

# AQA Science Revision Tasks



- There are over 300 revision tasks you can complete for your Science GCSE
- Your teacher may ask you to complete some of these as homework but they are mainly for your own personal revision
- Not all tasks are for your course depending on whether you are doing Foundation, Higher or Triple Science – please ask if unsure
- If you want your responses checking please ask your Science teacher
- Biology slides are 3-99
- Chemistry slides are 100-215
- Physics slides are 216-334
- From the first day of half term, there are 85 days until your first Science exam – this works out at about 4 a day if you were to do them all before your exams





# GCSE Science Daily Revision Task

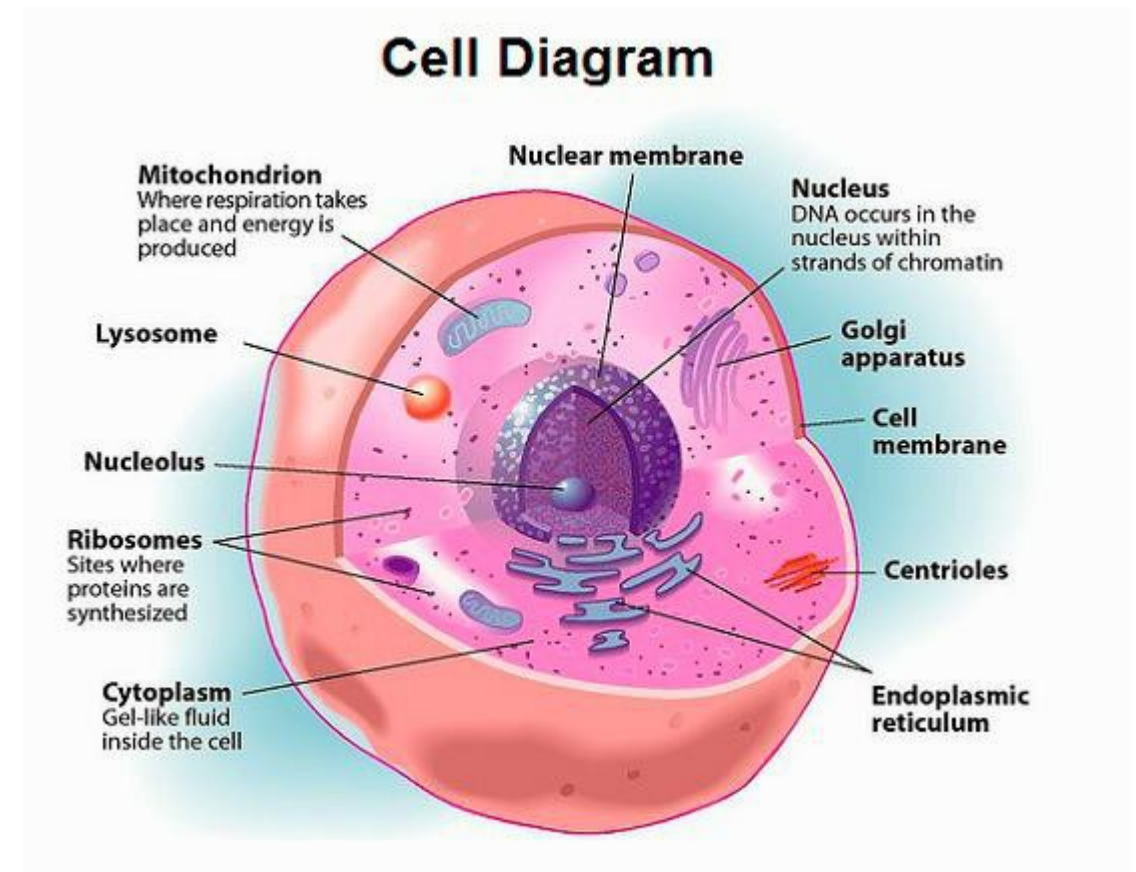


**Task:** Produce an information sheet on cells & organelles

## Things to include:

Produce a list of the following organelles & their functions

- Nucleus
- Cell membrane
- Cell wall
- Ribosomes
- Mitochondria
- Chloroplasts
- Vacuole



# GCSE Science Daily Revision Task

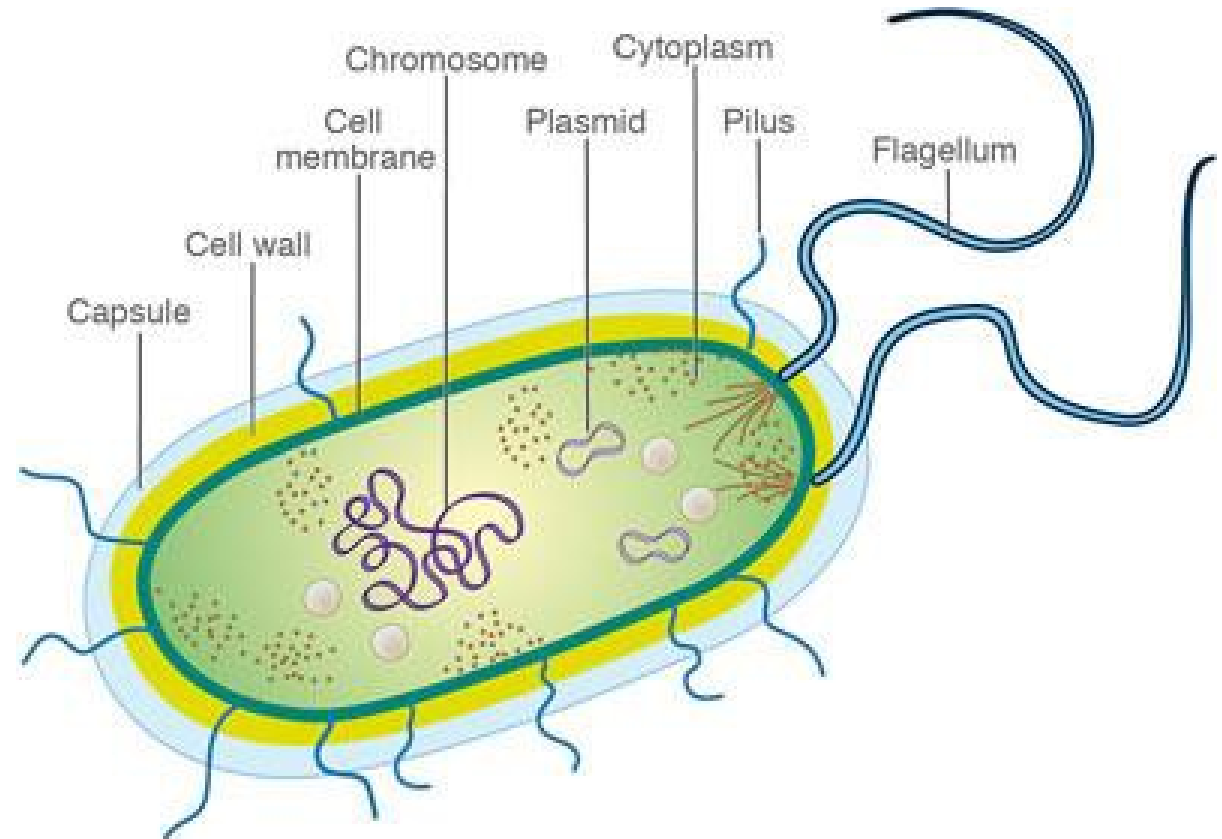


**Task:** Produce flash cards on bacteria & yeast cells

## Things to include:

For the two types of cells include the following:

- A diagram of each
- Label the organelles they have
- Give examples of each
- Describe their relative sizes



*Diagram of a Bacterium*

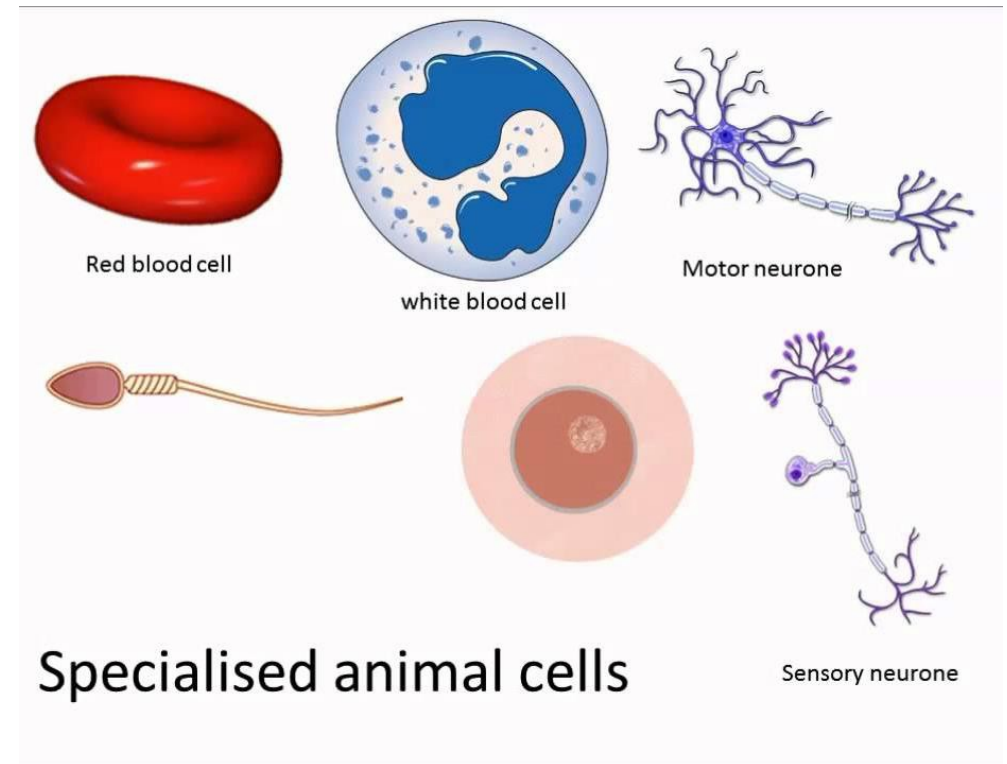


## Task: Produce flash cards on specialised cells

## Things to include:

Diagrams & descriptions of the following cells:

- Blood
- Root hair
- Palisade
- Fat
- Cone
- Sperm
- Nerve



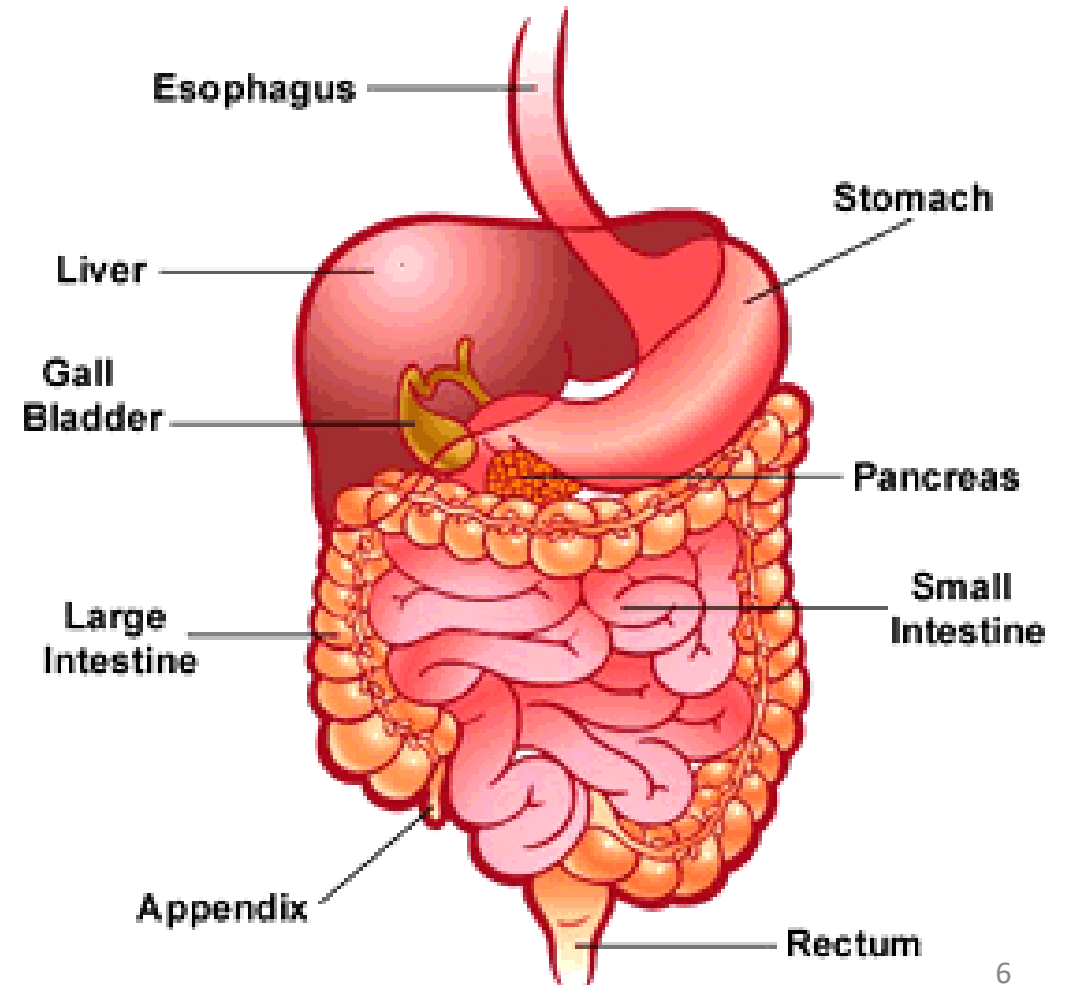
# GCSE Science Daily Revision Task



**Task:** Produce a concept map on the digestive system

## Things to include:

- A diagram of the digestive system
- A description of what each part does
- The enzymes present at each part



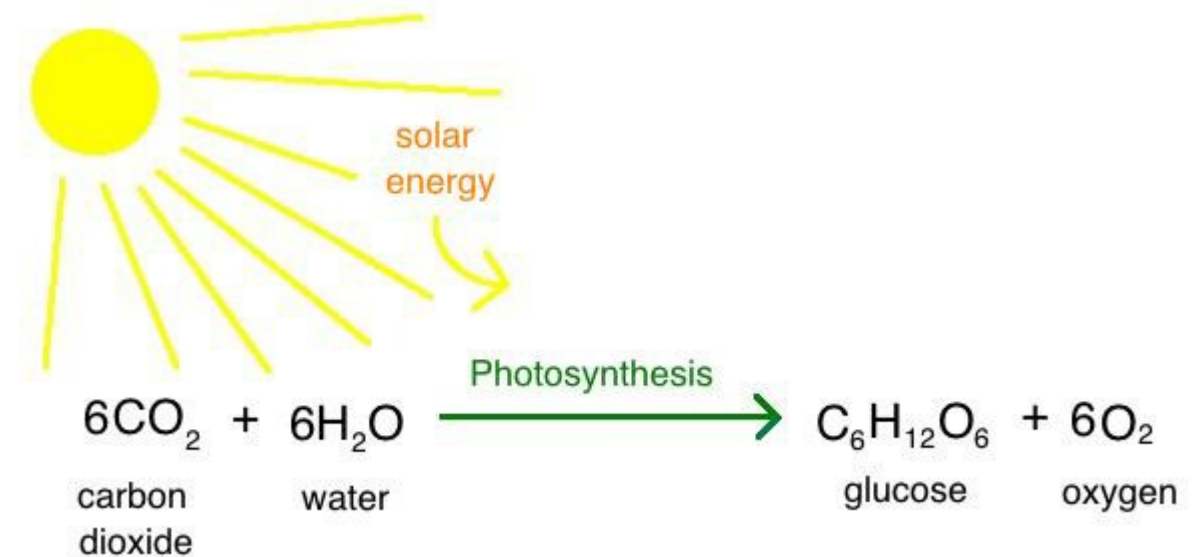
# GCSE Science Daily Revision Task



**Task:** Produce a concept map on photosynthesis

## Things to include:

- A definition of what photosynthesis is
- A word equation
- A chemical equation
- Graphs showing the effects of different factors on it





## Things to include:

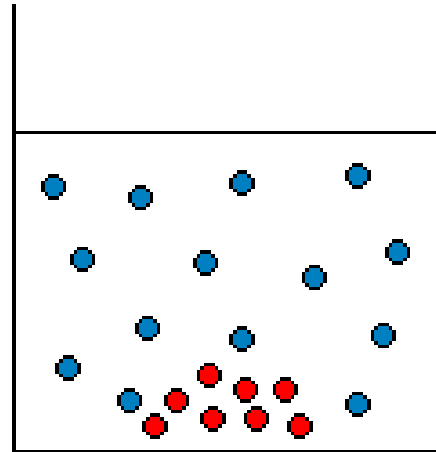
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## Task: Produce a flash card on diffusion

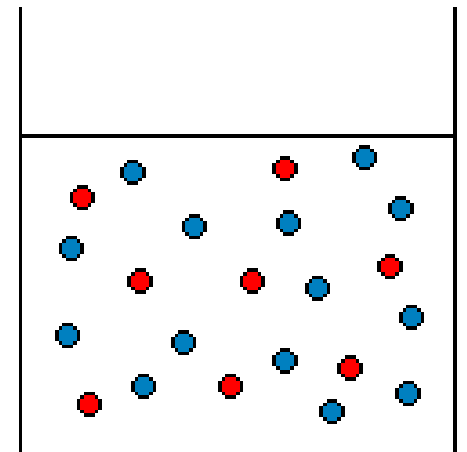
## Things to include:

- A definition of what diffusion is
- What factors effect diffusion
- Diffusion in living organisms

## Before



## After



## Things to include:

- 
- OCEAN
- BEACH
- PRIMARY DUNE
- TROUGH
- SECONDARY DUNE
- BACK DUNE



# GCSE Science Daily Revision Task

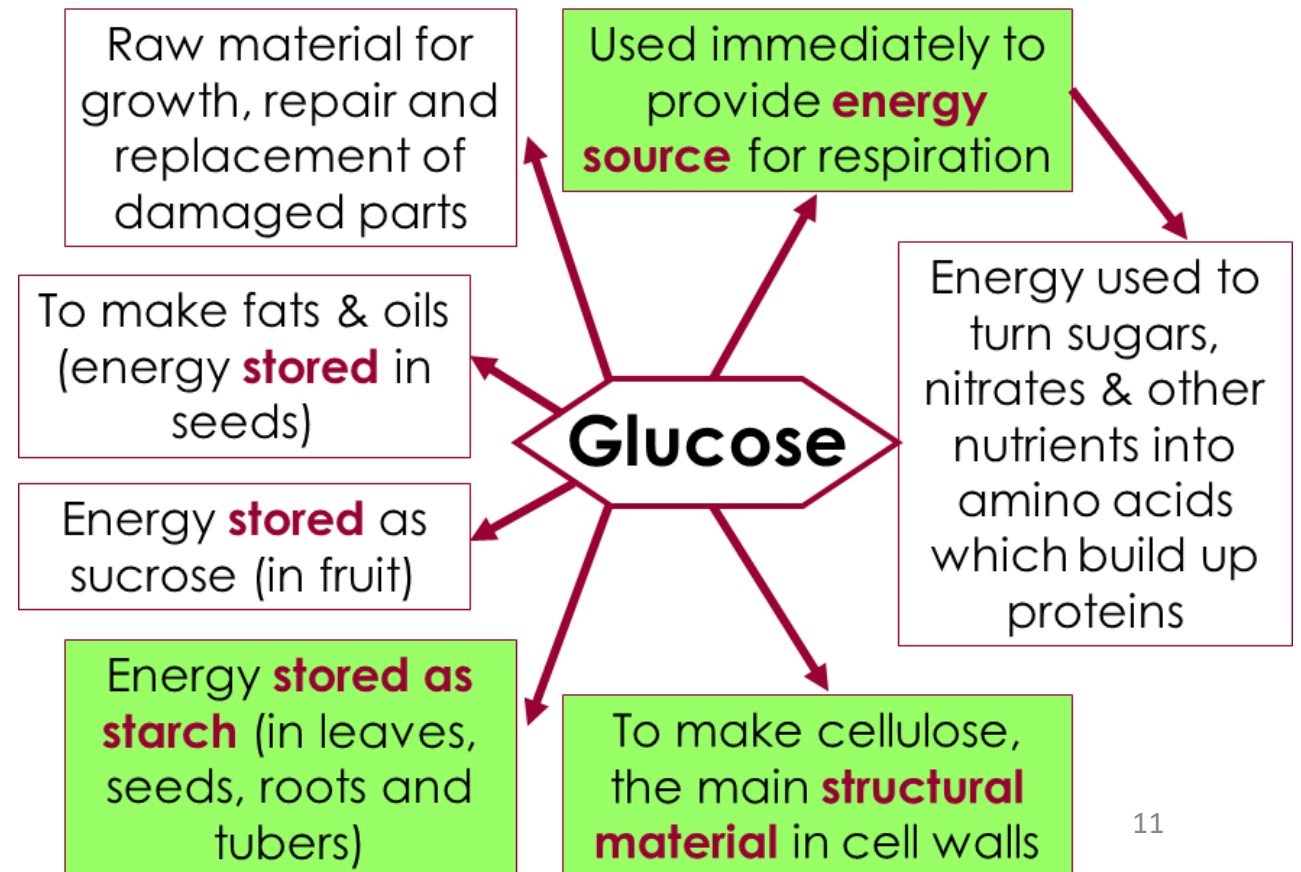


**Task:** Produce a flash card on how plants use glucose

## Things to include:

- How plants use cellulose
- How glucose is used in respiration
- How glucose is used to produce proteins

## Plants' uses of plant glucose



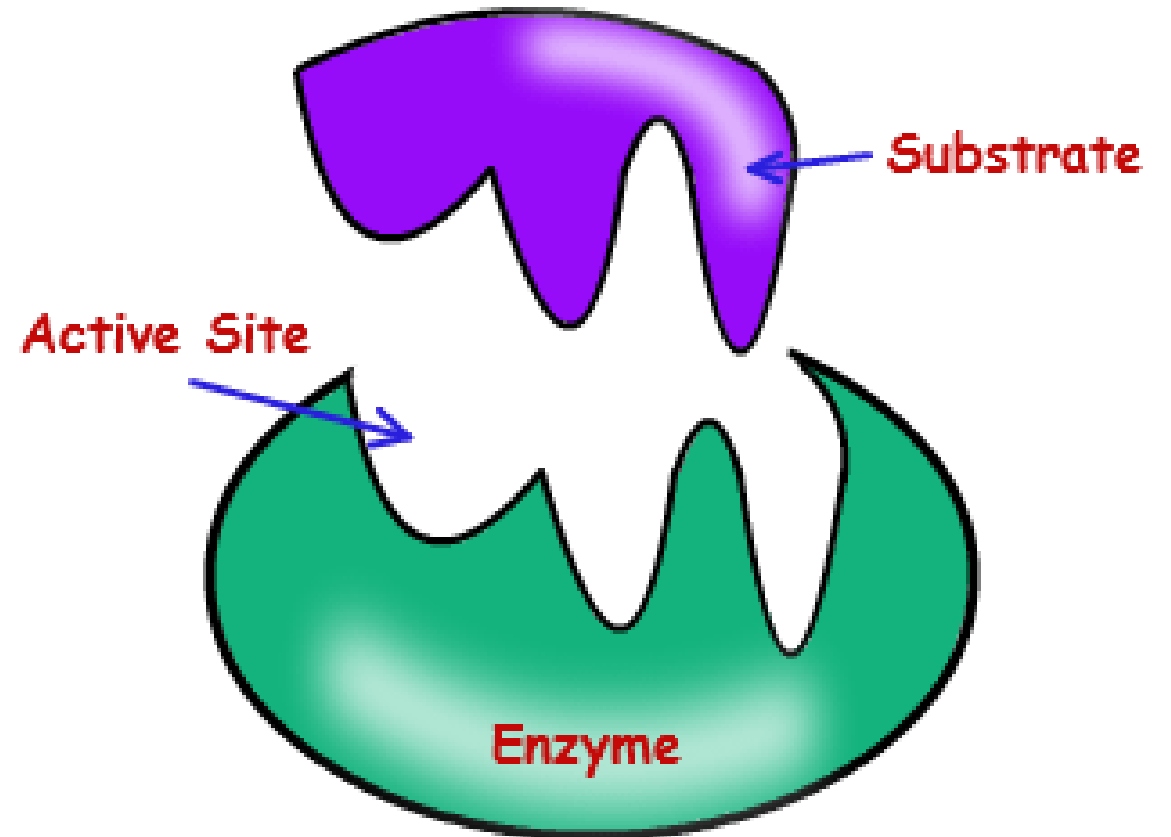
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**Task:** Produce a flash card on how enzymes work

## Things to include:

- What enzymes are
- The structure of enzymes
- Lock & Key mechanism
- What happens when enzymes are denatured



## Things to include:

- 
- Salivary Glands
- Tongue
- Epiglottis
- Esophagus
- Liver
- Stomach
- Gallbladder
- Duodenum
- Pancreas
- Ileum (small intestine)
- Colon
- Caecum
- Appendix
- Rectum
- anus
- 13



[illegible]

## Things to include:

- ## Juice Enzymes

14

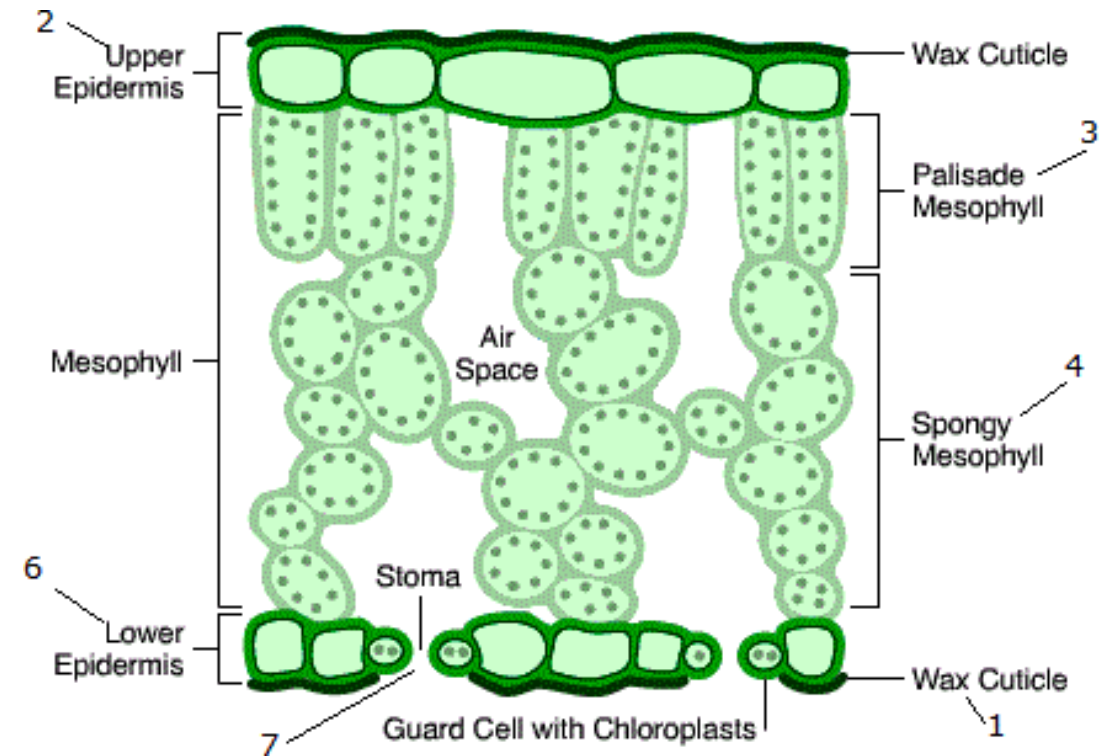
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on the structure of the leaf

## Things to include:

- A diagram of the leaf
- A description of what different cells do
- How the leaf is adapted to carry out photosynthesis



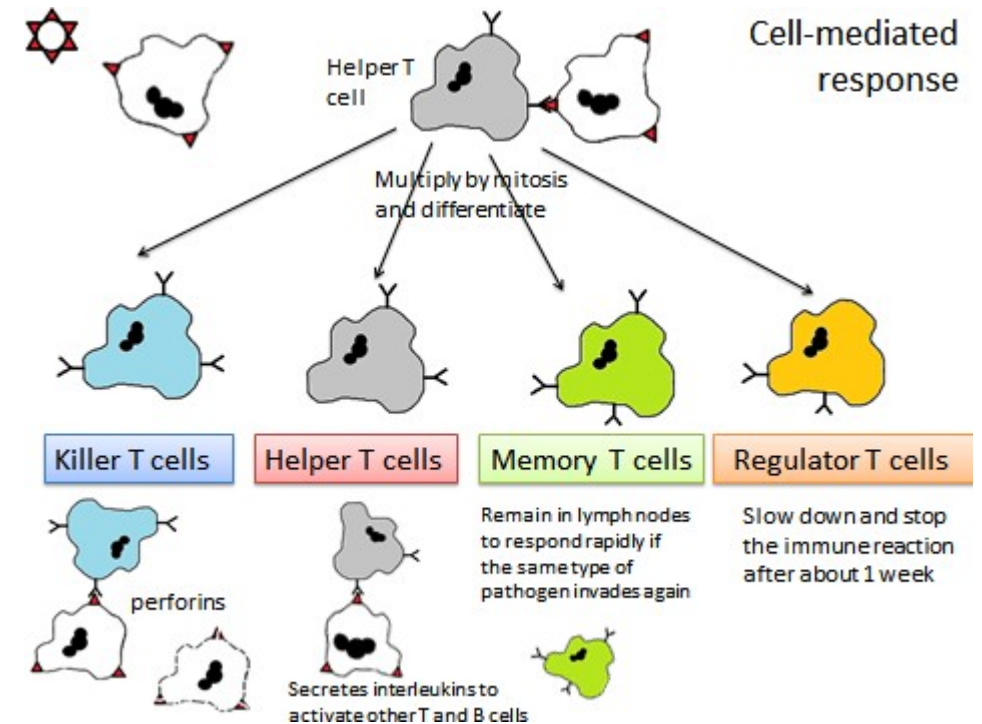
# GCSE Science Daily Revision Task



**Task:** Produce an flash card on the immune system

## Things to include:


- What the purpose of the immune system is
- What the roles of white blood cells are
- What the role of antibodies are





[illegible]

## Things to include:

- Method:
- 
- The diagram illustrates the three steps of streaking a bacterial culture on an agar plate:
- 1) Sterilise the inoculating loop: A Bunsen burner is shown with a blue flame. An inoculating loop is held in the flame to sterilize it.
  - 2) Dip the loop in the bacteria and spread it across the agar: The sterilized loop is shown dipping into a petri dish containing a bacterial culture (orange liquid) and spreading it across the agar surface.
  - 3) Secure (but don't seal) the lid with tape: The petri dish is shown with the lid secured by a piece of white tape.

## Things to include:

- 
- The diagram illustrates a reflex arc in four steps:
- 1** A strong pain stimulus causes a sensory neuron to generate a nerve impulse.
  - 2** The nerve impulse is carried by a sensory neuron to the spinal cord.
  - 3** In the spinal cord the nerve impulse causes a signal to be sent directly to a motor neuron.
  - 4** The motor neuron stimulates and effector (muscle) causing a contraction.
- Labels in the diagram include: Interneuron, Sensory nerve fiber, Motor nerve fiber, Effector (muscle), and Stimulus (cactus).

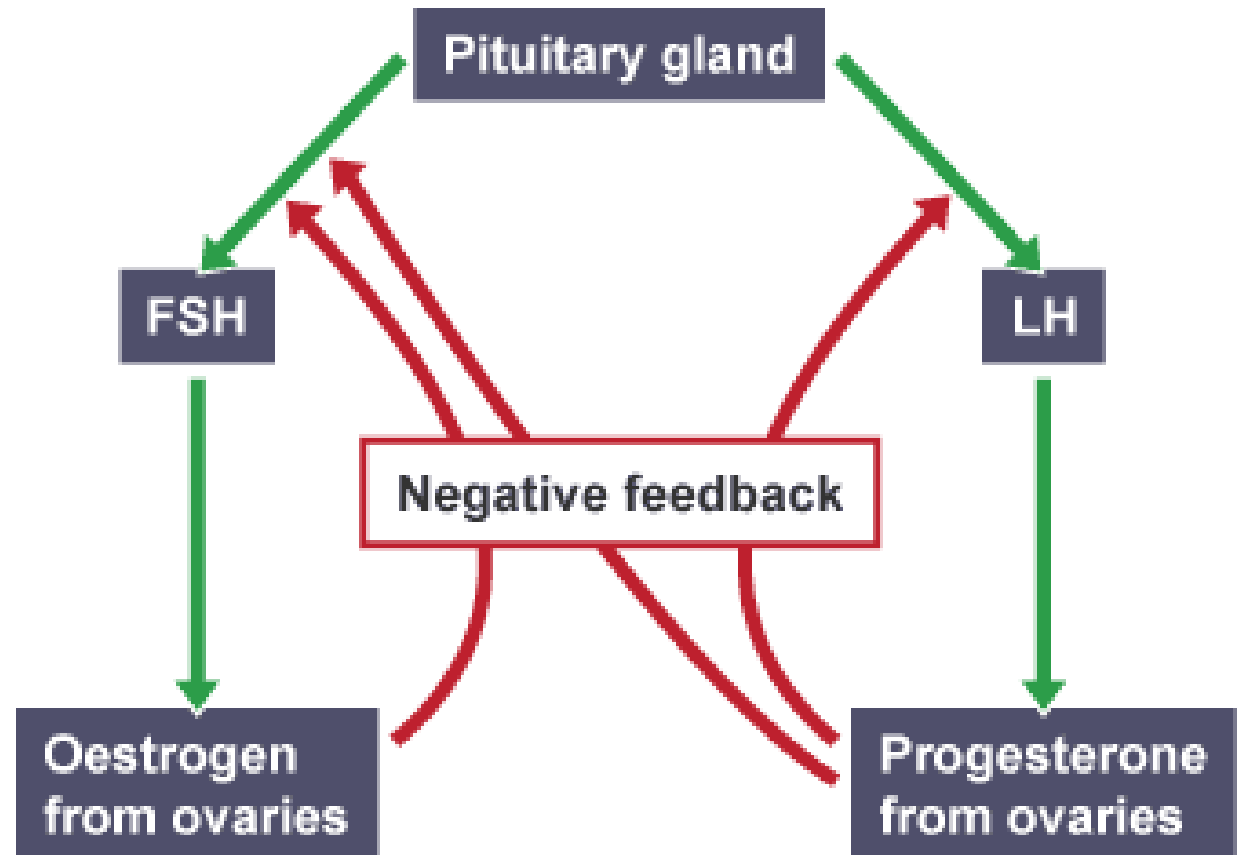
# GCSE Science Daily Revision Task



**Task:** Produce an flash card on the menstrual cycle

## Things to include:

A diagram showing how the hormones involved work together



[illegible]

## Things to include:

- 
- Diagram illustrating the anatomy of a shark, showing the following labeled parts:
- First Dorsal Fin
  - Second Dorsal Fin
  - Caudal Fin
  - Anal Fin
  - Pelvic Fin
  - Pectoral Fin
  - Gill Slits (5)
  - Ampullae of Lorenzini
  - Nostril
  - Lateral Line



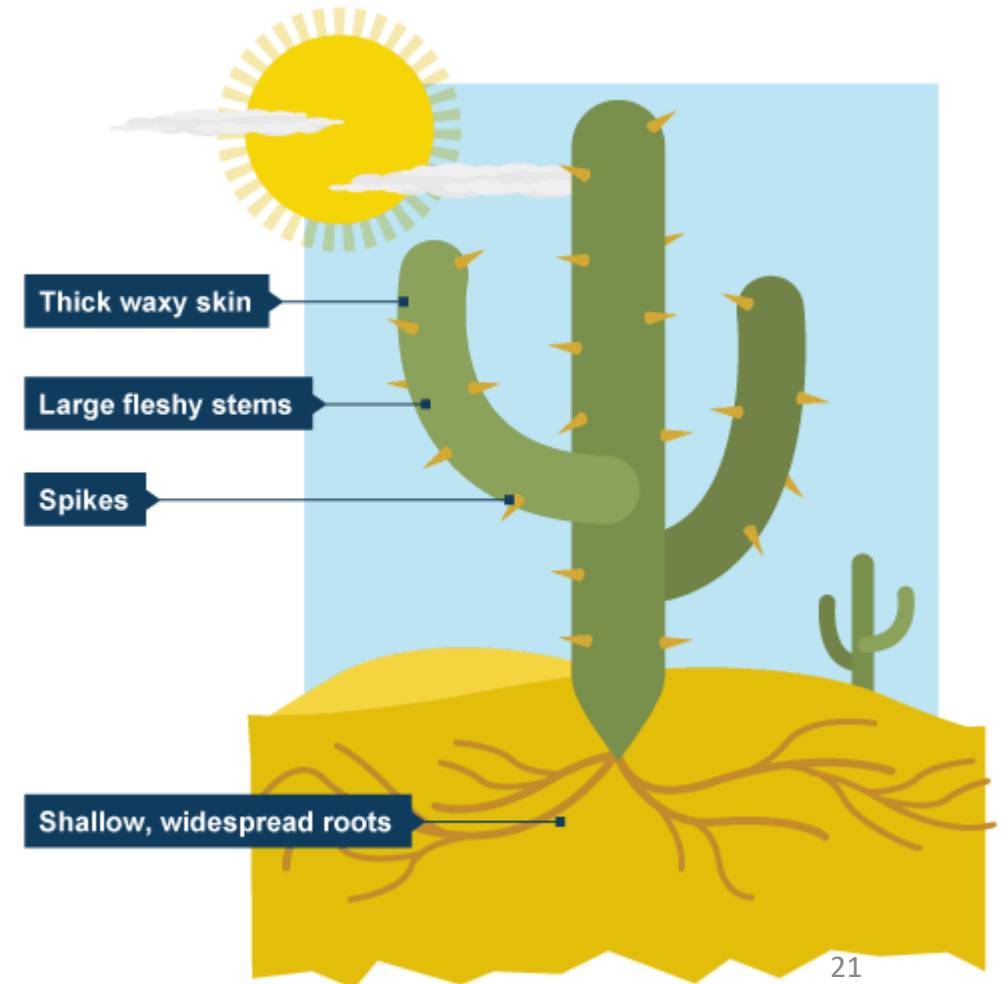
# GCSE Science Daily Revision Task



**Task:** Produce an flash card on plant adaptations

## Things to include:

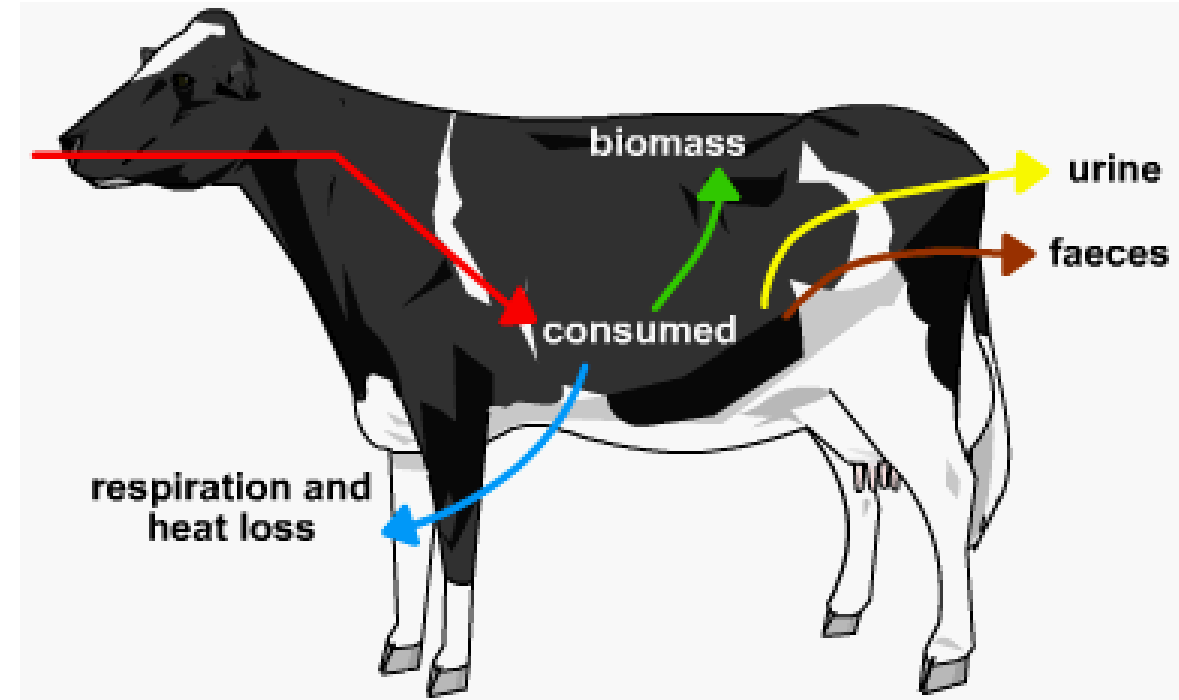
- General plant adaptations
- Cactus adaptations
- Pitcher plant adaptations



**Task:** Produce an flash card on energy transfers in animals

## Things to include:

- Explain how energy is lost
- A diagram showing this
- How this relates to pyramids of biomass



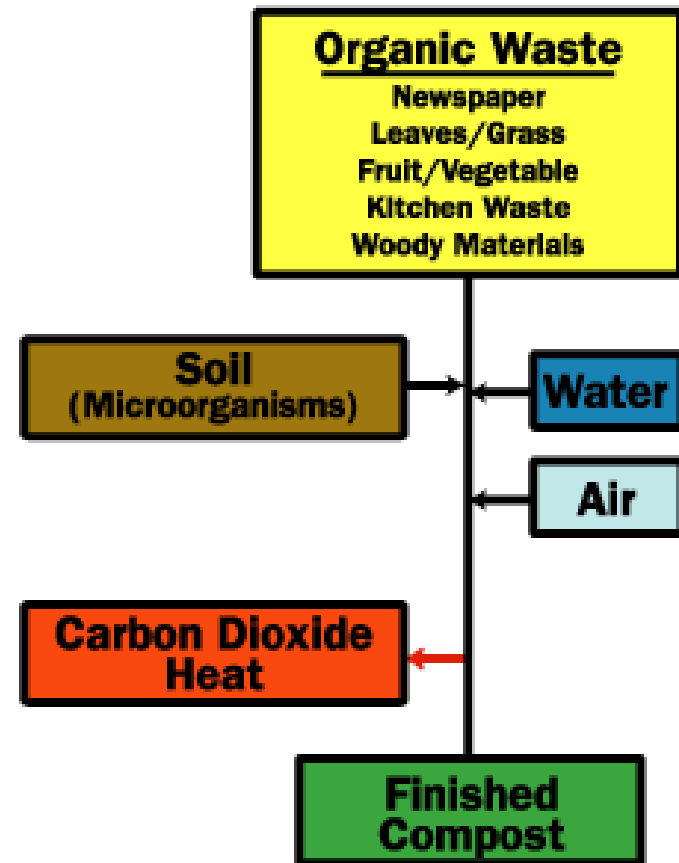
# GCSE Science Daily Revision Task



**Task:** Produce an flash card on the recycling organic waste

## Things to include:

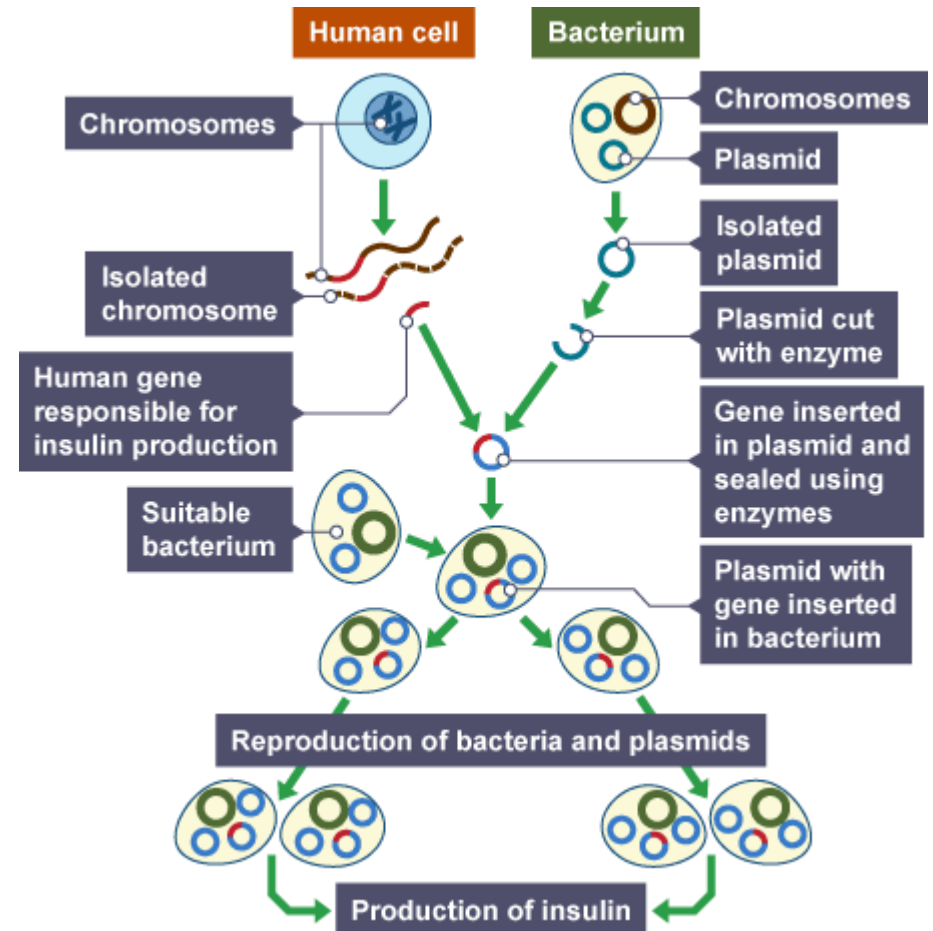
- What decay is
- What conditions are the best for decay
- How organic waste can be recycled



[illegible]

## Things to include:

Chemical reactions can only occur when reacting particles collide with each other and with sufficient energy. The minimum amount of energy particles must have to react is called the activation energy.



