



Year 7 - Science - Spring Term - Biology

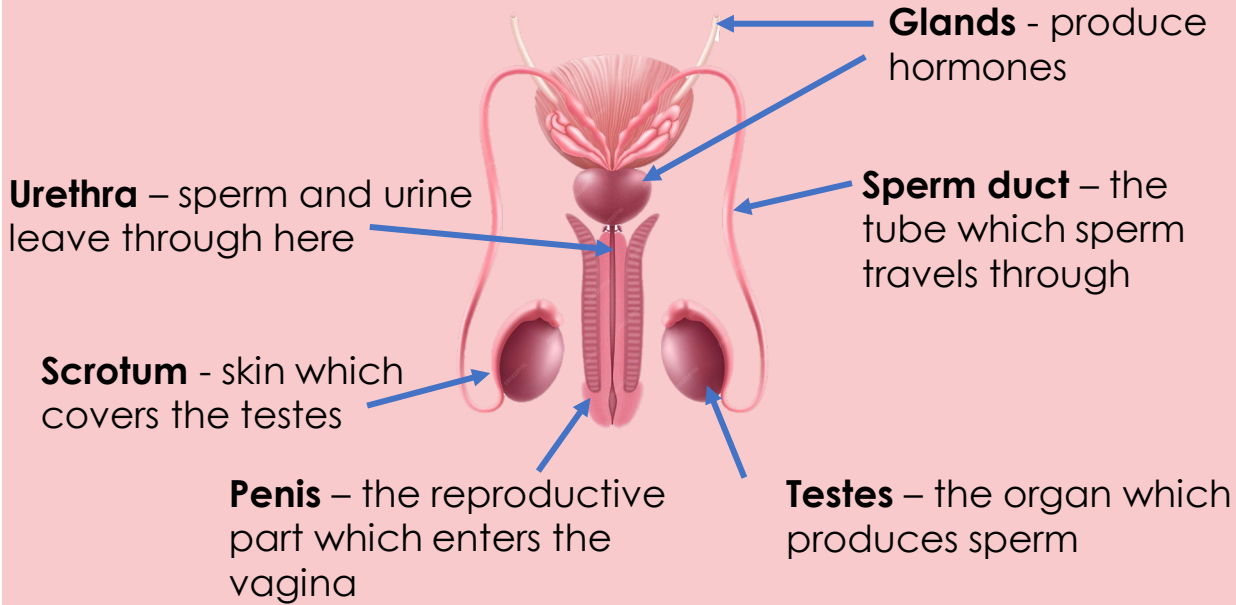
Keyword List	Definitions
Foetus	An embryo in its early stages
Sperm	Male sex cell (gamete)
Egg	Female sex cell (gamete)
Bladder	Organ which stores urine
Penis	Male reproductive organ
Testes	Found in males. Where sperm is made
Fallopian tube	The tube connecting the ovaries to the uterus
Uterus	The reproductive area where a foetus develops
Ovary	Found in females. Where the egg is produced
Cervix	The ring of muscle between the vagina and uterus
Vagina	The female reproductive area where the sperm enters
Fertilisation	The fusion of egg and sperm
Pregnancy	When a woman has a fertilised egg and it develops into a baby
Drugs	A form of substance which people take – some are bad for health
Alcohol	A form of liquid which people take – some are bad for health
Gestation	The length of time a pregnancy lasts
Menstruation	The time period where the lining of the uterus breaks
Ovulation	The time period when an egg is released
Umbilical cord	The tube which connects the baby to the mother – transfer of oxygen, nutrients and waste materials
Placenta	This structure transfer of oxygen, nutrients and waste materials

Biology term 1 checklist	<input checked="" type="checkbox"/>
To recall parts of the female reproductive system	
To recall the parts of the male reproductive system	
To describe the function of the female reproductive system	
To describe the function of the male reproductive system	
To describe what is meant by fertilisation	
To describe the functions of sperm cell	
To describe the functions of egg cell	
To be able to summarise how an egg develops into a baby	
To state the gestation period of pregnancy in humans	
To describe the stages of the menstrual cycle	
Define the terms ovulation and menstruation	
Describe the effects of alcohol and drugs on a pregnant woman and the baby	

