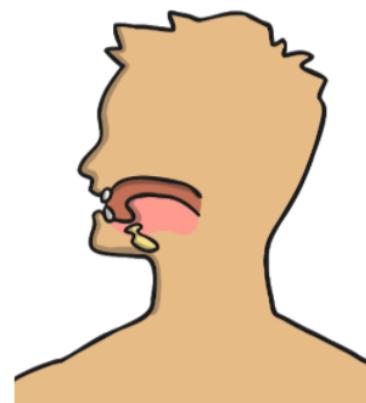
First part of the digestion process starts without you even eating!

The smell of food triggers the salivary glands to produce saliva (some call it your mouth watering).

The amount of saliva increases as you taste the food.

Saliva is mostly made of water and it helps you to chew, taste and swallow food.

Contains enzymes which start to break down the food we eat.



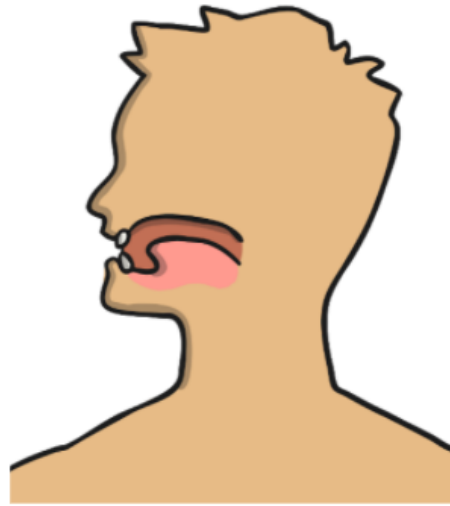
Mouth

Entry point for food.

Where saliva mixes with food.

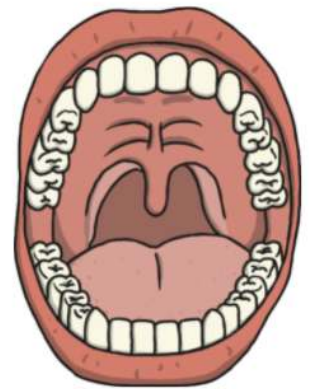
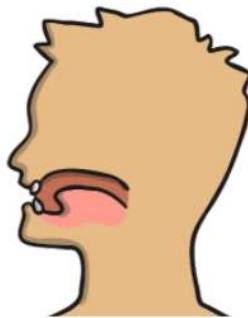
Location of tongue and teeth.

Top part of the mouth (soft palate) helps move food along to the oesophagus.



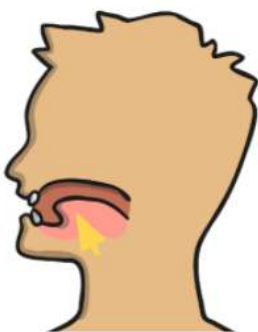
Teeth

Tear, cut and grind food into smaller pieces.



Tongue

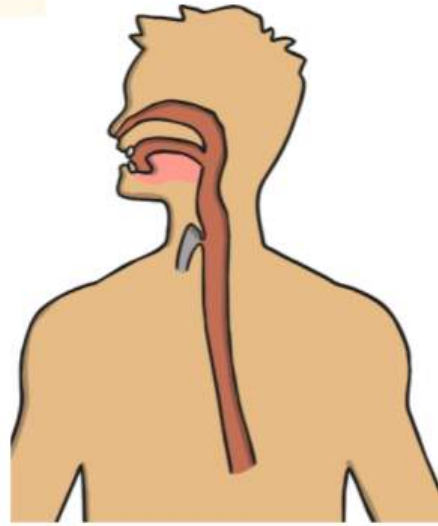
Helps mix the food and saliva.



Oesophagus

A muscular tube which forms the path from the mouth to the stomach.

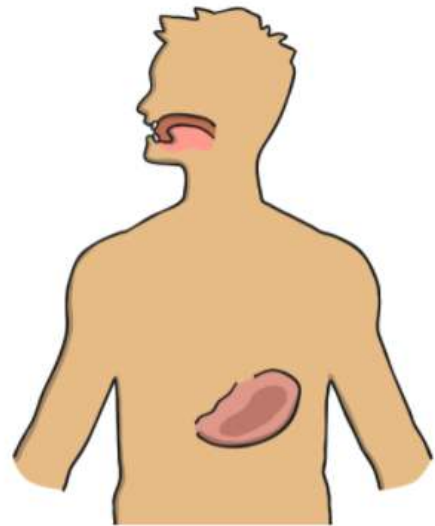
Muscles contract and relax to move food down the oesophagus to the stomach.