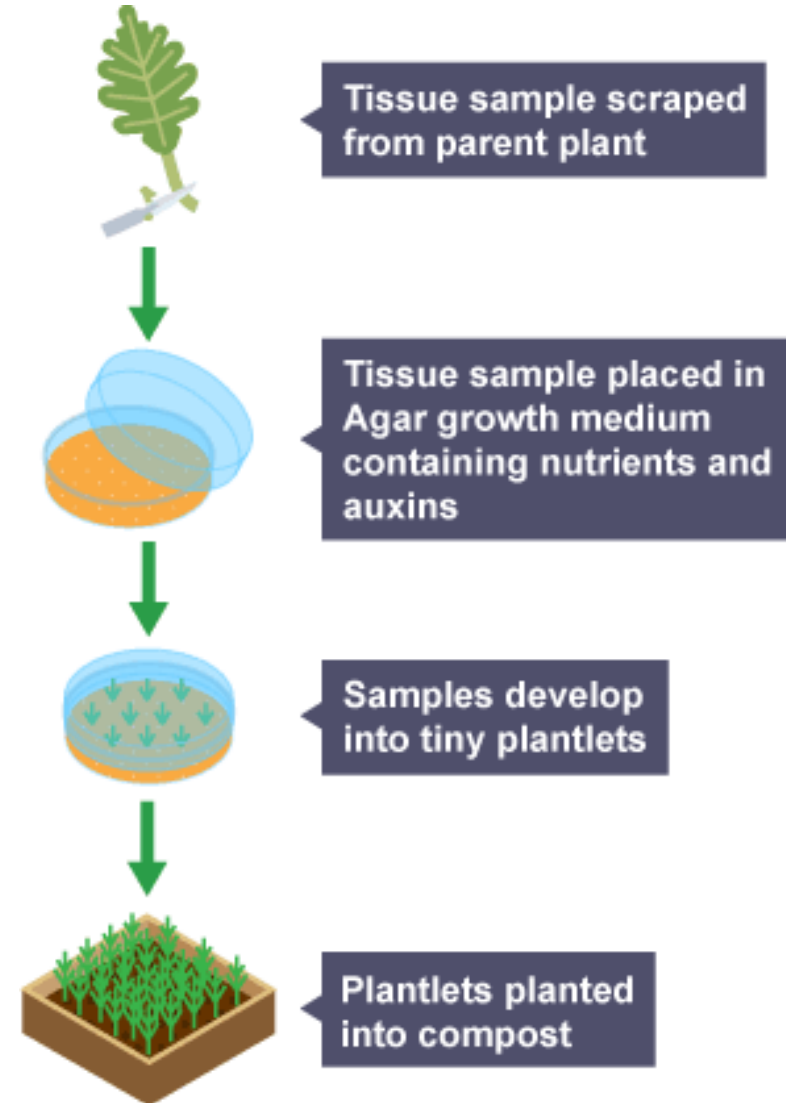
# GCSE Science Daily Revision Task



**Task:** Produce an flash card on cloning

## Things to include:

- Explain what cloning is
- Describe ow plants can be cloned
- Draw a diagram showing how animals can be cloned





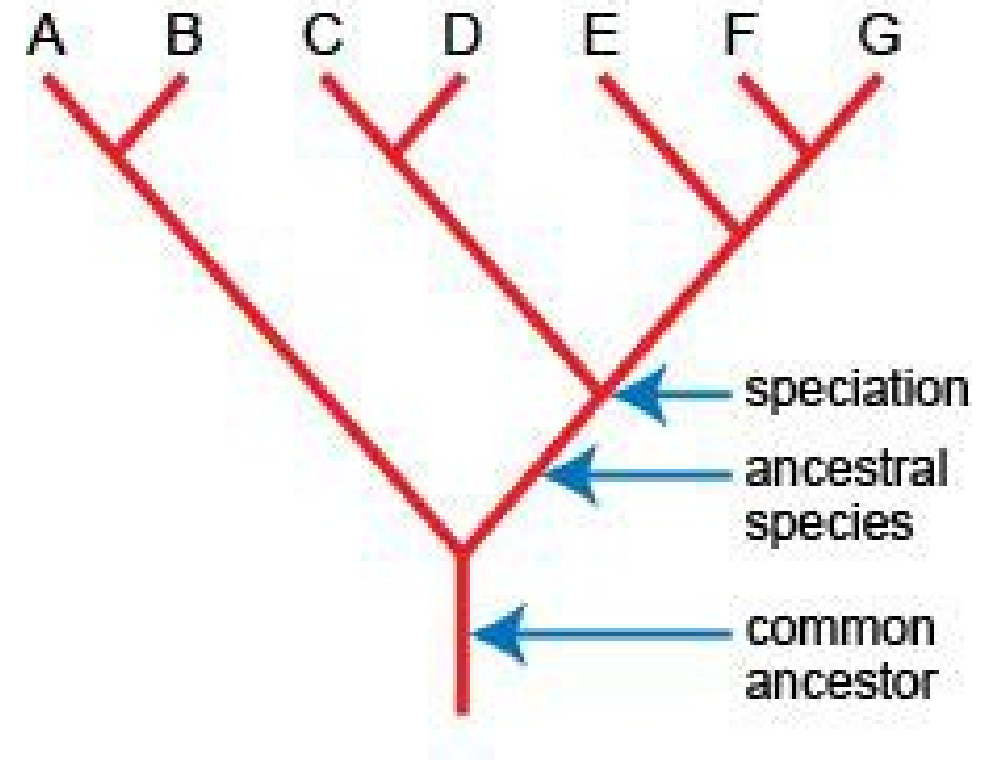
# GCSE Science Daily Revision Task



**Task:** Produce an flash card on the theories of evolution

## Things to include:

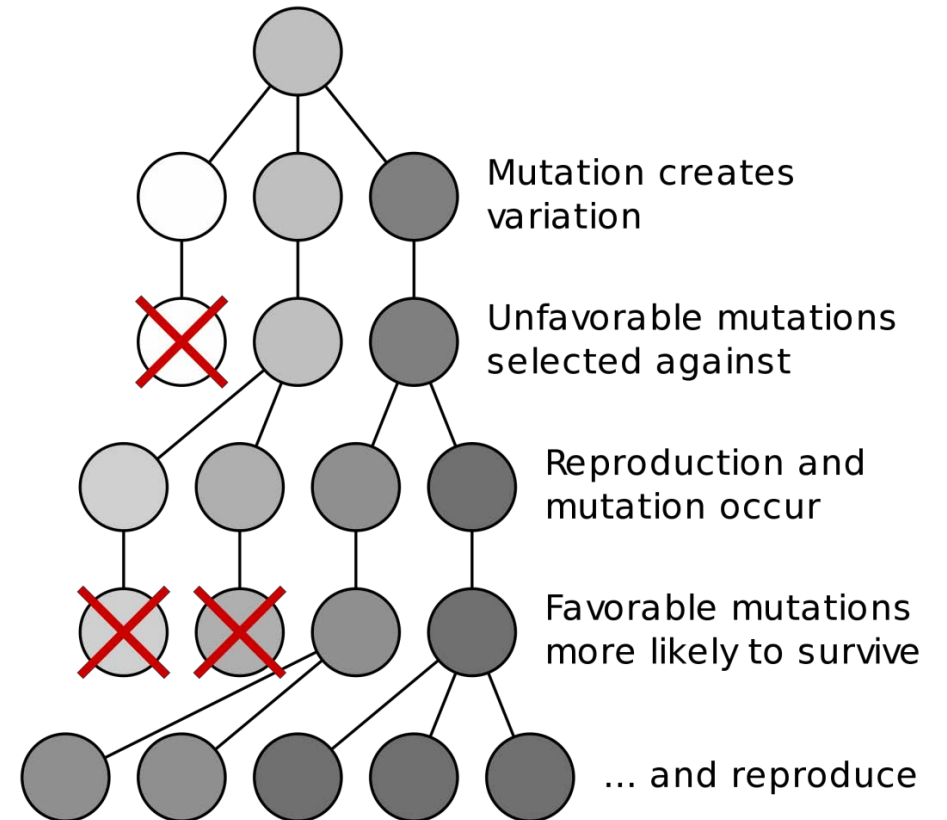
- A description of what evolution is
- Lamarck's theory
- Darwin's theory



## Task: Produce an flash card on natural selection

## Things to include:

That this is the process whereby organisms better adapted to their environment tend to survive and produce more offspring. The theory of its action was first fully expounded by Charles Darwin, and it is now regarded as be the main process that brings about evolution.



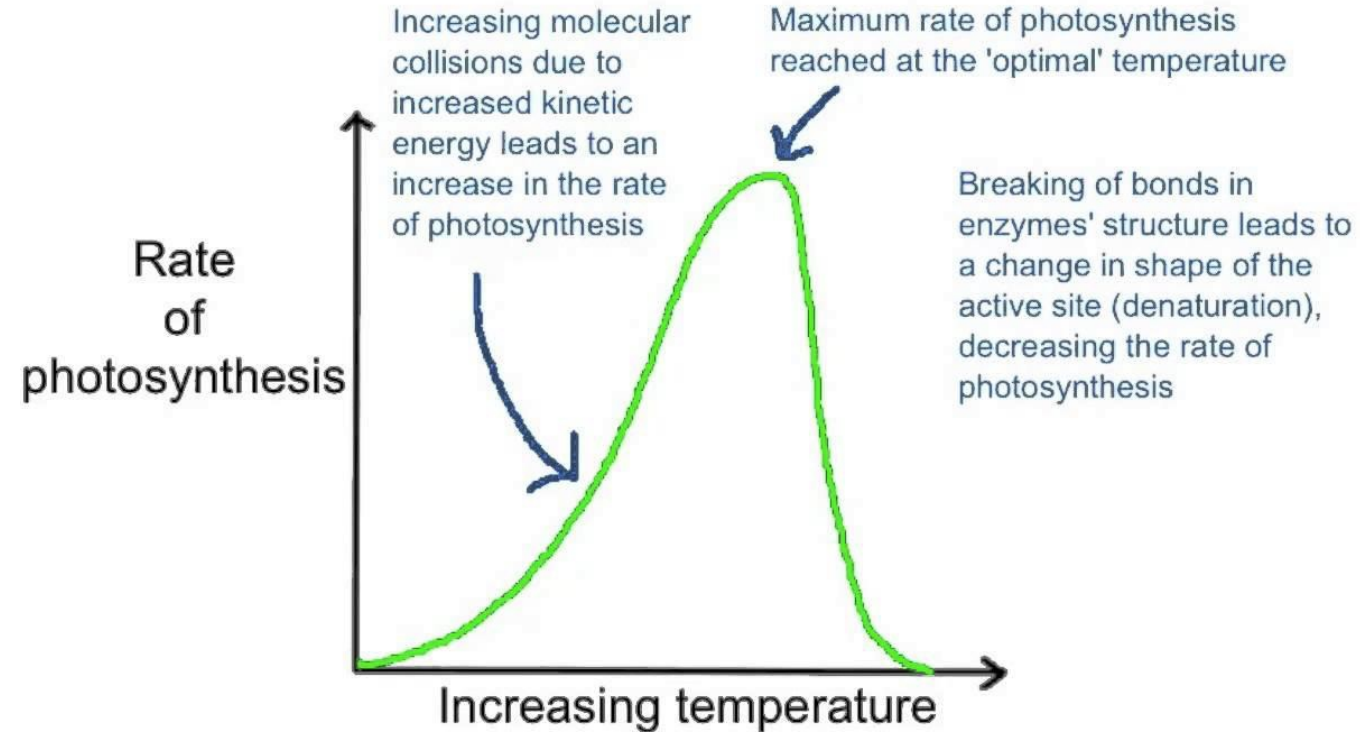
# GCSE Science Daily Revision Task



**Task:** Produce an flash card on limiting factors in photosynthesis

## Things to include:

- What a limiting factor is
- The effect of light on photosynthesis
- The effect of water on photosynthesis
- The effect of carbon dioxide on photosynthesis

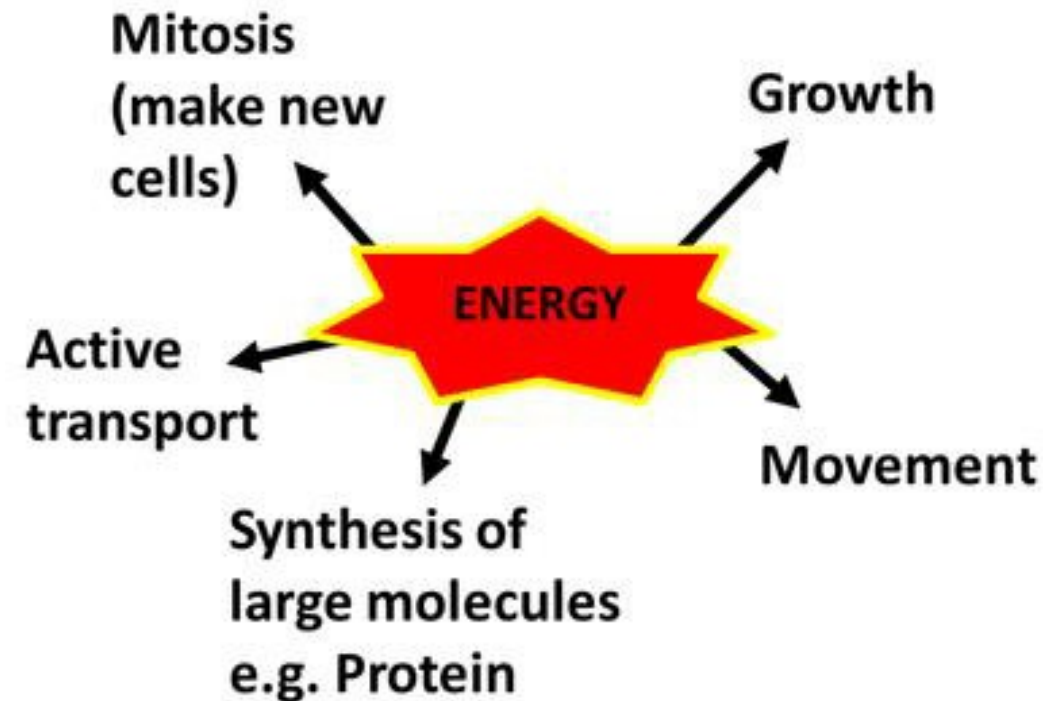


## Task: Produce an flash card on respiration

## Things to include:

- What respiration is
- The equation for aerobic respiration
- The equation for anaerobic respiration

## Why do cells need energy?



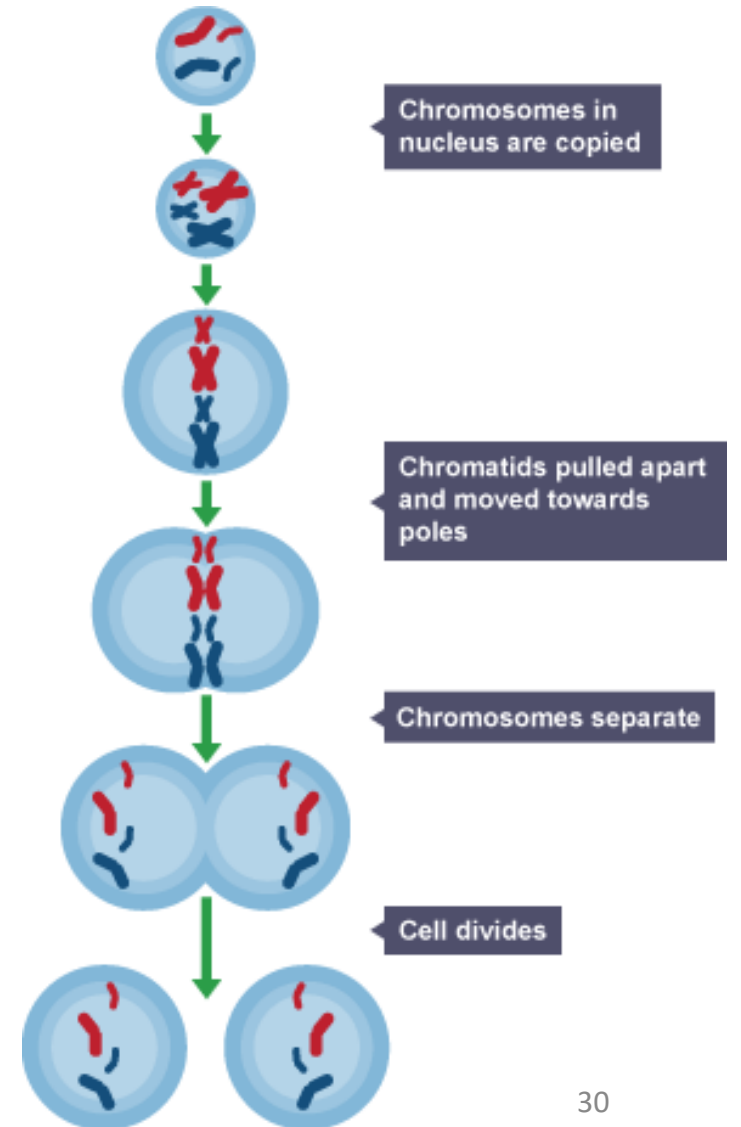
# GCSE Science Daily Revision Task



**Task:** Produce an flash card on mitosis

## Things to include:

Explain that mitosis is a type of cell division that results in two daughter cells each having the same number and kind of chromosomes as the parent nucleus, typical of ordinary tissue growth.





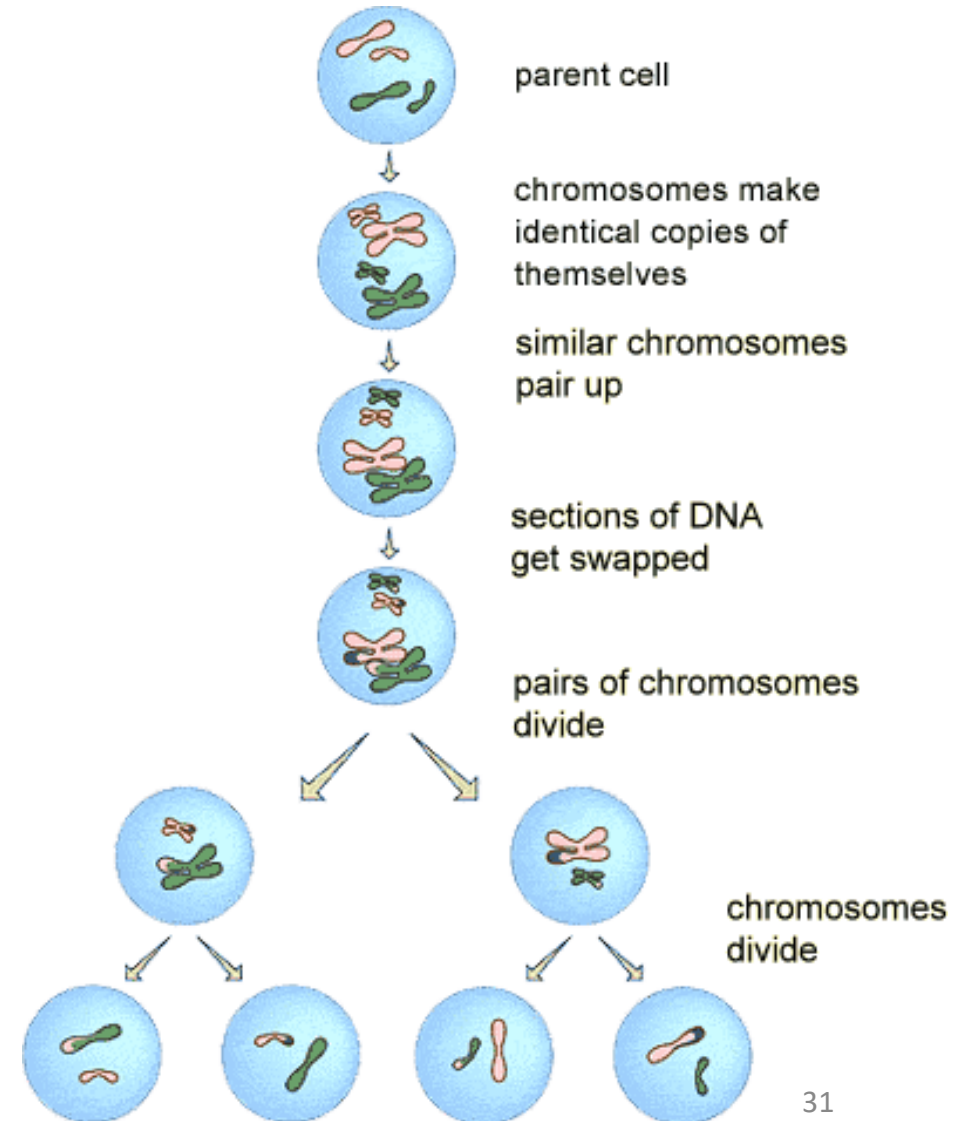
# GCSE Science Daily Revision Task



**Task:** Produce an flash card on meiosis

## Things to include:

Explain that meiosis is a type of cell division that results in four daughter cells each with half the number of chromosomes of the parent cell, as in the production of gametes and plant spores.



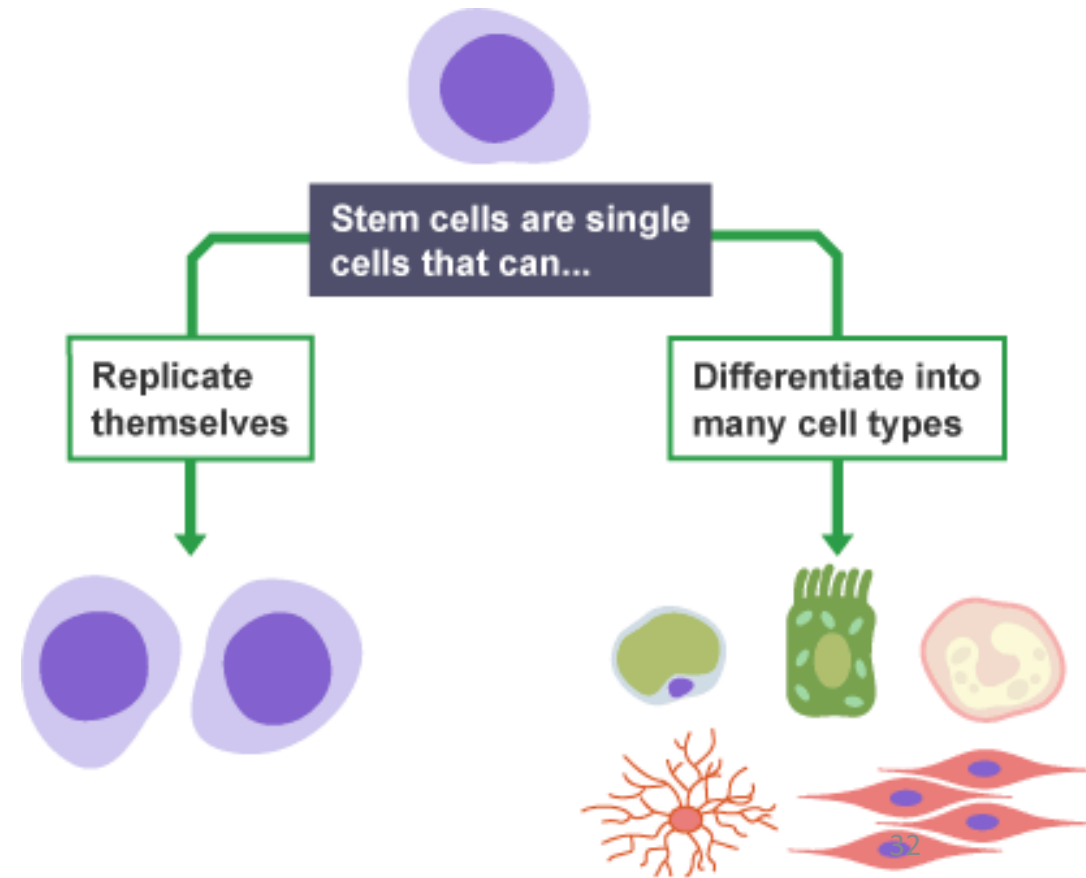
# GCSE Science Daily Revision Task



**Task:** Produce an flash card on stem cells

## Things to include:

Explain that a stem cell is an undifferentiated cell of a multicellular organism which is capable of giving rise to indefinitely more cells of the same type, and from which certain other kinds of cell arise by differentiation.



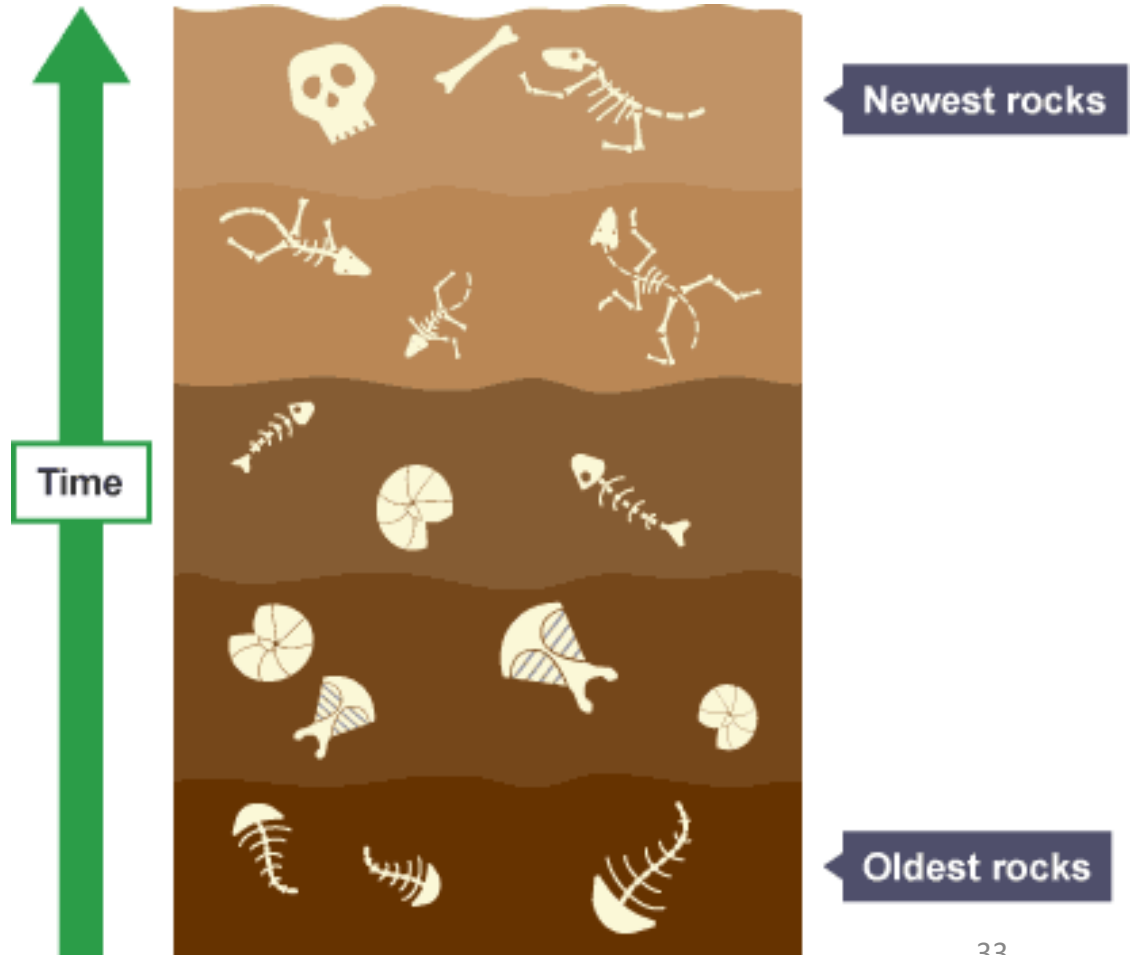
# GCSE Science Daily Revision Task



**Task:** Produce an flash card on how fossils form

## Things to include:

Explain that the process of fossilizing a plant or animal that existed in some earlier age; the process of being turned to stone.



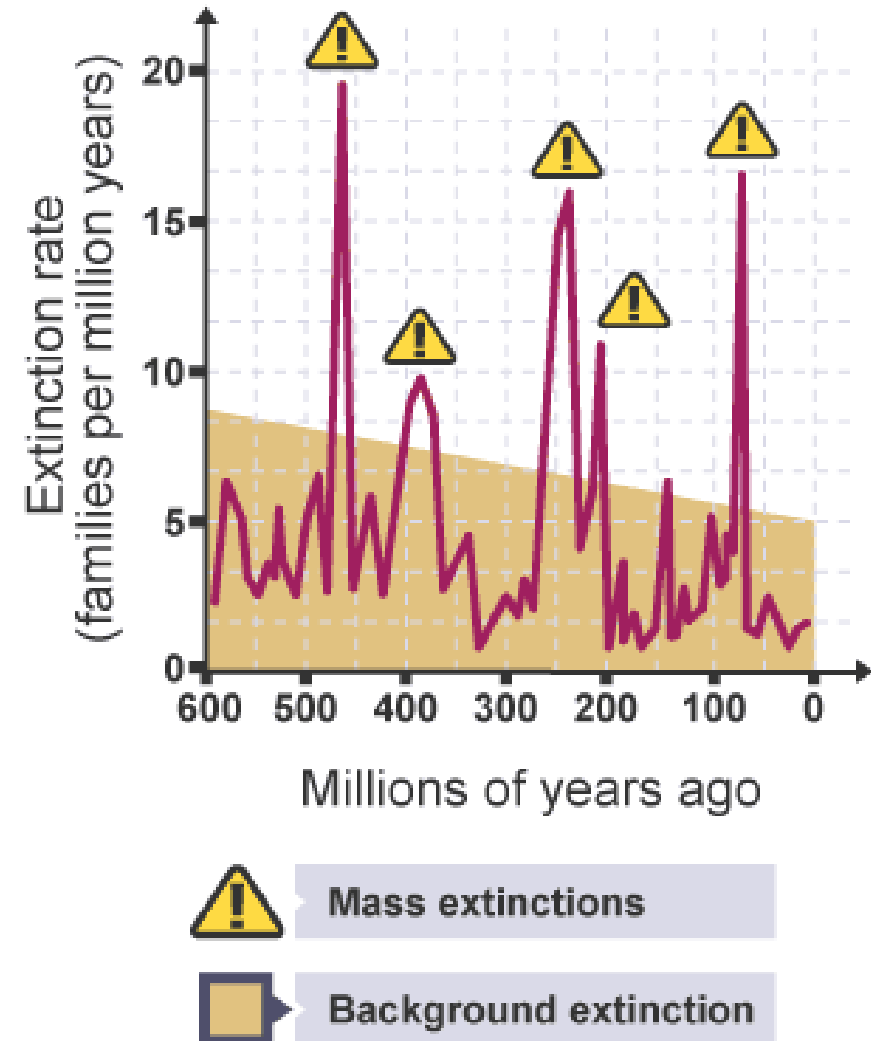
# GCSE Science Daily Revision Task



**Task:** Produce an flash card on extinction

## Things to include:

Explain that living organisms are dependent on the environment and other species for their survival. When the environment changes, organisms are not as well adapted to it. Individuals that are poorly adapted to their environment are less likely to survive and reproduce than those that are well adapted.



# GCSE Science Daily Revision Task

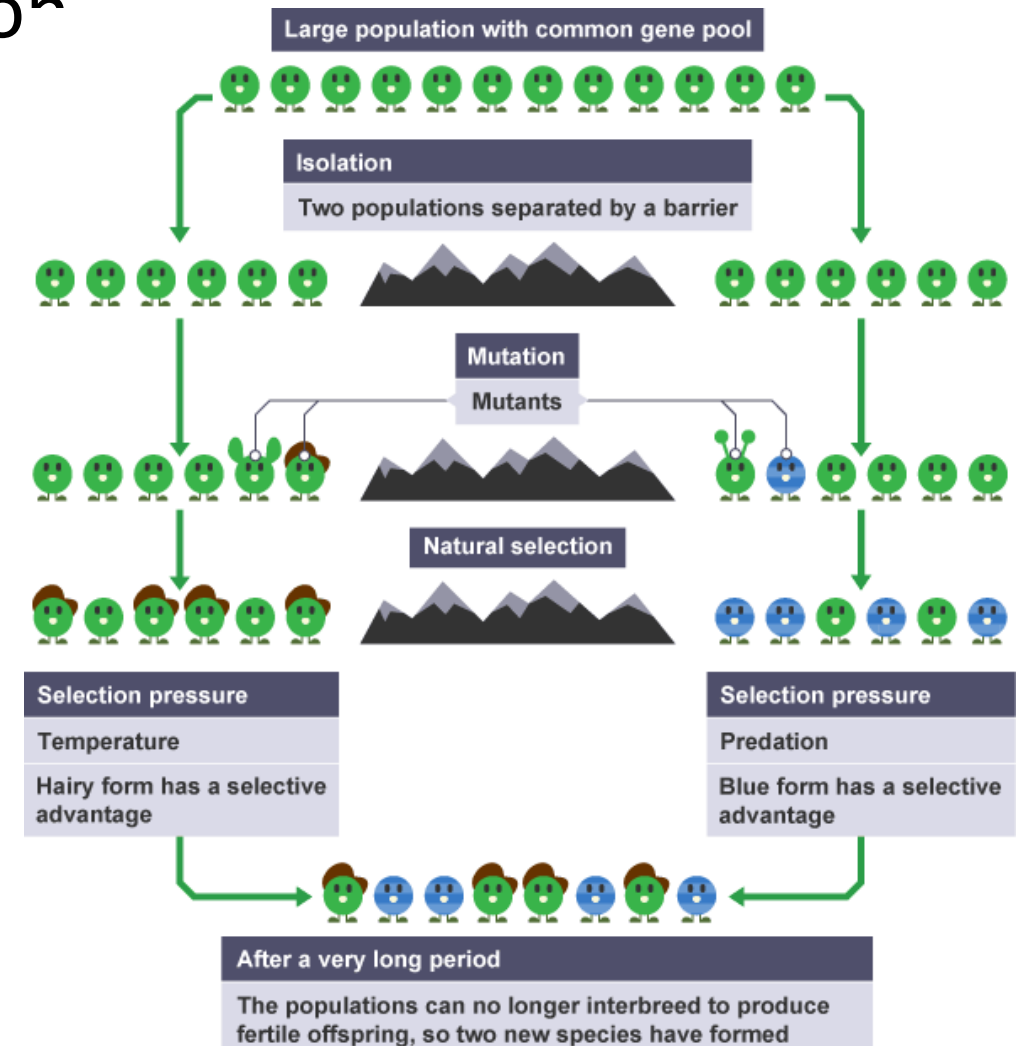


**Task:** Produce an flash card on speciation~

## Things to include:

New species can also arise as a result of:

- **Genetic variation** - where each population has a wide range of alleles that control their characteristics
- **Natural selection** - where the alleles which help an organism to survive are selected in each population
- **Speciation** - where the populations become so different that successful interbreeding cannot happen anymore





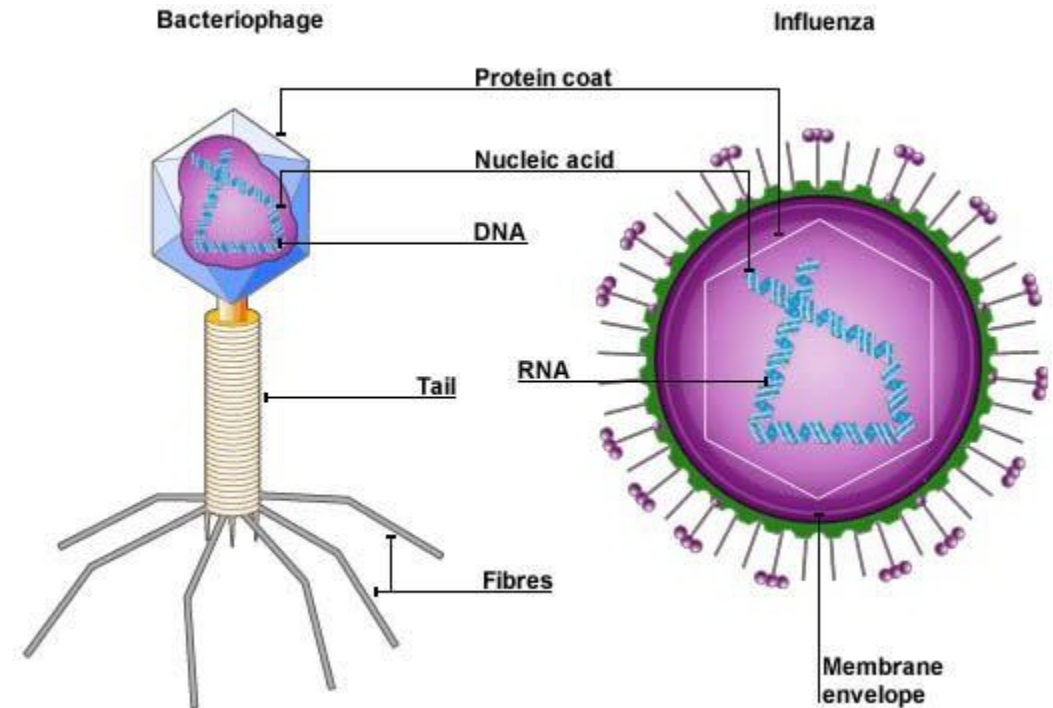
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on different types of pathogens

## Things to include:

**Pathogens** are microorganisms - such as **bacteria** and viruses - that cause **disease**. **Bacteria** release toxins, and viruses damage our cells. White blood cells can ingest and destroy **pathogens**. They can produce antibodies to destroy **pathogens**, and antitoxins to neutralise toxins. **Pathogens** are microorganisms - such as **bacteria** and viruses - that cause **disease**. **Bacteria** release toxins, and viruses damage our cells. White blood cells can ingest and destroy **pathogens**. They can produce antibodies to destroy **pathogens**, and antitoxins to neutralise toxins.



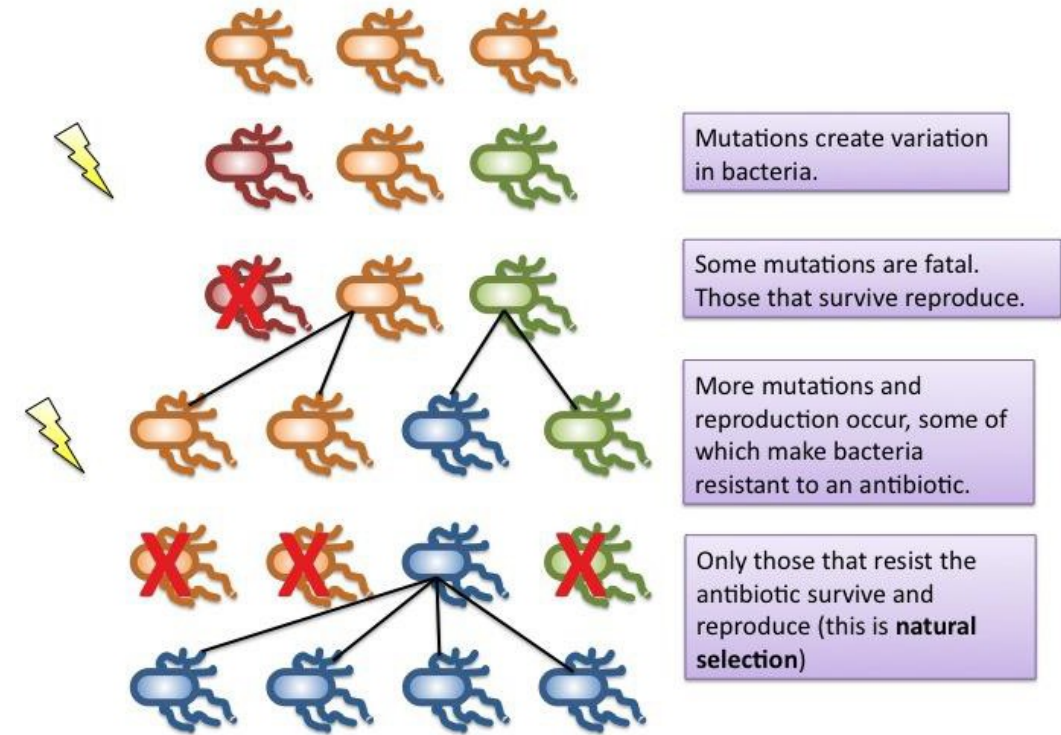
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on how antibiotic resistant bacteria develop

## Things to include:

Bacterial strains can develop **resistance** to **antibiotics**. This happens because of natural selection. In a large population of bacteria, there may be some cells that are not affected by the **antibiotic**. These cells survive and reproduce, producing even more bacteria that are not affected by the **antibiotic**.



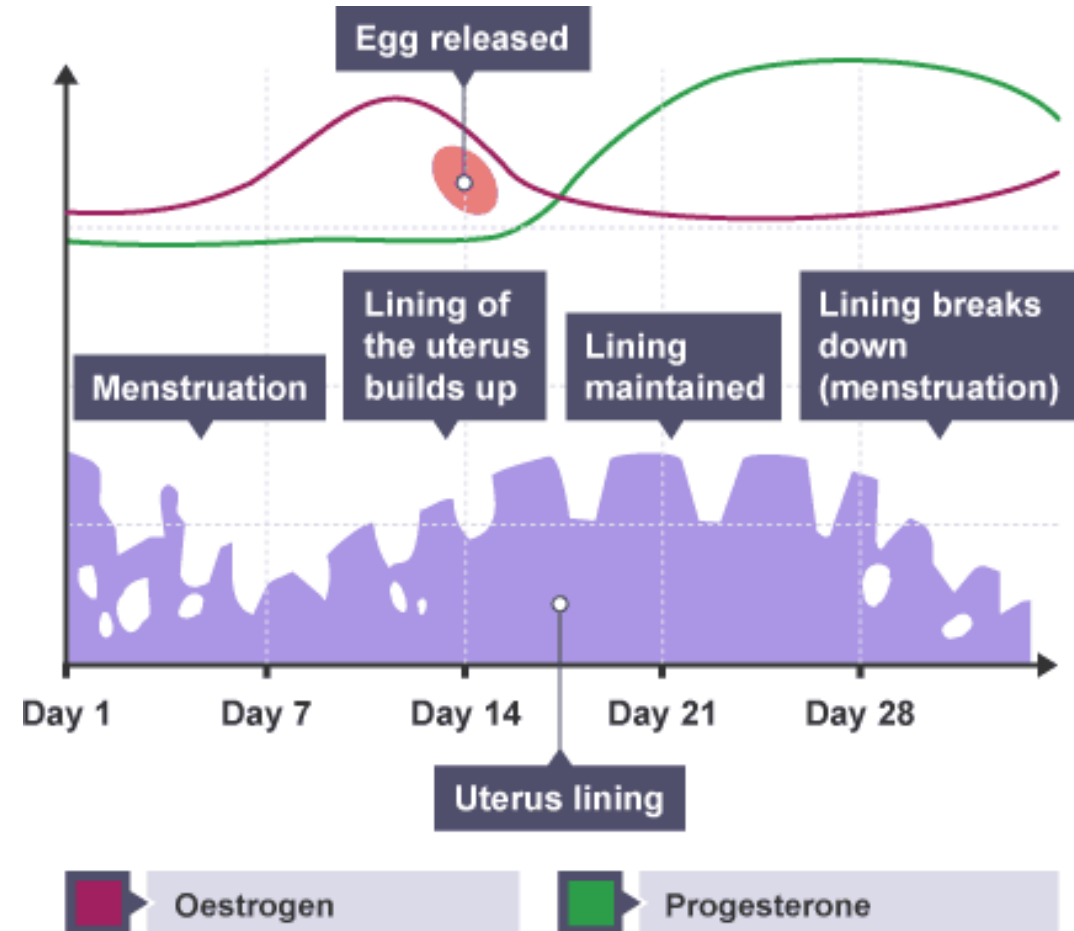
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on the menstrual cycle

## Things to include:

The role hormones play.  
The **menstrual cycle** is controlled by the hormones oestrogen and progesterone. Oestrogen is produced by the ovaries and makes the lining of the uterus repair itself and grow again after **menstruation**. Progesterone is produced by the empty follicle in the ovary after the egg has been released.



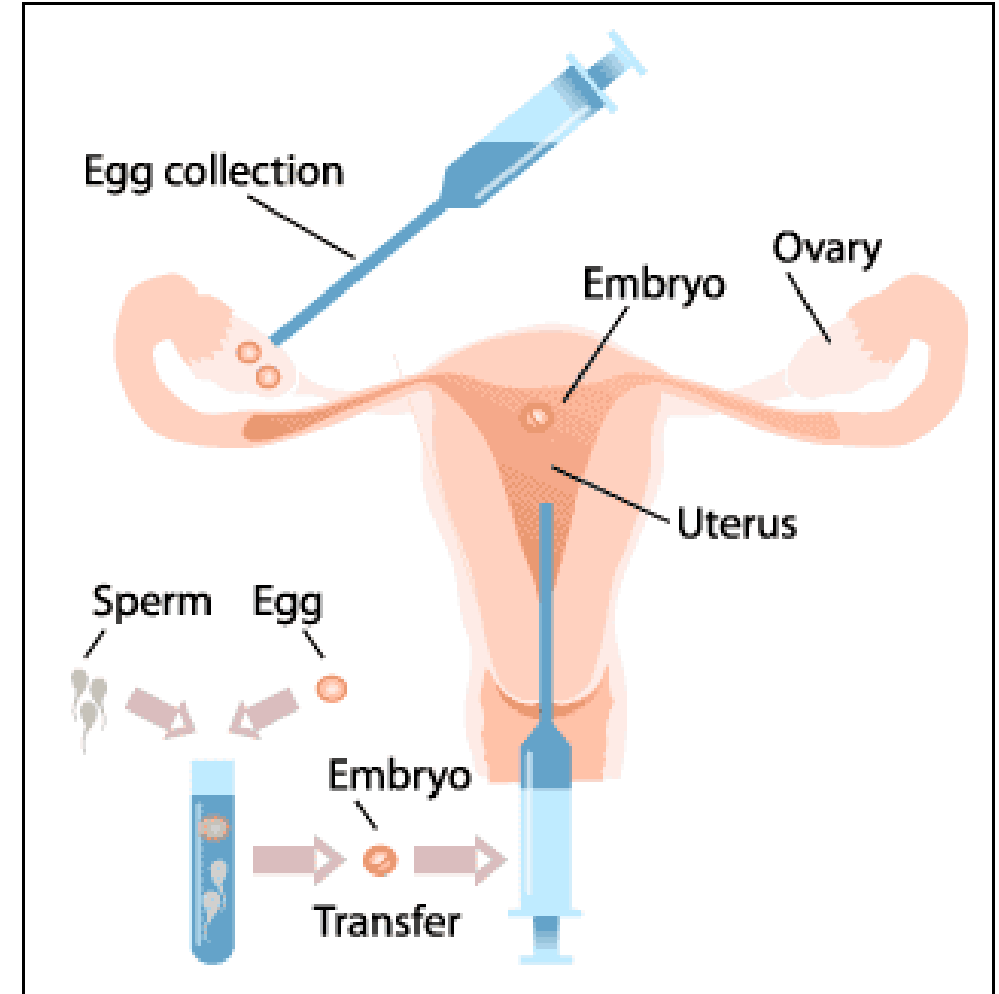
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on IVF treatment

## Things to include:

An egg (ovum) is removed from the woman (or a donor egg is used), and sperm is introduced to it outside of the body. The fertilised egg is then returned to the woman's uterus. ... **IVF - In vitro fertilisation.**



# GCSE Science Daily Revision Task

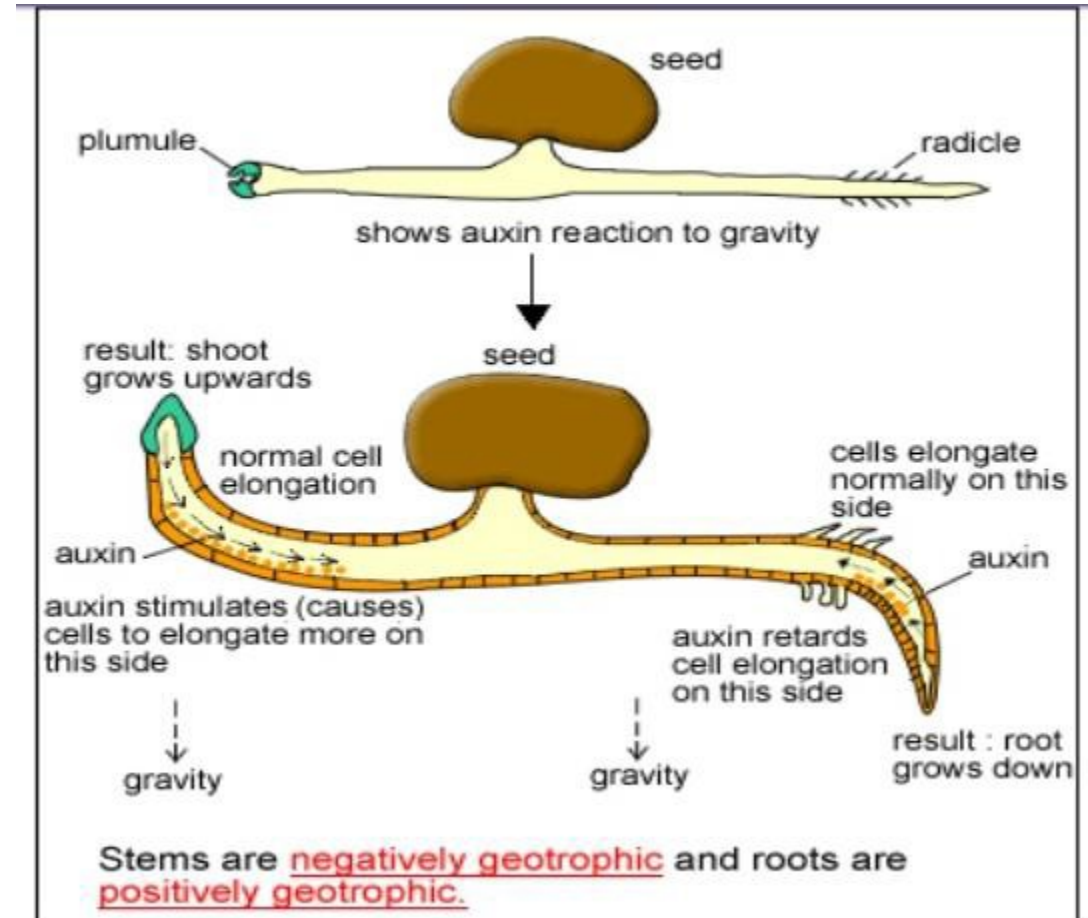


**Task:** Produce a flash card on geotropism

## Things to include:

In a **root** placed horizontally, the bottom side contains more auxin than the top side. This makes the bottom side **grow less** than the top side, causing the root to bend in the direction of the force of gravity.