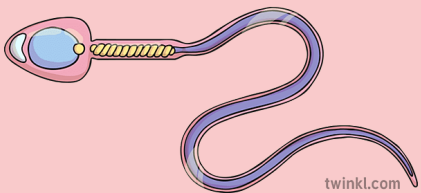


Human reproduction system

Male reproductive system



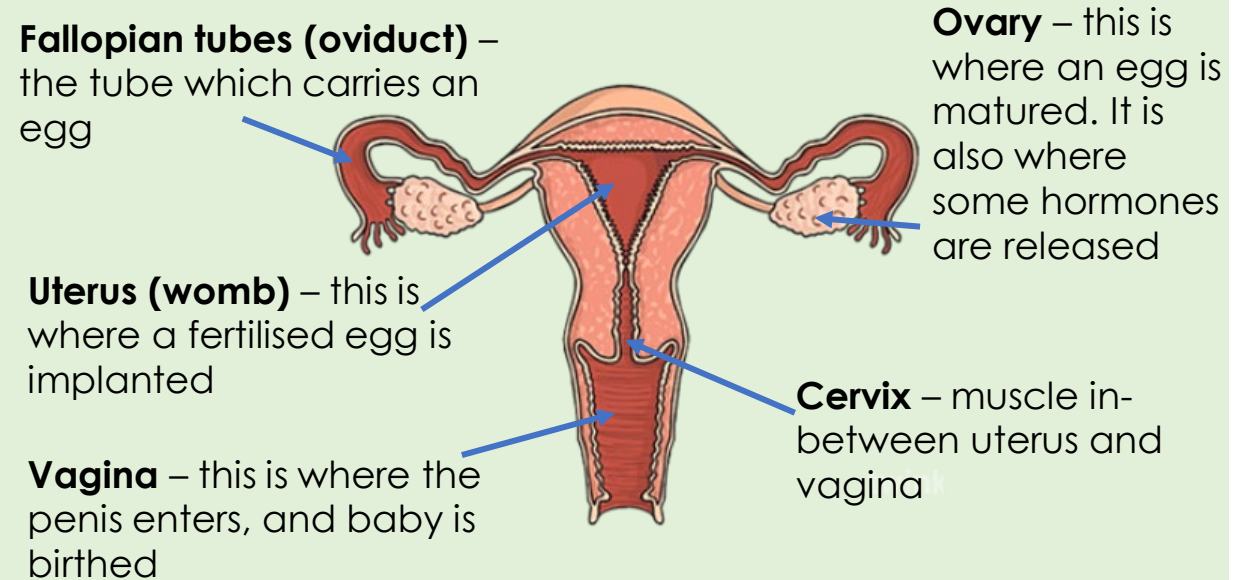
Male sex cell (gamete)



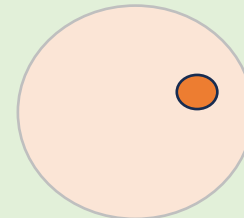
This is a sperm cell. It has many features which make it special:

- ✓ Tail to help it swim
- ✓ Streamlined head with enzymes in to get into the egg. The nucleus is also here
- ✓ Mitochondria to help provide energy

Female reproductive system



Female sex cell (gamete)



This is an egg cell. It has many features which make it special:

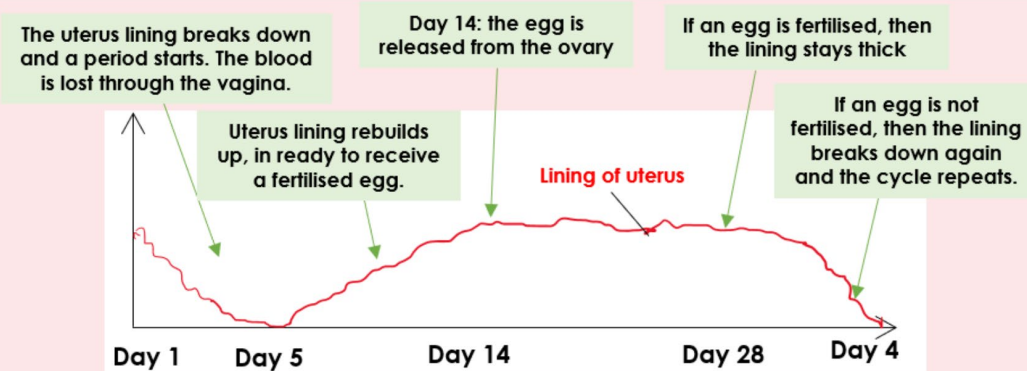
- ✓ Cytoplasm contains nutrients
- ✓ Nucleus containing DNA
- ✓ Jelly coat to protect the egg



Birth and Pregnancy

Menstrual cycle

MENSTRUAL CYCLE – the monthly process of events (after puberty) that prepares the uterus for a baby.



