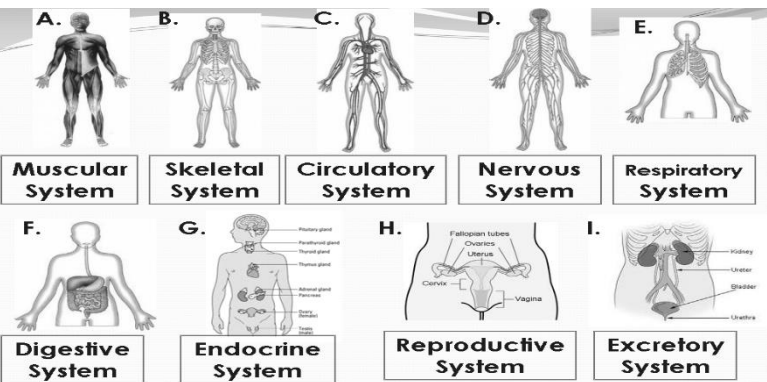


5 functions of the Skeletal System

1. Framework gives **shape & support** to the body.
2. Bones **protect** the **internal** organs.
3. Major **muscles** of the body are attached to the bones for **movement**.
4. **Blood** cells are formed in **marrow** of some bones.
5. Skeleton is a place where **calcium** and **phosphorus** compounds are **stored**.



Muscles

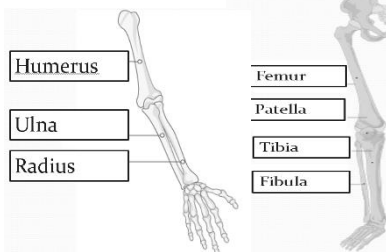
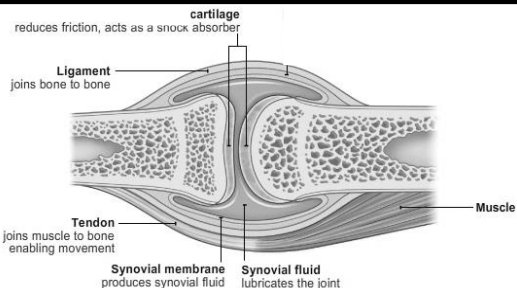
Muscles are the **organs** that **move** body parts. Bones **protect** the **internal** organs.

Two Groups of Muscles:

Voluntary—You **can** control these. **Arms, legs, hands, face**

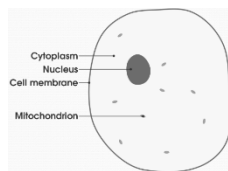
Involuntary—You **can't** control these; you don't have to decide to make these muscles work. Muscles around the **heart**

Antagonistic muscles occur in pairs. These pairs of muscles work **together** to create movement. As one muscle **contracts** (shortens) the other muscle **relaxes** (lengthens). They swap actions to reverse the movement.



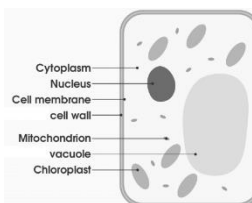
Y7 Biology T1- Living systems

Animal cell



Cell Part	Function
Nucleus	<ul style="list-style-type: none"> • Controls the cell • It contains DNA
Cytoplasm	<ul style="list-style-type: none"> • Where chemical reactions take place
Cell membrane	<ul style="list-style-type: none"> • Controls the passage of substances into and out of the cell
Mitochondrion	<ul style="list-style-type: none"> • Where energy is released by respiration

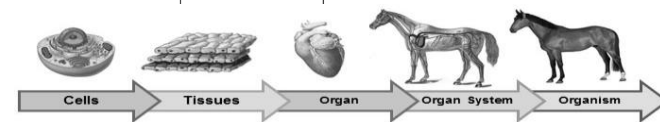
Plant cell



Cell Part	Function
Cell wall	<ul style="list-style-type: none"> • Gives the cell structure
Vacuole	<ul style="list-style-type: none"> • Contains water & nutrients
Chloroplast	<ul style="list-style-type: none"> • Absorbs light for photosynthesis

Drawing of the cell	Function	Specialised Features
Red blood cell	Transports oxygen around the body	<ul style="list-style-type: none"> -No nucleus so can carry more oxygen -A biconcave shape so is flexible to squeeze through small blood vessels
Nerve cell (neuron)	Transmits nerve impulses	<ul style="list-style-type: none"> -Long and thin -Contains fibres which connect to other nerve cells -Surrounded by a cover which insulates it and speeds up transmission of nerve impulse
Muscle cell	Contracts (to provide muscle movement)	<ul style="list-style-type: none"> -Contain many mitochondria to provide energy for movement
Sperm cell	Fertilises the female egg	<ul style="list-style-type: none"> -Has a long tail to swim to the egg. -The mid piece is packed with mitochondria to provide energy for movement. -Streamlined shape to help it swim -Head contains enzymes to break into the egg