In a **shoot** placed horizontally, the bottom side contains more auxin than the top side. This makes the bottom side **grow more** than the top side, causing the shoot to bend and grow against the force of gravity.





## Things to include:

You may have noticed that a houseplant grows towards the window and turns its leaves towards the light. It does this because light coming from the window side of the plant **destroys** the auxin in that side of the stem. So growth on that side slows down.

Diagram illustrating the mechanism of phototropism in a plant stem:

- unilateral light**: Indicated by an arrow pointing from the right towards the stem.
- light-induced destruction of auxin**: Occurs on the illuminated side (right) of the stem.
- lateral movement of auxin from the illuminated side to the darkened side**: Auxin moves from the right side to the left side of the stem.
- movement down the stem**: Auxin moves downwards along the stem.
- IAA**: Auxin (Indole-3-acetic acid) is shown as small dots.
- increased concentration of auxin enhances elongation growth on darkened side of stem**: The higher concentration of auxin on the left side promotes growth, causing the stem to curve towards the light.

# GCSE Science Daily Revision Task



**Task:** Produce a flash card on developing new medicines

## Things to include:

**Drug development** is the process of bringing a new pharmaceutical **drug** to the market once a lead compound has been identified through the process of **drug discovery**.



## Things to include:

The diagram illustrates the nuclear transfer process for cloning. It starts with two female sheep, Female A and Female B. From Female A, a body cell is taken, and its DNA is extracted. From Female B, an egg cell is taken, and its nucleus is removed. The DNA from Female A is then fused with the egg cell from Female B. This fused cell develops into an embryo, which is placed in the uterus of a foster mother (labeled C). The resulting lamb is a clone of Female A (labeled A).



## Things to include:

The simplest way to clone a plant involves taking a cutting. A branch from the parent plant is cut off, its lower leaves removed and the stem planted in damp compost. Plant *hormones* are often used to encourage new roots to develop. The cutting is usually covered in a clear plastic bag at this stage to keep it moist and warm. After a few weeks, new roots develop and a new plant is produced. The method is easy enough for most gardeners to do successfully.

Another way of cloning plants is by tissue culture, which works not with cuttings but with tiny pieces from the parent plant. Sterile agar jelly with plant hormones and lots of nutrients is needed. This makes tissue culture more expensive and difficult to do than taking cuttings.



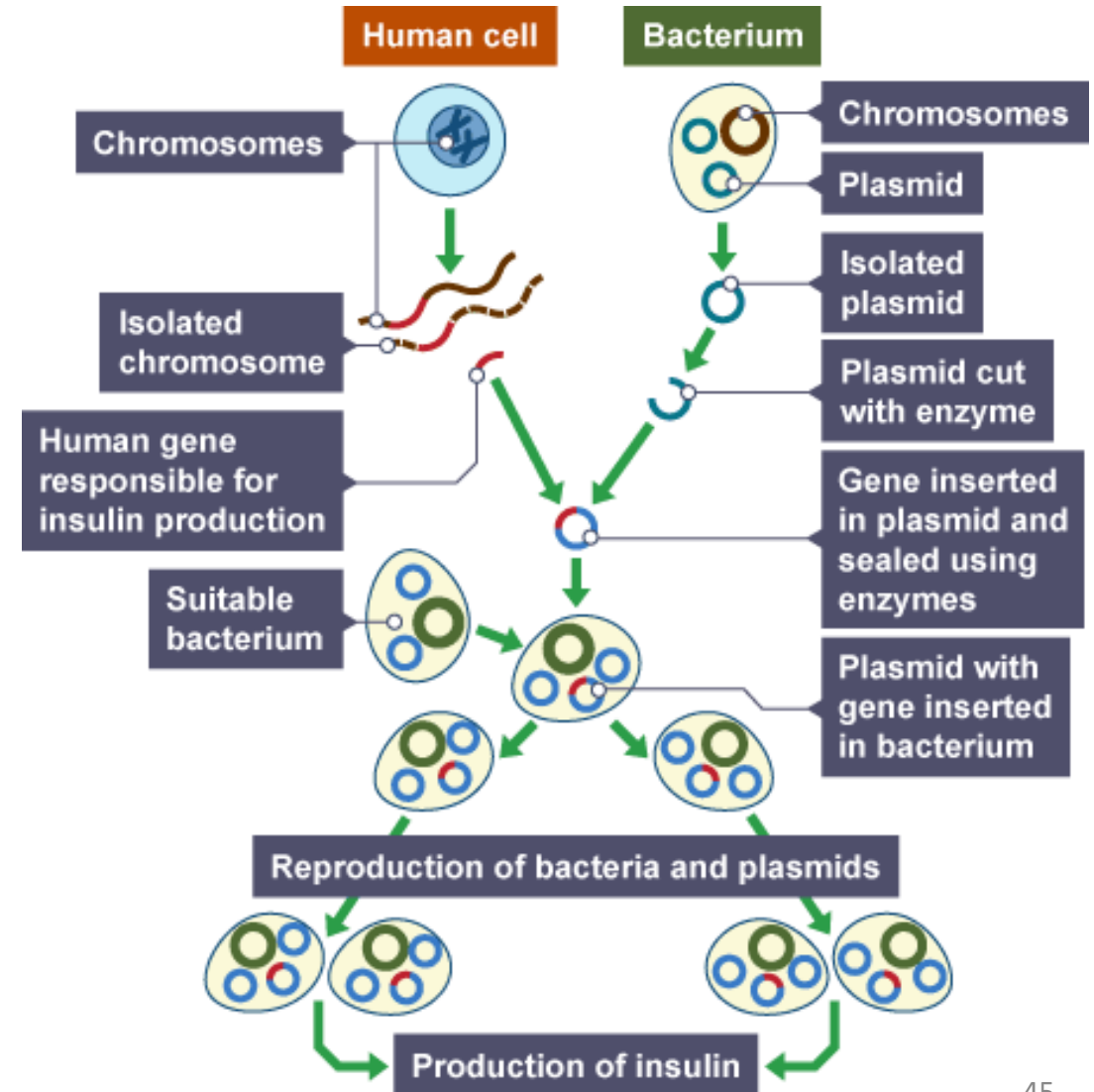
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on genetic engineering

## Things to include:

Genetic engineering, or genetic modification, is a faster way to produce new varieties than selective breeding. It involves the artificial transfer of selected **genes** from one living organism to another living organism, which need not be of the same species.





## Things to include:

Diet and lifestyle can increase the risk of developing certain cancers. For example:

- 
- Cancer cells growing through normal tissue
- Cancer Research UK

# GCSE Science Daily Revision Task

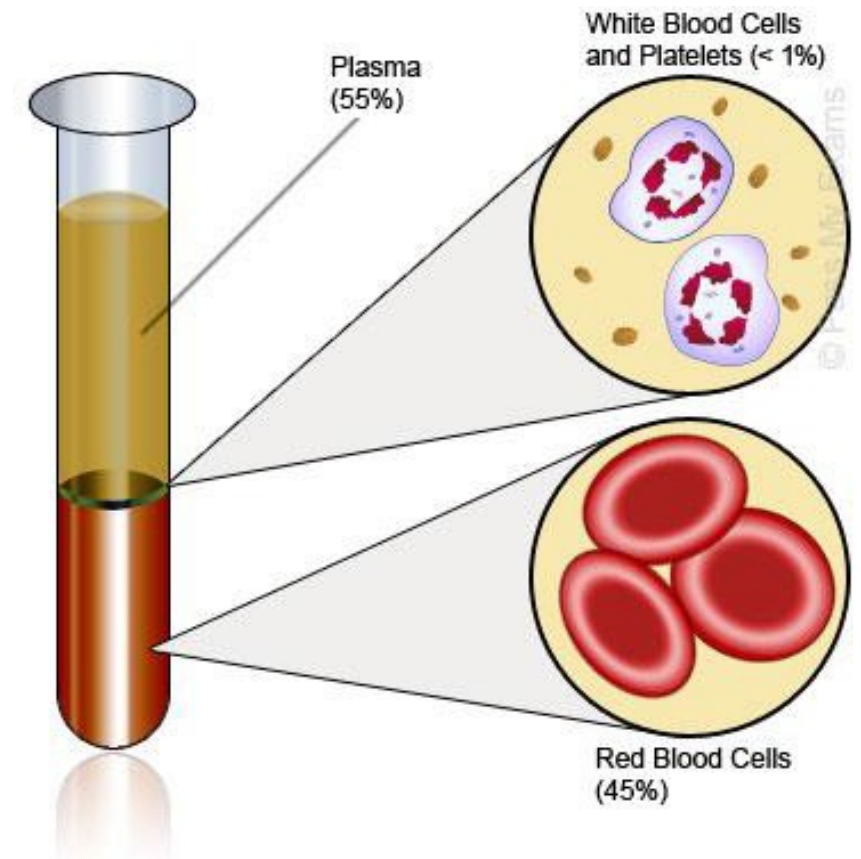


**Task:** Produce an information sheet on Blood

## Things to include:

Produce a list of & explain the component's

- Red blood cells
- White blood cells
- Platelets
- Plasma



## Things to include:

Carry blood away from the heart (always oxygenated apart from the pulmonary artery which goes to the lungs)

Have small passageways for blood (internal **lumen**)

Carry blood to the heart (always de-oxygenated apart from the pulmonary vein which goes from the lungs to the heart)

Have larger internal *lumen*

## Contain blood under low pressure

Have valves to prevent blood flowing backwards



Found in the muscles and lungs

Microscopic – one cell thick

## Very low blood pressure

Where **gas exchange** takes place. Oxygen passes through the capillary wall and into the tissues, carbon dioxide passes from the tissues into the blood

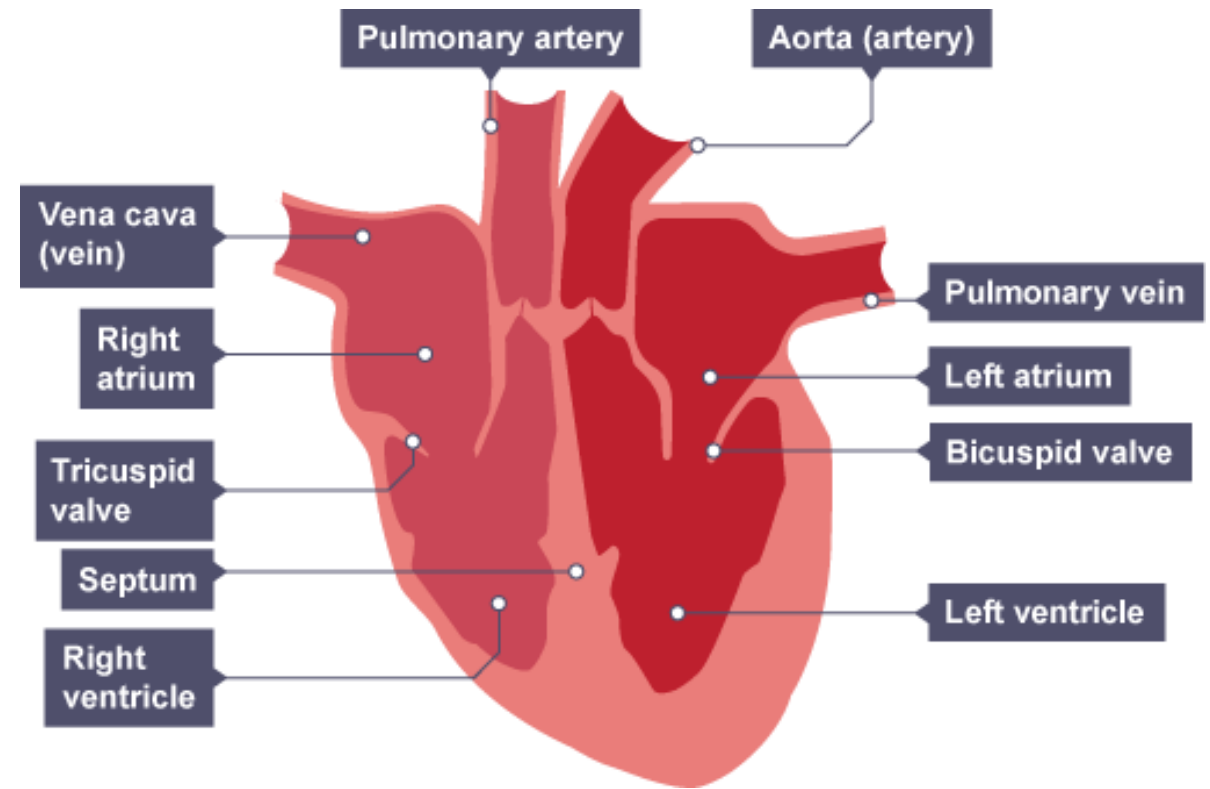
# GCSE Science Daily Revision Task



**Task:** Produce an information sheet on The heart and blood vessels

## Things to include:

The circulatory system. Blood is pumped away from the heart at high pressure in arteries, and returns to the heart at low pressure in veins. The human circulatory system is a double circulatory system.



[illegible]

## Things to include:

The diagram illustrates the transport of a protein through the endomembrane system. A protein, represented by a blue Y-shaped structure, is synthesized in the rough endoplasmic reticulum (RER) and moves through a series of vesicles to the Golgi apparatus. From the Golgi, it is packaged into a secretory vesicle, which fuses with the plasma membrane to release the protein outside the cell. The Golgi apparatus is shown as a stack of flattened sacs, and the plasma membrane is the outer boundary of the cell.



# GCSE Science Daily Revision Task



**Task:** Produce an information sheet on Plant disease

## Things to include:

1. Dutch elm disease
2. TMV
3. Black spot





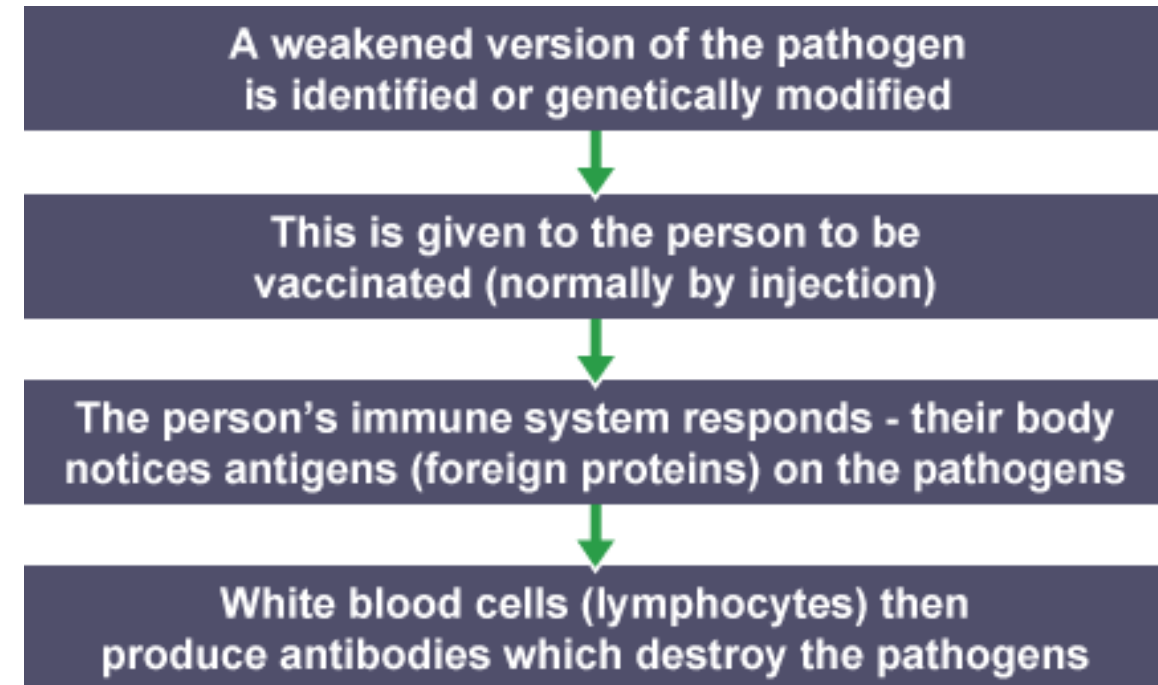
# GCSE Science Daily Revision Task



**Task:** Produce an information sheet on Vaccination

## Things to include:

Vaccination causes the body to produce enough white blood cells to protect itself against a pathogen. Antibiotics are effective against bacteria, but not against viruses. Some strains of bacteria are resistant to antibiotics. So people can be immunised against a pathogen through vaccination. Different vaccines are needed for different pathogens.

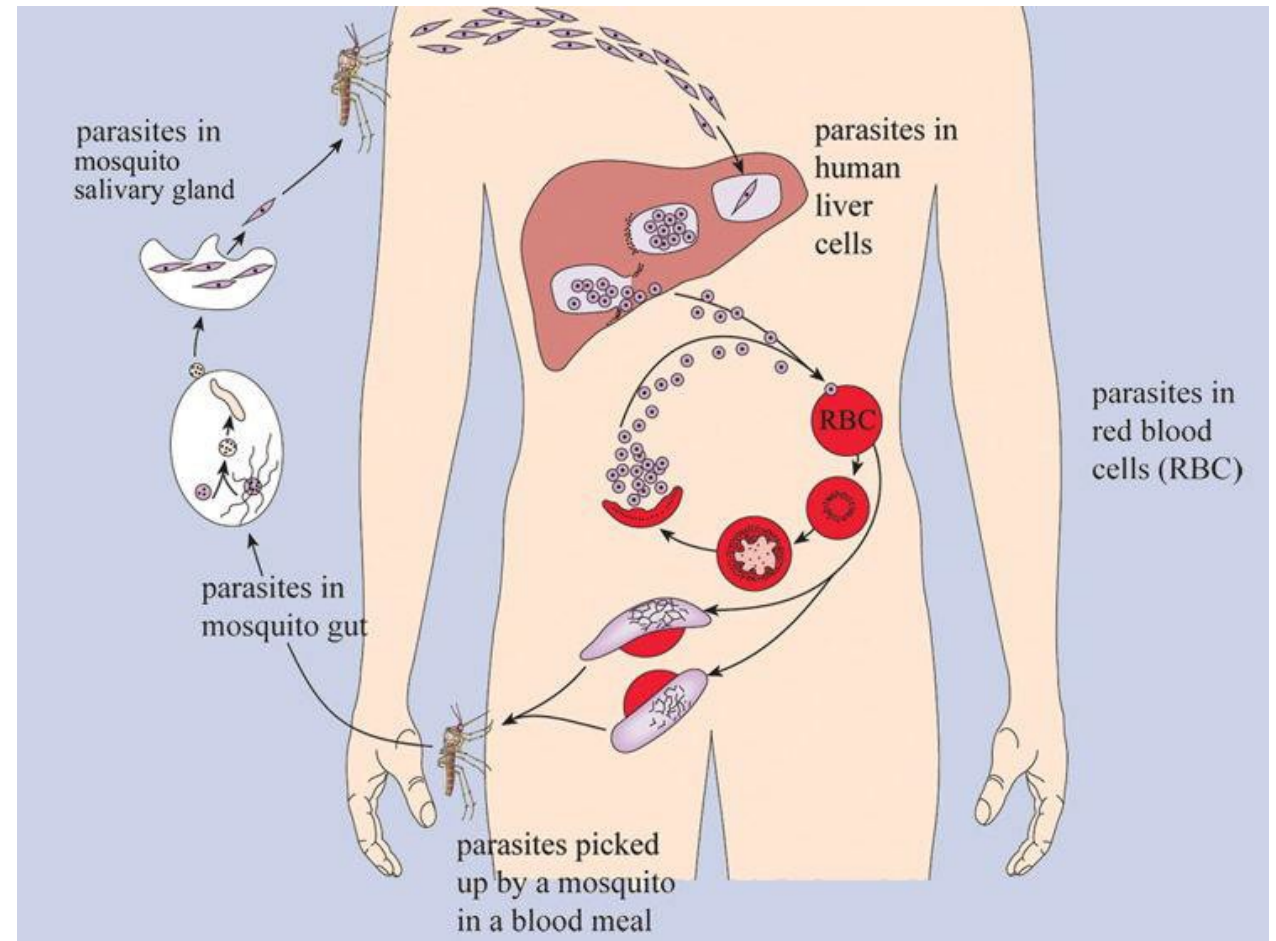


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**Task:** Produce an information sheet on Protist diseases – malaria

## Things to include:

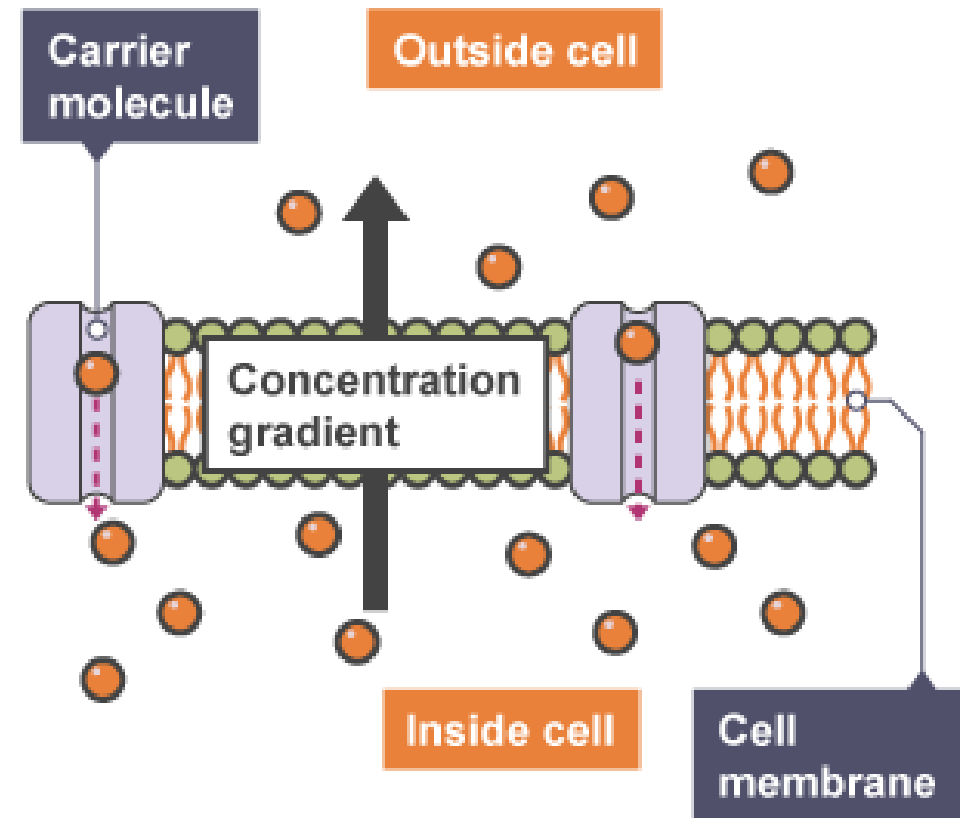
Malaria is a disease caused by a protozoan, a type of single-celled organism. The malaria parasite is spread from person to person by mosquitoes. These insects feed on blood and the malaria parasite is passed on when the mosquito takes a meal. Organisms that spread disease, rather than causing it themselves, are called vectors. The mosquito is the vector for malaria.



## Task: Produce an information sheet on Active transport

## Things to include:

Active transport is the process by which dissolved molecules move across a cell **membrane** from a lower to a higher concentration. In active transport, particles move **against** the concentration gradient - and therefore require an input of **energy** from the cell.



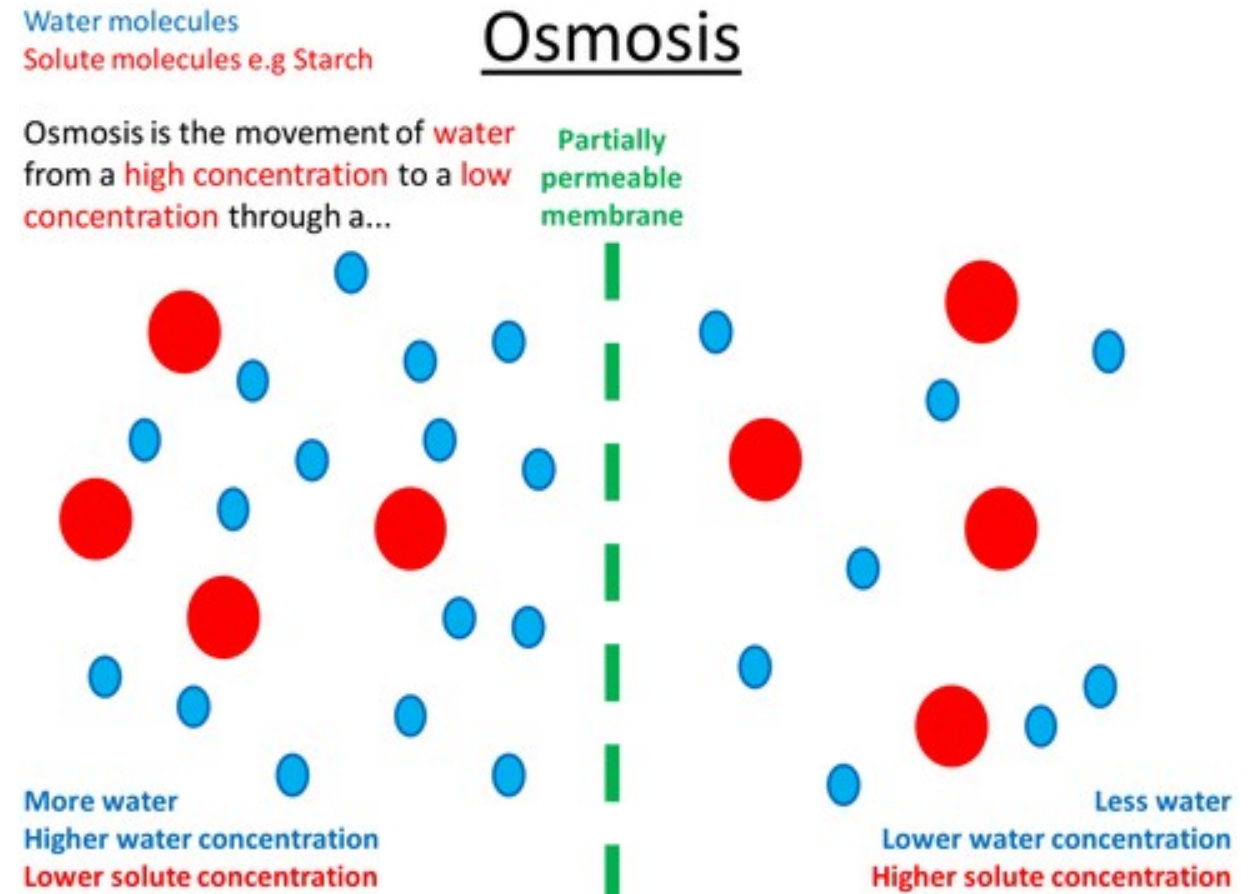
# GCSE Science Daily Revision Task



**Task:** Produce an information sheet on Osmosis

## Things to include:

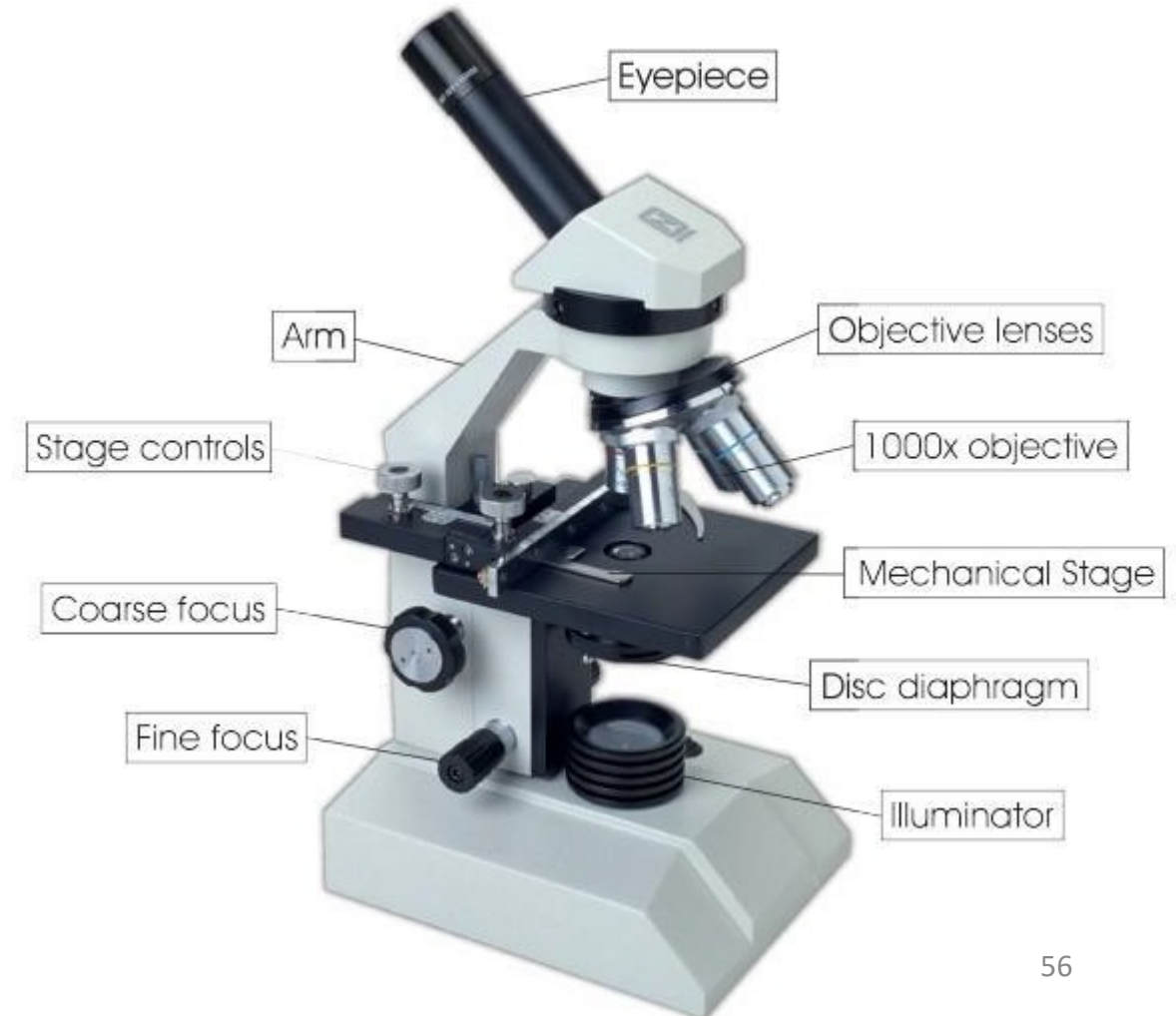
Osmosis is the movement of water from a less concentrated solution to a more concentrated solution through a partially permeable membrane.



## Task: Produce an information sheet on Microscopy

## Things to include:

- Clip your slide onto the **mount**
- Set your microscope to the lowest magnification by changing the **objective lenses**
- Roughly focus in on your slide using the **coarse focusing knob**
- Focus in properly using the **fine focus**
- Set your microscope to the highest magnification **objective lenses**
- Refocus using the **fine focus knob**





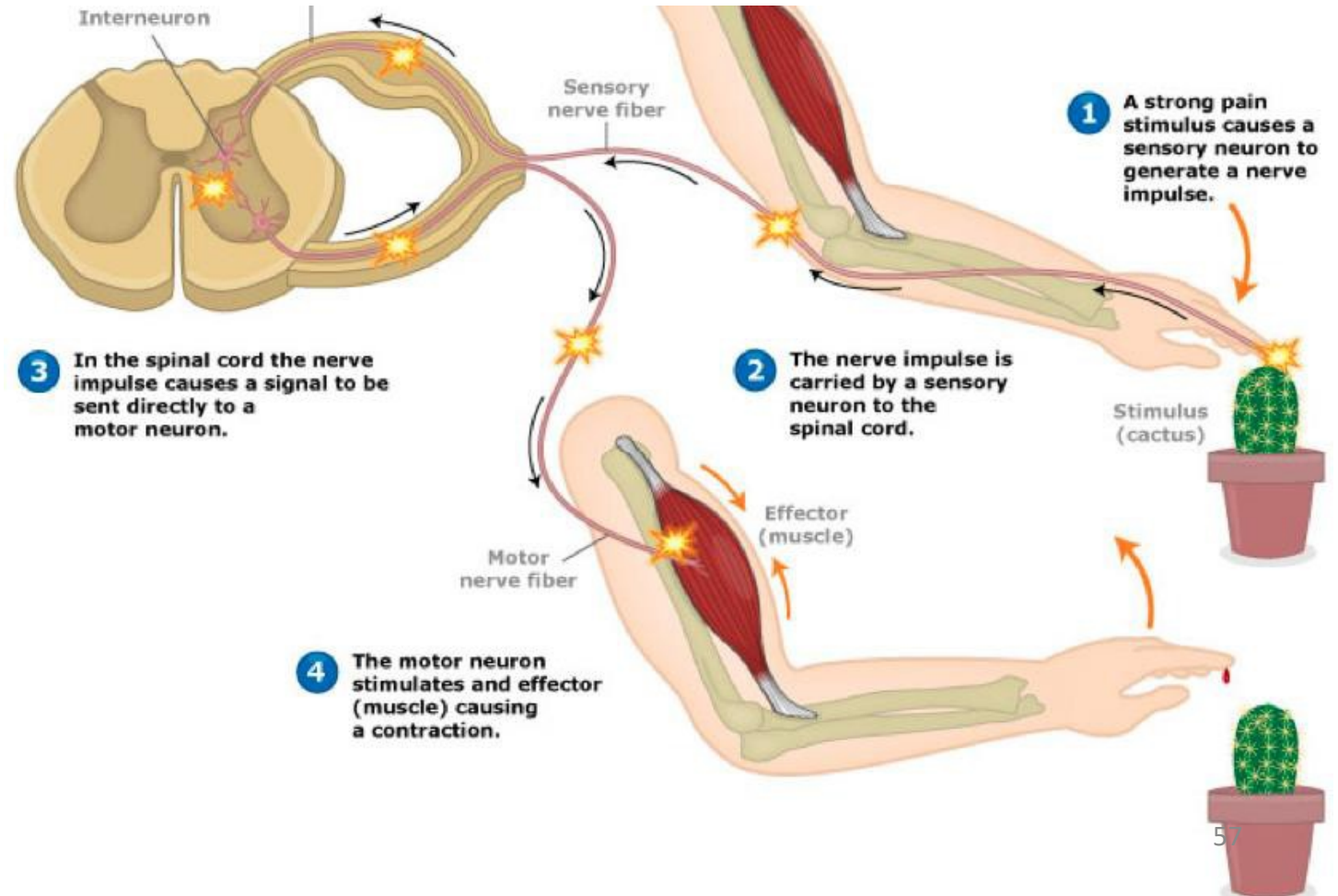
# GCSE Science Daily Revision Task



**Task:** Produce an flash card on nerves & reflexes

## Things to include:

- What the 3 types of nerve cells are
- Examples of effectors & responses
- A diagram showing a reflex arch





## Things to include:

A line graph showing the relationship between light intensity and the rate of photosynthesis. The vertical axis is labeled 'Rate of photosynthesis' and the horizontal axis is labeled 'Light intensity'. The curve starts at the origin (0,0), rises steeply, and then levels off, indicating that the rate of photosynthesis increases with light intensity but eventually reaches a plateau.

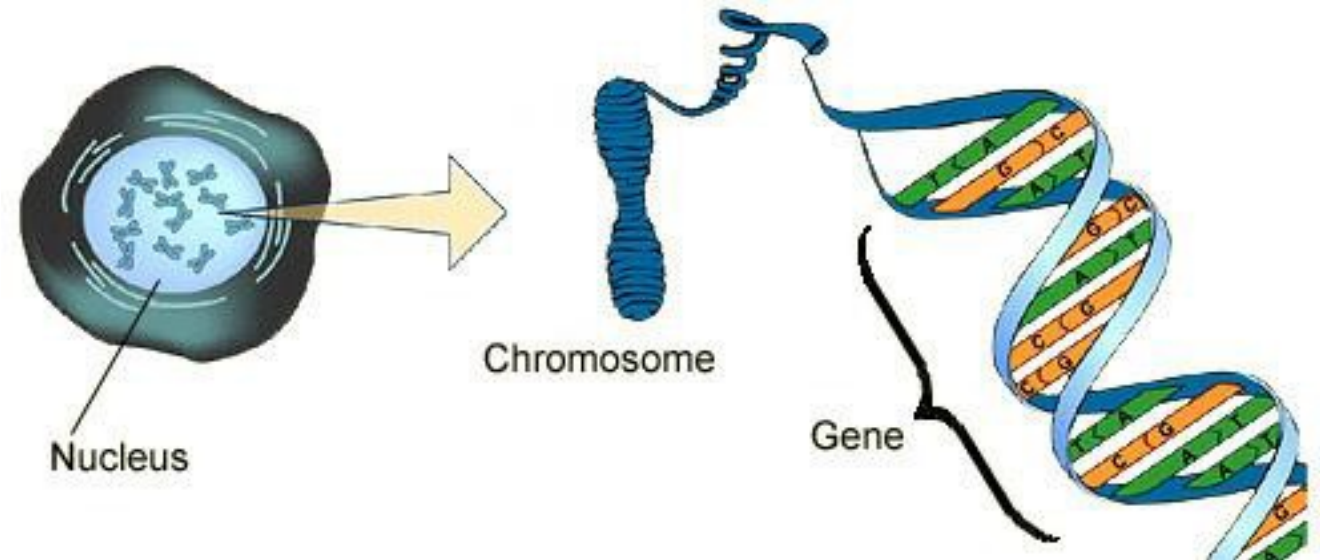
# GCSE Science Daily Revision Task



**Task:** Produce an information sheet on chromosomes

## Things to include:

Chromosomes are made from DNA. Genes are short sections of DNA. Genetically identical cells are produced by a type of cell division called mitosis. In sexual reproduction, a male gamete fuses with a female gamete to produce a new cell. This is called fertilisation. Gametes are produced by a type of cell division called meiosis. They contain a single set of chromosomes, whereas body cells contain two sets of chromosomes.



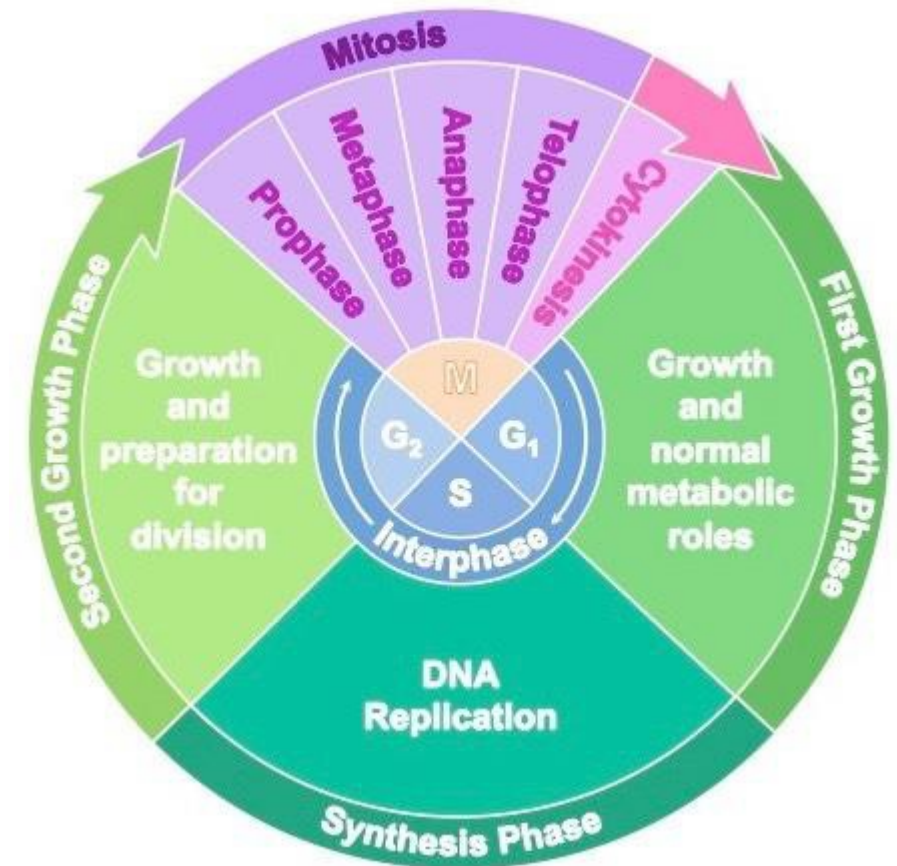
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on Mitosis and the cell cycle

## Things to include:

The cell cycle or cell-division cycle is the series of events that take place in a cell leading to its division and duplication of its DNA to produce two daughter cells.



## Things to include:

**Brain (CNS)**

- Perception and processing of sensory stimuli (somatic/autonomic)
- Execution of voluntary motor responses (somatic)
- Regulation of homeostatic mechanisms (autonomic)

**Spinal cord (CNS)**

- Initiation of reflexes from ventral horn (somatic) and lateral horn (autonomic) gray matter
- Pathways for sensory and motor functions between periphery and brain (somatic/autonomic)

**Nerves (PNS)**

- Fibers of sensory and motor neurons (somatic/autonomic)

**Ganglia (PNS)**

- Reception of sensory stimuli by dorsal root and cranial ganglia (somatic/autonomic)
- Relay of visceral motor responses by autonomic ganglia (autonomic)

**Digestive tract (ENS)**

- The enteric nervous system (ENS), located in the digestive tract, is responsible for autonomous functions and can operate independently of the brain and spinal cord.



## Things to include:

**Reflex reaction**

The diagram illustrates the neural pathway of a reflex reaction. A reflex hammer strikes the patellar tendon, which causes the quadriceps femoris muscle (extensor) to contract. The sensory neuron carries the signal from the stretch receptor in the muscle to the cell body of the sensory neuron in the dorsal root ganglion. The signal then travels through the spinal cord, where it meets the cell bodies of motor neurons and interneurons. The motor neurons carry the signal back to the quadriceps femoris muscle (extensor) to cause contraction. The diagram also shows the biceps femoris muscle (flexor) and the spinal cord with its gray and white matter.

Labels in the diagram include:

- sensory neuron
- cell body of sensory neuron
- dorsal root ganglion
- spinal cord
- gray matter
- white matter
- motor neurons
- stretch receptor
- reflex hammer
- patellar tendon
- biceps femoris muscle (flexor)
- quadriceps femoris muscle (extensor)
- cell bodies of motor neurons
- interneuron

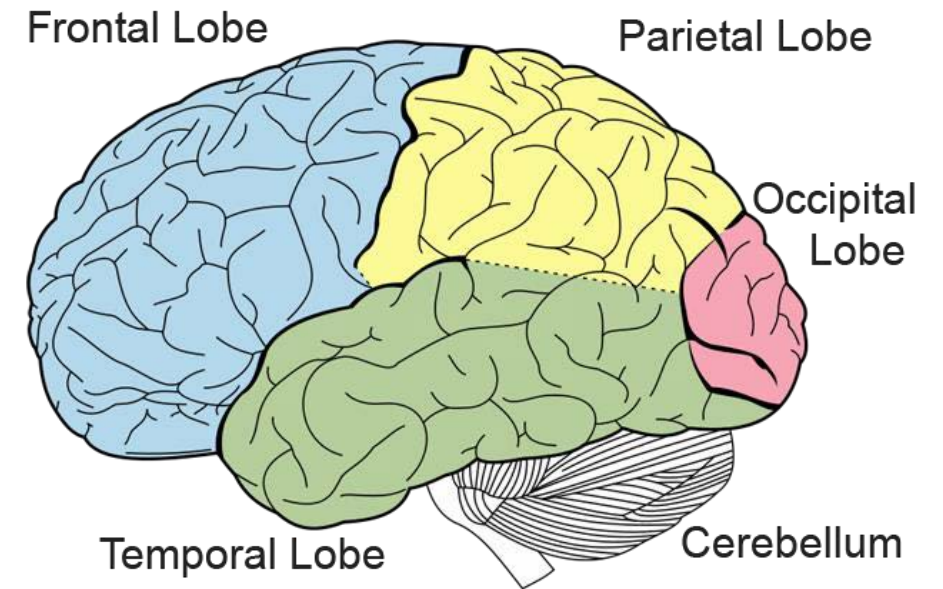
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on the structure of the brain

## Things to include:

The brain is made of three main parts: the forebrain, midbrain, and hindbrain. The forebrain consists of the cerebrum, thalamus, and hypothalamus (part of the limbic system). The midbrain consists of the tectum and tegmentum. The hindbrain is made of the cerebellum, pons and medulla.





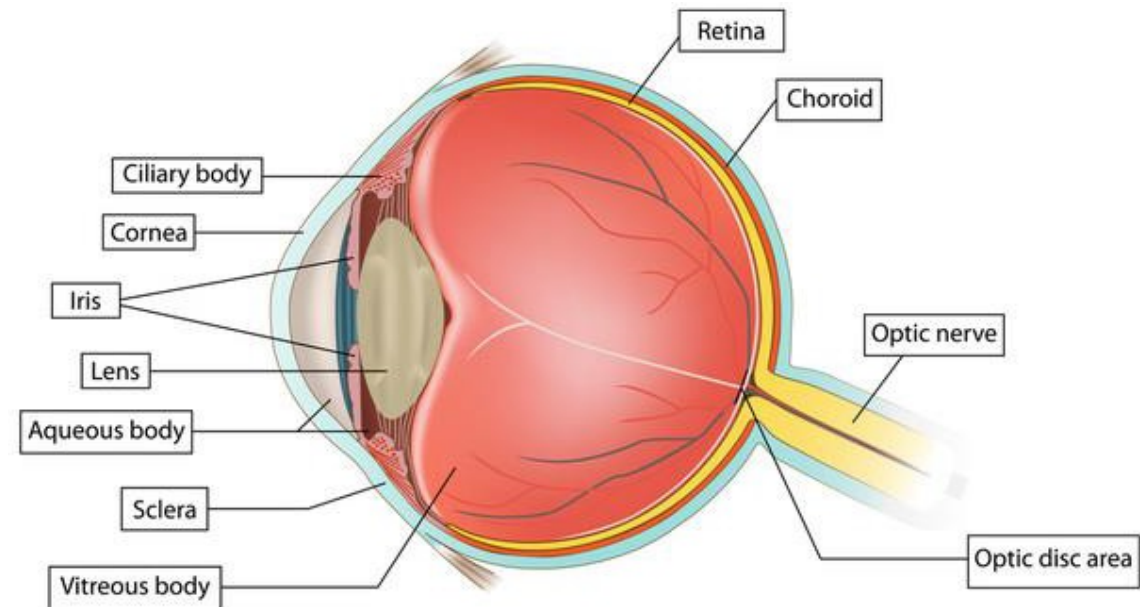
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on the structure of the eye

## Things to include:

**Lens:** The transparent structure suspended behind the iris that helps to focus light on the retina; it primarily provides a fine-tuning adjustment to the primary focusing structure of the eye, which is the cornea. ... **Sclera:** The tough outer coat that protects the entire eyeball.