Fertilisation and development

Sperm is released into the vagina.



Sperm meets egg
This is **fertilisation**.



Fertilised egg forms an **embryo**, which plants into the uterus wall

Gestation
-time between fertilisation and a baby being born.
Humans: 9 months



Pregnancy and health

The placenta allows substances to pass between the blood of the mother and foetus.



If a pregnant woman smokes, takes drugs or drinks alcohol, then **harmful substances can cross the placenta**, which can be bad for the mother and baby.

3 main things pregnant women should consider when pregnant:

1. **Nutrition** – healthy food such as fruit, vitamins and vegetables
2. **Physical activity** – 10-minute exercise a day
3. **Wellbeing** – meditation, meeting friends and family

Year 7 - Science - Spring Term - Chemistry



Keyword List	Definition
Atom	The smallest particle of a chemical element that can exist
Compound	A substance made of two or more elements
Molecule	More than one atom chemically bonded together
Element	Made up of only one atom
Chemical formula	A written way to name chemical elements or compounds
Chemical change	A reaction which cannot be reversed
Physical change	A reaction which can be reversed
Conservation of Mass	The law that the mass of a reaction is the same at the start and at the end
Exothermic	A reaction which releases energy
Endothermic	A reaction which takes energy in
Combustion	A reaction which burns fuel with oxygen to give carbon dioxide and water
Oxidation	A reaction where oxygen is added
Decomposition	When a substance breaks down into smaller substances
Thermal decomposition	When a substance breaks down into smaller substances using heat

Chemistry term 1 checklist	<input checked="" type="checkbox"/>
Be able to define the term atom	
Be able to define the term element	
Be able to define the term compound	
Be able to define the term molecule	
Be able to name compounds	
Be able to write out chemical formula	
Name different salts	
Describe the differences between chemical and physical changes	
Be able to write equations for acid reactions	
Define the terms exothermic and endothermic reaction	
State what is meant by conservation of mass	
Describe reactions for thermal decomposition, oxidation and combustion	

Year 7 - Science - Spring Term - Chemistry



Atoms and elements

The Atom

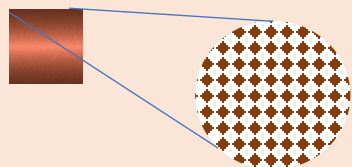
Atoms are very small particles that cannot be seen directly.

Dalton is a scientist which concluded 3 main things about atoms:

1. All matter is made up of atoms
2. There are different types of atom
3. Each element contains a different type of atom

Elements

ELEMENT – a substance that contains only one type of atom.



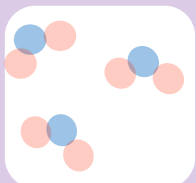
Elements have different properties. E.g. copper is soft, bendy metal and oxygen is a colourless gas.

Molecules, compounds and naming compounds

MOLECULE – two or more atoms bonded together

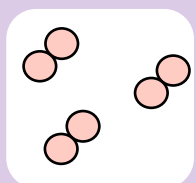
COMPOUND – a substance made up of atoms from different elements, bonded together.

Molecule in a compound:



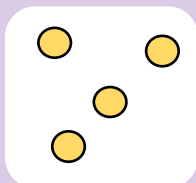
e.g. water, H₂O

An element made of molecules:



e.g. hydrogen H₂

An element made of atoms:



e.g. argon, Ar

Two Rules for naming compounds

1 When **two** different elements combine, the name of the compound usually ends **-ide**.

- sodium + chlorine → sodium chloride
- magnesium + oxygen → magnesium oxide

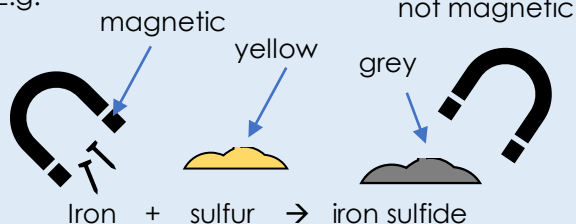
2 When **three** or more different elements combine, and one of them is **oxygen**, the compound usually ends **-ate**.

- sodium + carbon + oxygen → sodium carbonate
- copper + sulfur + oxygen → copper sulfate

Properties of compounds

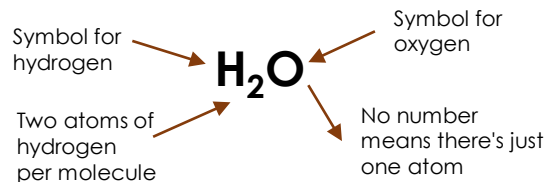
Compounds often have completely different properties to the elements they are made from.