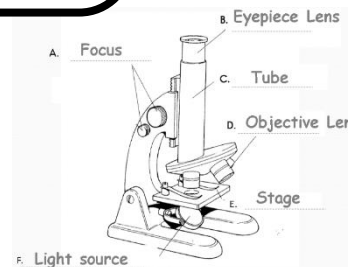
Drawing of the cell	Function	Specialised Features
Palisade cell	Absorbs light for photosynthesis	<ul style="list-style-type: none"> -Packed with chloroplasts which contain the pigment chlorophyll. -Packed together to absorb as much light as possible
Root hair cell	Absorbs water and minerals from the soil	<ul style="list-style-type: none"> -Thin membrane -Large surface area which enables the cell to absorb more water from the soil
Guard cell	Allows gases in and out the leaf	<ul style="list-style-type: none"> -Able to change their shape -Found in pairs
Sieve cell	Transport water, nutrients and minerals through the plant	<ul style="list-style-type: none"> -Hollow -Form long tubes



Scientific Drawing rules

- Use simple clear lines
- Draw only what you see (in proportion).
- Ensure diagram is the right size.
- No shading
- Draw labelling lines using a ruler (NO crossing)
- Include a scale or magnification

$$\text{Magnification} = \frac{\text{Eyepiece lens}}{\text{Objective lens}} \times \text{Objective lens}$$



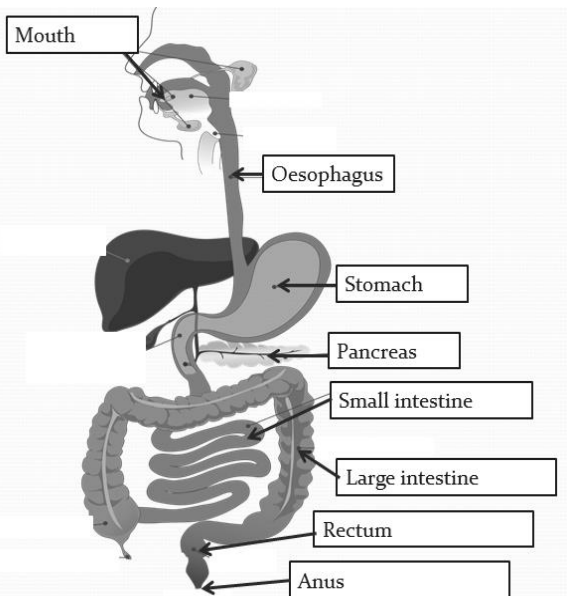


Digestive system

Large molecules are broken down into **small** molecules which can be absorbed into the blood.

There are two types of digestion:

- Physical breakdown- Structures like teeth and muscular walls physically break up molecules
- Chemical breakdown- Enzymes break up molecules



Food tests

Test for sugars	Add Benedict's solution and heat. Positive test for simple sugars: Changes colour (blue to green/ yellow/ red).
Test for starch	IODINE test: Add iodine Positive test for starch: From orange/brown to Blue/black colour.
Test for fats	EMULSION test: Add ethanol, then add water. Positive result for fats: A cloudy white suspension .
Test for protein	BIURET test: Add biuret solution Positive result for protein: Turns lilac colour.

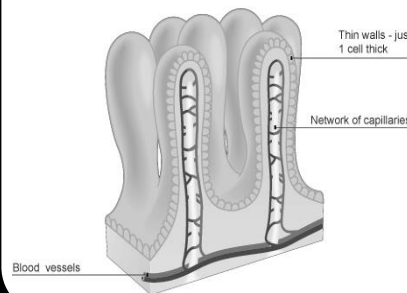
Food Group	Effect on the body	Example
Carbohydrates	Provides the body with the most energy	Bread, rice, pasta
Fats	Second best provider of energy, insulation.	Butter, oils
Protein	Growth and repair of cells	Meat, fish, eggs
Vitamins	Stay Healthy. Vit A= Eyes, Vit C= Immunity, Vit D= Bones	Fruit & Vegetables
Minerals	Stay Healthy. Iron= blood, Calcium= Teeth & bones	Milk, meat
Fibre	Prevents constipation	Cereal
Water	Hydrates cells, chemical reactions	Water

Lack of ...	Problems caused
Energy	- Weight loss, lack of growth - Starvation - E.g. Marasmus
Protein	- Lack of growth - Less repair of body tissues - E.g. Kwashiorkor
Fats	- Dry skin & fatigue - Less insulation - Loss of menstrual cycle
Vitamins & minerals	- Lack of formation of bones - Bleeding gums & loss of teeth - E.g. Rickets, Scurvy
Overnutrition	- Overweight & obesity - Cardiovascular disease - E.g. Type 2 diabetes

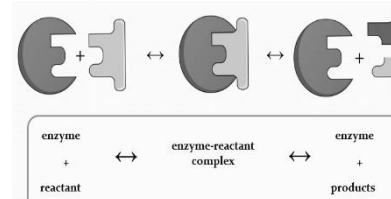
Organ	Function
Mouth	Chew food into smaller pieces
Oesophagus	Muscular tube which moves food to the stomach
Stomach	Produces acid (HCl) to kill any bacteria. Muscular walls to churn food.
Pancreas	Produces enzymes
Small intestine	Digested food absorbed into the blood
Large intestine	Water reabsorbed
Rectum	Faeces is stored
Anus	Faeces leave the body