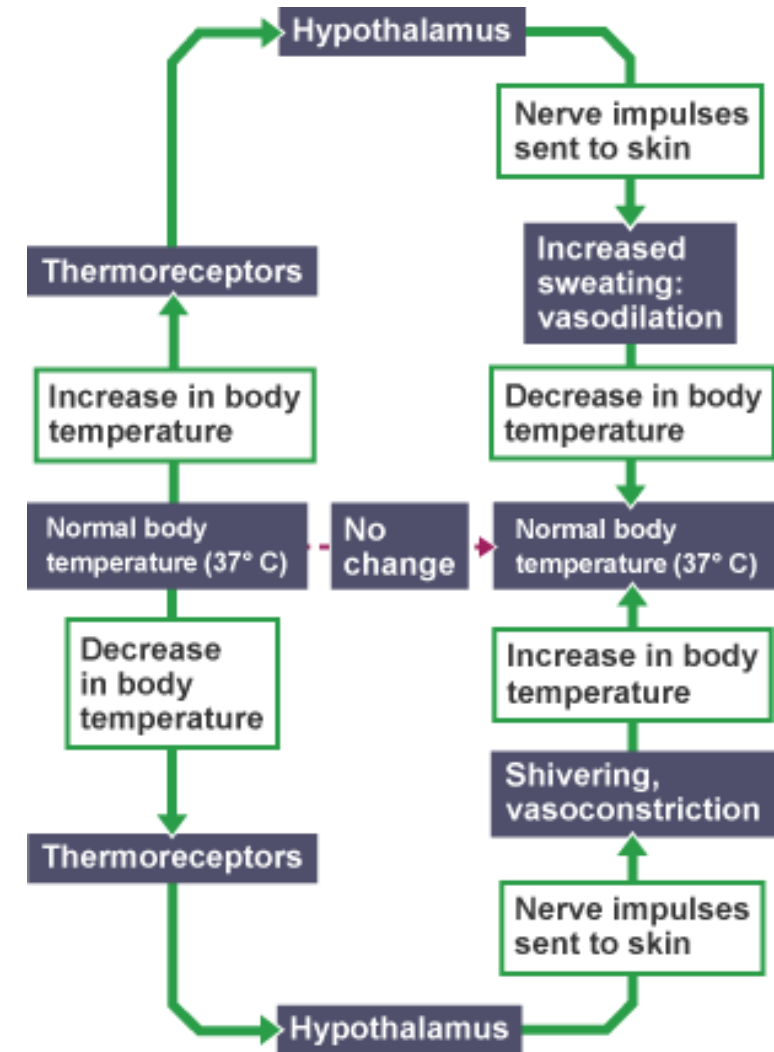
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on the control of body temperature

## Things to include:

The hypothalamus is the processing centre in the brain that controls body temperature. It does this by triggering changes to effectors, such as sweat glands and muscles controlling body hair. Heat stroke can happen when the body becomes too hot; and hypothermia when the body becomes too cold.



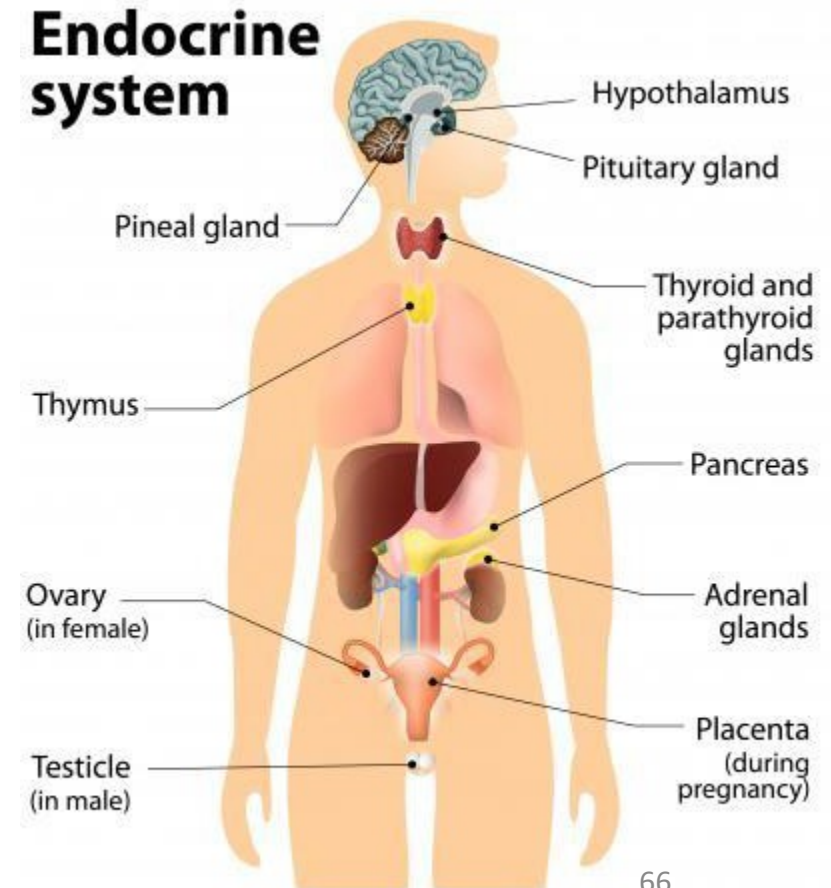
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on the endocrine system

## Things to include:

The endocrine system is the collection of glands of an organism that secrete hormones directly into the circulatory system to be carried towards distant target organs



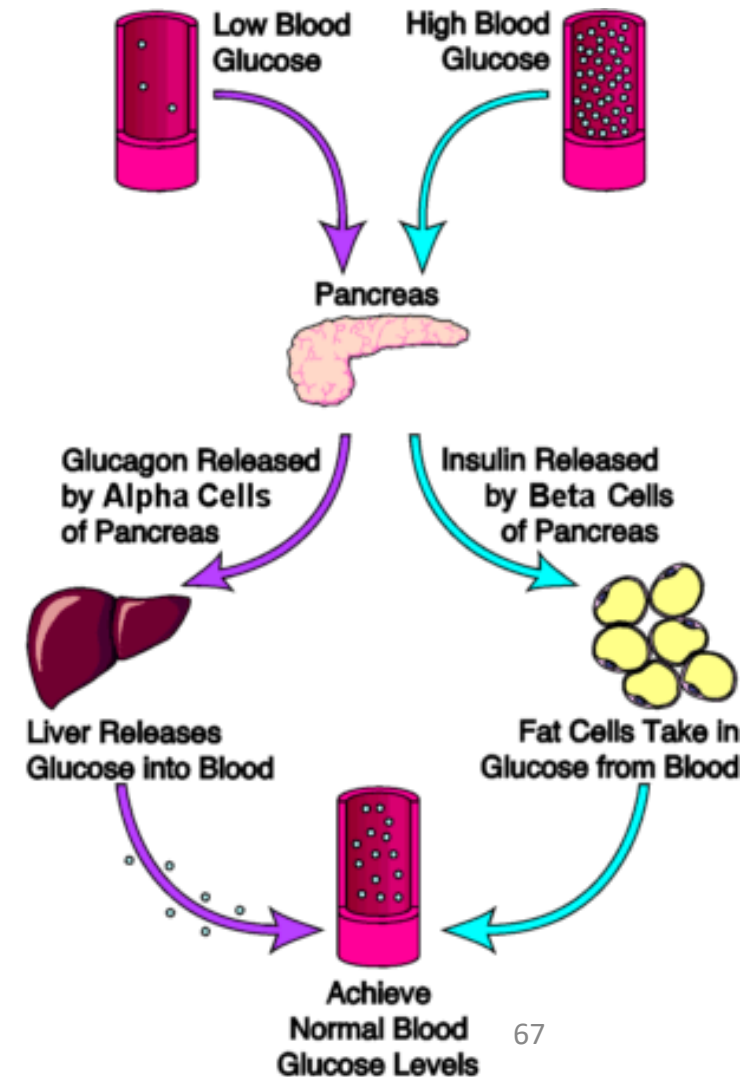
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on the control of blood glucose

## Things to include:

Insulin and glucagon are hormones secreted by islet cells within the pancreas. They are both secreted in response to blood sugar levels, but in opposite fashion! Insulin is normally secreted by the beta cells (a type of islet cell) of the pancreas



## Things to include:

A diagram of the human urinary system within a grey silhouette of a human body. The brain is shown at the top with a small blue dot indicating the location of the hypothalamus. The heart is in the center, with red arteries and blue veins branching out to the kidneys. The kidneys are shown as two bean-shaped organs, one on each side of the spine. The bladder is located below the kidneys, and the urethra is the tube that carries urine from the bladder out of the body. Labels with leader lines point to the following parts: 'blood from kidneys' (pointing to the renal vein), 'blood to kidneys' (pointing to the renal artery), 'kidney' (pointing to the right kidney), 'bladder' (pointing to the urinary bladder), and 'urethra' (pointing to the urethral tube).



[illegible]

## Things to include:

The diagram illustrates the internal structure and function of a kidney. A cross-section of the kidney is shown with the following components and processes labeled:

- Blood capillaries wrapped round nephron:** A circular inset provides a magnified view of the renal corpuscle, showing a network of red blood capillaries (glomerulus) and a yellow tubule (nephron) that is coiled around it.
- Nephron:** The yellow tubule is labeled as the nephron, the basic functional unit of the kidney.
- Blood with waste products arrives through renal artery:** A red arrow points to the renal artery entering the kidney, indicating the inflow of blood containing waste.
- Clean blood leaves via renal vein:** A blue arrow points to the renal vein exiting the kidney, indicating the outflow of filtered, clean blood.
- Ureter:** The yellow tube at the bottom of the kidney is labeled as the ureter, which carries urine away from the kidney.
- Waste products (urine) to the bladder:** An orange arrow points downwards from the ureter, indicating the path of urine to the bladder.

## Things to include:

The diagram illustrates the female reproductive cycle over a 28-day period. The cycle is divided into two main phases: the follicular phase (Days 1-14) and the luteal phase (Days 15-28). Key events include the shedding of the endometrium (menstruation) at the start of the cycle, the release of an egg (ovulation) around Day 14, and the subsequent changes in hormone levels and body temperature.

**Endometrium sheds (thins) / Endometrium thickens**

**Thickness of endometrium (uterine lining)**

**Ovary: follicle releases egg then collapses**

**Gonadotropin hormone levels (LH & FSH)**

**Ovarian hormone levels (estrogen and progesterone)**

**Body temperature ( $^{\circ}\text{C}$ ) rises at ovulation**

**Day**

**Period starts**

**Period ends**

**Ovulation (egg released)**

# GCSE Science Daily Revision Task



**Task:** Produce a flash card on contraception

## Things to include:

The deliberate use of artificial methods or other techniques to prevent pregnancy as a consequence of sexual intercourse. The major forms of artificial contraception are: barrier methods, of which the commonest is the condom or sheath; the contraceptive pill, which contains synthetic sex hormones which prevent ovulation in the female; intrauterine devices, such as the coil, which prevent the fertilized ovum from implanting in the uterus; and male or female sterilization.



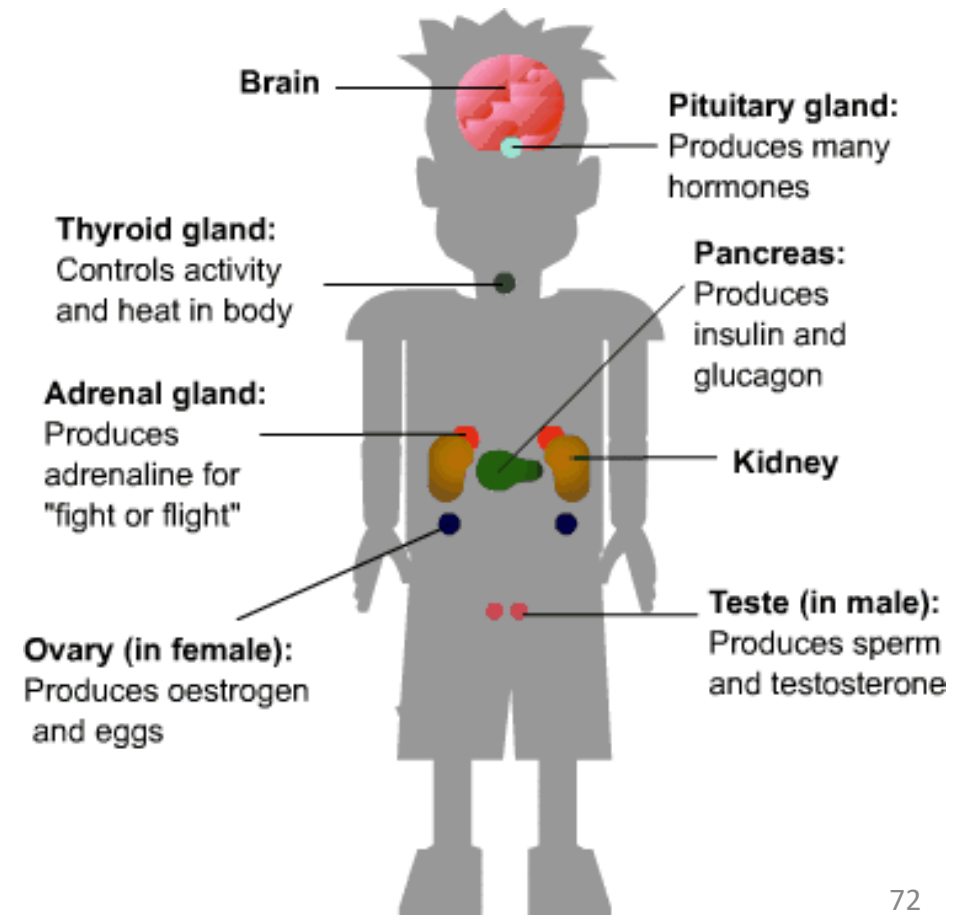
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on control & coordination

## Things to include:

Hormones are chemical substances that regulate processes in the body. Hormones are secreted by glands and travel to their target organs in the bloodstream. Several hormones are involved in the female menstrual cycle. Hormones can be used to control human fertility and have advantages and disadvantages.



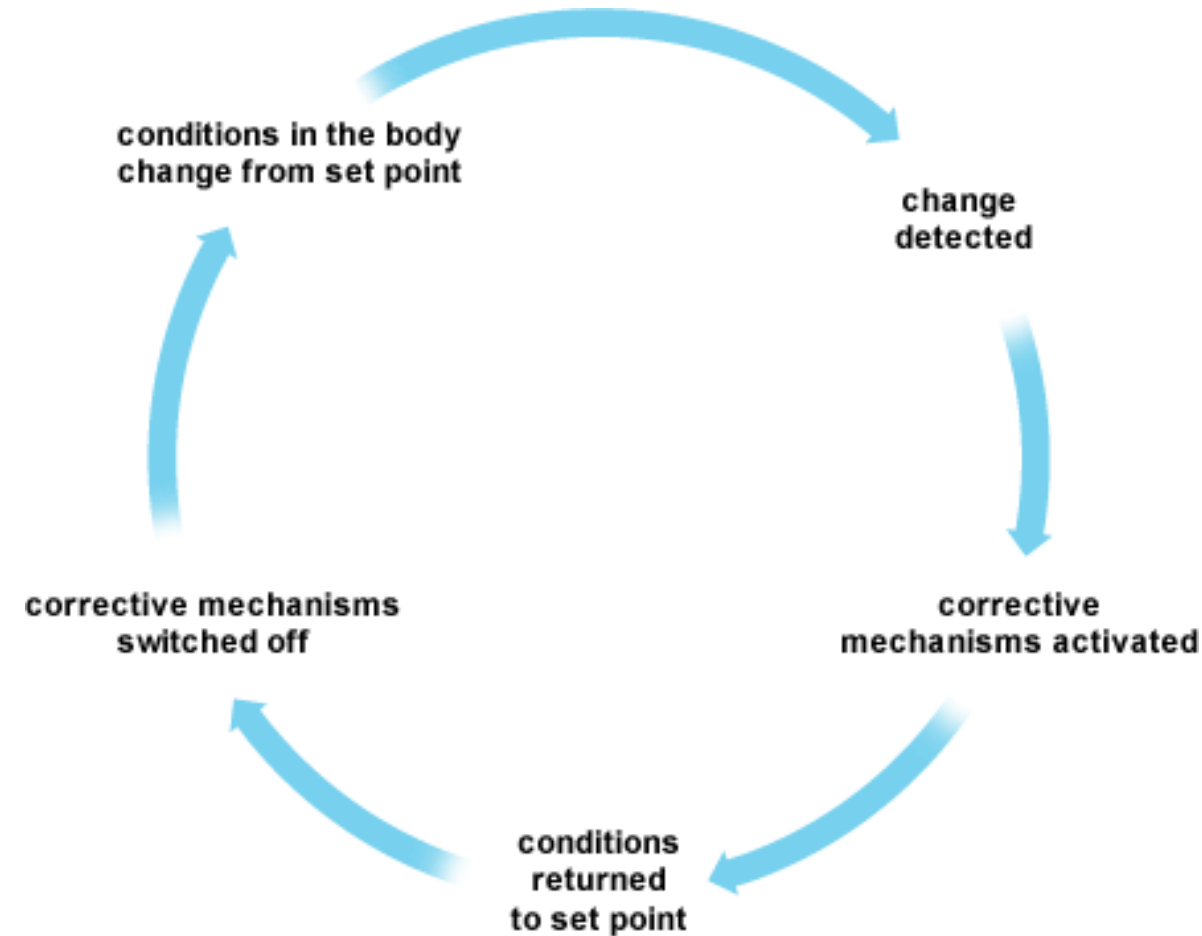
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on negative feedback

## Things to include:

**Negative feedback** is a reaction that causes a decrease in function. It occurs in response to some kind of stimulus. Often it causes the output of a system to be lessened; so, the **feedback** tends to stabilize the system. This can be referred to as homeostatis, as in **biology**, or equilibrium, as in mechanics.

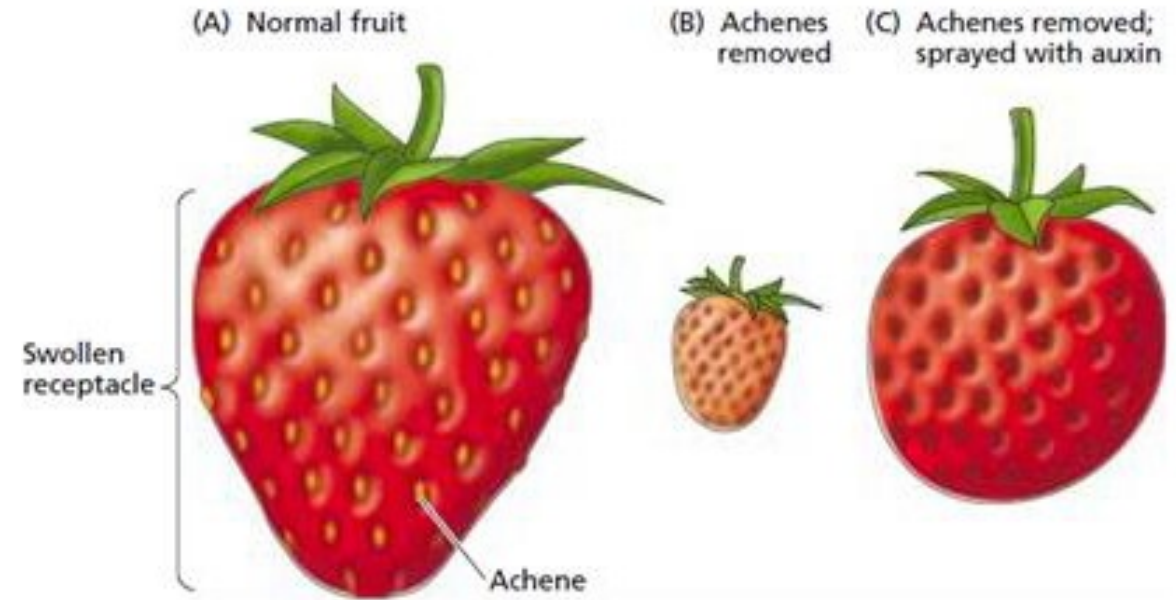




## Task: Produce a flash card on the use of plant hormones

## Things to include:

Selective weedkillers kill some plants but not others. This can be useful for getting rid of dandelions in a lawn without killing the grass, or getting rid of thistles in a field without killing the wheat plants. The selective weedkiller contains growth hormone that causes the weeds to grow too quickly.



# GCSE Science Daily Revision Task



**Task:** Produce a flash card on sexual & asexual reproduction

## Things to include:

### Asexual reproduction

Asexual reproduction only needs one parent. All the offspring are genetically identical to each other, and their parent. They are **clones**.

### Sexual reproduction

Sexual reproduction needs two parents. Each parent produces sex cells, called **gametes**

	Sexual Reproduction	Asexual Reproduction
Advantages	<ul style="list-style-type: none"><li>• High Genetic Variability</li><li>• Facilitates adaptation</li><li>• "Speeds" up evolution</li></ul>	<ul style="list-style-type: none"><li>• Saves energy</li><li>• Courtship is a non-issue</li><li>• Greatest increase in fitness for each individual</li></ul>
Disadvantages	<ul style="list-style-type: none"><li>• Energy Costly</li><li>• Courtship is time/resource consuming</li><li>• Usually sacrifices the fitness of one sex to the other.</li></ul>	<ul style="list-style-type: none"><li>• Low Genetic Variability</li><li>• Adaptation to environment is difficult</li><li>• "Retards" evolution</li></ul>

## Things to include:

The diagram illustrates the stages of meiosis. It begins with a single cell in **Interphase**, containing four single-chromatid chromosomes (two light blue, two red). An arrow points to the next stage, **Meiosis I**, where the chromosomes have replicated into eight double-chromatid chromosomes (two light blue, two red). A label **Homologous Chromosomes** points to a pair of these chromosomes. From **Meiosis I**, two arrows lead to two separate cells, each containing four double-chromatid chromosomes. These are labeled **Daughter Nuclei**. From each of these daughter nuclei, two arrows lead to a total of four final cells, each containing four single-chromatid chromosomes. These are labeled **Daughter Nuclei II**. The final cells show the segregation of maternal and paternal chromosomes, with each cell containing two light blue and two red single-chromatid chromosomes.

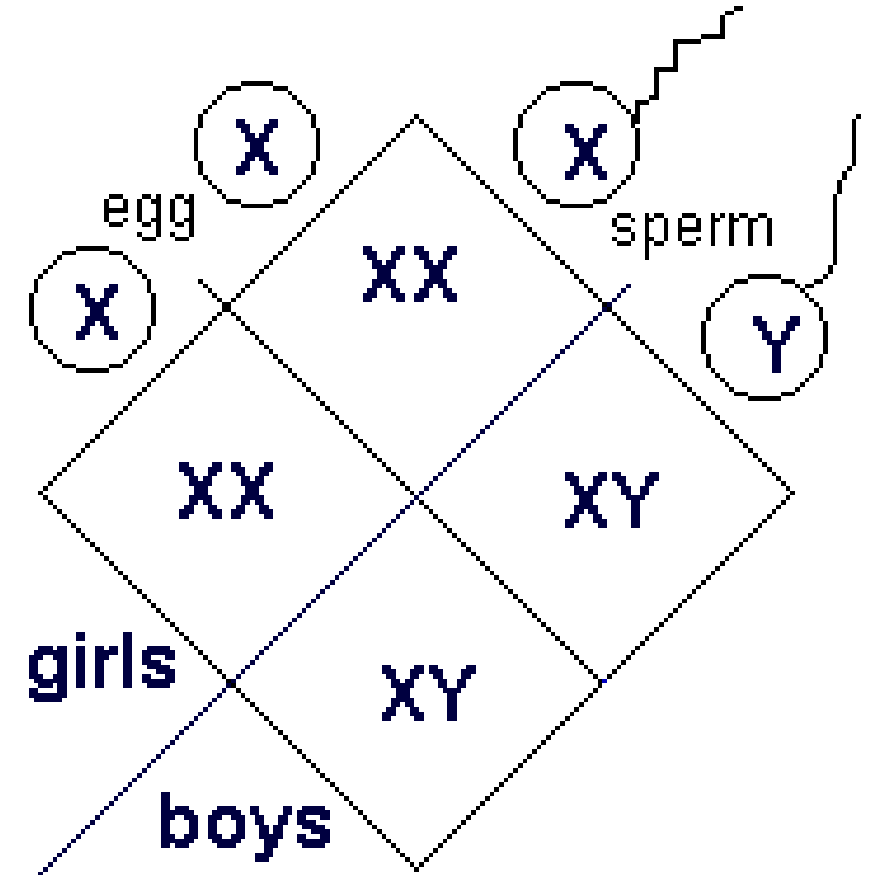
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on sex determination

## Things to include:

A sex-determination system is a biological system that determines the development of sexual characteristics in an organism. Most organisms that create their offspring using sexual reproduction have two sexes. Occasionally, there are hermaphrodites in place of one or both sexes.



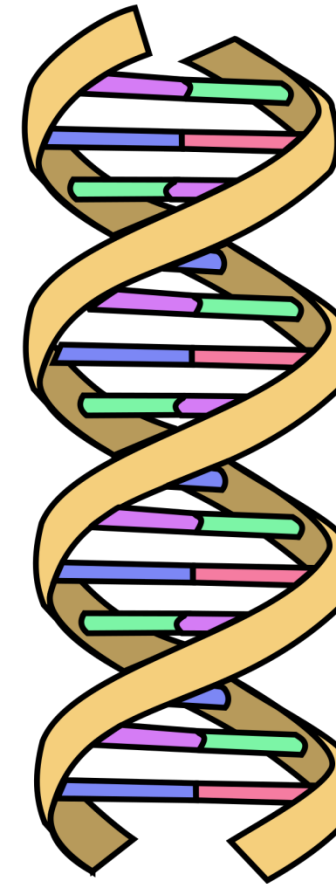
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on DNA

## Things to include:

deoxyribonucleic acid: an extremely long macromolecule that is the main component of chromosomes and is the material that transfers genetic characteristics in all life forms, constructed of two nucleotide strands coiled around each other in a ladderlike arrangement with the sidepieces composed of alternating phosphate and deoxyribose units and the rungs composed of the purine and pyrimidine bases adenine, guanine, cytosine, and thymine:



-  = Adenine
-  = Thymine
-  = Cytosine
-  = Guanine
-  = Phosphate backbone

DNA



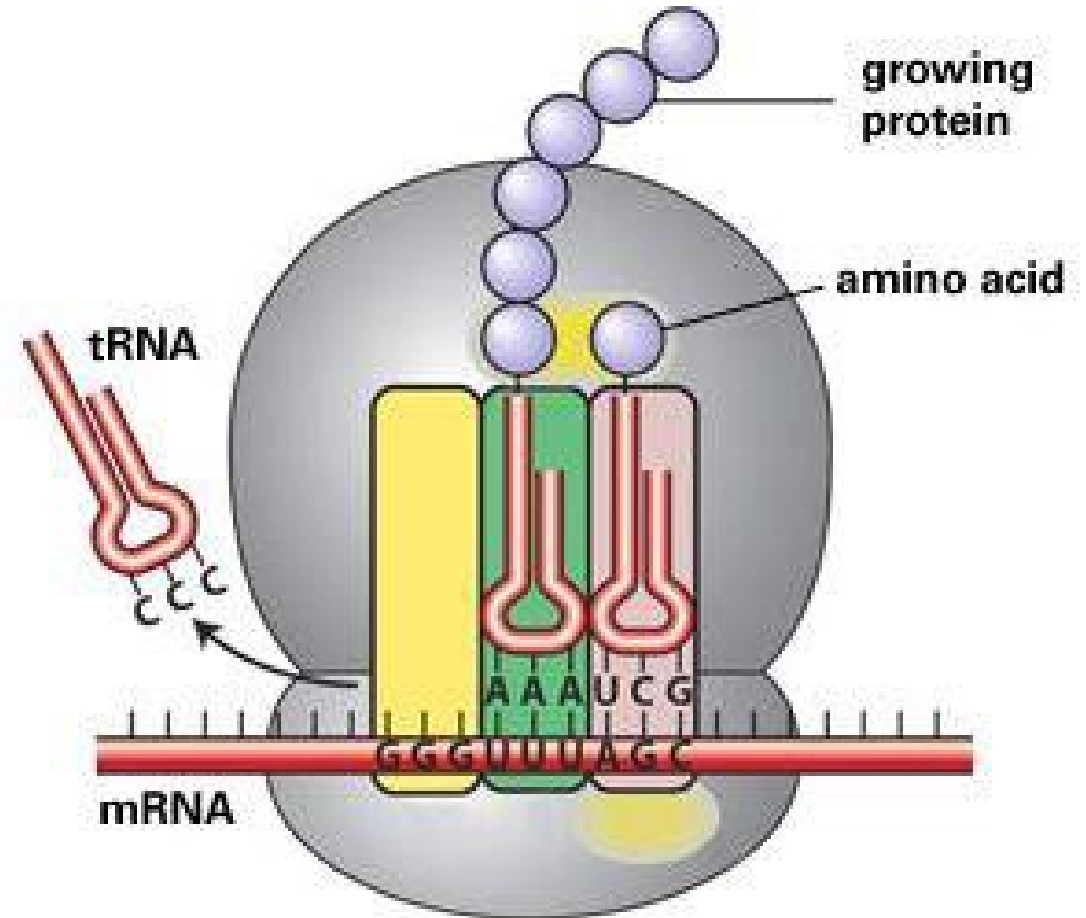
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on protein synthesis

## Things to include:

The process by which individual amino acids are connected to each other in a specific order dictated by the nucleotide sequence in DNA, which also involves the processes of transcription and translation. Protein synthesis is process by which the genetic code puts together proteins in the cell.



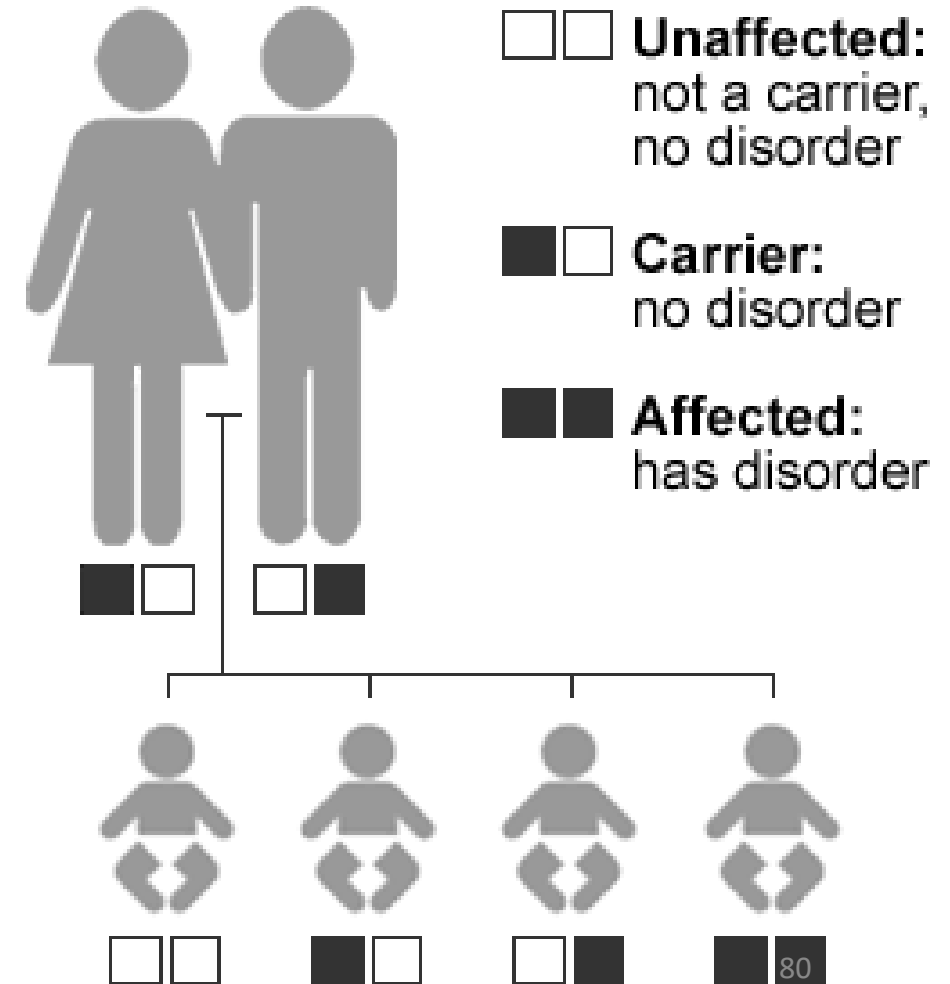
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on inherited disorders

## Things to include:

Some disorders are inherited, such as: red-green colour blindness. sickle cell anaemia. cystic fibrosis.



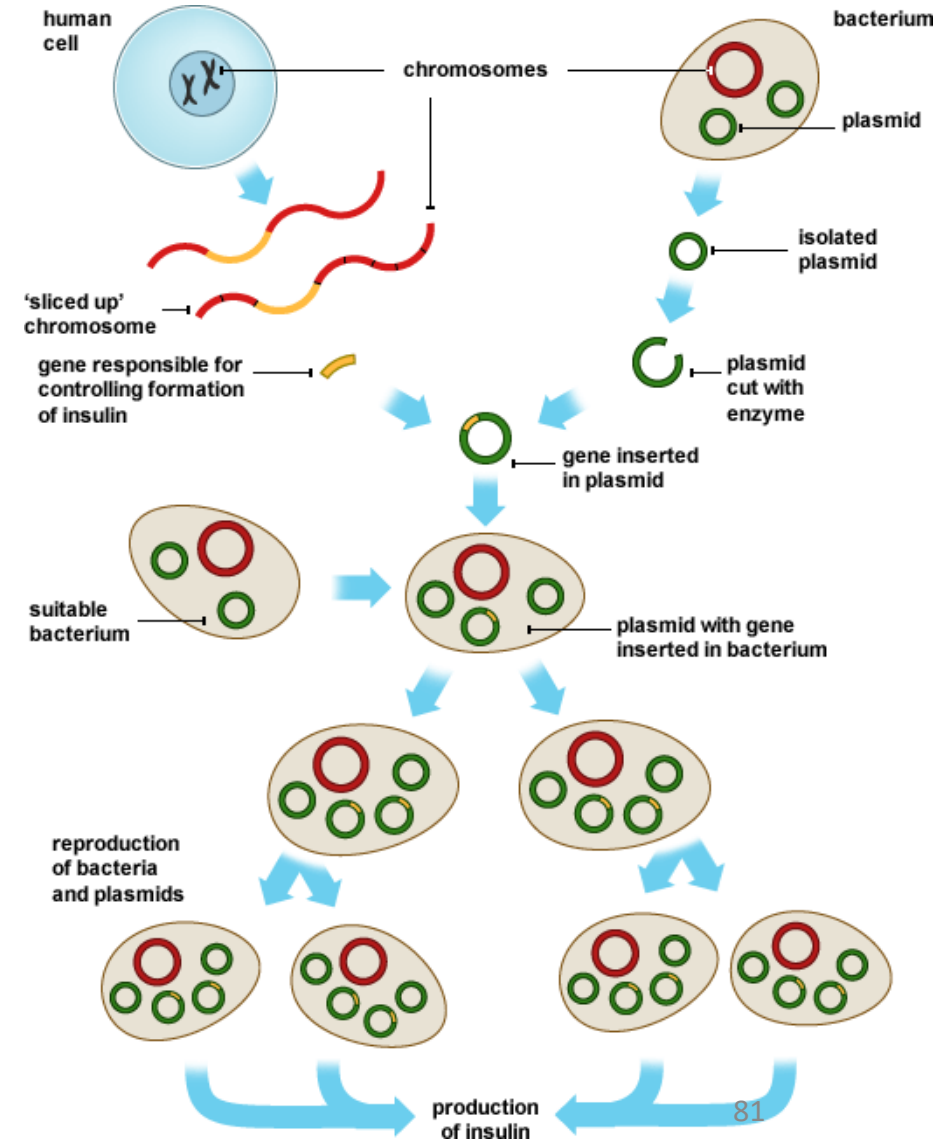
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on genetic engineering

## Things to include:

Certain *enzymes* can cut pieces of *DNA* from one organism, and join them into a gap in the DNA of another organism. This means that the new organism with the inserted genes has the genetic information for one or more new characteristics. For example, the organism might produce a useful substance, or be able to carry out a new function. We say that the organism has been genetically modified.



# GCSE Science Daily Revision Task

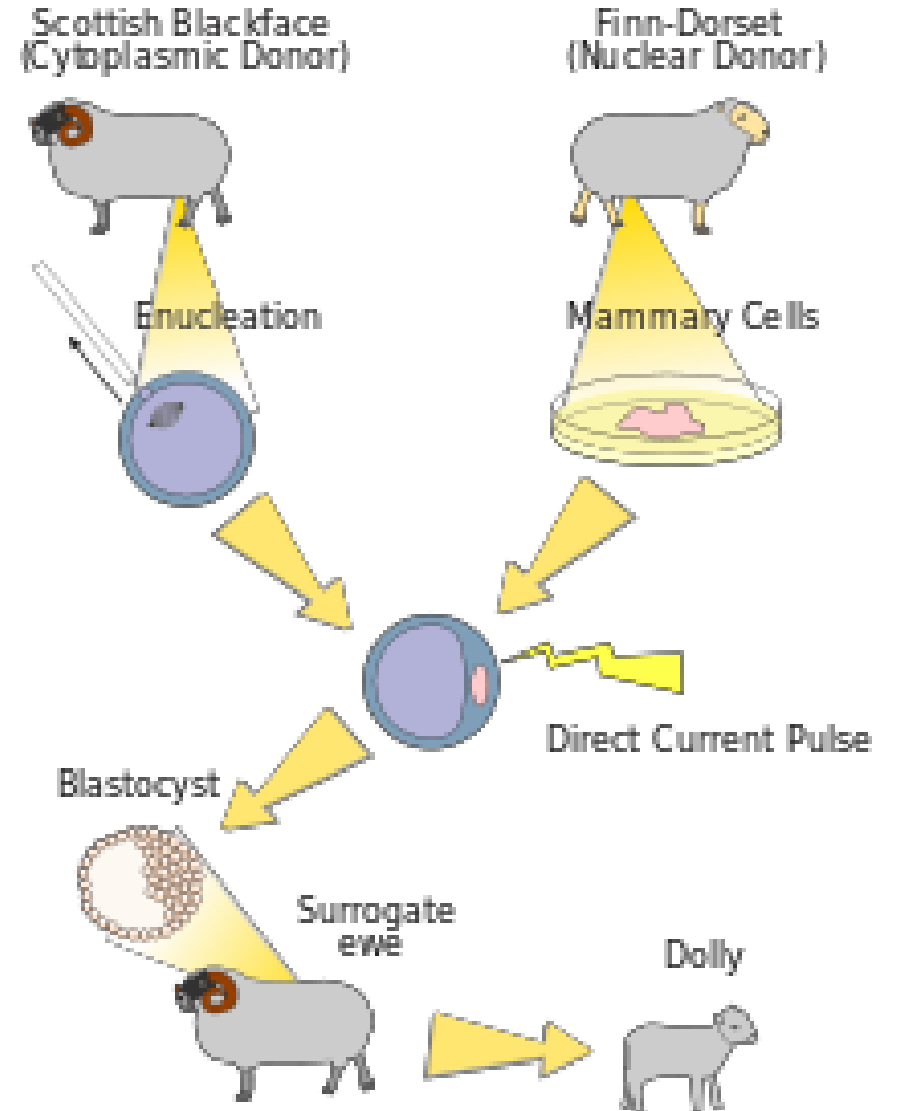


**Task:** Produce a flash card on cloning

## Things to include:

Clones are genetically identical individuals. Bacteria, plants, and some animals, can reproduce asexually to form clones that are genetically identical to their parent. Identical human twins are also clones. Any differences between them are due to environmental factors.

Asexual reproduction only requires **one parent**, unlike sexual reproduction, which needs two. Since there is only one parent, there is no fusion of gametes, and no mixing of genetic information. As a result, the offspring are genetically identical to the parent, and to each other.



## Task: Produce a flash card on selective breeding

## Things to include:

## These are the steps in selective breeding:

- Decide which **characteristics** are important
- Choose **parents** that show these characteristics
- Select the best **offspring** from parents to breed the next generation
- Repeat the process continuously



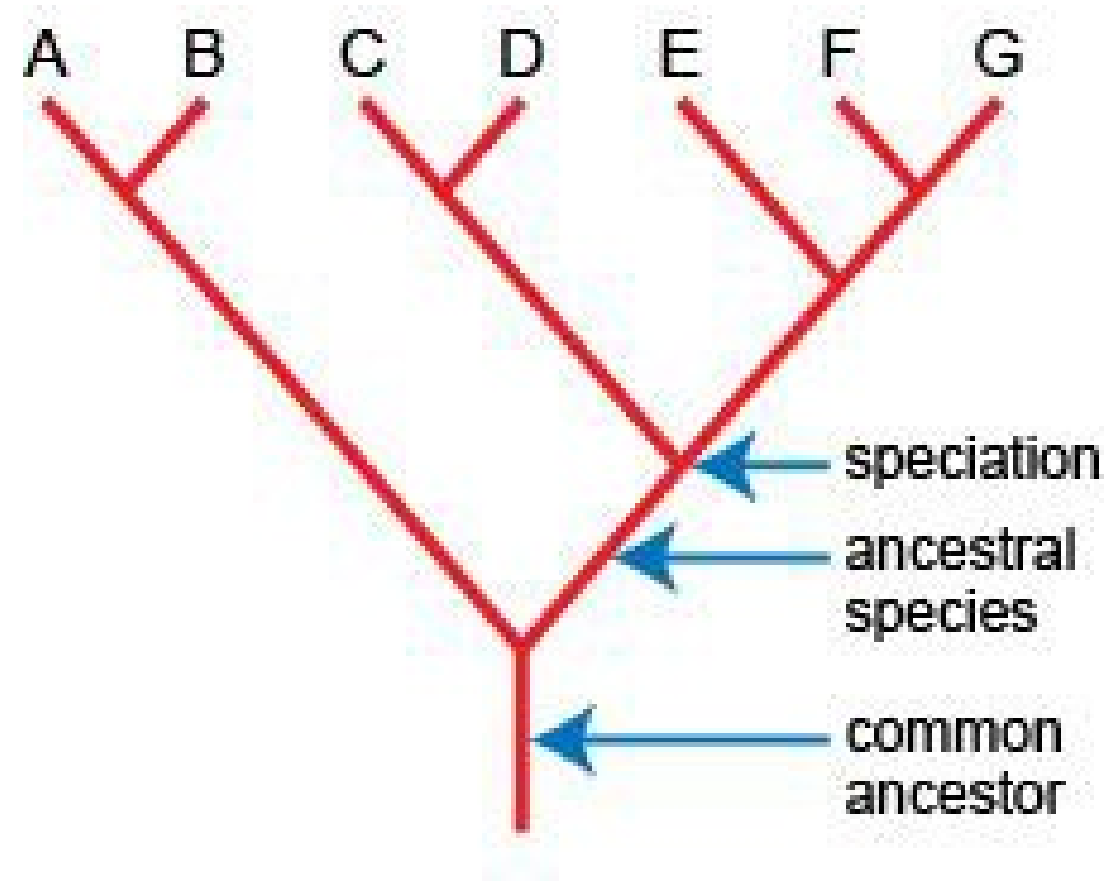


[illegible]

## Task: Produce a flash card on evolution

## Things to include:

Change in the genetic composition of a population during successive generations, often resulting in the development of new species. The mechanisms of **evolution** include natural selection acting on the genetic variation among individuals, mutation, migration, and genetic drift.