E.g.



Chemical formula

CHEMICAL FORMULA – a formula that shows the proportion of atoms of each element in a compound. e.g. water:



Types of Reaction

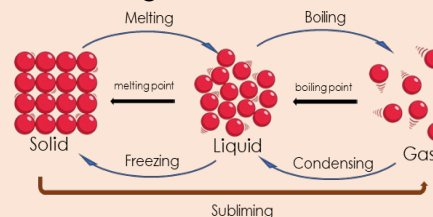
Chemical and Physical Reactions

Physical Changes

In a physical reaction the atoms are simply moved or their pattern is rearranged. They are reversible changes.

Example:

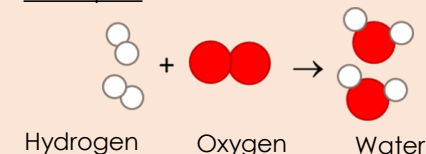
State changes



Chemical Changes

In a chemical reaction, the bonds between the atoms are broken and the atoms put back together differently. This produces something new. This is not easily reversible.

Example:



Conservation of Mass

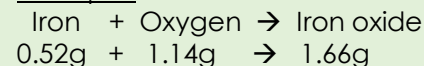
CONSERVATION – something is being saved and is not lost

Conservation of Mass

We cannot create mass and we cannot lose mass, so whatever we start with must be there at the end.

This is called Conservation of Mass.

Example:



Thermal Decomposition

DECOMPOSITION – when something is broken down into smaller pieces

Thermal Decomposition

Thermal decomposition reactions are when a compound is broken down using heat.

You start with a compound and end with 2 or more products.

When a metal carbonate decomposes under heat, it produces a metal oxide and carbon dioxide.





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Types of Reaction

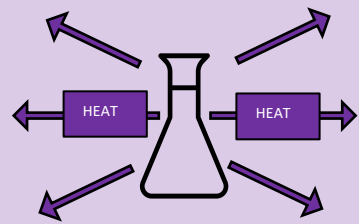
Exothermic and Endothermic Reactions

EXOTHERMIC REACTIONS

Reactions that release energy are called exothermic.

Exo = give out, exit
-thermic = heat, heat energy

Therefore, exothermic reactions feel like they get hotter (their temperature increases).



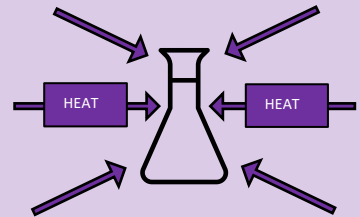
- Example:
- Camp fire
 - Rusting
 - Respiration

ENDOTHERMIC REACTIONS

Reactions that need to take in energy are called endothermic.

Endo = inside
-thermic = heat, heat energy

Therefore, endothermic reactions feel like they get cooler (their temperature decreases).



- Example:
- Photosynthesis
 - Cooking an egg
 - Baking bread

Oxidation and Combustion

Oxidation

Oxidation is the addition of oxygen.

Example:
Rusting is an example of an oxidation reaction.



Combustion

When a fuel combusts (burns), it combines with oxygen from the air and makes a new substance.

The general word equation for this reaction is:
 $\text{Fuel} + \text{oxygen} \rightarrow \text{carbon dioxide} + \text{water}$



4Rs And Scientific

Revision is a very important part of education and here at Highfields we break it down into the 4Rs:

1. **Rehearse** – practice learning the information
2. **Revisit** – after a set time, come back to review past content
3. **Reduce** – summarise content learnt into smaller pieces e.g. mind map, flashcards, abbreviation and acronyms
4. **Retrieve** – bringing back and remembering content learnt in the past



Key scientific vocabulary which is important throughout all years of Science and during practical work:

- + **Independent variable** → variable which is purposely changed in an experiment.
- + **Dependent variable** → variable which is measured in an experiment.
- + **Control variable** → variables which are kept the same throughout an experiment.
- + **Reliability** → how trustworthy the results are. We increase this by repeating an experiment.
- + **Accuracy** → how close a result is to its true value.
- + **Validity** → How suited the method used in an experiment is for the purpose.
- + **Average** → adding up the values and dividing the value by how many they are
- + **Anomaly** → an odd result, which does not fit the pattern of results.
- + **Data** → the results from an experiment