Stomach

Glands line the stomach produce acid and **enzymes** which breaks the food down further.

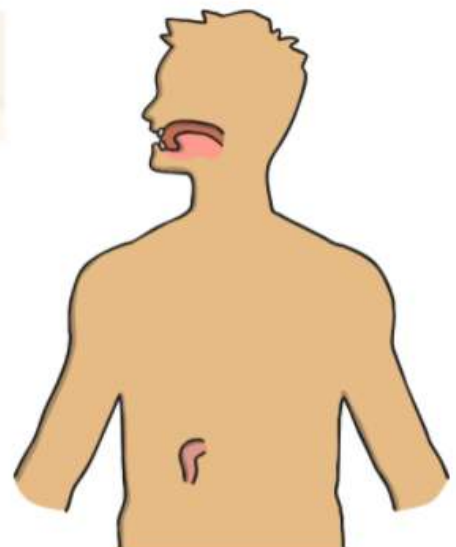
Muscles in the stomach mix the food.



Duodenum

First part of the small intestine

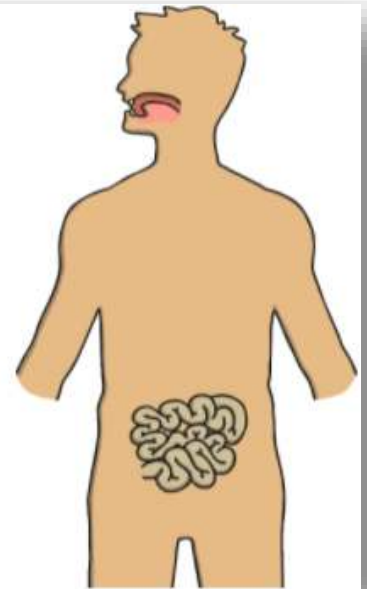
Food is broken down by bile from the gallbladder and enzymes from the pancreas.



Small Intestine

The other parts of the small intestine – (jejunum and ileum) absorb nutrients from the food.

Pass any leftover broken down food to the large intestine.

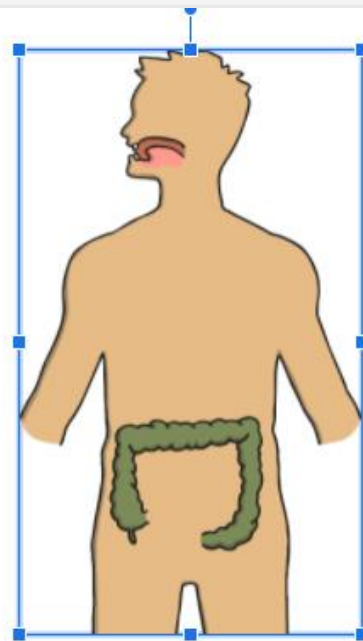


Large Intestine

Connects the small intestine to the rectum.

Absorbs water from waste food.

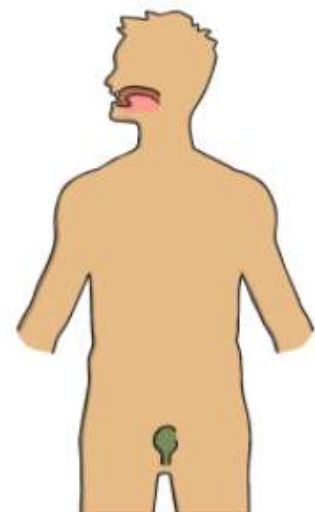
Forms stool from waste food.



Rectum

Stores stool passed to it from the large intestine.

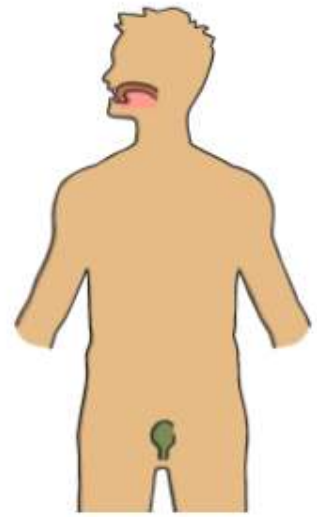
Makes brain aware of need to go to the toilet.



Anus

Releases the stool.

End of the digestive process.



Natural foods or foods as close as to their natural state are useful to our body



Processed foods are less useful, so our bodies create more waste when we eat these products