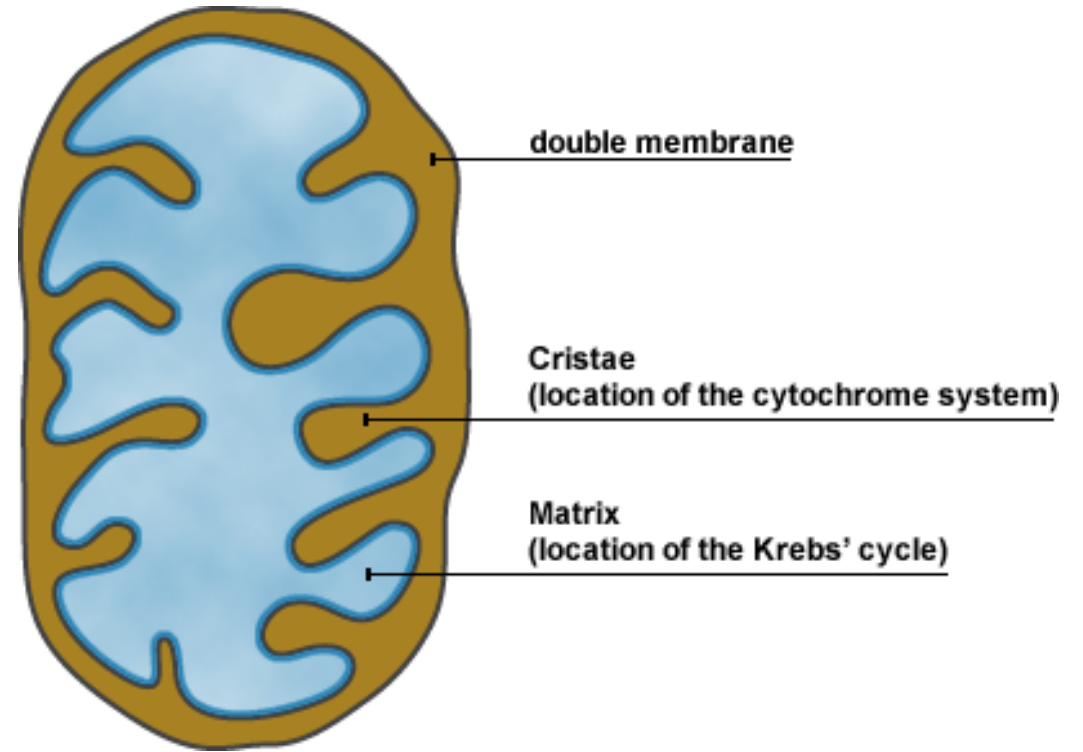


## Task: Produce a flash card on aerobic respiration

## Things to include:

Respiration is a series of reactions in which energy is released from *glucose*. **Aerobic respiration** is the form of respiration which uses oxygen. It can be summarised by this equation:

**glucose + oxygen → carbon dioxide  
+ water (+ energy)**



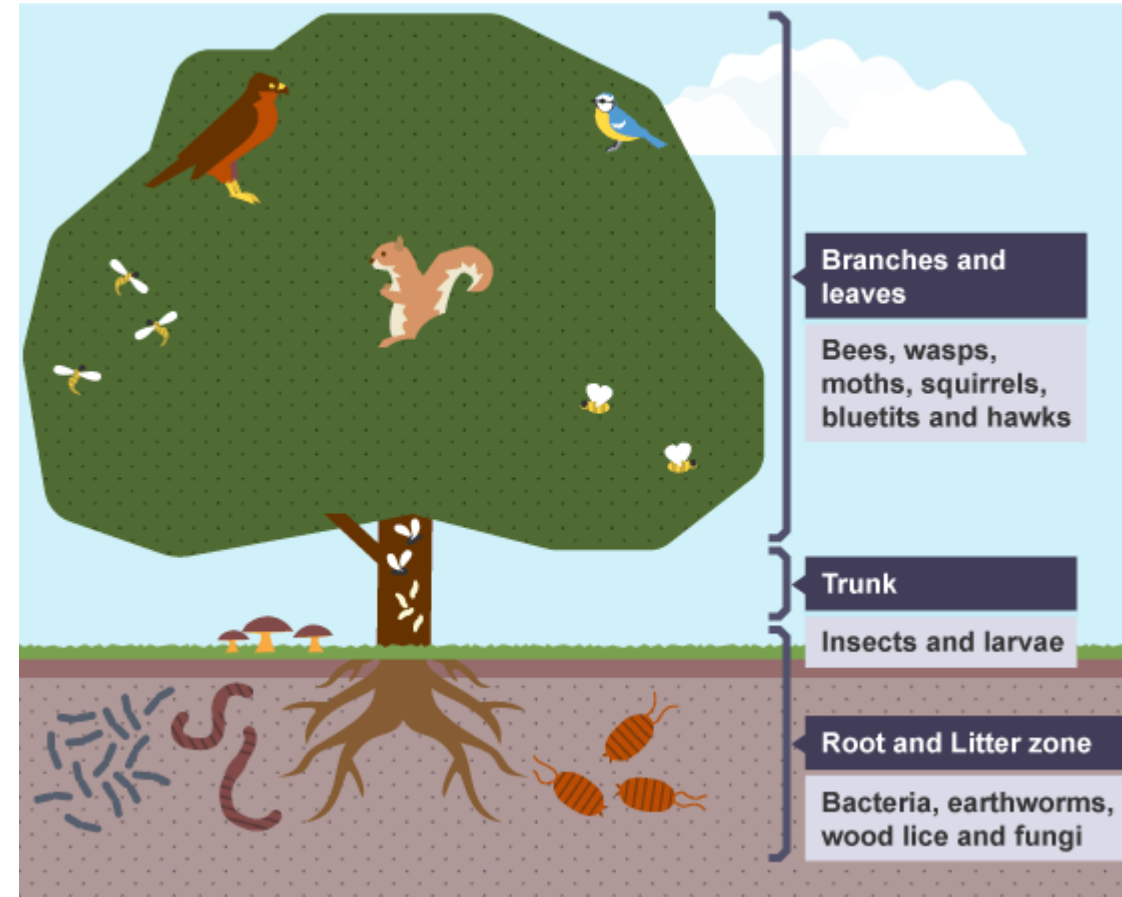
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on the distribution of organisms

## Things to include:

The distribution of organisms in a habitat may be affected by physical factors, such as temperature and light. Transects and quadrats are used to collect quantitative data.



[illegible]

## Things to include:

**Physical Adaptations**

- Horns**- Used to spare against other giraffes
- Long Tongue**- Helps rip off leaves off trees
- Tough lips**- Used to protect lips from thorns of tree
- Long neck**- Used to reach leaves on acacia tree
- Long Legs**- Helps giraffe reach leaves for food
- Hoofs**- Tough to protect feet
- Fringed Tail**- Swats insects and flies away
- Camouflage Coat**- Helps keep it more hidden in the savanna

# GCSE Science Daily Revision Task

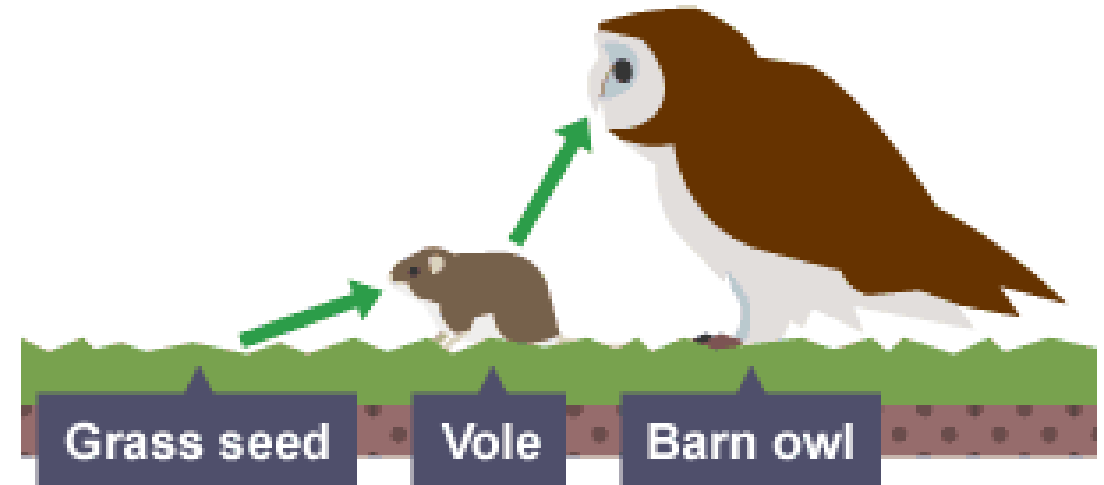


**Task:** Produce a flash card on producers, consumers and decomposers.

## Things to include:

A food chain shows what eats what in a particular habitat. It shows the flow of energy and materials from one organism to the next, beginning with a producer. The Sun is the ultimate source of energy for most communities of living things. Green plants are usually the producers in a food chain.

Producers are organisms that make their own organic nutrients (food) - usually using energy from sunlight. Green plants make their food by photosynthesis. The other organisms in a food chain are consumers, because they all get their energy by consuming other organisms.





**Things to include:**

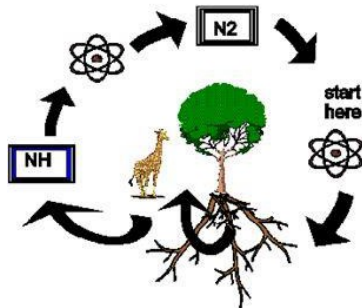
A pyramid of biomass is a more accurate indication of how much energy is passed on at each trophic level. Biomass is the mass of living material in each organism multiplied by the total number of organisms in that trophic level.

A pyramid of biomass is a more accurate indication of how much energy is passed on at each trophic level. Biomass is the mass of living material in each organism multiplied by the total number of organisms in that trophic level.



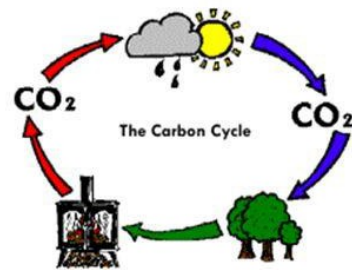
## Things to include:

# Types of Cycles:



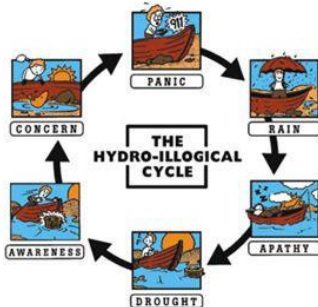
The Nitrogen Cycle diagram shows a tree with roots and a giraffe. Arrows indicate the flow of nitrogen: from the atmosphere (N<sub>2</sub>) to the soil (NH), then to the tree, and back to the atmosphere. A 'start here' label points to the beginning of the cycle.

- Nitrogen Cycle



The Carbon Cycle diagram shows a tree and a factory. Arrows indicate the flow of carbon: from the atmosphere (CO<sub>2</sub>) to the tree, then to the factory, and back to the atmosphere. The cycle is labeled 'The Carbon Cycle'.

- Carbon Cycle



The Water Cycle diagram shows a circular flow of water between the atmosphere, land, and water. The cycle is labeled 'THE HYDRO-ILLOGICAL CYCLE'.

- Water Cycle

# GCSE Science Daily Revision Task



**Task:** Produce a flash card on biodiversity

## **Things to include:**

Biodiversity means having as wide a range of different species as possible. Maintaining biodiversity is an important part of using the environment in a sustainable way. Indiscriminate use of the environment, for example cutting down large areas of the rain forest to grow crops such as soya, results in a large number of species becoming extinct and reduces biodiversity.



# GCSE Science Daily Revision Task



**Task:** Produce a flash card on waste management

## Things to include:

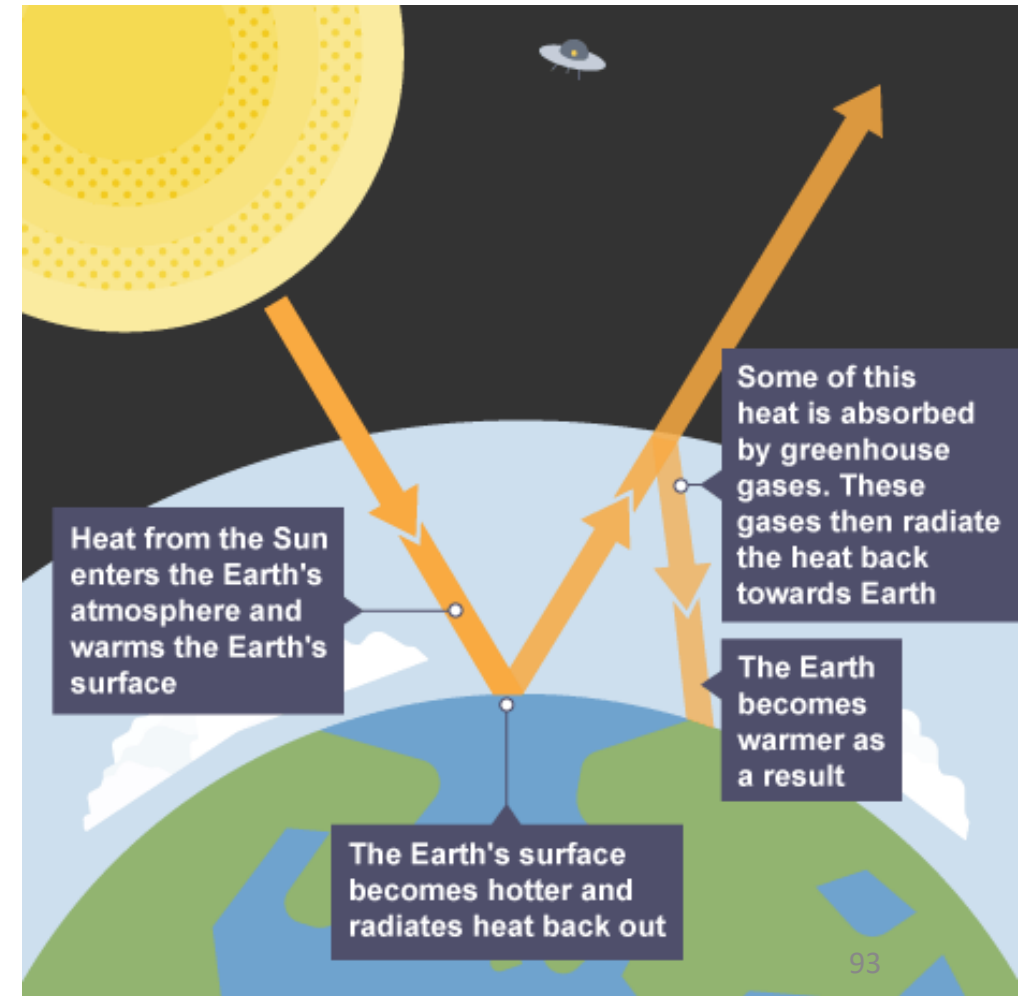
Most rubbish is buried in landfill sites and not all of it comprises safe materials. Even **common household items can contain toxic chemicals** such as poisonous metals. Many smoke alarms contain radioactive americium. **Industrial waste is also discharged onto the land.** Many farmers apply *pesticides* to improve their crops, but these can damage living things. Toxic chemicals can be washed from the land into rivers, lakes and seas.



## Task: Produce a flash card on global warming

## Things to include:

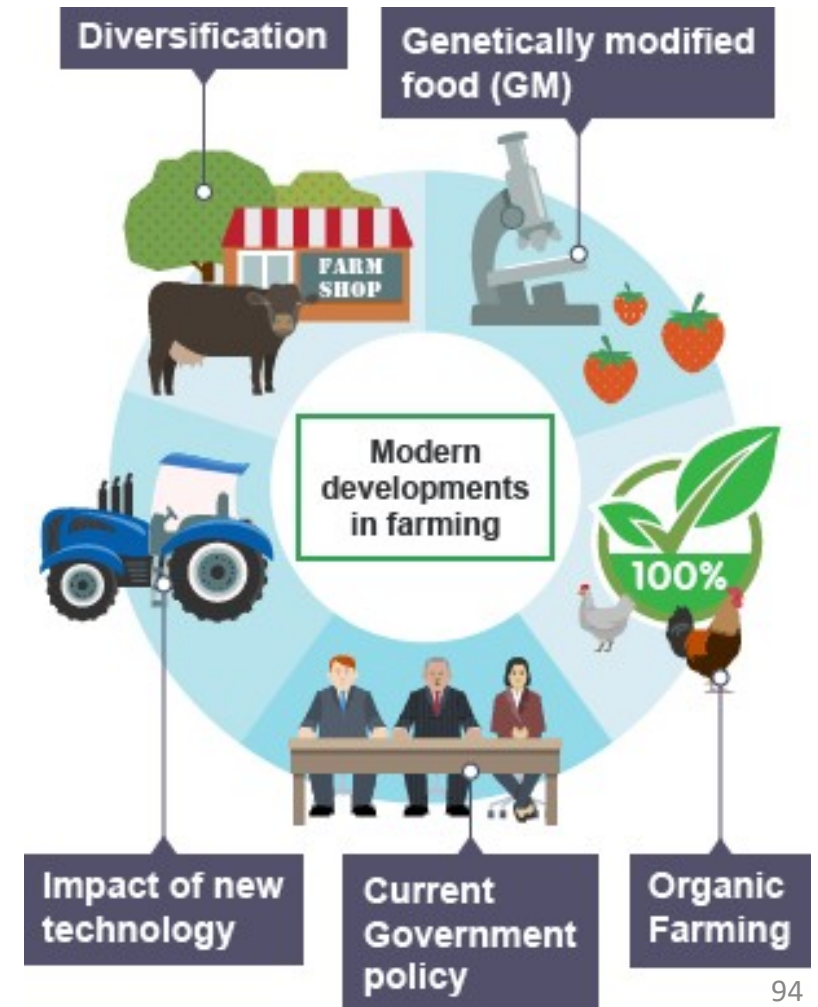
1. Sun's rays enter the Earth's atmosphere
2. Heat is reflected back from the Earth's surface
3. Heat is absorbed by carbon dioxide (greenhouse gas) and as a result becomes trapped in the Earth's atmosphere
4. The Earth becomes hotter as a result





## Things to include:

One such initiative is sustainable farming. It simply means production of food, plants and animal products using farming techniques that prove to be beneficial for public health and promote economic profitability. It draws and learns from organic farming.



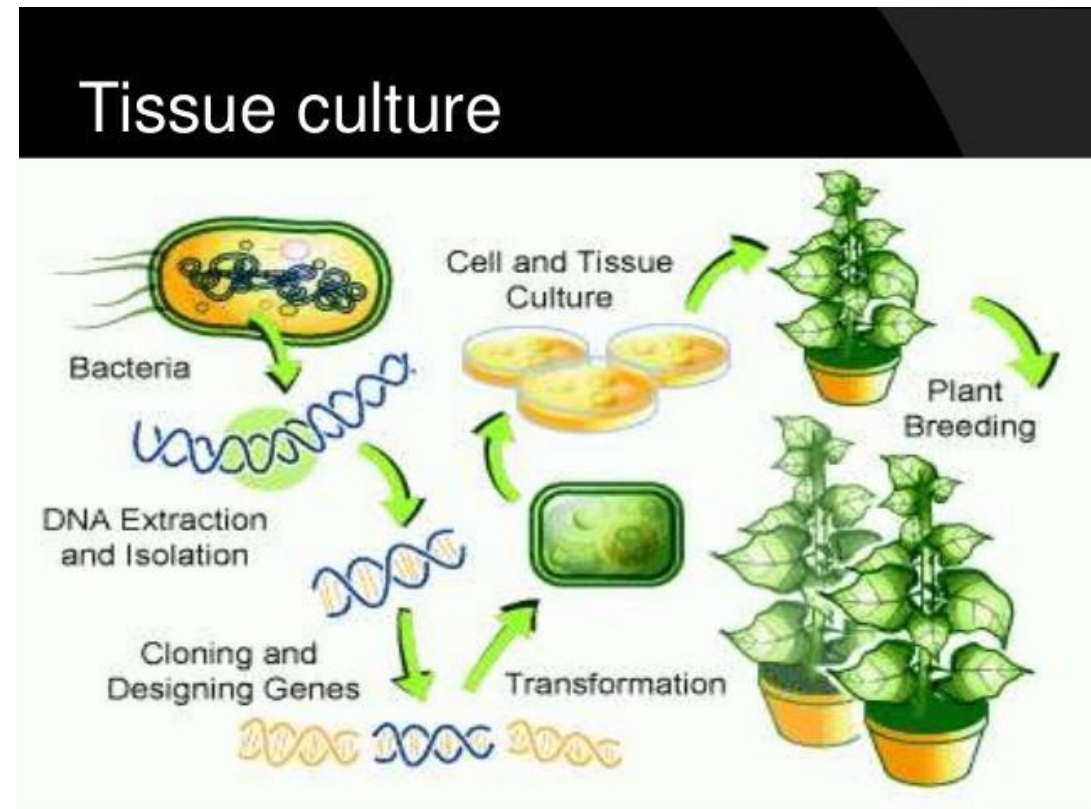
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on role of biotechnology

## Things to include:

Agricultural **biotechnology** is a collection of scientific techniques, including genetic engineering, that are used to modify and improve plants, animals and micro-organisms for human benefit. It is not a substitute for conventional plant and animal breeding but can be a powerful complement.



## Things to include:

**Large population with common gene pool**

**Isolation**  
Two populations separated by a barrier

**Mutation**  
Mutants

**Natural selection**

**Selection pressure**  
Temperature  
Hairy form has a selective advantage

**Selection pressure**  
Predation  
Blue form has a selective advantage

**After a very long period**  
The populations can no longer interbreed to produce fertile offspring, so two new species have formed

# GCSE Science Daily Revision Task

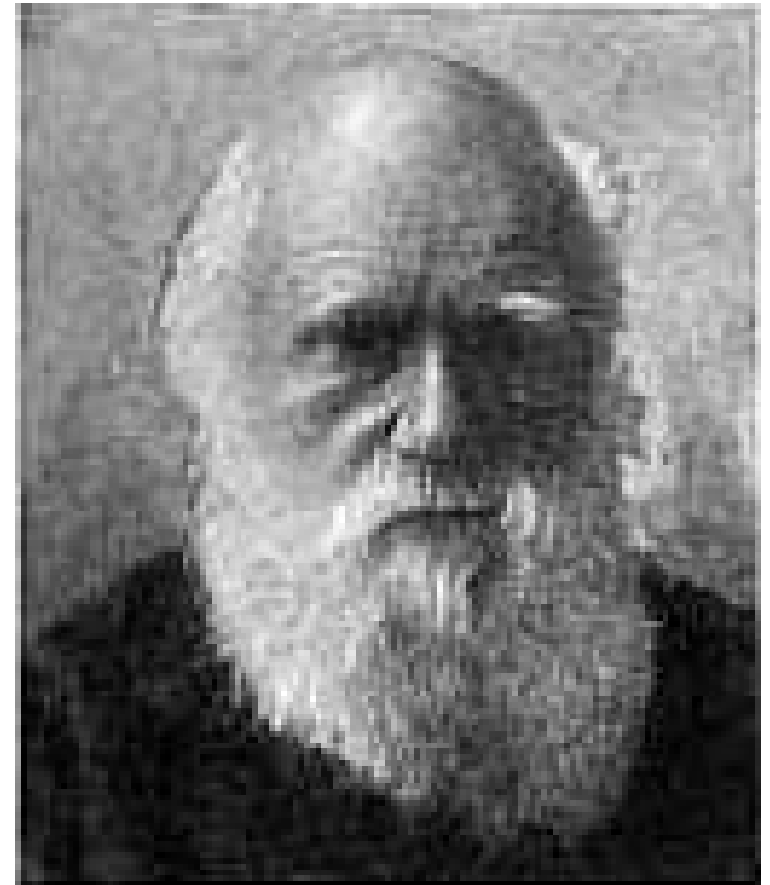


**Task:** Produce a flash card on the theory of evolution

## Things to include:

The theory of evolution states that evolution happens by natural selection. The key points are that:

- individuals in a species show a wide range of variation
- this variation is because of differences in their *genes*
- individuals with characteristics most suited to the environment are more likely to survive and reproduce
- the genes that allow these individuals to be successful are passed to their offspring





## Things to include:

Human      Dog      Bird      Whale



## Task: Produce a flash card on extinction

## Things to include:

Individuals that are poorly adapted to their environment are less likely to survive and reproduce than those that are well adapted. Similarly, it is possible that a species that is poorly adapted to its environment will not survive at all, and will become extinct.





[illegible]

## Things to include:

The graph illustrates the effect of temperature on the rate of reaction. The y-axis represents 'Total mass / vol of product' and the x-axis represents 'Time from start of reaction'. Two curves are plotted: a blue curve for 'High temperature' and a red curve for 'Low temperature'. The blue curve rises more steeply and reaches the plateau earlier than the red curve, indicating a faster reaction rate at higher temperatures.

# GCSE Science Daily Revision Task

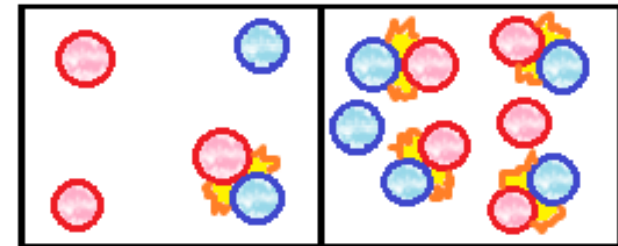


**Task:** Produce a flash card on how pressure effects rate of reaction

## Things to include:

Increasing the pressure of reacting gases increases the frequency of collisions and so increases the rate of reaction.

Low  
concentration/  
pressure.  
Less collisions  
Little energy



High  
concentration/  
pressure.  
More collisions  
More energy

# GCSE Science Daily Revision Task



**Task:** Produce a flash card on how surface area effects rate of reaction

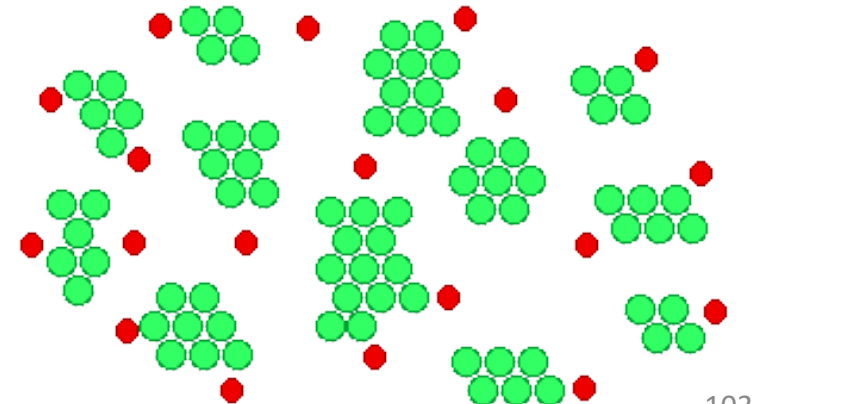
## Things to include:

Increasing the surface area of solid reactants increases the frequency of collisions and so increases the rate of reaction

Hydrogen ions can hit the outer layer of atoms . . .

. . . but not these in the centre of the lump.

With the same number of atoms now split into lots of smaller bits, there are hardly any magnesium atoms which the hydrogen ions can't get at.







[illegible]

## Things to include:

The diagram illustrates the recrystallization process in four numbered steps: 1. A beaker containing a mixture of solid and liquid. 2. A boiling flask containing the solution, heated by a Bunsen burner on a stand. 3. A funnel with filter paper filtering the solution into a dish. 4. A dish containing the purified crystals.

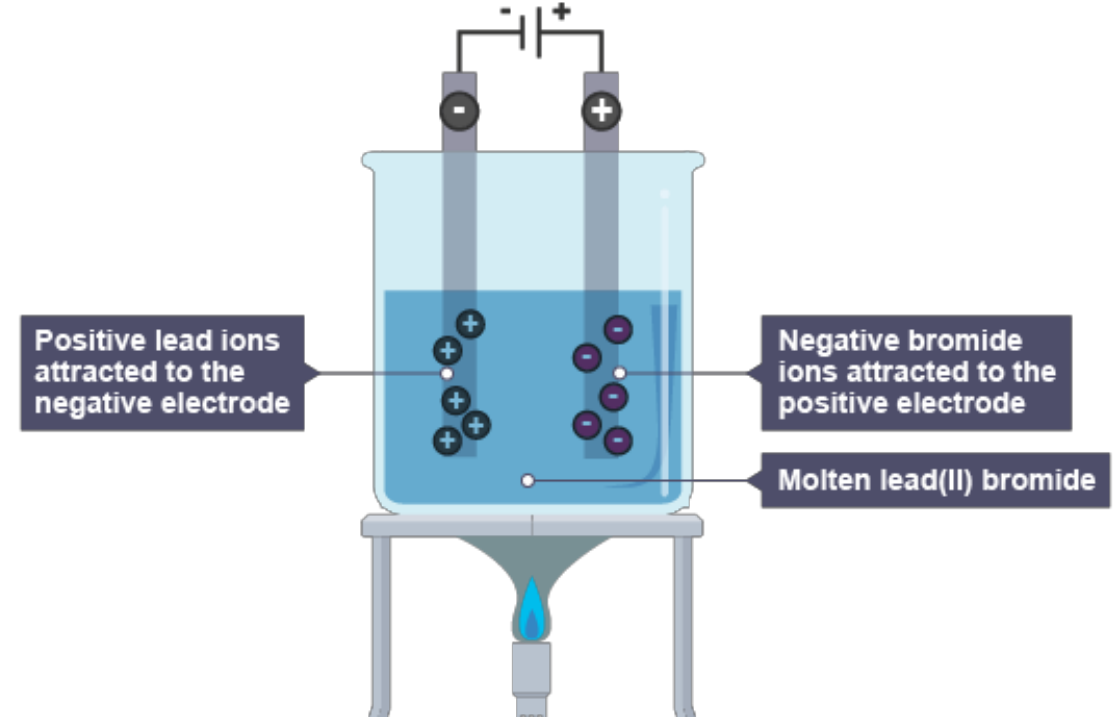
# GCSE Science Daily Revision Task



**Task:** Produce a concept map on electrolysis

## Things to include:

Passing an electric current through ionic substances that are molten, for example lead bromide, or in solution breaks them down into elements. This process is called electrolysis and the substance that is broken down is called the electrolyte.



[illegible]

## Things to include:

The diagram illustrates the electrolysis cell used for the extraction of molten aluminium. It features a central electrolyte bath labeled "purified aluminium ore dissolved in molten cryolite". Two large rectangular electrodes are positioned in the bath: a "graphite anode" at the top, connected to a positive terminal (+), and a "graphite cathode" at the bottom, connected to a negative terminal (-). The entire setup is housed within a "steel case". At the bottom of the cell, a layer of "molten aluminium" is shown. The diagram is labeled with "107" in the bottom right corner.

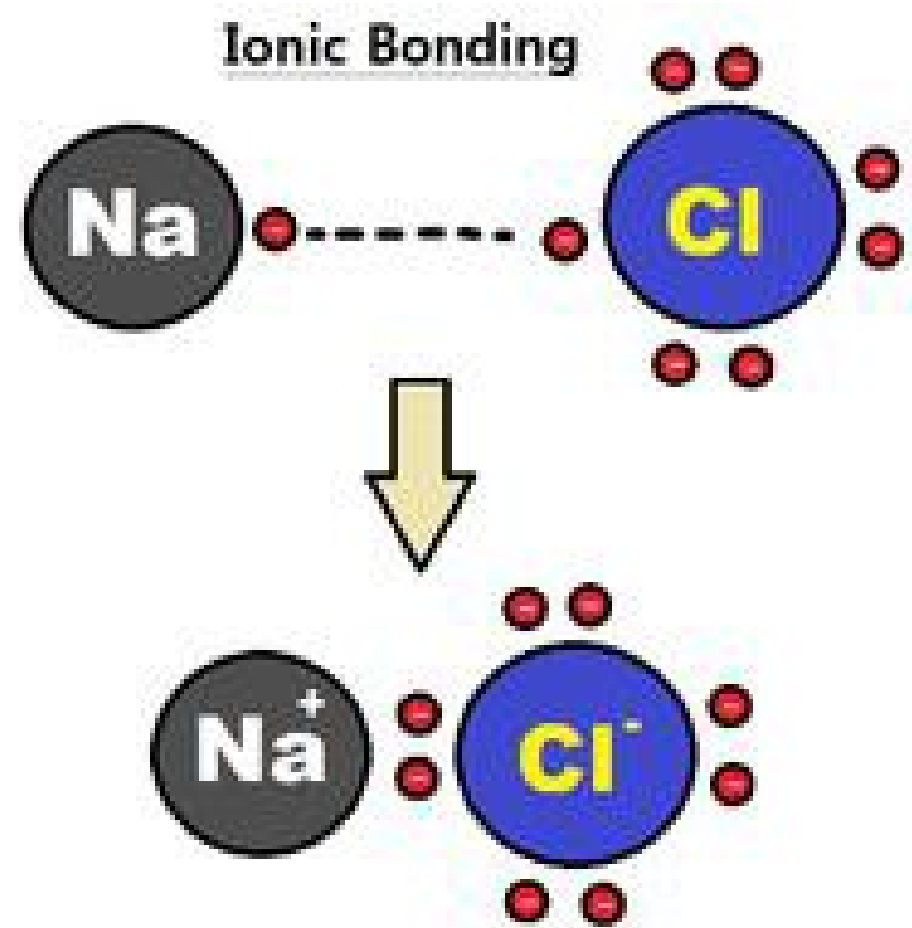
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on ionic bonding

## Things to include:

- How ionic bonds form
- How the charge of the molecules effects the molecule that forms
- Examples of ionic compounds





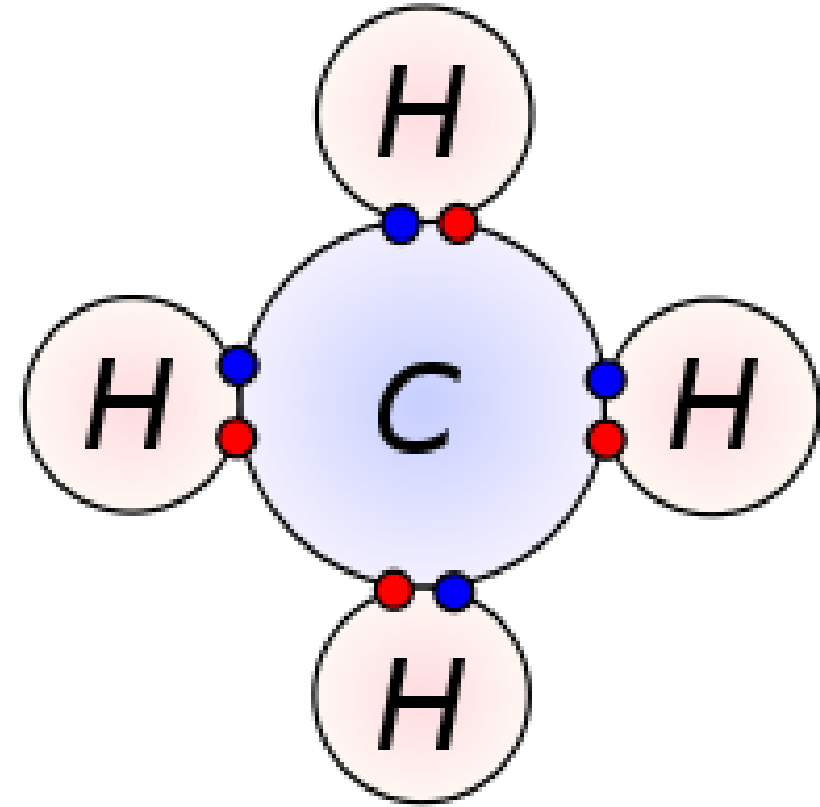
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on covalent bonding

## Things to include:

- What covalent bonds are
- How covalent bonds form
- Examples of covalent molecules



- Electron from hydrogen
- Electron from carbon

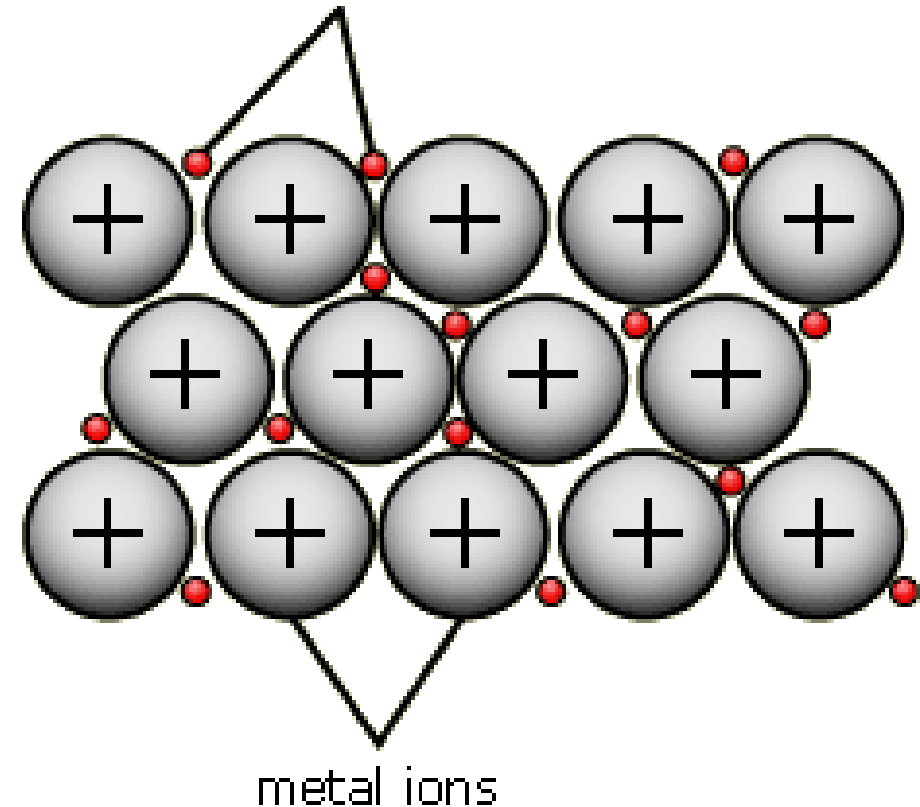
[illegible]

## Task: Produce a flash card on metallic bonding

## Things to include:

- What metallic bonds are
- How metallic bonds form
- Diagrams showing metallic bonding

**free electrons** from outer shells of metal atoms



# GCSE Science Daily Revision Task

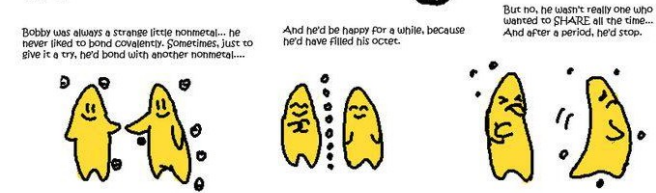


**Task:** Produce a concept map on different types of bonding

## Things to include:

- Metallic bonding
- Covalent bonding
- Ionic bonding

### Covalent bonding



### Ionic bonding



### metallic bonding



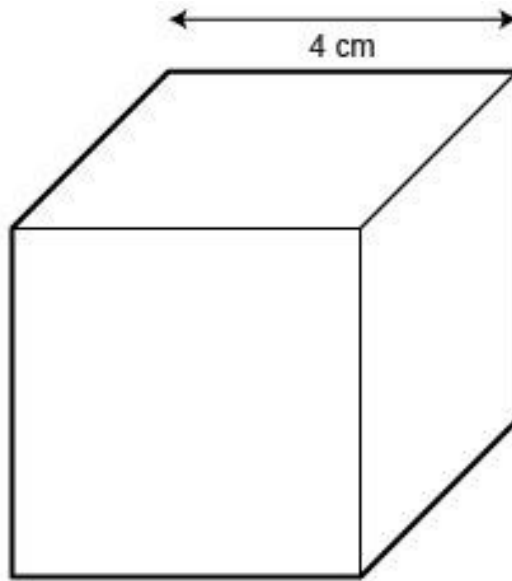
# GCSE Science Daily Revision Task



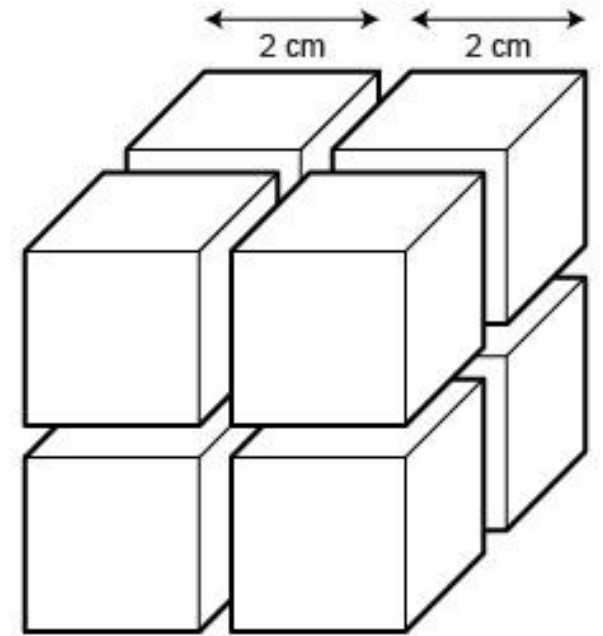
**Task:** Produce a summary sheet on nano science

## Things to include:

- What nano science is
- The size of nano particles
- Some of the uses of nano science



Surface area  
= (4 cm x 4 cm x 6 faces) = 96 cm<sup>2</sup>



Surface area of one cube  
= (2 cm x 2 cm) x 6 faces = 24 cm<sup>2</sup>

Total surface area  
= 24 cm<sup>2</sup> x 8 cubes = 192 cm<sup>2</sup>

## Things to include:

- | Quantity            | Quantity symbol | Unit name | Unit abbreviation |
|---------------------|-----------------|-----------|-------------------|
| Length              | $l$             | meter     | m                 |
| Mass                | $m$             | kilogram  | kg                |
| Time                | $t$             | second    | s                 |
| Temperature         | $T$             | kelvin    | K                 |
| Amount of substance | $n$             | mole      | mol               |



# GCSE Science Daily Revision Task

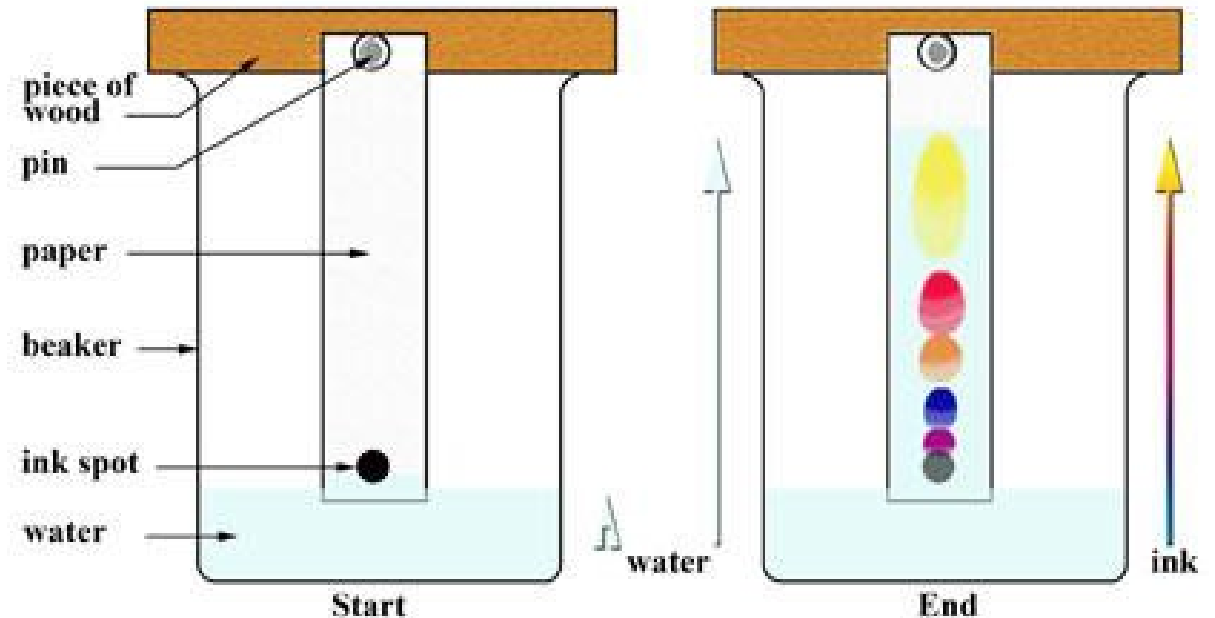


**Task:** Produce a flash card on chromatography

## Things to include:

- What chromatography is
- How it's carried out
- When it is used

## Simple chromatography



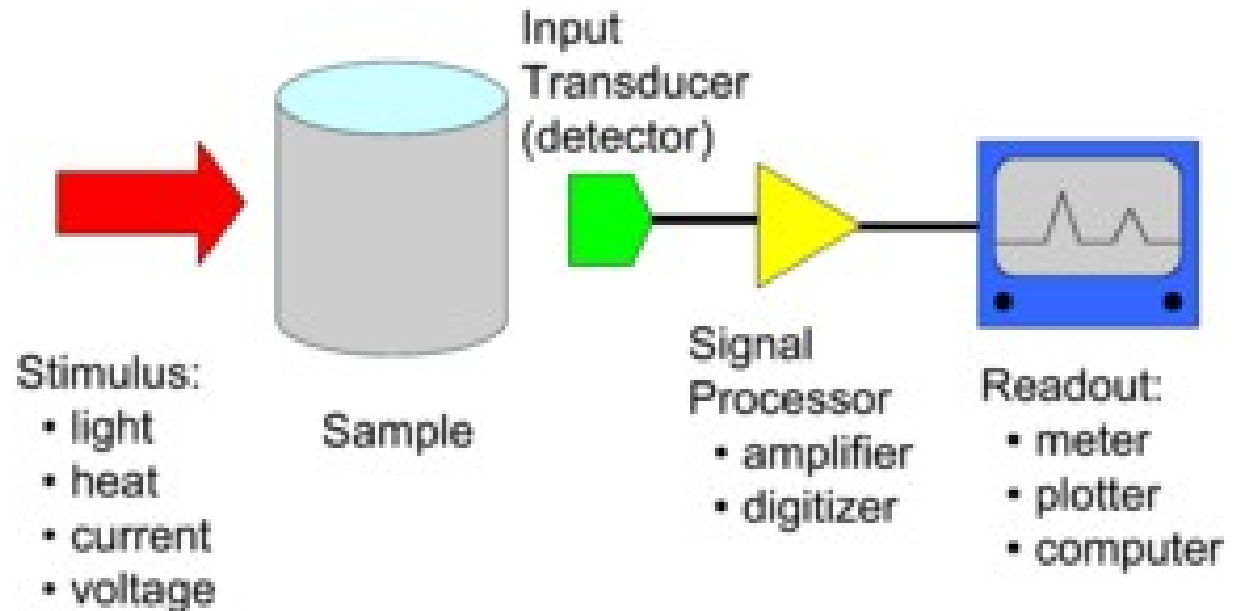
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on instrumental analysis

## Things to include:

- What instrumental analysis is
- How gas chromatography is carried out
- What it is used for



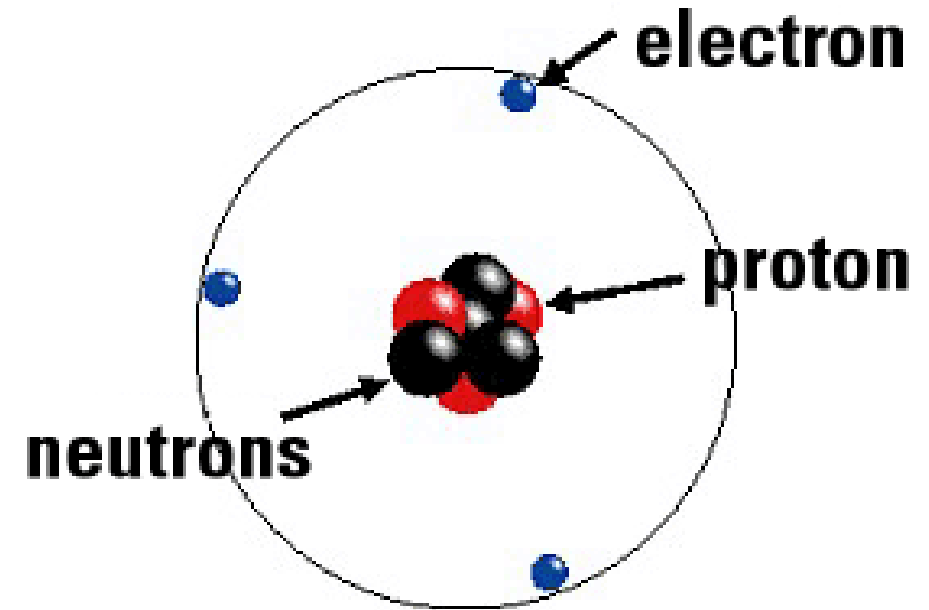
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on the structure of the atom

## Things to include:

Atoms consist of electrons surrounding a **nucleus** that contains **protons** and neutrons. Neutrons are neutral, but **protons** and electrons are electrically charged. **Protons** have a relative charge of +1, while electrons have a relative charge of -1. The number of **protons** in an atom is called its atomic number.



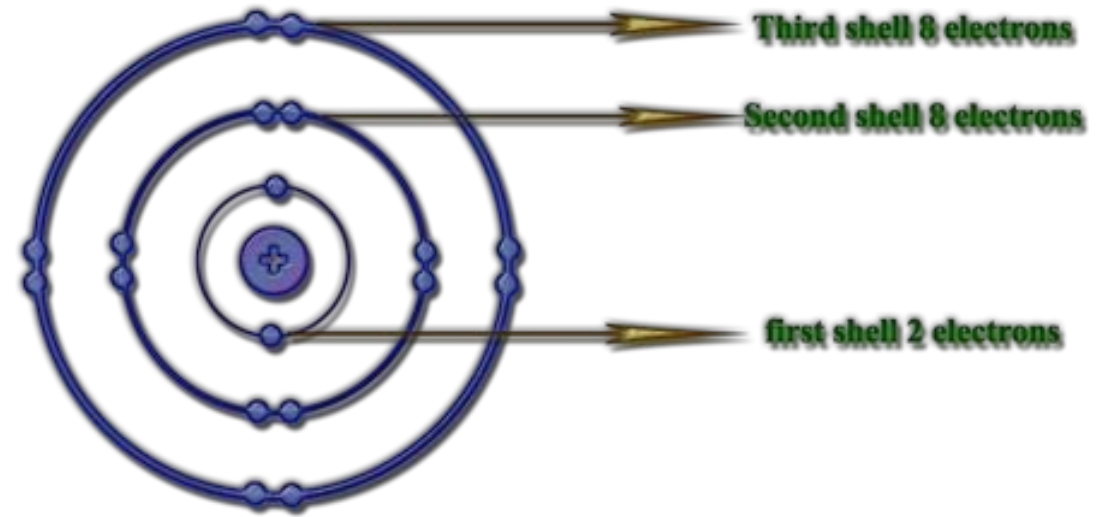
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on the arrangement of electrons

## Things to include:

The number of **electrons** in an atom is the same as the number of protons. These **electrons** are **arranged** in shells or 'energy levels' around the nucleus. The **arrangement** of **electrons** determines the chemical properties of an element.