Inside the small intestine there are small hair like structures called villi. Villi are adapted for absorption:

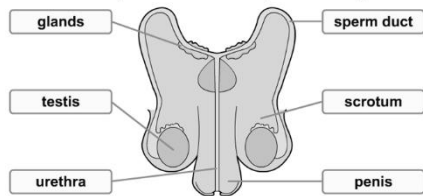
- Provide a large surface area
- Thin membrane
- Good blood supply



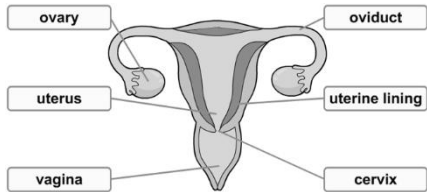
Enzymes are chemicals that speed up reactions. They help us break down food molecules:



What are the parts of the male reproductive system?



What are the parts of the female reproductive system?



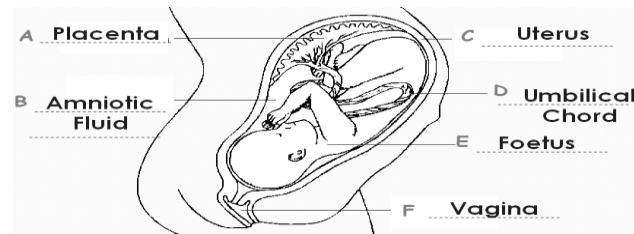
What is the function of each body part?

testes	to produce sperm
ovary	to produce eggs
urethra	to carry sperm out of the body
oviduct	to carry eggs to the uterus
glands	to add fluid to sperm
sperm duct	to carry sperm from the testes
scrotum	to protect the testes

What does each reproductive process involve?

- ovulation** - The release of an egg from the ovary.
- ejaculation** - The ejection of sperm through the penis.
- fertilization** - The egg and the sperm nuclei fuse.
- implantation** - The embryo sinks into the uterus lining.

A woman is pregnant for 9 months



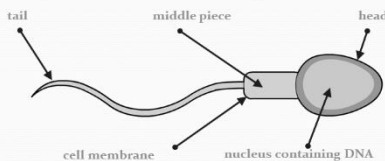
Adolescence is the period of life between child and adulthood

Puberty is the time when sex organs begin to work

The changes that happen during puberty are caused by **hormones**

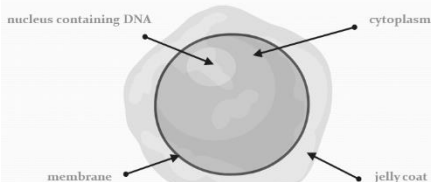
Changes in boys	Changes in girls
sudden increase in height (growth spurt)	sudden increase in height (growth spurt)
hair starts to grow on body, including pubic hair	hair starts to grow on body, including pubic hair
voice deepens	breasts grow
testes start to make sperm and hormones	ovaries start to release eggs and make hormones
shoulders broaden	hips widen
sexual organs get bigger	periods start

In males, the sex cells are called **sperm**.

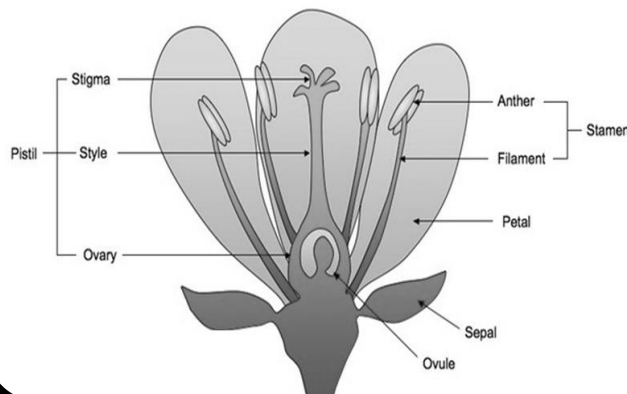


Sperm are produced in sex organs called **testes**.

In females, the sex cells are called **eggs**.



Eggs are produced in sex organs called **ovaries**.



Menstrual cycle:

Day 1-7: the lining of the uterus comes away and exits through the vagina.

Day 8-13: The lining of the uterus begins to build up again. At this time an egg starts to mature in one of the ovaries.

Day 14: An egg is released by an ovary into the oviduct. (Ovulation).

Day 15-17: The egg travels down the oviduct and into the uterus hoping to be fertilized.

Day 18-28: If the egg is not fertilised then the lining of the uterus begins to break down again.

After about 9 months the baby is ready to be born. However, before it can be born, the baby must make sure it is the correct way up.



Before birth, the baby usually turns itself round so that his/her head lies above the cervix



The mother starts to feel small contractions of the uterus wall. These gradually become stronger and happen more often. Eventually the amniotic sac breaks and the amniotic fluid escapes.



The muscles of the uterus wall now contract very strongly and start to push the baby out. As the baby is pushed out, the cervix widens and the baby's head is pushed out through the vagina.

As the baby is born it breathes air for the first time - the umbilical cord is tied and cut. After a few minutes the placenta comes away from the uterus wall. This is pushed out as the **afterbirth**.