## Things to include:

```
graph TD; A[1. Dissolve sodium chloride in water] --> B[2. Add ammonia]; B --> C[3. Add sodium hydroxide solution]; C --> D[4. Heat]; D --> A;
```

1. Dissolve sodium chloride in water

2. Add ammonia

3. Add sodium hydroxide solution

4. Heat

118



## Things to include:

iron ore, coke and limestone

hot waste gases

hot waste gases

400°C

steel lined with heat-resistant brick

1800°C

hot air blast

hot air blast

molten slag

molten iron

tap hole for slag

tap hole for iron

119

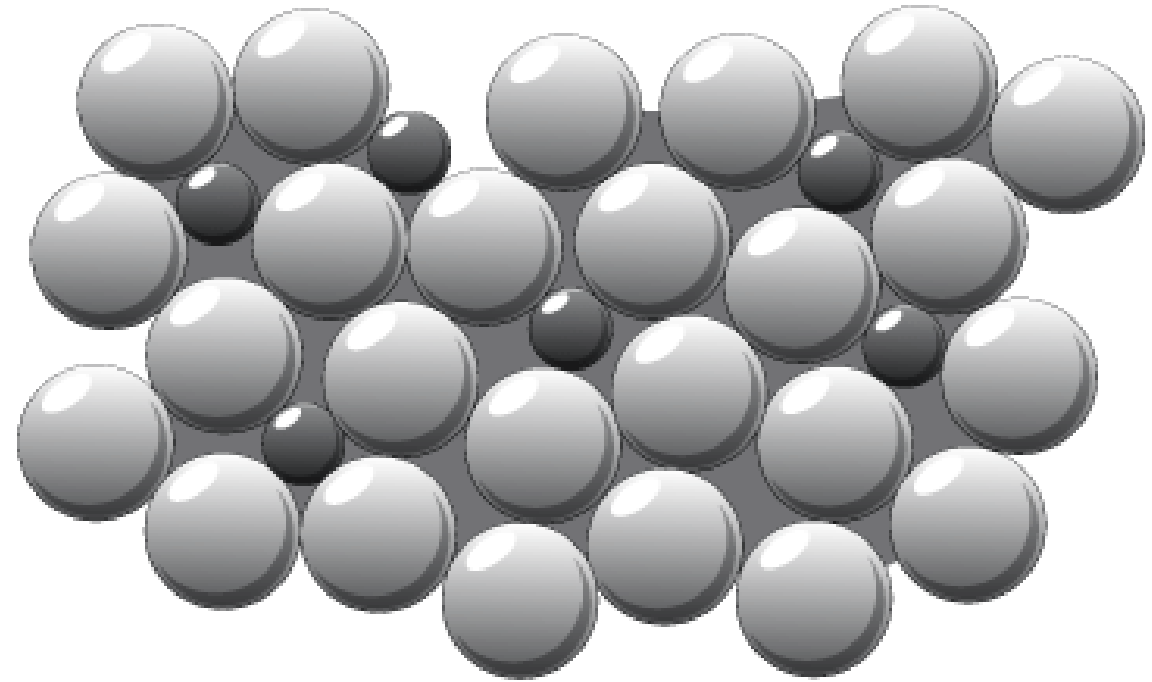
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on steel

## Things to include:

Carbon is removed by blowing oxygen into the molten metal. It reacts with the carbon producing carbon monoxide and carbon dioxide. These escape from the molten metal. Enough oxygen is used to achieve steel with the desired carbon content. Other metals are often added, such as vanadium and chromium.



# GCSE Science Daily Revision Task



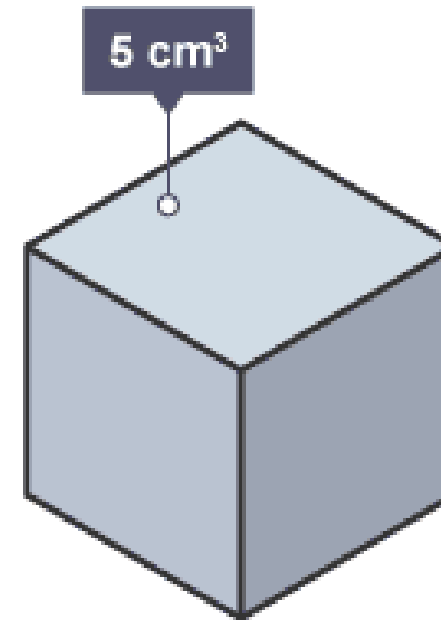
**Task:** Produce a flash card on titanium

## Things to include:

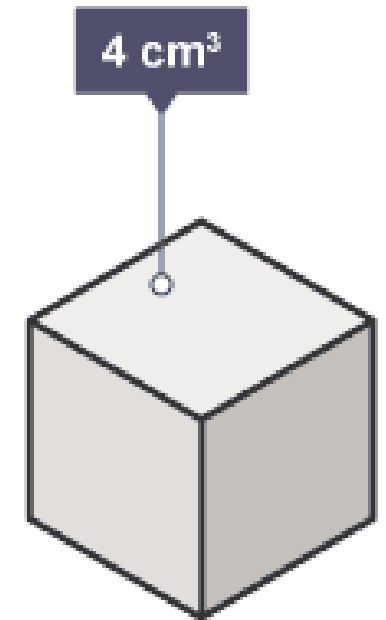
Unlike iron, aluminium and titanium cannot be extracted from their oxides by reduction with carbon:

- Aluminium is more reactive than carbon, so the reaction does not work.
- Titanium forms titanium carbide with carbon, which makes the metal brittle.

Aluminium extraction is expensive because **the process needs a lot of electrical energy**. Titanium extraction is expensive because **the process involves several stages** and a lot of energy. This especially limits the uses of titanium.



Aluminium (13.5 kg)



Titanium (18 g)

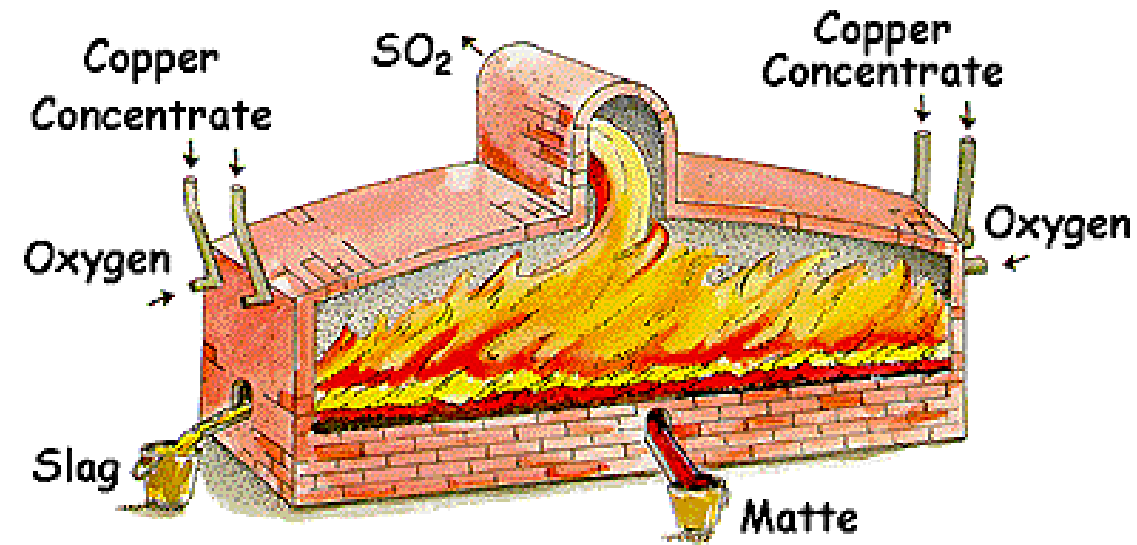
# GCSE Science Daily Revision Task



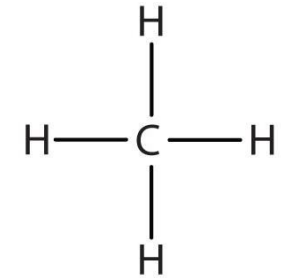
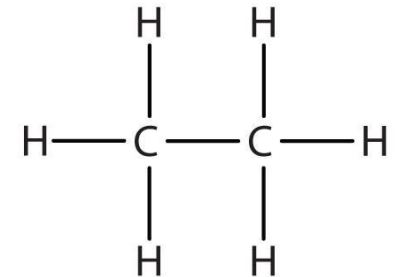
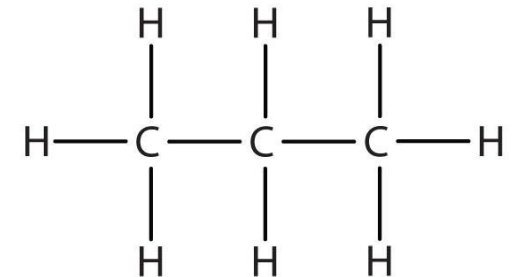
**Task:** Produce a flash card on smelting copper

## Things to include:

**Smelting** is a form of extractive metallurgy; its main use is to produce a base metal from its ore. This includes production of silver, iron, **copper** and other base metals from their ores.



## Things to include:

methane, CH<sub>4</sub>ethane, C<sub>2</sub>H<sub>6</sub>propane,  $C_3H_8$ 



[illegible]

## Things to include:

The diagram illustrates the fractional distillation of crude oil. A vertical column is shown with a temperature gradient from 25 °C at the top to 350 °C at the bottom. Heated crude oil enters from the bottom. As the oil rises, it is separated into different fractions based on their boiling points. The fractions are collected in trays and then directed to specific products.

Temperature / Condition	Fraction / Product	Uses / Properties
Cool (25 °C)	Refinery gases	Bottled gas
	Gasoline	Fuel for cars
	Kerosene	Aircraft fuel
	Diesel	Fuel for cars, lorries, buses
	Fuel oil	Fuel for ships, power stations
Hot (350 °C)	Bitumen	Bitumen for roads & roofs

On the right side, a vertical arrow indicates the molecular weight and volatility of the fractions:

- Small molecules** (top): Low boiling point, Very volatile, Flows easily, Ignites easily.
- Large molecules** (bottom): High boiling point, Not very volatile, Does not flow easily, Does not ignite easily.

# GCSE Science Daily Revision Task



**Task:** Produce a flash card on burning fuels

## Things to include:

We burn fuels to produce energy. When these fuels burn, the *atoms* in the fuels combine with oxygen from the air to make new *molecules*.

Coal is made mainly of carbon. This burns to produce **carbon dioxide**.

Petrol, diesel fuel and fuel oil are **hydrocarbons**.

Their molecules are made of carbon and hydrogen atoms. When these fuels burn, the carbon and hydrogen atoms combine with oxygen atoms to produce carbon dioxide and water vapour.



# GCSE Science Daily Revision Task

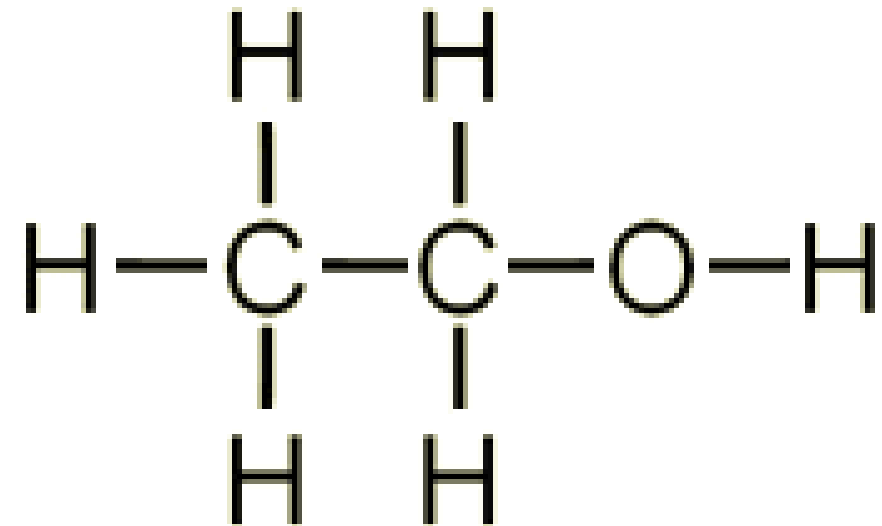


**Task:** Produce a flash card on producing ethanol

## Things to include:

Ethanol can be manufactured by reacting ethene (from *cracking* crude oil fractions) with steam. A *catalyst* of phosphoric acid is used to ensure a fast reaction.

The process is continuous – as long as ethene and steam are fed into one end of the reaction vessel, ethanol will be produced. These features make it an efficient process, but there is a problem. Ethene is made from **crude oil**, which is a non-renewable resource. It cannot be replaced once it is used up and it will run out one day.



## Things to include:

The diagram illustrates the cracking of butane. At the top, a butane molecule is shown as a chain of four carbon atoms (black spheres) with hydrogen atoms (white spheres). A blue double-headed arrow points down to two products: an ethane molecule (two carbon atoms) and an ethene molecule (two carbon atoms connected by a double bond).

# GCSE Science Daily Revision Task

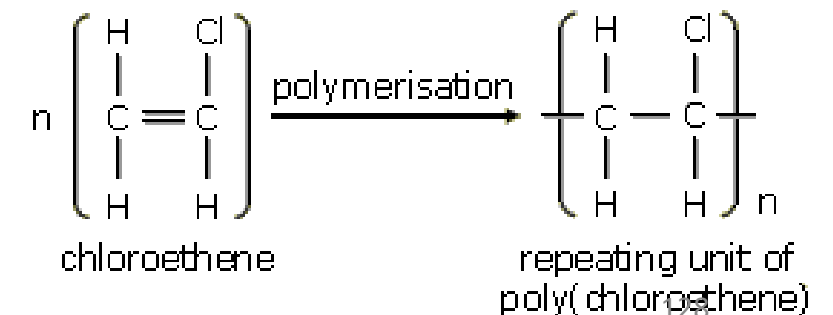
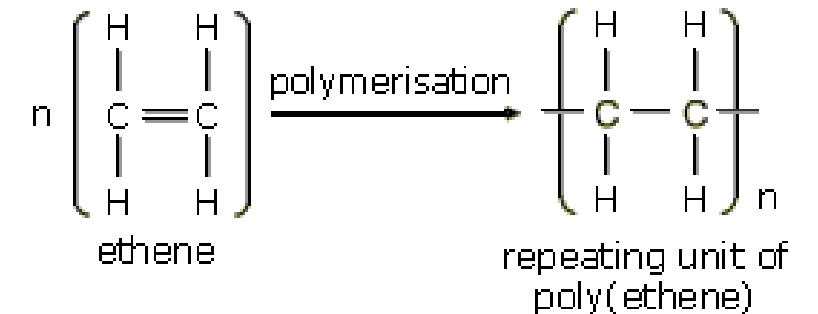
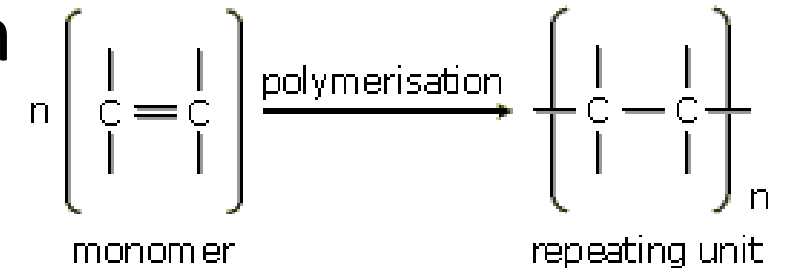


**Task:** Produce a flash card on polymerisation

## Things to include:

Some small molecules can join together to make very long molecules called **polymers**. This process is called polymerisation.

Many polymers are made from chemicals that are obtained from crude oil. For example, molecules of ethene join together to make poly(ethene), commonly known as polythene.





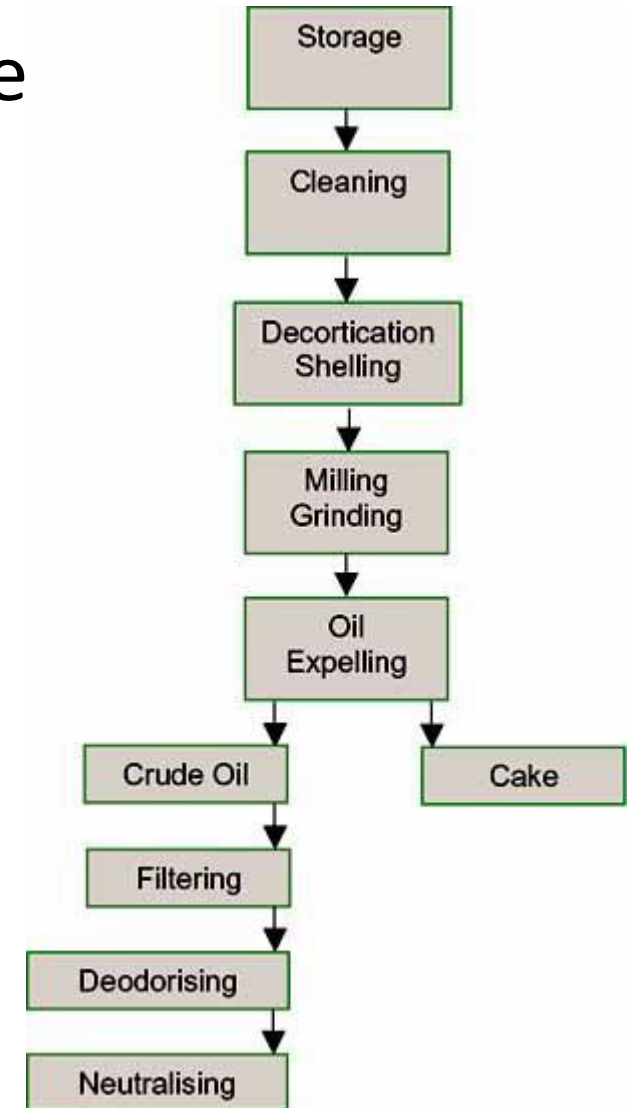
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on producing vegetable

## Things to include:

The plant materials are **crushed and pressed** to squeeze the oil out. Olive oil is obtained this way. Sometimes the oil is more difficult to extract and has to be **dissolved in a solvent**. Once the oil is dissolved, the solvent is removed by distillation, and impurities such as water are also removed, to leave pure vegetable oil. Sunflower oil is obtained in this way.



# GCSE Science Daily Revision Task

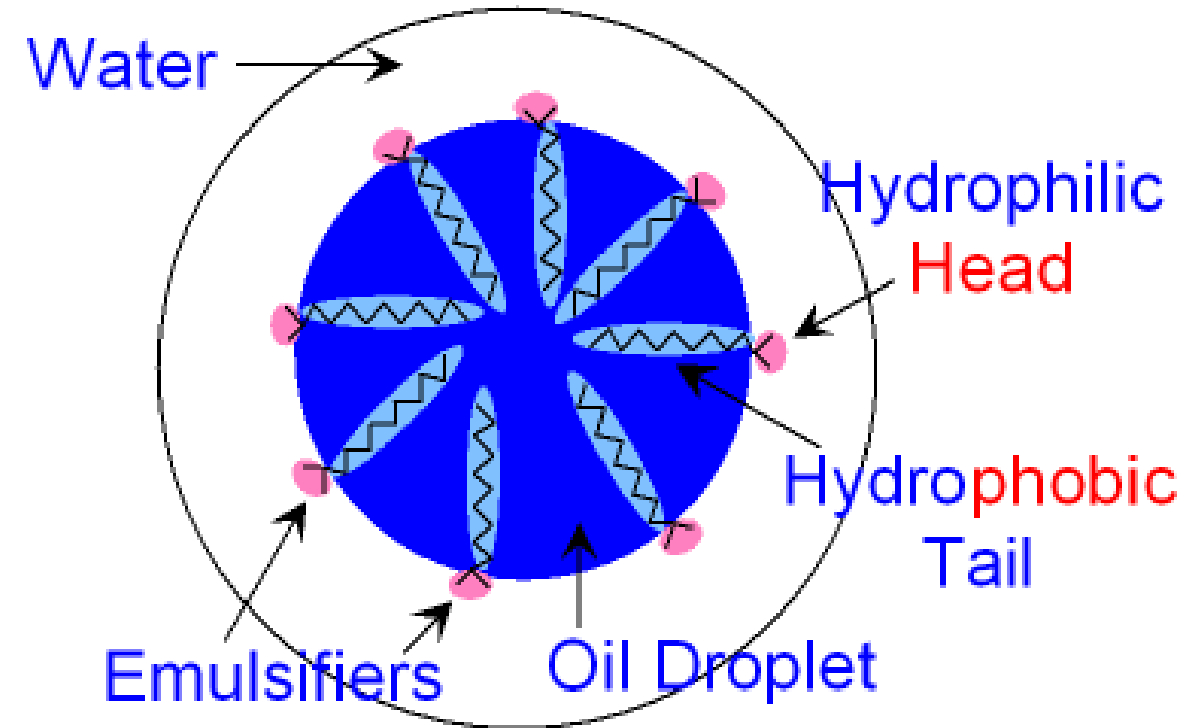


**Task:** Produce a flash card on emulsions

## Things to include:

Emulsifier molecules have two different ends:

- a hydrophilic end - 'water-loving' - that forms chemical bonds with water but not with oils
- a hydrophobic end - 'water-hating' - that forms chemical bonds with oils but not with water.



## Things to include:

- **crust** - relatively thin and rocky
- **mantle** - has the properties of a solid, but can flow very slowly
- **outer core** - made from liquid nickel and iron
- **inner core** - made from solid nickel and iron



## Things to include:

The diagram illustrates a fractional distillation column used for the separation of air. Liquefied air enters the column at  $-200^{\circ}\text{C}$  from the left. The column is filled with a blue liquid and contains a central vertical tube with a series of small white dots representing the fractionating tray. The temperature at the top of the column is  $-190^{\circ}\text{C}$ , and the temperature at the bottom is  $-185^{\circ}\text{C}$ . Gaseous nitrogen exits the top of the column, and liquid oxygen exits the bottom of the column.

# GCSE Science Daily Revision Task



**Task:** Produce a flash card on the elements in the periodic table

## Things to include:

The vertical columns in the periodic table are called groups. Each group contains elements that have similar properties. The periodic table has eight main groups. For example, group 1 contains very reactive metals such as sodium - Na - while group 7 contains very reactive non-metals such as chlorine - Cl.

## Periodic Table of the Elements

1 H																	2 He	
3 Li	4 Be																	10 Ne
11 Na	12 Mg																	18 Ar
19 K	20 Ca	21 Sc	22 Ti	23 V	24 Cr	25 Mn	26 Fe	27 Co	28 Ni	29 Cu	30 Zn	31 Ga	32 Ge	33 As	34 Se	35 Br	36 Kr	
37 Rb	38 Sr	39 Y	40 Zr	41 Nb	42 Mo	43 Tc	44 Ru	45 Rh	46 Pd	47 Ag	48 Cd	49 In	50 Sn	51 Sb	52 Te	53 I	54 Xe	
55 Cs	56 Ba	57 La	72 Hf	73 Ta	74 W	75 Re	76 Os	77 Ir	78 Pt	79 Au	80 Hg	81 Tl	82 Pb	83 Bi	84 Po	85 At	86 Rn	
87 Fr	88 Ra	89 Ac	104 Unq	105 Unp	106 Unh	107 Uns	108 Uno	109 Une	110 Unn									



## Things to include:

### Development of the modern Periodic Table

By the end of the 1700s there were about 30 known elements

Oxygen	Hydrogen	Nitrogen (Azote)	Carbon	Sulphur	Phosphorus	Gold	Platinum (Platina)	Silver
Mercury	Copper	Iron	Nickel	Tin	Lead	Zinc	Bismuth	Antimony
Arsenic	Calcium (Lime)	Manganese	Uranium	Tungsten	Titanium	Cerium	Potassium (Potash)	Sodium (Soda)
Calcium	Magnesium (Magnesia)	Barium (Barytes)	Strontium	Aluminium	Silicon	Vanadium	Beryllium	Zirconium

## Things to include:

Properties of Metals	Properties of Non- Metals
Solid at room temperature (Hot hg)	Solids, liquids or gases at room temperature
Shiny if polished	Not shiny
Conduct electricity	Do not conduct electricity (except graphite, a form of carbon)
Conduct heat	Do not conduct heat (except graphite)
Bend without breaking (malleable)	Break easily if solid (brittle)
Can stretch into wires (ductile)	Cannot stretch easily

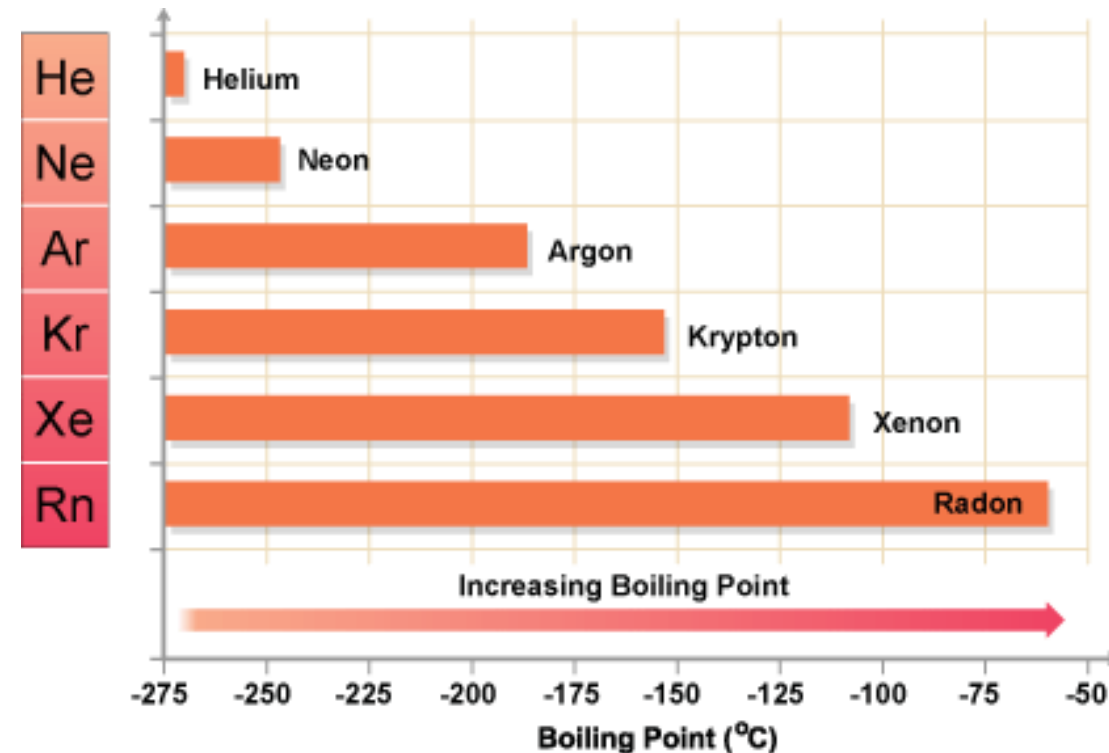
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on the elements in Group 0

## Things to include:

The group 0 elements are found on the right hand side of the periodic table. They are called the noble gases because they are very unreactive. The highest occupied energy levels (outermost shells) of their atoms are full: helium atoms have two electrons in their outer energy level.



# GCSE Science Daily Revision Task



**Task:** Produce a flash card on the elements in Group 1

## Things to include:

The alkali metals are a group (column) in the periodic table consisting of the chemical elements lithium (Li), sodium (Na), potassium (K), rubidium (Rb), caesium (Cs), and francium (Fr).



Lithium



Sodium



Potassium



Rubidium



Cesium



Francium

# GCSE Science Daily Revision Task



**Task:** Produce a flash card on the elements in Group 7

## Things to include:

The group 7 elements are also known as the halogens. They include fluorine, chlorine, bromine and iodine, which all have seven electrons in their outer shell. In a displacement reaction, a less reactive element is displaced by a more reactive element.

F
Cl
Br
I
At



**most reactive**  
attracts electrons easily

**least reactive**  
has great difficulty  
attracting electrons



## Things to include:

A simplified periodic table diagram. The title "TRANSITION METALS" is written in green, bold, capital letters at the top center. The periodic table is represented by a grid of white squares with black outlines. The transition metals, located in the d-block (groups 3-10), are highlighted in yellow. These include the first row of transition metals (groups 3-10) and the second row of transition metals (groups 3-10). The other elements (groups 1, 2, 11, 12, 13-18) are represented by white squares.

## Things to include:

- reduction is the removal of oxygen from a substance in a reaction
- oxidation is the addition of oxygen to a substance in a reaction, or the reaction of a substance with oxygen

A cartoon-style illustration of an offshore oil rig. The rig is primarily yellow and orange, with a tall derrick structure. It is supported by four large yellow legs that extend into the green water. The background is a light blue sky. The rig has several mechanical components, including a crane arm and a smaller structure on top. The water is depicted with simple green waves.

Is

## Reduction



## Gain of electrons

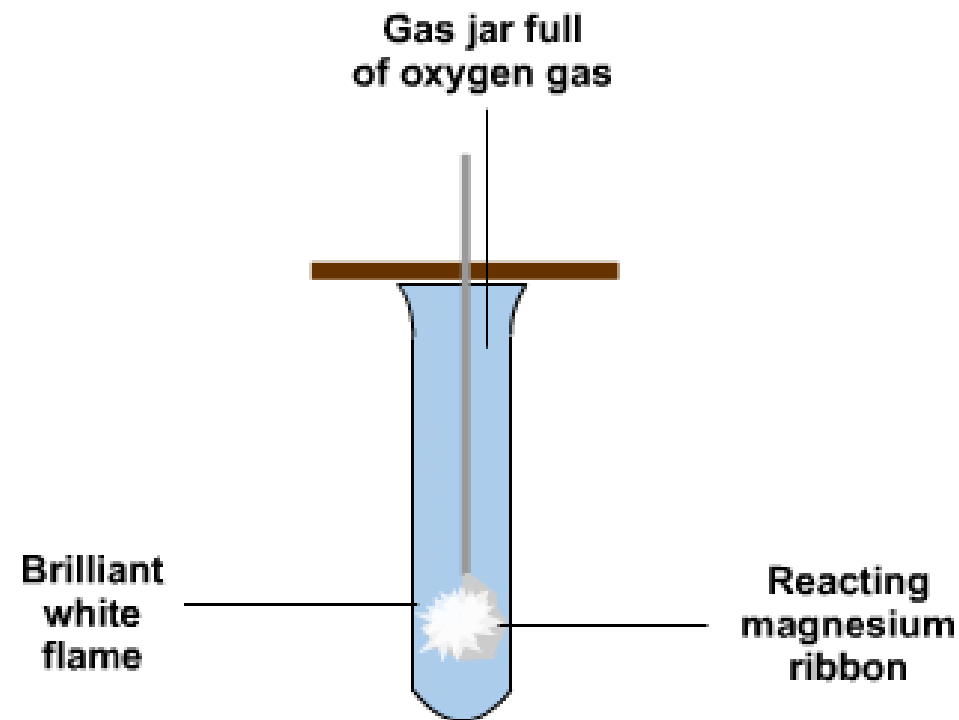
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on reactions with metals

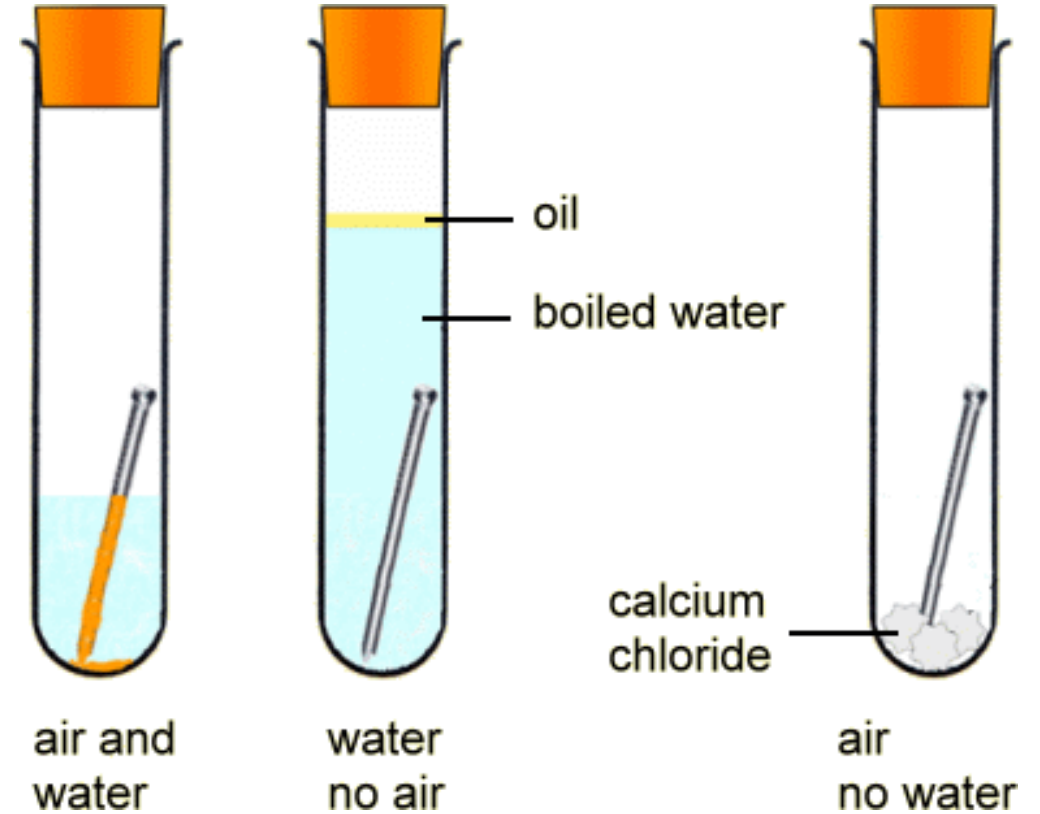
## Things to include:

Acids will react with reactive metals, such as magnesium and zinc, to make a salt and hydrogen. The hydrogen causes bubbling during the reaction. It can be detected using a lighted splint, which causes the gas to burn with a squeaky pop.



## Things to include:

magnesium + oxygen → magnesium  
oxide



[illegible]

## Things to include:

K	Potassium	 most reactive
Na	Sodium	
Ca	Calcium	
Mg	Magnesium	
Al	Aluminium	
C	<i>Carbon</i>	
Zn	Zinc	
Fe	Iron	
Sn	Tin	
Pb	Lead	
H	<i>Hydrogen</i>	
Cu	Copper	
Ag	Silver	
Au	Gold	
Pt	Platinum	least reactive

*(added for comparison)*



# GCSE Science Daily Revision Task

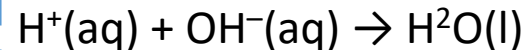


**Task:** Produce a flash card on neutralisation

## Things to include:

When the  $\text{H}^+(\text{aq})$  ions from an acid react with the  $\text{OH}^-(\text{aq})$  ions from an alkali, a neutralisation reaction occurs to form water.

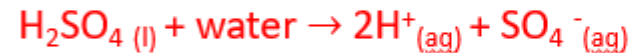
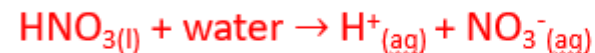
This is the equation for the reaction:



For example, hydrochloric acid and sodium hydroxide solution react together to form water and sodium chloride solution. The acid contains  $\text{H}^+$  ions and  $\text{Cl}^-$  ions, and the alkali contains  $\text{Na}^+$  ions and  $\text{OH}^-$  ions. The  $\text{H}^+$  ions and  $\text{OH}^-$  ions produce the water, and the  $\text{Na}^+$  ions and  $\text{Cl}^-$  ions produce the sodium chloride,  $\text{NaCl}(\text{aq})$ .

## Acids & alkalis

### Acids



All **acids** release **hydrogen ions** into solution when added to water. It is these excess  **$\text{H}^+$  ions** that make a solution acidic.

### Alkalis



WHAT DO YOU NOTICE ABOUT THE PRODUCT OF THE REACTION BETWEEN AN **ALKALI** & WATER?

## Things to include:

add acid to alkali

add alkali to acid

volume to neutralise =  $X \text{ cm}^3$

0 or

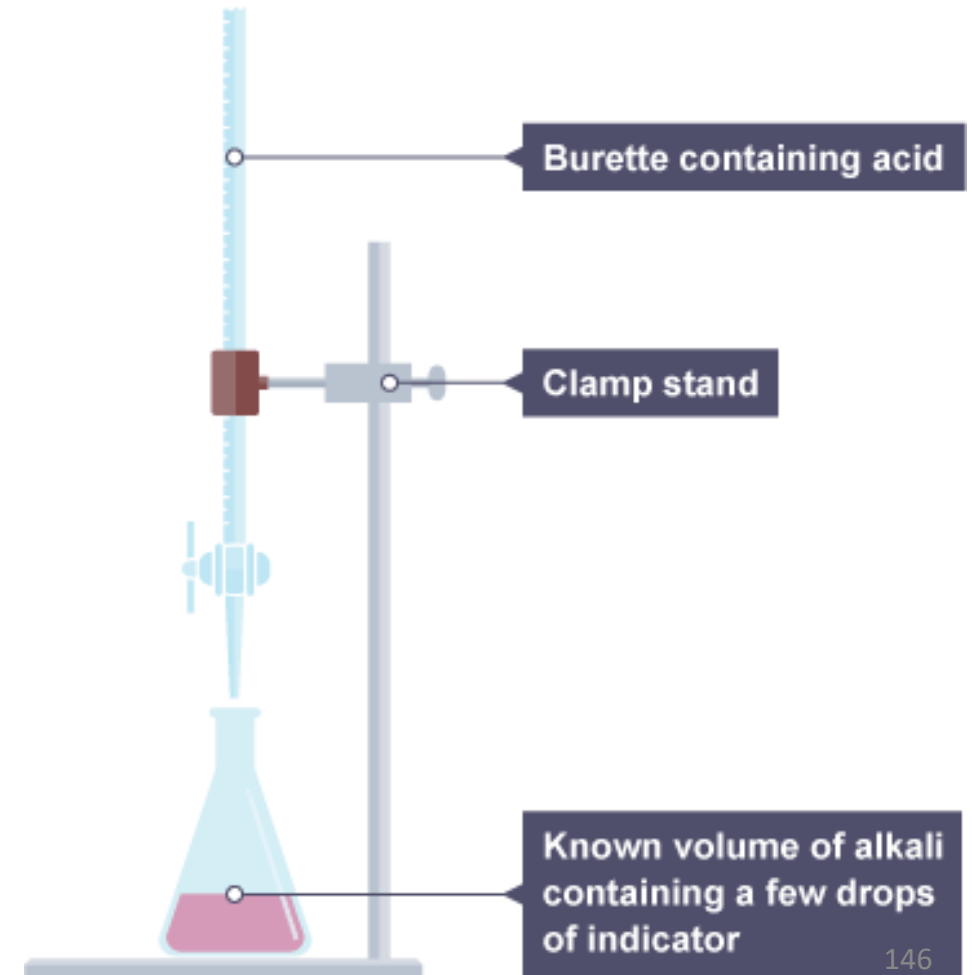
volume of acid added to alkali —

volume of alkali added to acid —

[illegible]

## Things to include:

Samples of chemicals that are synthesised must be checked for purity. This is often done by carrying out a **titration**. A titration is used to measure the volume of one solution that exactly reacts with another solution.



# GCSE Science Daily Revision Task



**Task:** Produce a flash card on acid strength

## Things to include:

Acid solutions contain hydrogen ions. The higher the concentration of hydrogen ions, the lower the pH. Hydrochloric acid is a strong acid and ethanoic acid is a weak acid. Strong acids are fully ionised but weak acids are only partly ionised in solution. At the same concentration, strong acids have a higher concentration of hydrogen ions than weak acids.

Acid	Formula	Strength
sulfuric acid	$\text{H}_2\text{SO}_4$	strong
hydrochloric acid	HCl	strong
nitric acid	$\text{HNO}_3$	strong
ethanoic acid (vinegar)	$\text{CH}_3\text{COOH}$	weak

## Things to include:

Reversible reactions are where the products can react to remake the original reactants. If the forward reaction is exothermic, the reverse reaction is endothermic.



## Things to include:

The diagram shows Energy on the vertical axis and Progress of reaction on the horizontal axis. A blue curve starts at a horizontal line labeled 'Reactants', rises to a peak labeled 'transition state' (indicated by a red dashed line), and then falls to a lower horizontal line labeled 'Products'. A vertical double-headed arrow between the 'Reactants' and 'transition state' levels is labeled 'Activation Energy'.



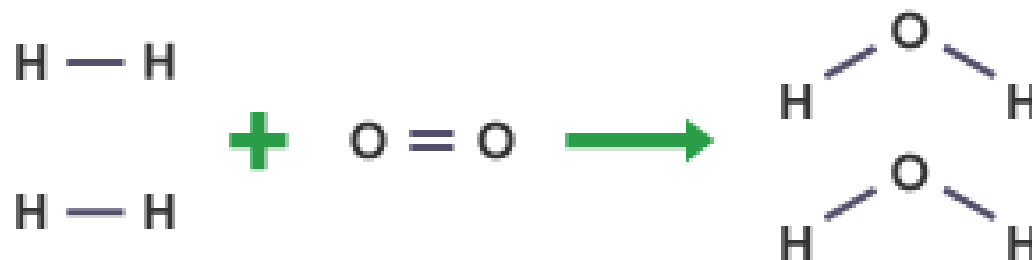
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on calculating energy change in reactions

## Things to include:

Data from a calorimetry experiment can be used to calculate the molar enthalpy change of a reaction. You need to know the mass – or volume of the water that was heated, the temperature change of the water, and the mass or number of moles of the limiting reactant (eg the fuel burned or the solute added).



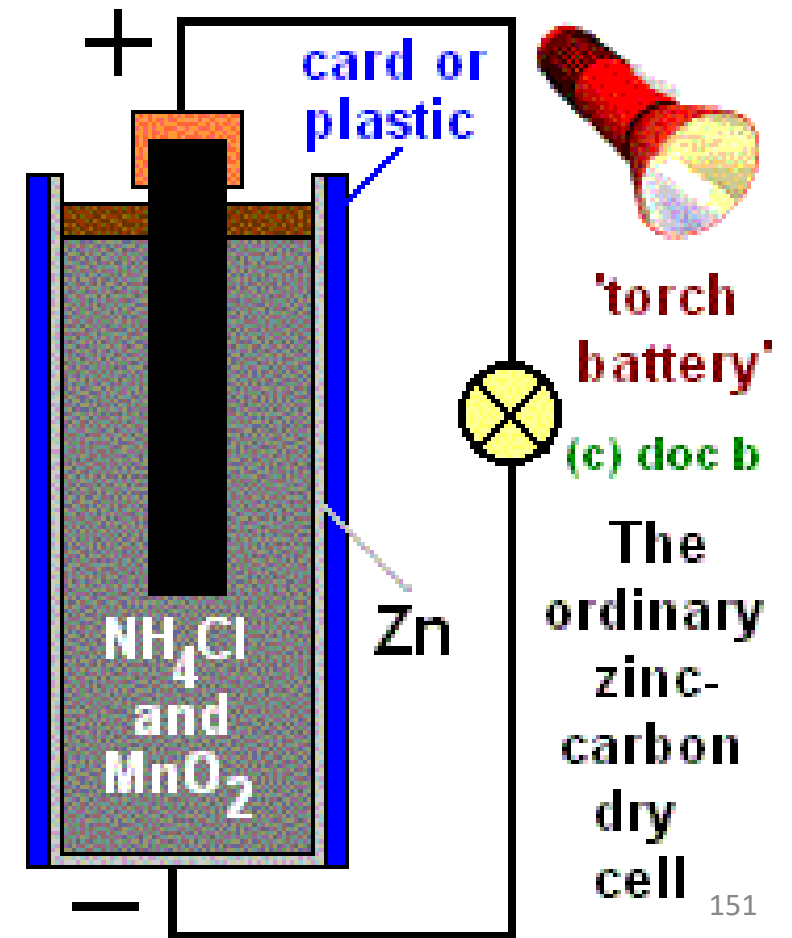
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on cells & batteries

## Things to include:

Ordinary 'dry-cell' batteries are non-rechargeable. As the reactants inside them become used up in chemical reactions, the output from these batteries gradually falls. Once all the reactants have been used up, these batteries go 'flat' and cannot supply electrical energy anymore.



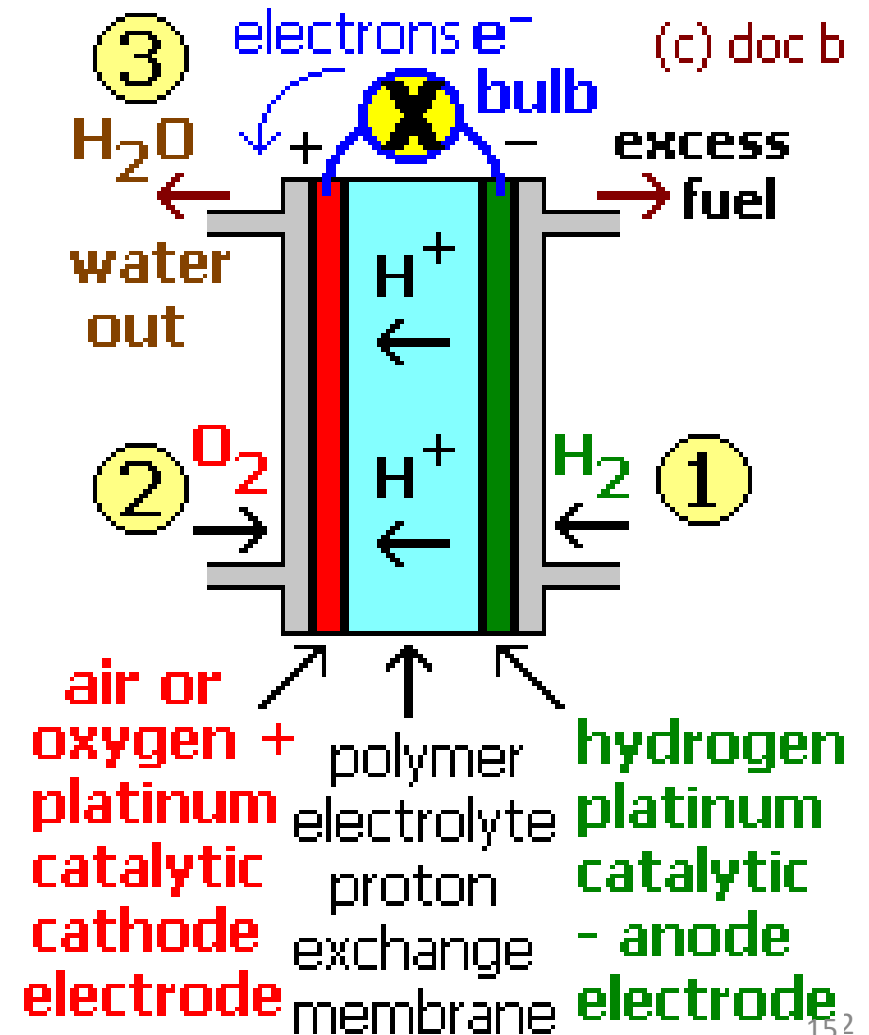
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on fuel cells

## Things to include:

The use of hydrogen-oxygen fuel cells in cars has benefits, including zero emissions of carbon dioxide from the car, and less reliance on fossil fuels. The Earth has vast amounts of water, which can be decomposed - using electricity - to produce hydrogen (and oxygen).



# GCSE Science Daily Revision Task



**Task:** Produce a flash card on elements & compounds

## Things to include:

All matter is made of atoms. There are over a hundred different types of atom, called elements, and each one has a symbol. The atoms of a particular element are identical to each other.

When atoms of different elements join together they make a compound. Compounds are represented by formulae that show how many atoms of each element are in the compound. Formulae can be worked out from the charge of the ions that make up the compound.

Substance	Types of atom chemically combined	So it is...
hydrogen	hydrogen	an element
sodium chloride	sodium and chlorine	a compound
carbon	carbon	an element
carbon dioxide	carbon and oxygen	a compound

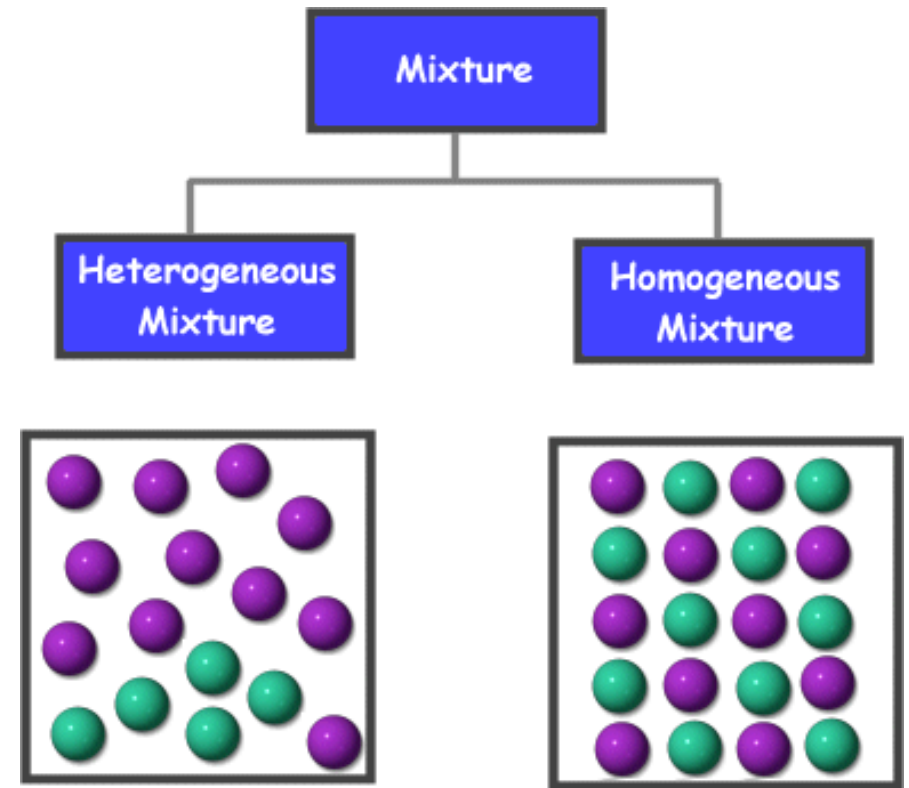
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on mixtures

## Things to include:

- An impure substance made from different elements or compounds.
- Mixtures can usually be separated by physical techniques such as filtering and distillation.
- Air is a mixture that contains the elements nitrogen, oxygen and argon, and also the compound carbon dioxide.



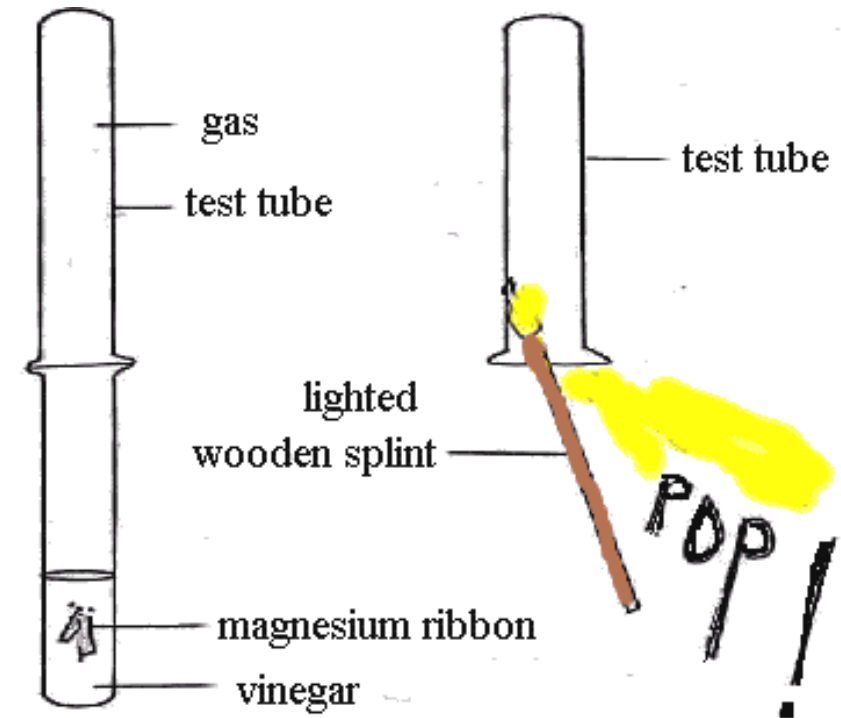
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on testing for hydrogen

## Things to include:

A lighted wooden splint makes a popping sound in a test tube of hydrogen.





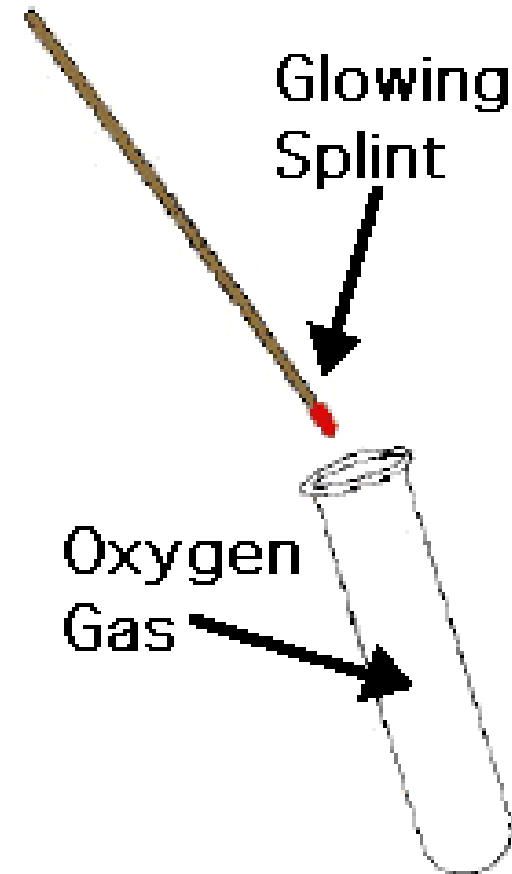
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on testing for oxygen

**Things to include:**

A glowing wooden splint relights in a test tube of oxygen.



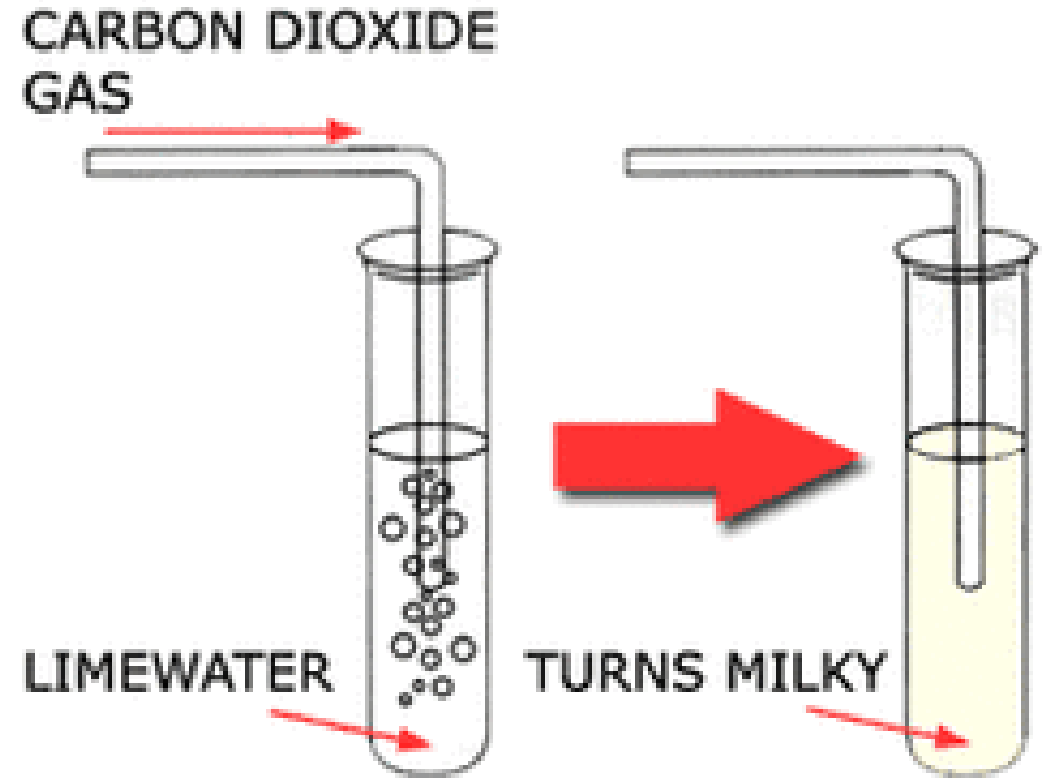
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on testing for carbon dioxide

## Things to include:

A lighted wooden splint goes out in a test tube of carbon dioxide but this happens with other gases, too. It is better to bubble the test gas through limewater - calcium hydroxide solution. Carbon dioxide turns limewater cloudy white.



[illegible]

## Things to include:

**Silver nitrate (c) doc**  
**TESTS FOR brown**  
**HALIDE**  
**IONS**

The diagram shows a test tube containing a grey liquid. At the bottom of the tube is a white, cloudy precipitate. A pink arrow points from the text 'white precipitate silver chloride  $\text{AgCl}_{(s)}$ ' to this precipitate. Above the tube, a test pipette with an orange handle is shown dispensing a drop of liquid. To the right of the pipette is the text ' $\text{Ag}^+_{(a)}$  in test pipette'. Below the tube, the text 'chloride ion solution  $\text{Cl}^-_{(aq)}$  plus dilute nitric acid' is written.

$\text{Ag}^+_{(a)}$   
in test pipette

white  
precipitate  
silver chloride  
 $\text{AgCl}_{(s)}$

chloride ion  
solution  $\text{Cl}^-_{(aq)}$   
plus dilute nitric acid

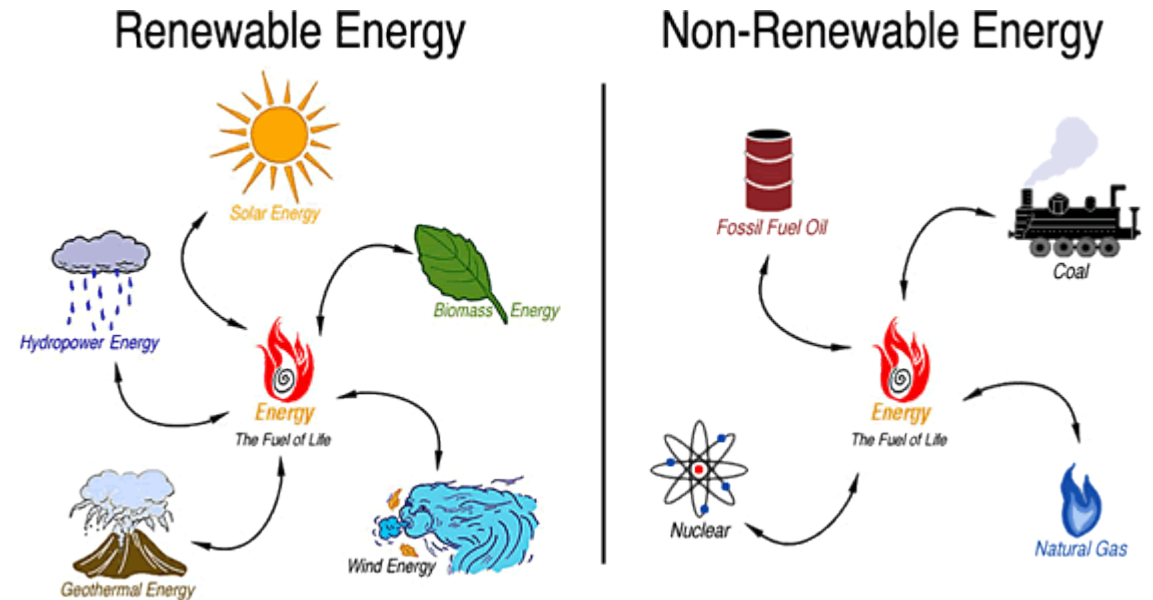
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on finite & renewable resources

## Things to include:

Renewable resources are commodities such as solar energy, oxygen, biomass, fish stocks or forestry that is inexhaustible or replaceable over time providing that the rate of extraction of the resource is less than the natural rate at which the resource renews itself. ...  
Finite resources cannot be renewed.



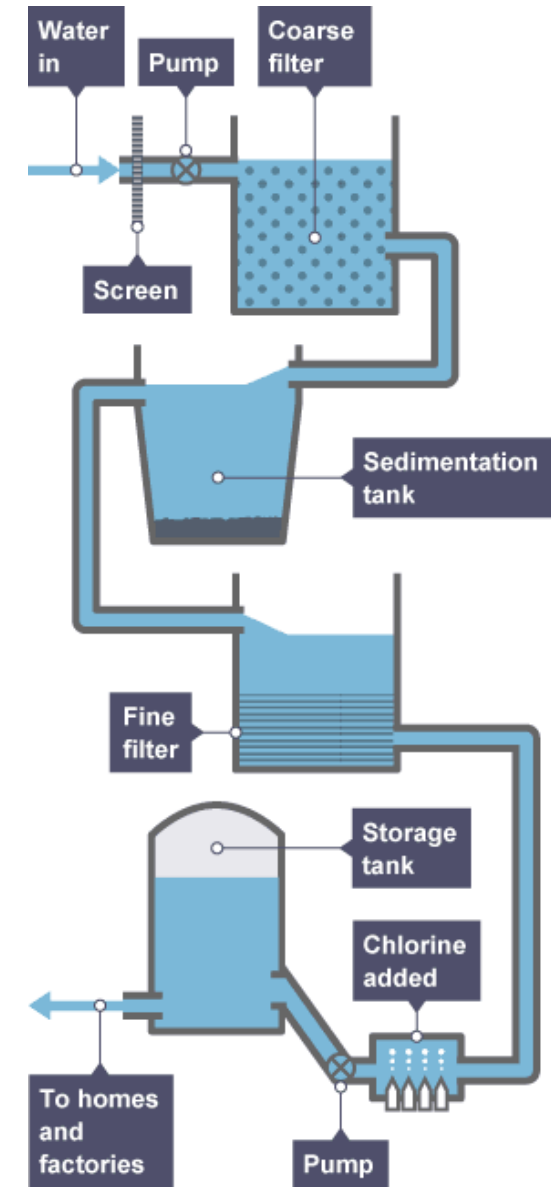
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on potable water

## Things to include:

Drinking water, also known as potable water or improved drinking water, is water that is safe to drink or to use for food preparation, without risk of health problems.



## Things to include:

The diagram illustrates the process of water treatment in a plant. It begins with 'Water in' entering a 'Screen' to catch large debris. The water then passes through a 'Coarse filter' (represented by a grid of dots) and enters a 'Sedimentation tank' where solids settle at the bottom. The clear water then moves to a 'Fine filter' (represented by horizontal lines). After filtration, 'Chlorine added' is introduced into the water. The treated water is then pumped into a 'Storage tank' (a large cylindrical tank). Finally, the water is distributed 'To homes and factories'.



[illegible]

## Things to include:

The diagram illustrates the stages of sewage treatment:

- Sewage** enters the system.
- Screens** are used to filter out large debris.
- The water then flows into a **Grit Channel** to remove sand and grit.
- The remaining sludge goes to a **Settling tank** where solids settle at the bottom.
- The settled sludge is sent to an **Anaerobic sludge digester**, which produces **Methane out** and **Digested sludge sold as fertiliser**.
- The water from the settling tank can follow one of two paths:
  - Either** it goes to a **Biological filter**, which uses a filter media and air (indicated by arrows and the text "Holes allow air to enter") to break down organic matter. The output is labeled **Final filter then to river**.
  - or** it goes to an **Oxidation Pond**, which uses aeration (indicated by a vertical pipe with bubbles) to break down organic matter. The output is labeled **Final filter then to river**.
- The sludge from the oxidation pond is labeled **Activated sludge sold as fertiliser**.

[illegible]

## Things to include:

Pure Copper Cathode (-ve)

Impure Copper Anode (+ve)

$\text{Cu}^{2+}$   $\text{Cu}^{2+}$

$\text{Cu}^{2+}$   $\text{Cu}^{2+}$

Copper(II) Sulphate(aq)

163

# GCSE Science Daily Revision Task

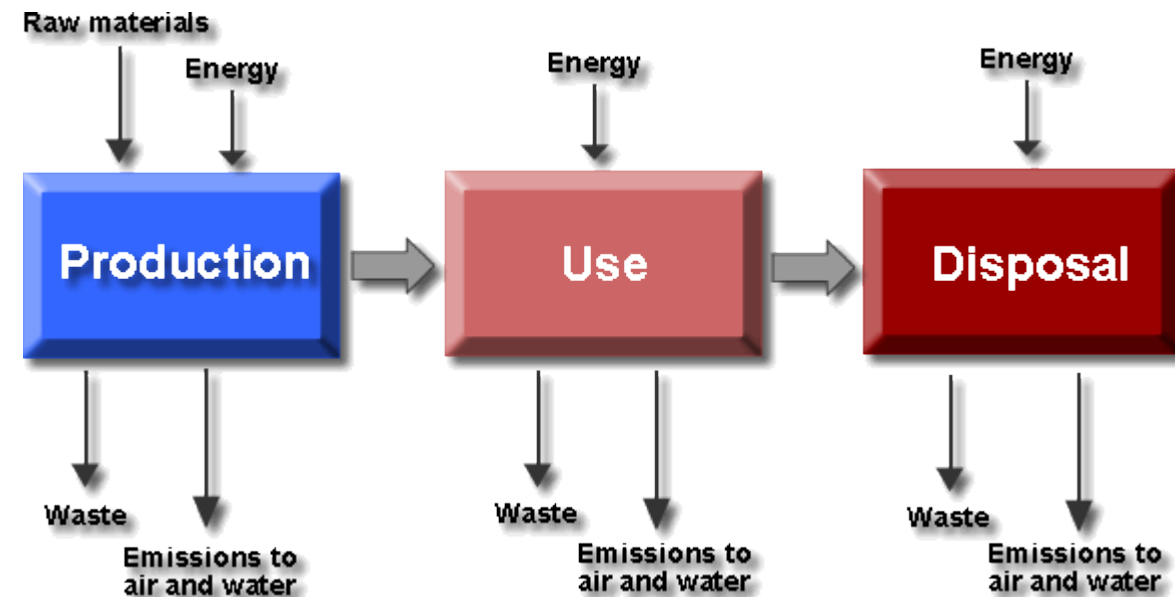


**Task:** Produce a flash card on life cycle assessments

## Things to include:

The key features of a life cycle assessment include the following factors:

- the main requirements for energy input
- the environmental impact and sustainability of making the materials from natural resources
- the environmental impact of making the product from the material
- the environmental impact of using the product
- the environmental impact of disposing of the product by incineration, landfill or recycling



# GCSE Science Daily Revision Task



**Task:** Produce a flash card on recycling

## Things to include:

Recycling is an important way to help us achieve sustainable development. We can recycle many resources, including:

- glass
- metal
- paper



## Things to include:

The diagram illustrates the rusting of iron in three different conditions:

- Beaker 1:** An iron nail is partially submerged in water. The part of the nail in the water is labeled "iron nail" and "water". The result is "slightly rusty".
- Beaker 2:** An iron nail is connected to a wire and submerged in water. The part of the nail in the water is labeled "iron nail" and "wire". The result is "very rusty".
- Beaker 3:** An iron nail is connected to a tin strip and submerged in water. The part of the nail in the water is labeled "iron nail" and "tin strip". The result is "not rusty".

[illegible]

## Things to include:



# GCSE Science Daily Revision Task

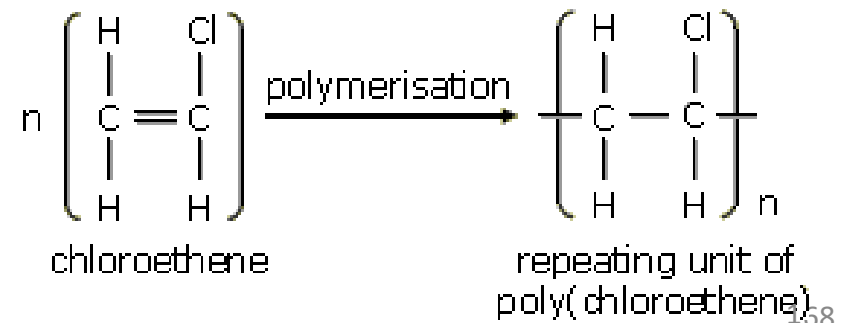
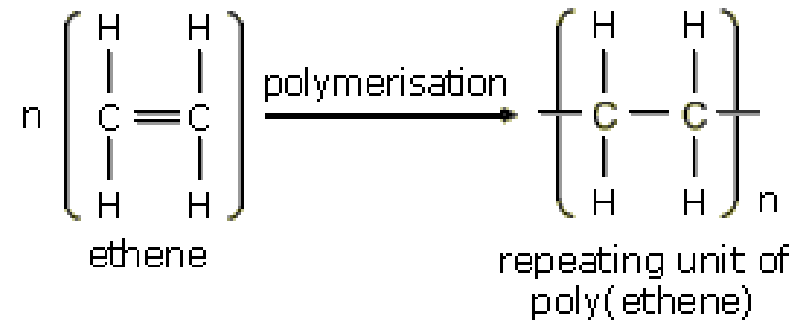
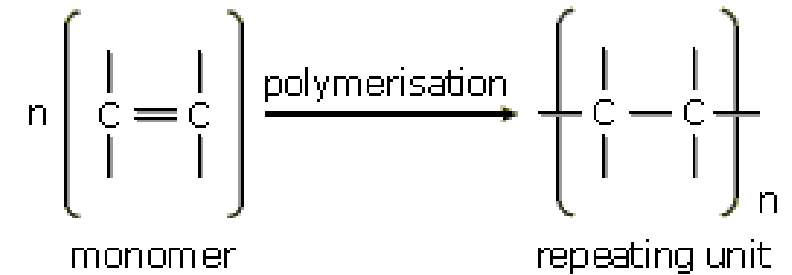


**Task:** Produce a flash card on polymers

## Things to include:

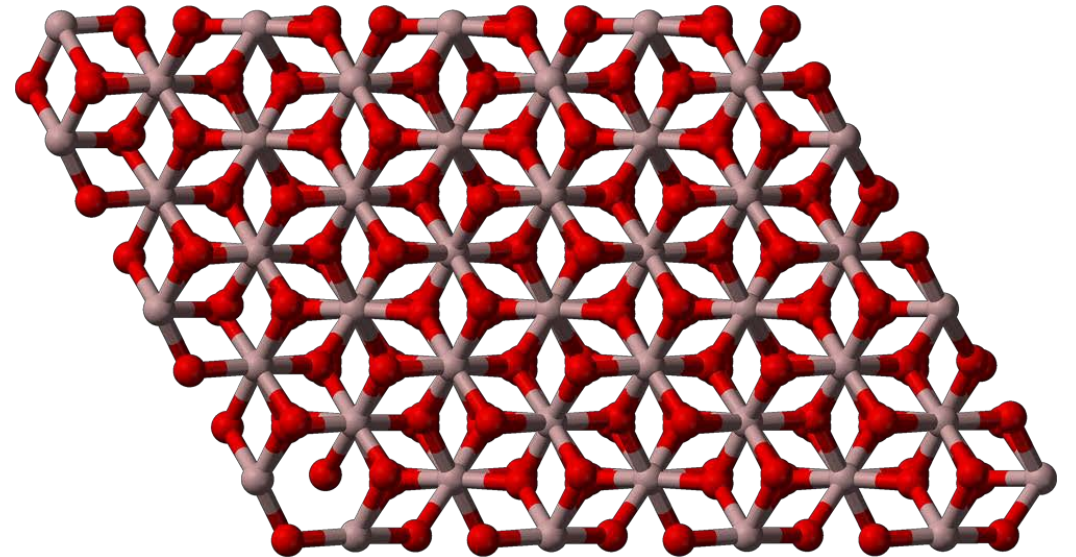
Alkenes can be used to make polymers. Polymers are very large molecules made when many smaller molecules join together, end-to-end. The smaller molecules are called monomers. In general:

lots of monomer molecules  $\rightarrow$  a polymer molecule



## Things to include:

- are solids made by baking a starting material in a very hot oven or kiln
- are hard and tough
- have very many different uses
- You will have seen ceramic materials coated in a tough glaze in bathrooms. They are hard and tough, and waterproof.



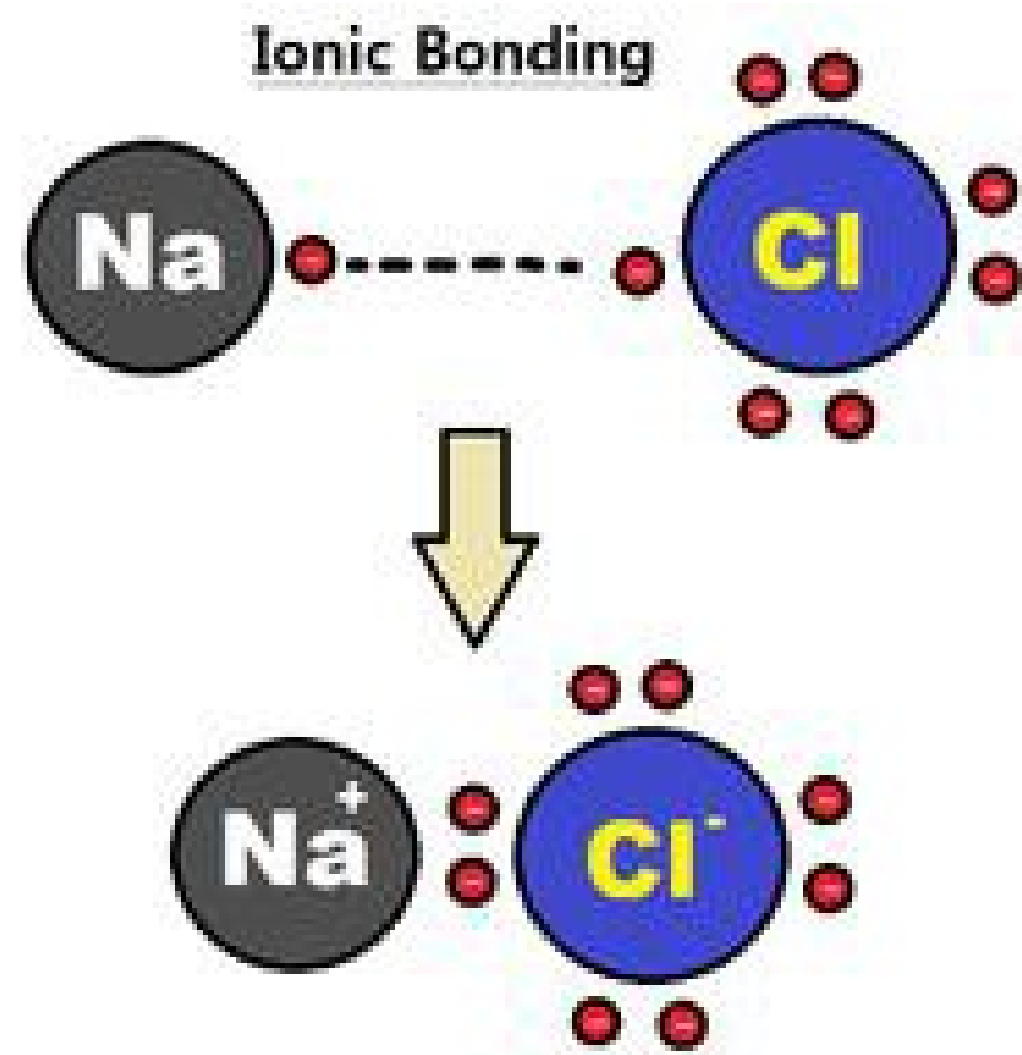
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on ionic bonds

## Things to include:

**Ionic bonding** is the complete transfer of valence electron(s) between atoms. It is a type of chemical **bond** that generates two oppositely charged **ions**. In **ionic bonds**, the metal loses electrons to become a positively charged cation, whereas the nonmetal accepts those electrons to become a negatively charged anion



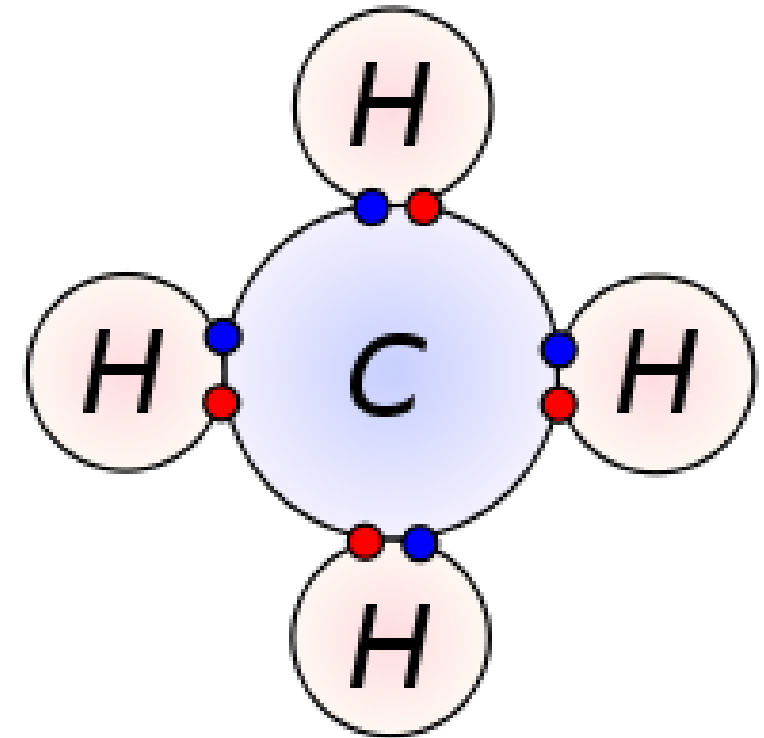
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on covalent bonds

## Things to include:

A covalent bond is formed between non metal atoms, which combine together by sharing electrons. Covalent compounds have no free electrons and no ions so they don't conduct electricity.



● Electron from hydrogen  
● Electron from carbon

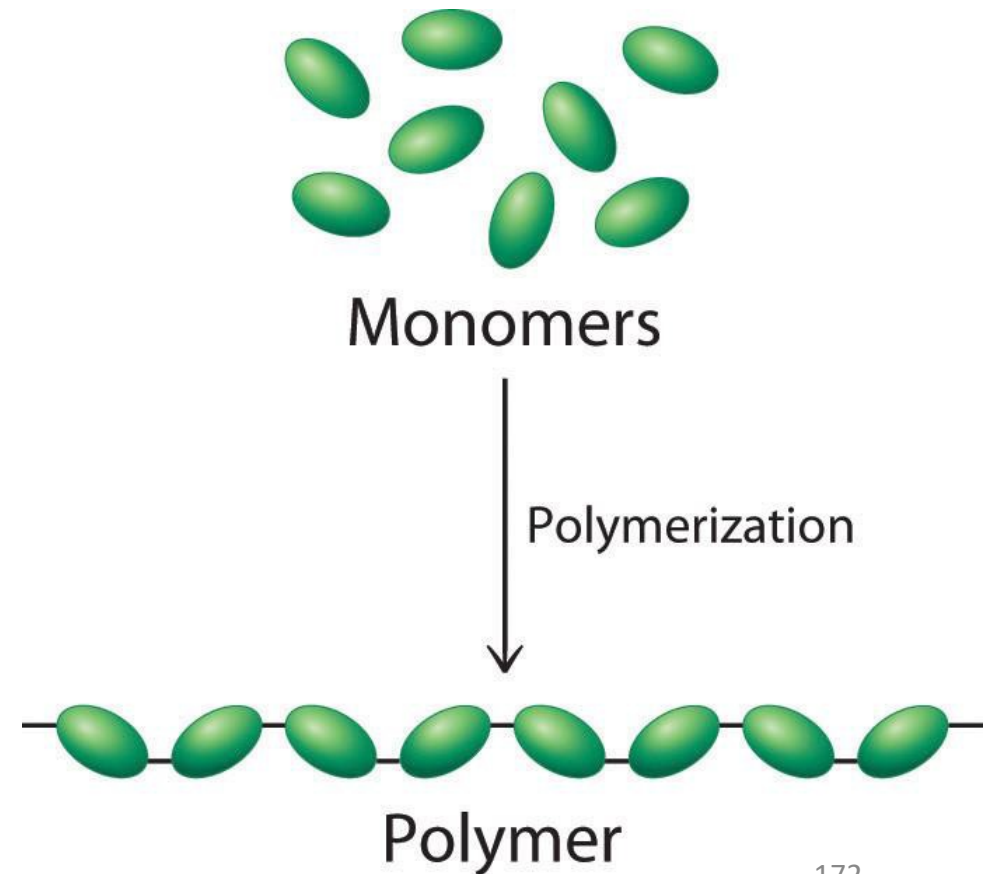
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on polymers

## Things to include:

A polymer is a large molecule, or macromolecule, composed of many repeated subunits. Because of their broad range of properties, both synthetic and natural polymers play essential and ubiquitous roles in everyday life.



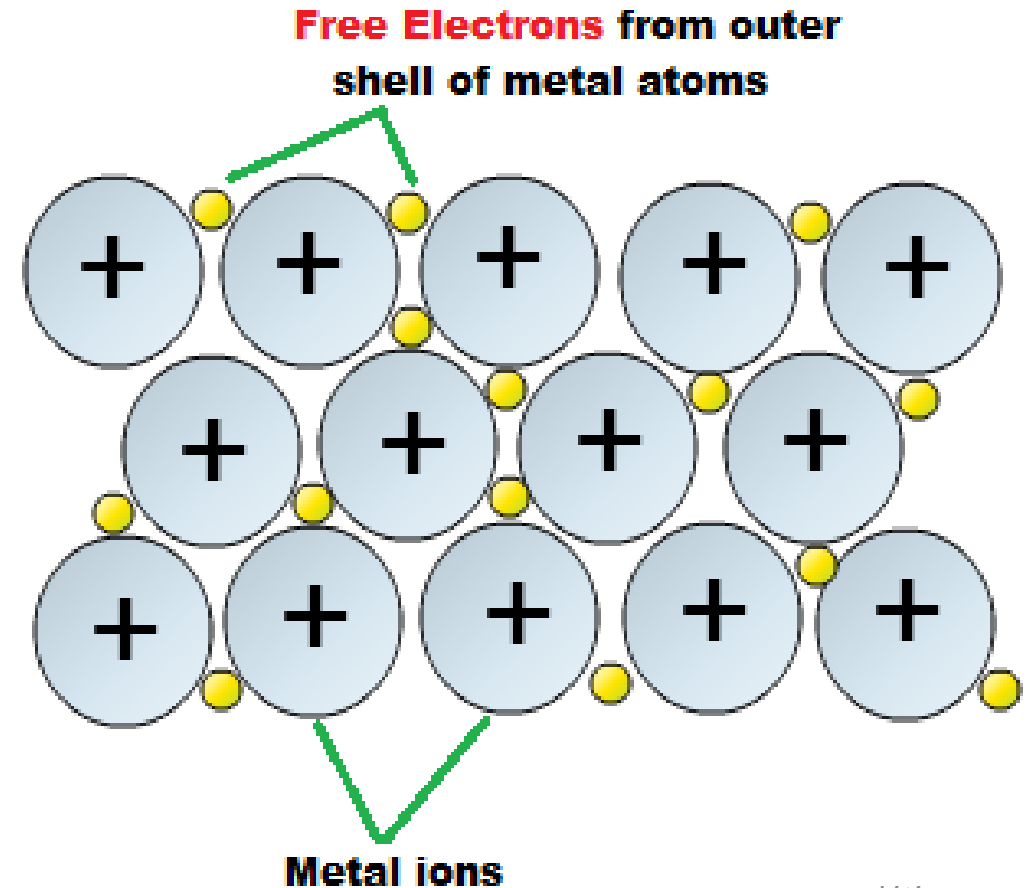
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on metallic bonding

## Things to include:

Metallic bonding is a type of chemical bonding that arises from the electrostatic attractive force between conduction electrons and positively charged metal ions





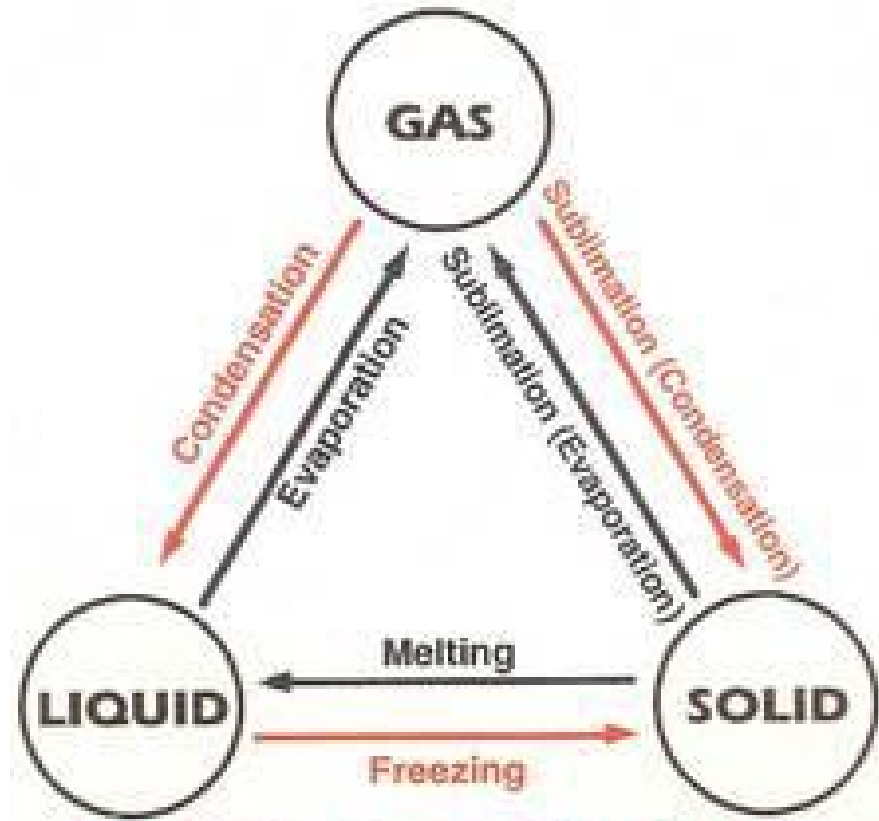
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on states of matter

**Things to include:**

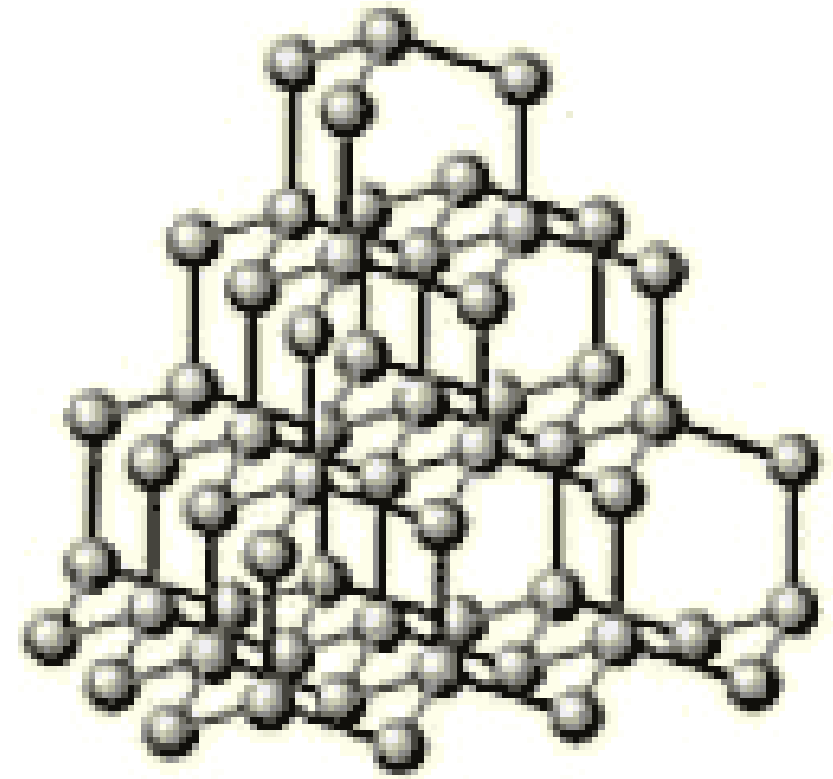
**States of matter.** Almost all substances can be classified into three **states of matter** – solids, liquids and gases. ... Heating and cooling a substance can cause it to change **state**.



Exothermic Process (Gives off heat)  
Endothermic Process (Requires heat)

## Things to include:

- Lustrous (shiny)
- Colourless and clear (transparent)
- Hard
- High melting point
- Insoluble in water (does not dissolve)
- Does not conduct electricity
- Diamond is used in jewellery because, when cut by experts, it will sparkle and reflect light in an attractive way.



diamond

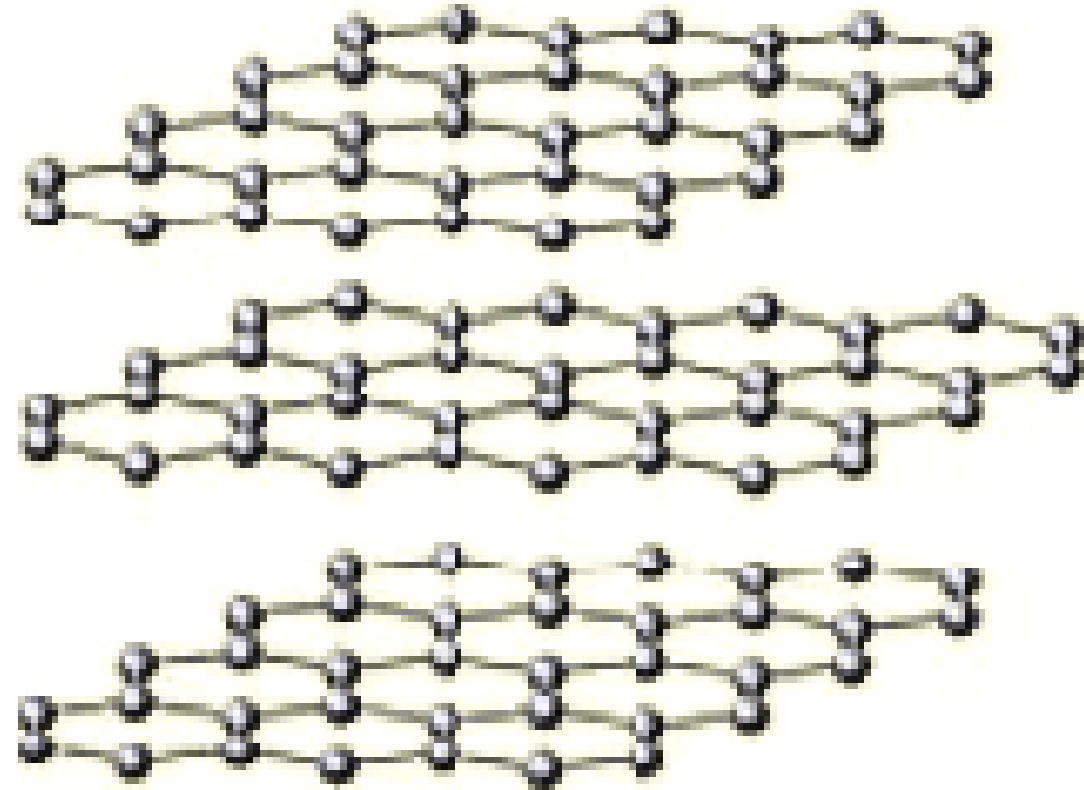
# GCSE Science Daily Revision Task



## Task: Produce a flash card on graphite

### Things to include:

- Like diamond, graphite has a giant molecular structure. As its covalent bonds are very strong, and there are many of them, a lot of energy would be needed to separate atoms. This makes graphite's melting point and boiling point very high.
- However, each carbon atom is only covalently bonded to three other carbon atoms, rather than to four as in diamond. Graphite contains layers of carbon atoms. The layers slide over each other easily because there are only weak forces between them, making graphite slippery.
- Graphite contains **delocalised electrons** (free electrons). These electrons can move through the graphite, carrying charge from place to place and allowing graphite to conduct electricity.



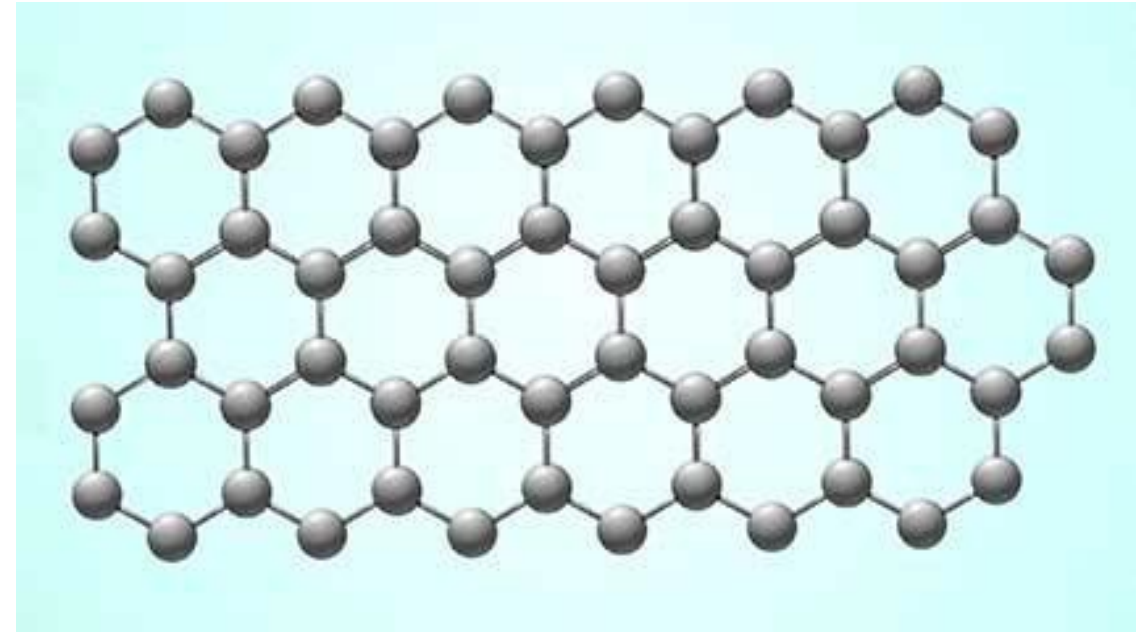
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on graphine

## **Things to include:**

Graphene is an allotrope of carbon consisting of a single layer of carbon atoms arranged in an hexagonal lattice. It is the basic structural element of many other allotropes of carbon, such as graphite, charcoal, carbon nanotubes and fullerenes



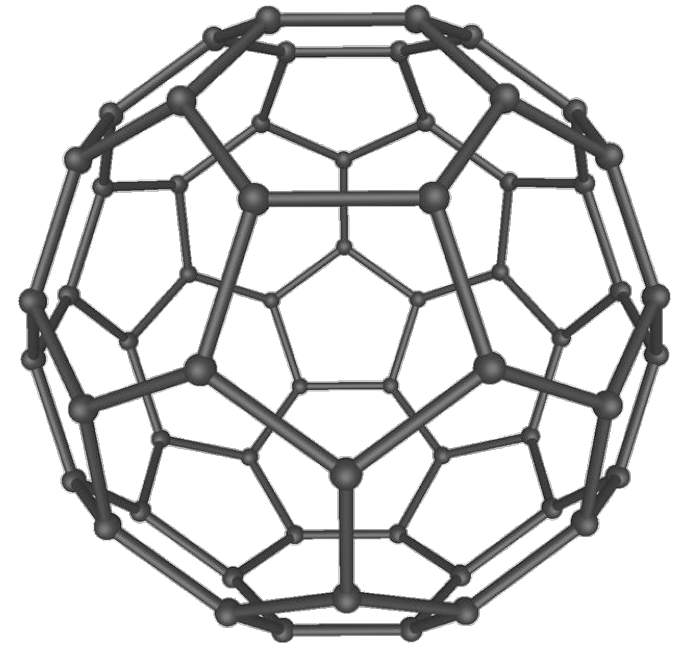
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on fullerenes

## Things to include:

A fullerene is a molecule of carbon in the form of a hollow sphere, ellipsoid, tube, and many other shapes. Spherical fullerenes, also referred to as Buckminsterfullerenes or buckyballs, resemble the balls used in association football



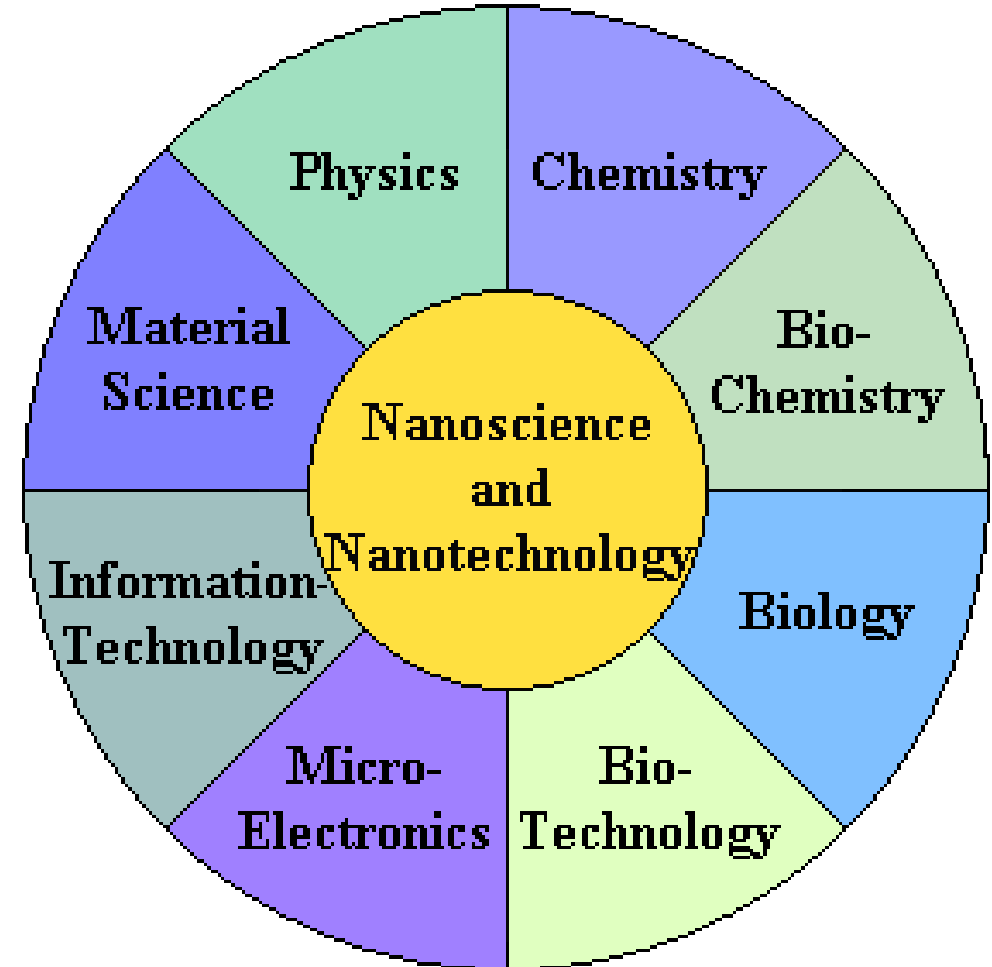
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on nanoscience

## Things to include:

A nanometre, 1 nm, is one billionth of a metre (or a millionth of a millimetre). Nanoparticles range in size from about 100 nm down to about 1 nm. They are typically the size of small *molecules*, and far too small to see with a microscope.





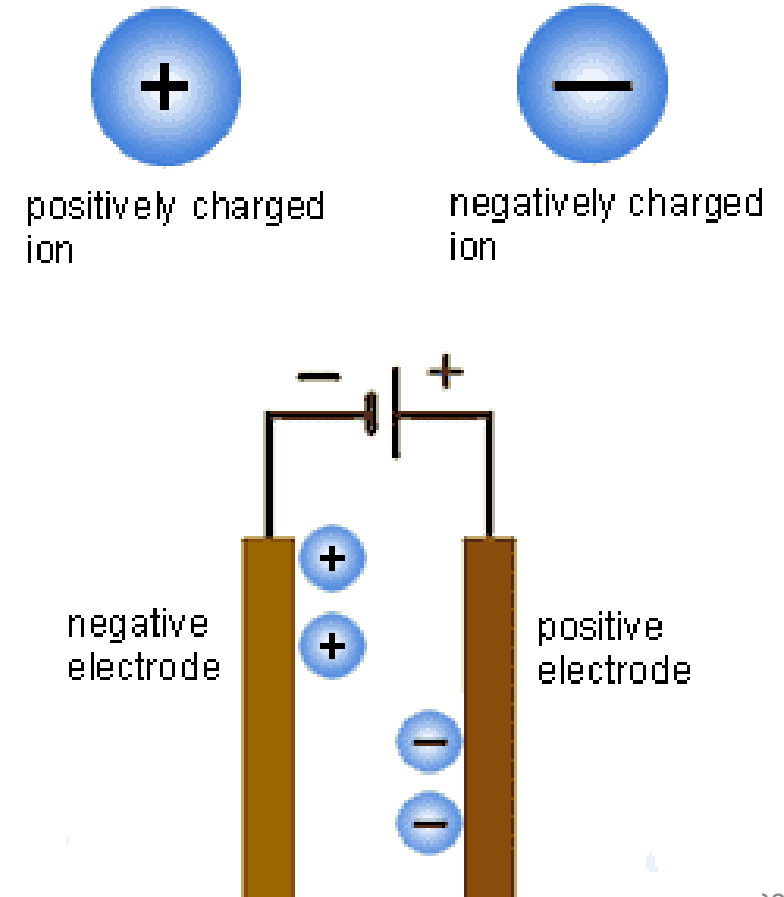
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on electrolysis

## Things to include:

Electrolysis is the process by which ionic substances are broken down into simpler substances using electricity. During electrolysis, metals and gases may form at the electrodes.



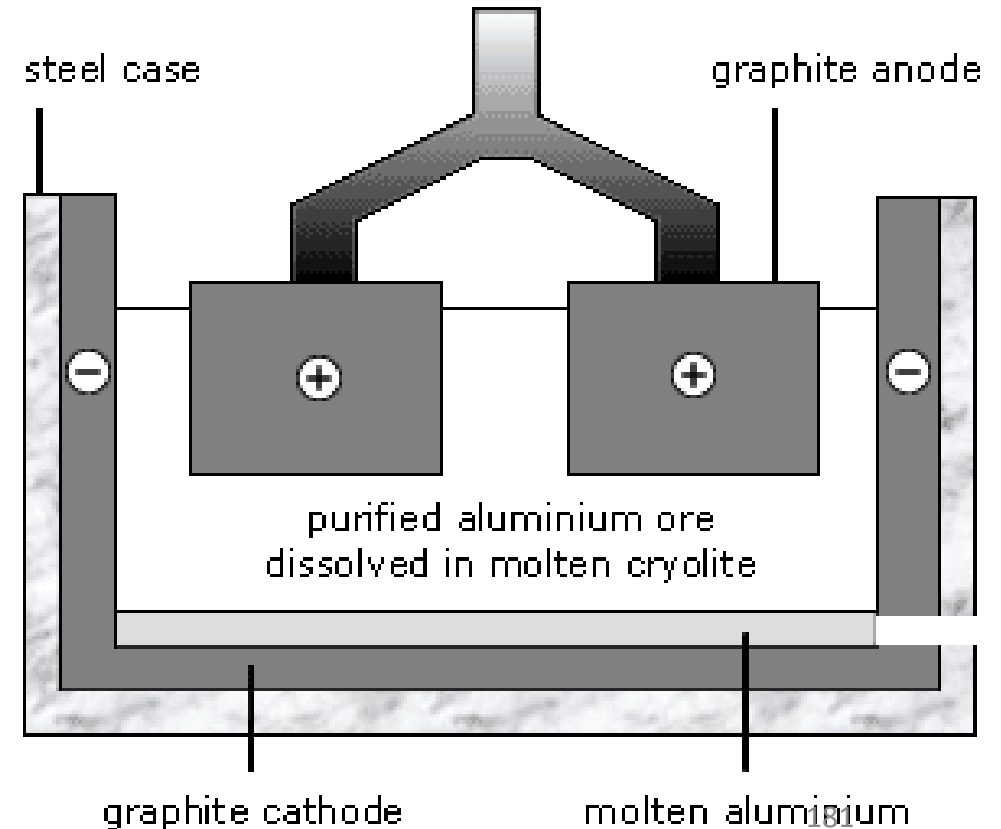
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on electrolysis of aluminium

## Things to include:

First the aluminium oxide must be made **molten** so that electricity can pass through it. Aluminium oxide has a very high melting point (over  $2,000^{\circ}\text{C}$ ), so it would be expensive to melt it. Instead, it is **dissolved** in **molten cryolite**, an aluminium compound with a lower melting point than aluminium oxide. The use of cryolite reduces some of the energy costs involved in extracting aluminium.



## Things to include:

The diagram shows an electrolytic cell with two electrodes: a Cathode (-ve) on the left and an Anode (+ve) on the right. The electrolyte is a solution of sodium chloride (NaCl). The ions present are  $\text{Na}^+$ ,  $\text{OH}^-$ , and  $\text{Cl}^-$ . The movement of ions is indicated by arrows:  $\text{H}^+$  ions move towards the Cathode, and  $\text{Cl}^-$  ions move towards the Anode. The products of electrolysis are  $\text{Na}^+$  and  $\text{OH}^-$  at the Cathode, and  $\text{Na}^+$  and  $\text{OH}^-$  at the Anode.

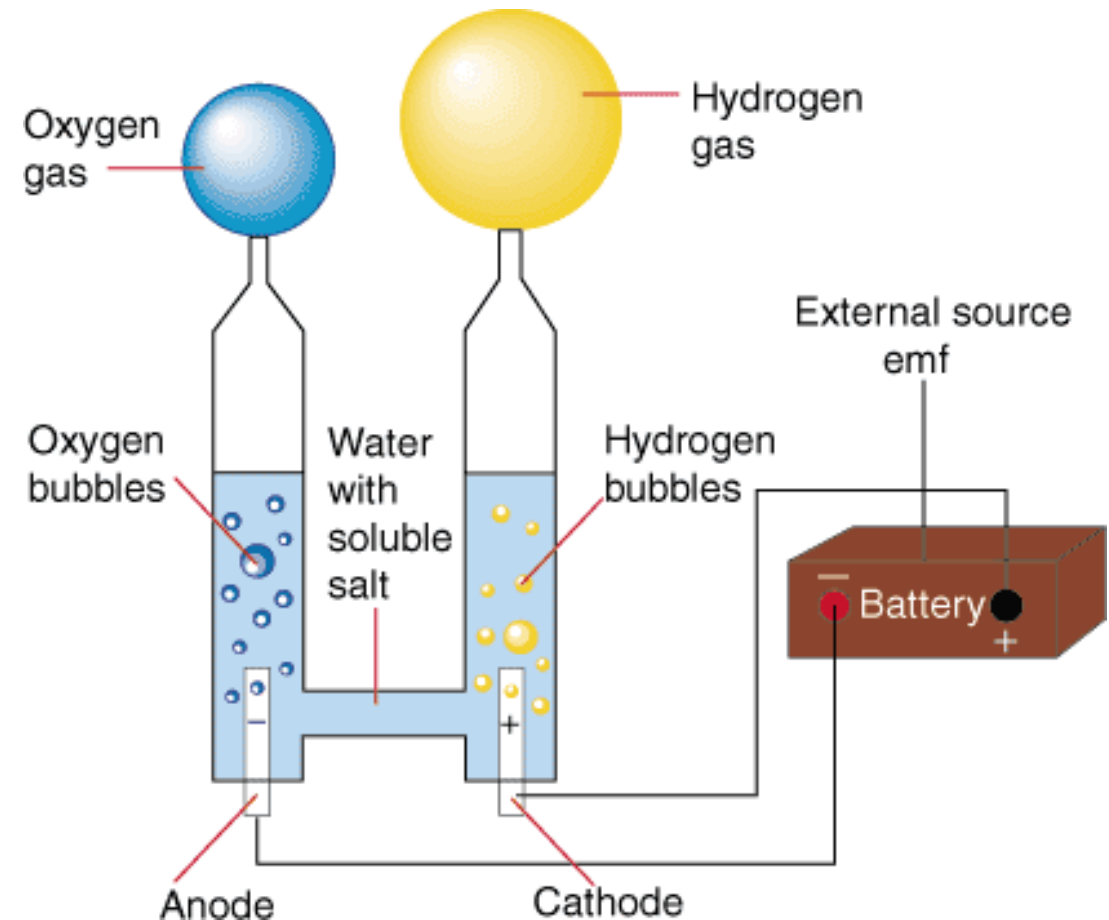
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on the electrolysis of water

## Things to include:

**Electrolysis of water** is the decomposition of **water** into oxygen and hydrogen gas due to an electric current being passed through the **water**. The reaction has a standard potential of  $-1.23\text{ V}$ , meaning it ideally requires a potential difference of  $1.23\text{ volts}$  to split **water**.



## Task: Produce a flash card on factors affecting rate of reaction

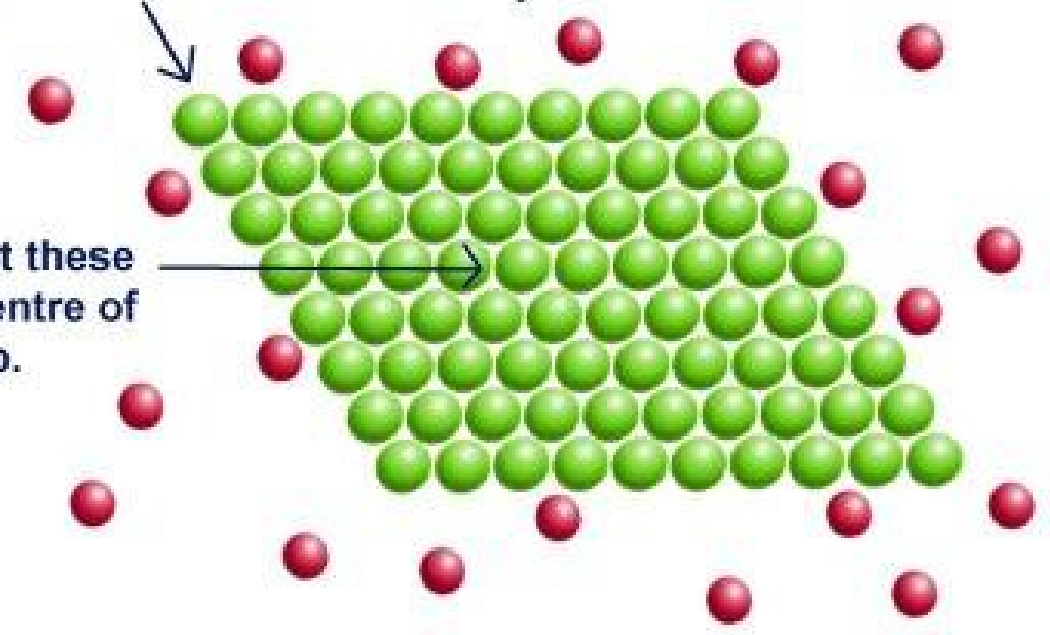
## Things to include:

## The factors that affect reaction rates are:

- surface area of a solid reactant.
- concentration or pressure of a reactant.
- temperature.
- nature of the reactants.
- presence/absence of a catalyst.

Hydrogen ions can hit the outer layer of atoms...

...but not these  
in the centre of  
the lump.



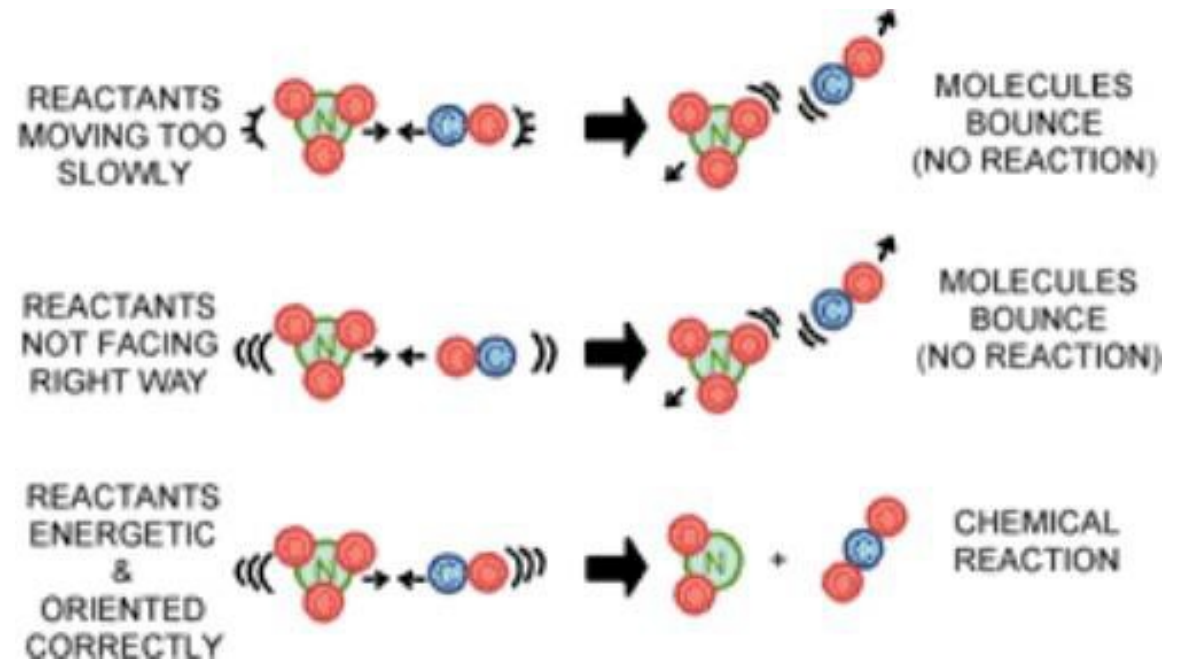
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on collision theory

## Things to include:

When a catalyst is involved in the **collision** between the reactant molecules, less energy is required for the chemical change to take place, and hence more **collisions** have sufficient energy for reaction to occur. The reaction rate therefore increases. **Collision theory** is closely related to chemical kinetics





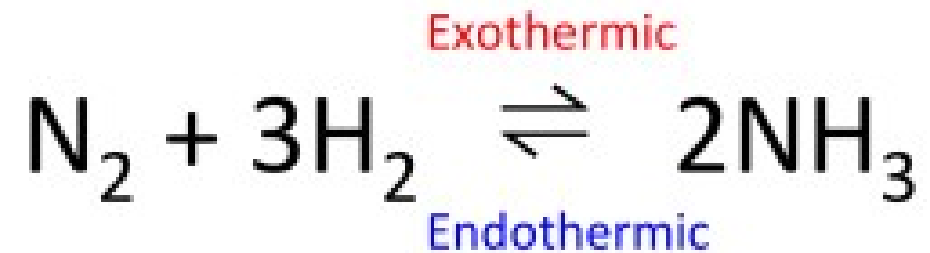
## Things to include:

$$\text{N}_2 + 3\text{H}_2 \rightarrow 2\text{NH}_3$$

Exothermic  
(gives out heat energy)



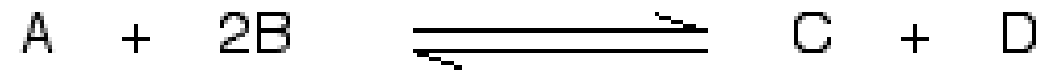
Endothermic  
(takes in heat energy)



## Task: Produce a flash card on Le Chatellier's Principle

## Things to include:

**Le Chatelier's principle** applied to changes in concentration or pressure can be understood by having  $K$  have a constant value. The effect of temperature on equilibria, however, involves a change in the equilibrium constant.



The position of equilibrium moves to the left if you decrease the concentration of A.

## Things to include:

The diagram illustrates the Haber process for ammonia synthesis. It shows a continuous flow system with five numbered stages:

- Stage 1:** Two input streams enter from the left:  $\text{N}_2$  from the air and  $\text{H}_2$  from natural gas.
- Stage 2:** The gas mixture enters a **Compressor**.
- Stage 3:** The compressed gas, labeled  $\text{H}_2, \text{N}_2$  in, enters a vertical reactor containing **Iron catalyst beds**.
- Stage 4:** The gas exits the reactor, labeled  $\text{N}_2, \text{H}_2, \text{NH}_3$  out, and enters a **Cooling tank**.
- Stage 5:** The cooled gas mixture enters a separator. **Liquid ammonia** is collected at the bottom, and **Ammonia out** (labeled 188) exits from the side. The unreacted  $\text{H}_2, \text{N}_2$  gas is recycled back to the compressor inlet.

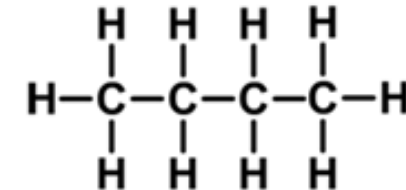
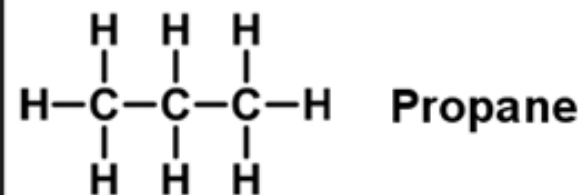
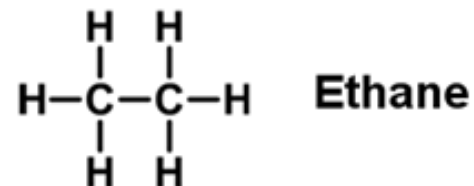
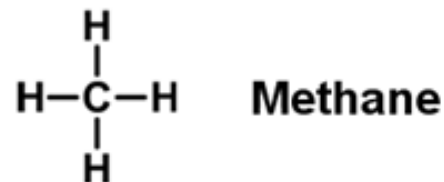
# GCSE Science Daily Revision Task



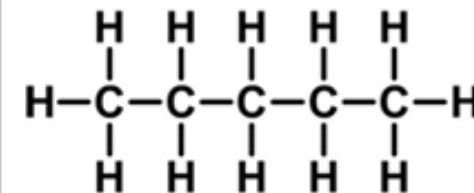
**Task:** Produce a flash card on oil & alkanes

## Things to include:

Most of the **compounds** in crude oil are **hydrocarbons**. These are **compounds** that contain **hydrogen** and **carbon atoms** only, joined together by chemical bonds called **covalent bonds**. There are different types of **hydrocarbon**, but most of the ones in crude oil are alkanes.



Butane



Pentane

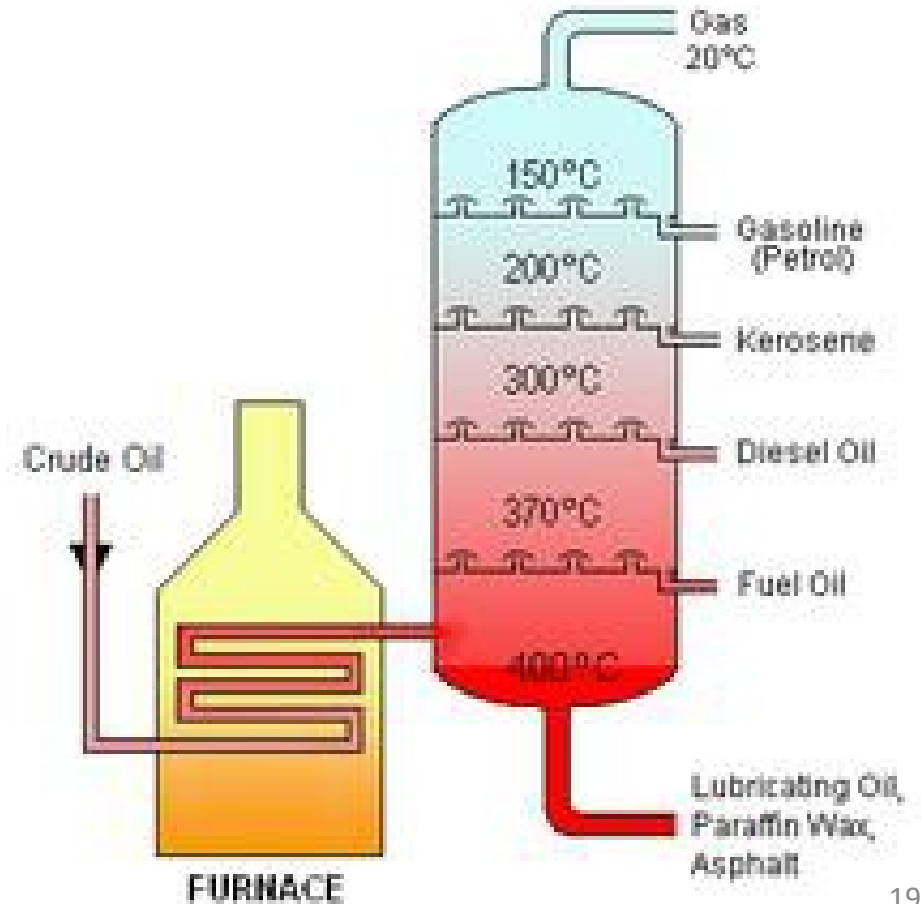
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on fractional distillation

## Things to include:

**Fractional distillation** is the separation of a mixture into its component parts, or fractions. Chemical compounds are separated by heating them to a temperature at which one or more fractions of the compound will vaporize.



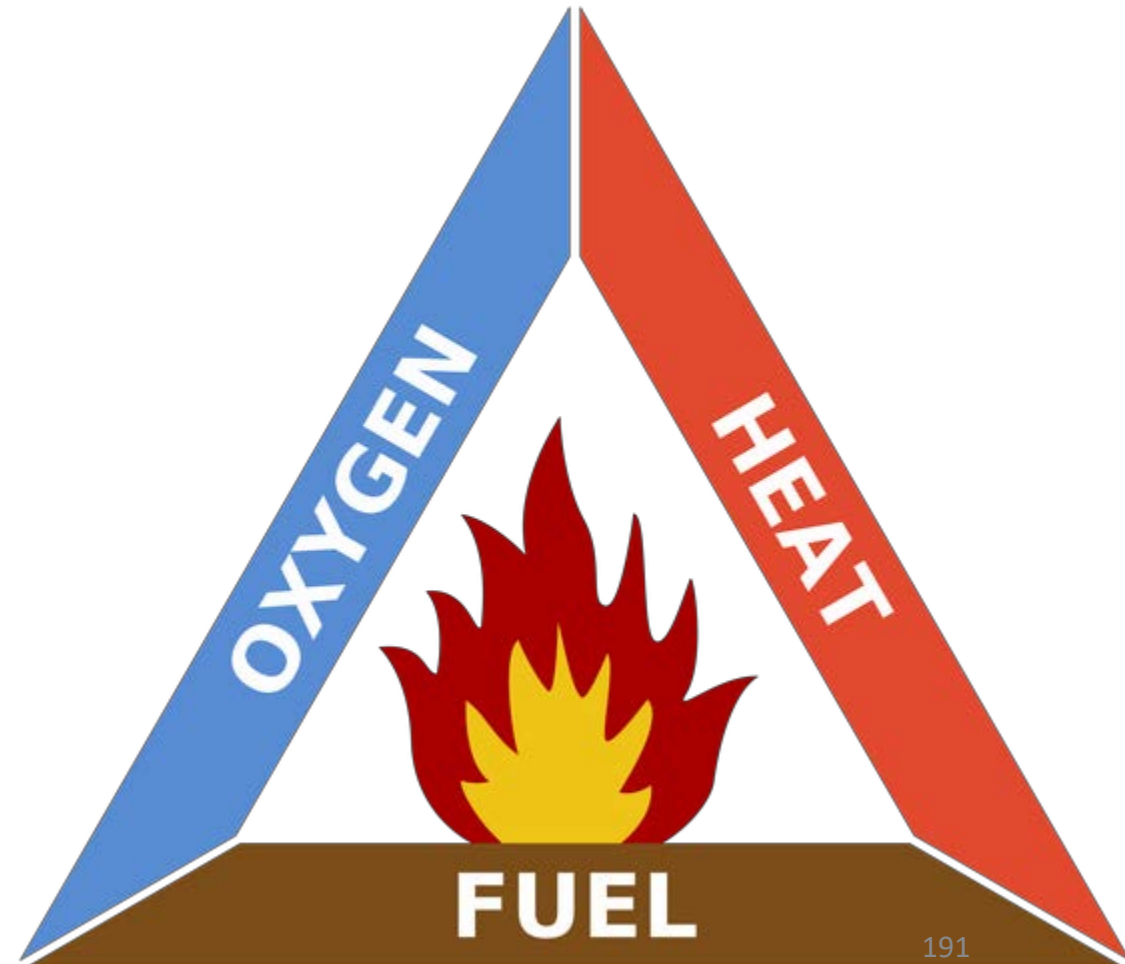
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on combustion

## Things to include:

Combustion or burning is a high-temperature exothermic redox chemical reaction between a fuel and an oxidant, usually atmospheric oxygen, that produces oxidized, often gaseous products, in a mixture termed as smoke.





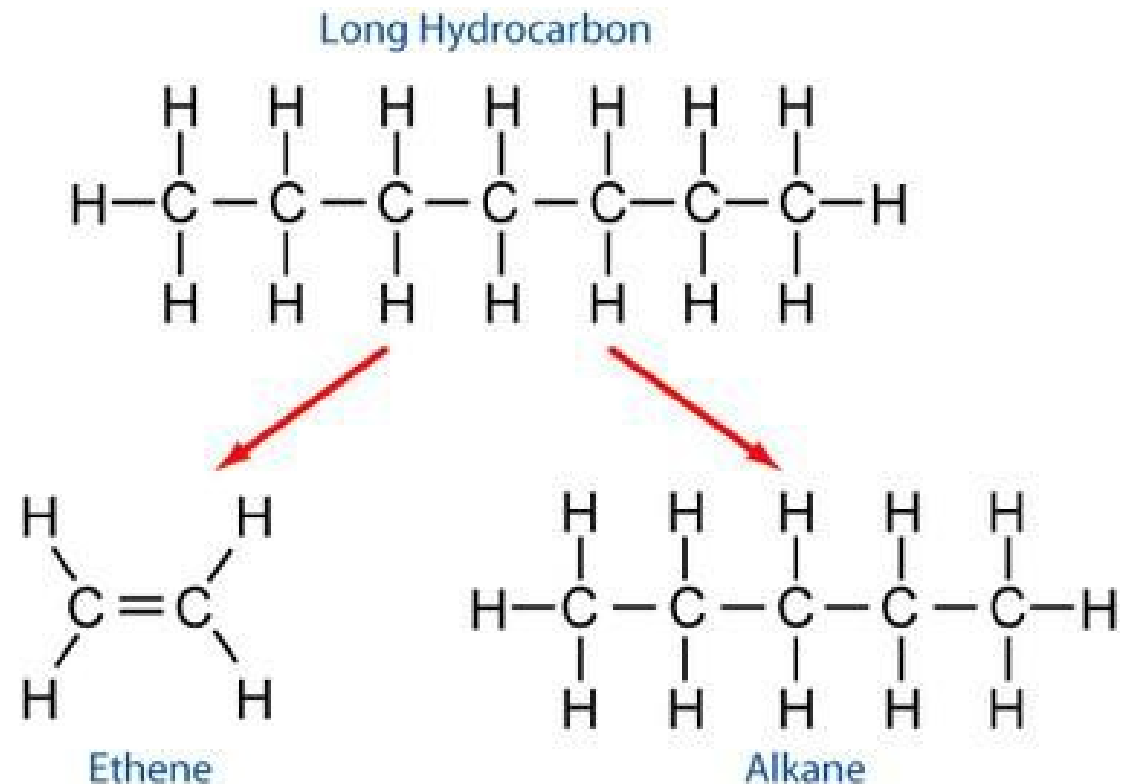
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on cracking

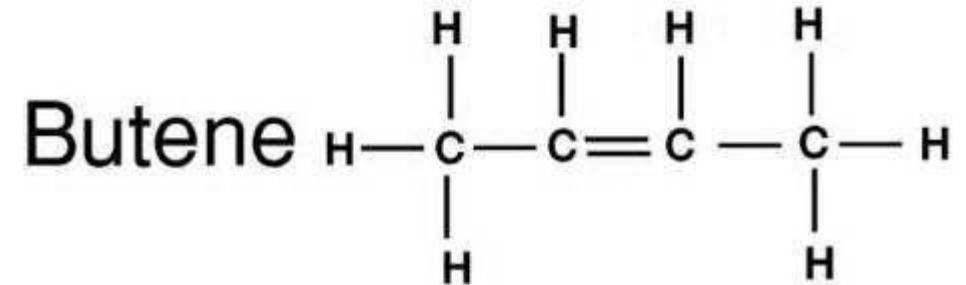
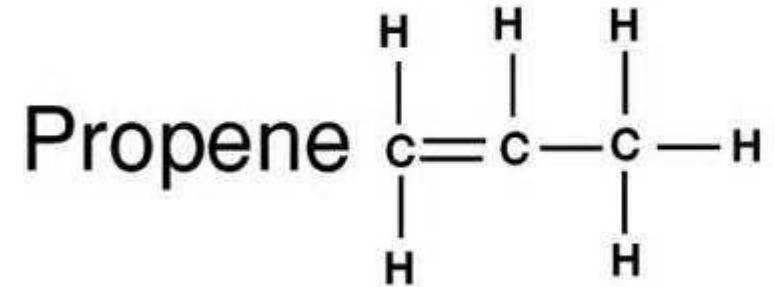
## Things to include:

Fuels made from oil mixtures containing large hydrocarbon molecules are not efficient: they do not flow easily and are difficult to ignite. Crude oil often contains too many large hydrocarbon molecules and not enough small hydrocarbon molecules to meet demand. This is where cracking comes in.



## Things to include:

For example, the molecular formula of ethene is  $C_2H_4$ , while for propene it is  $C_3H_6$



# GCSE Science Daily Revision Task

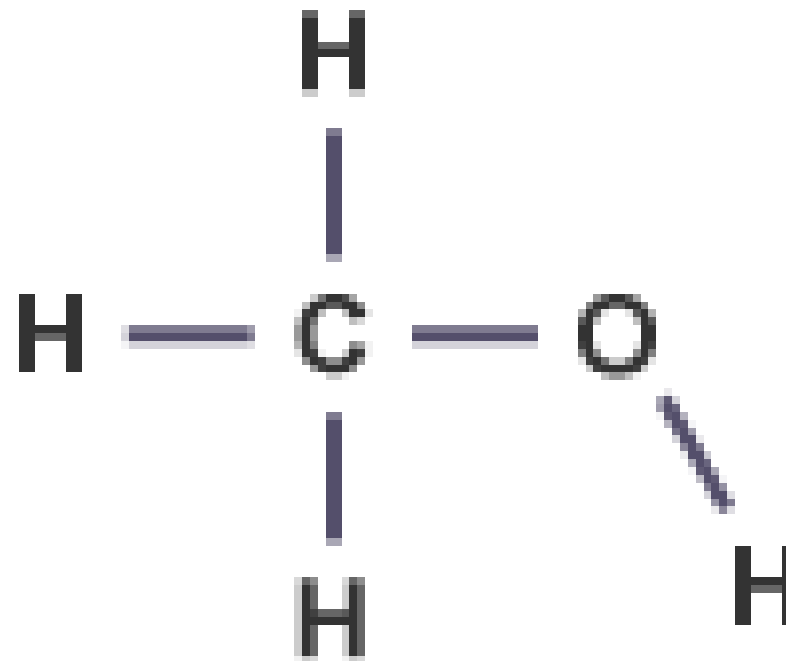


**Task:** Produce a flash card on Alcohols

**Things to include:**

Alcohols all contain the –OH group and this is generally responsible for their chemical properties and reactions.

They are named after their ‘parent’ alkanes, for example: methanol (alcohol) and methane (‘parent’ alkane); ethanol (alcohol) and ethane (‘parent’ alkane).



## Things to include:

CC(=O)O



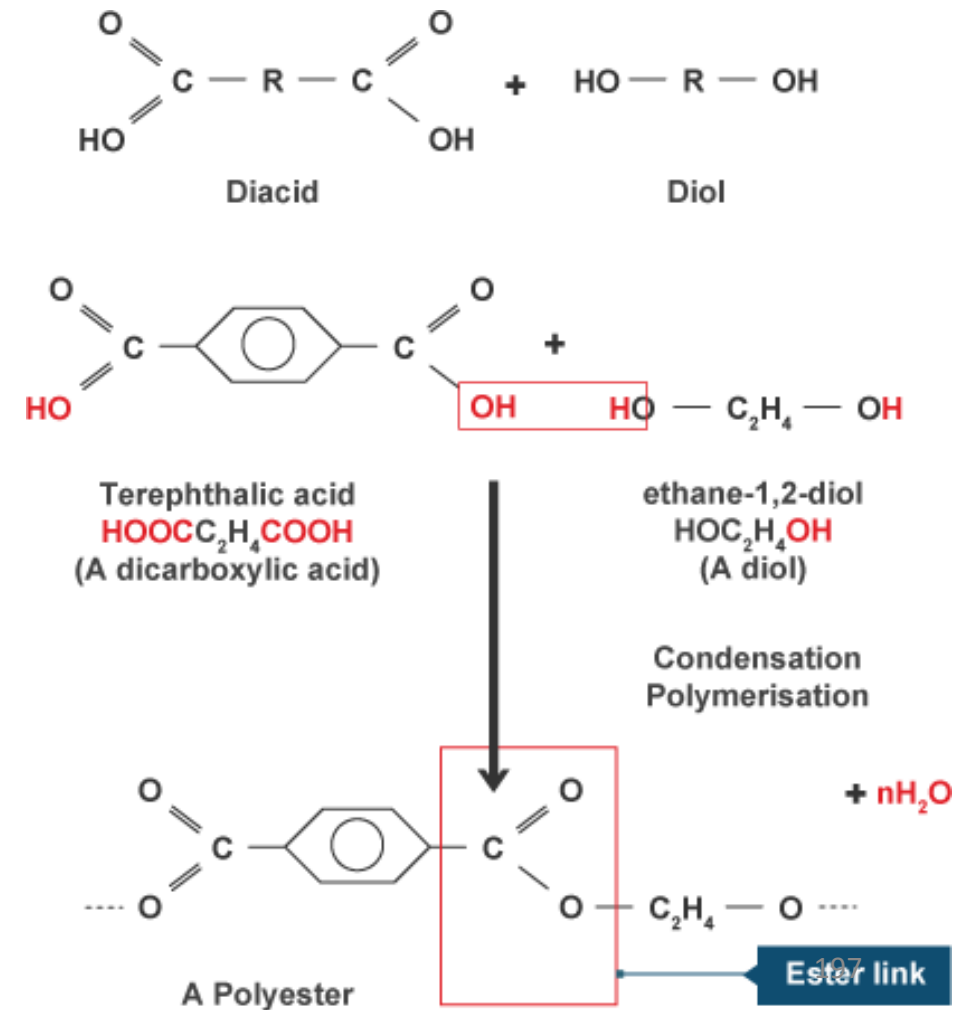
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on condensation polymerisation

## Things to include:

Condensation polymers are any kind of polymers formed through a condensation reaction—where molecules join together—losing small molecules as byproducts such as water or methanol, as opposed to addition polymers which involve the reaction of unsaturated monomers.





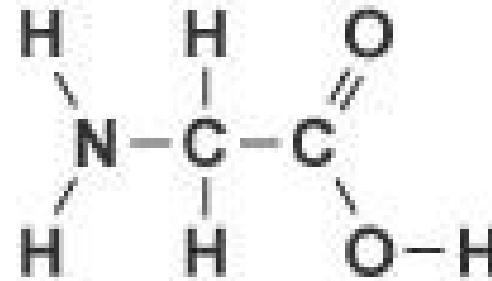
# GCSE Science Daily Revision Task



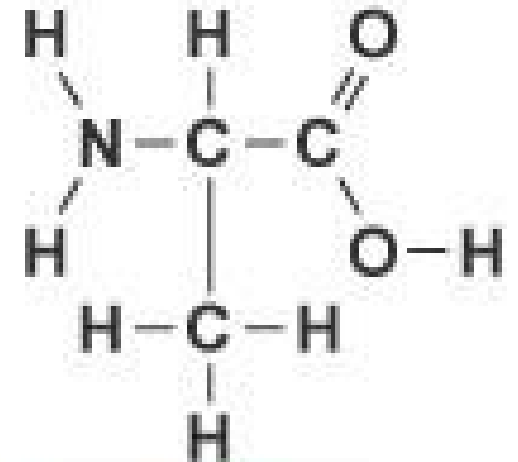
**Task:** Produce a flash card on Amino acids

## Things to include:

Amino acids and proteins. Each gene acts as a code, or set of instructions, for making a particular protein. Finally, the amino acid molecules join together in a long chain to make a protein molecule. The number and sequence of amino acids determines which protein results.



Glycine



Alanine

## Things to include:

```

graph TD
    methane[methane] --> reaction1
    steam[steam] --> reaction1
    reaction1["methane + steam → hydrogen + carbon monoxide"]
    reaction1 --> hydrogen[hydrogen]
    reaction1 --> air[air]
    hydrogen --> reaction2
    oxygen[oxygen] --> reaction2
    reaction2["hydrogen + oxygen → water  
This reaction removes oxygen from the air to leave nitrogen"]
    reaction2 --> nitrogen[nitrogen]
    reaction2 --> hydrogen2[hydrogen]
    nitrogen --> reaction3
    hydrogen2 --> reaction3
    reaction3["450 °C  
200 atmospheres  
iron catalyst  
nitrogen + hydrogen → ammonia  
N2(g) + 3H2(g) → 2NH3(g)"]

```

## Things to include:

A simple experiment to demonstrate the **LAW of CONSERVATION OF MASS**

**REACTANTS**

- small test tube
- string
- sodium hydroxide solution
- copper sulfate solution

**MIX THOROUGHLY**

**PRODUCTS**


- sodium sulfate solution
- copper hydroxide precipitate

67.25g

one pan electric balance

[illegible]

## Things to include:



**Mass**

---

**Moles**      **x**      **Relative formula mass**

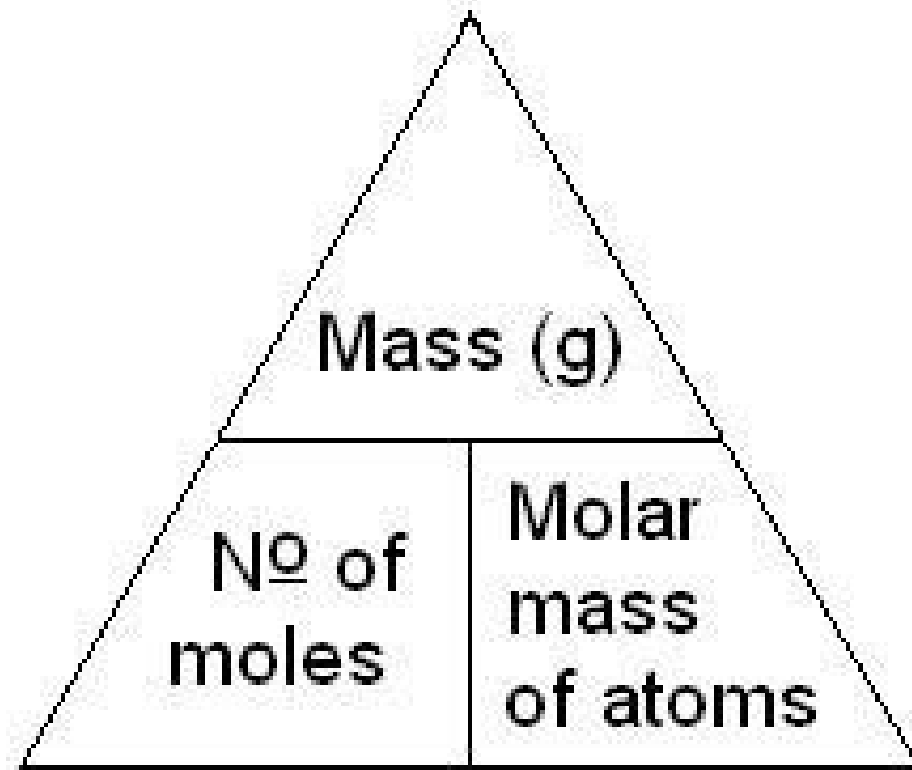
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on Moles

## Things to include:

The mole is the unit for amount of substance. The molar mass is the relative formula mass of a substance in grams (measured in g/mol). Mass is conserved in chemical reactions, allowing the mass of a reactant or product to be calculated if the masses of the other substances in the reaction are known.



## Things to include:

a little bit of salt

solute

solvent

Dilute

a lot of salt

Concentrated



# GCSE Science Daily Revision Task



**Task:** Produce a flash card on yield

## Things to include:

In chemistry, yield, also referred to as reaction yield, is the amount of product obtained in a chemical reaction. The absolute yield can be given as the weight in grams or in moles (molar yield).



2 moles of CO

MOLAR  
MASSES

28 g/mol

2 g/mol

16 g/mol

18 g/mol

Assume that CO is the limiting reagent with plenty of excess H<sub>2</sub> present for the reaction

THEORETICAL  
YIELD

(The maximum number of  
moles that each can make)

2 moles of CH<sub>4</sub>

32 g of CH<sub>4</sub>

2 moles of H<sub>2</sub>O

36 g of H<sub>2</sub>O

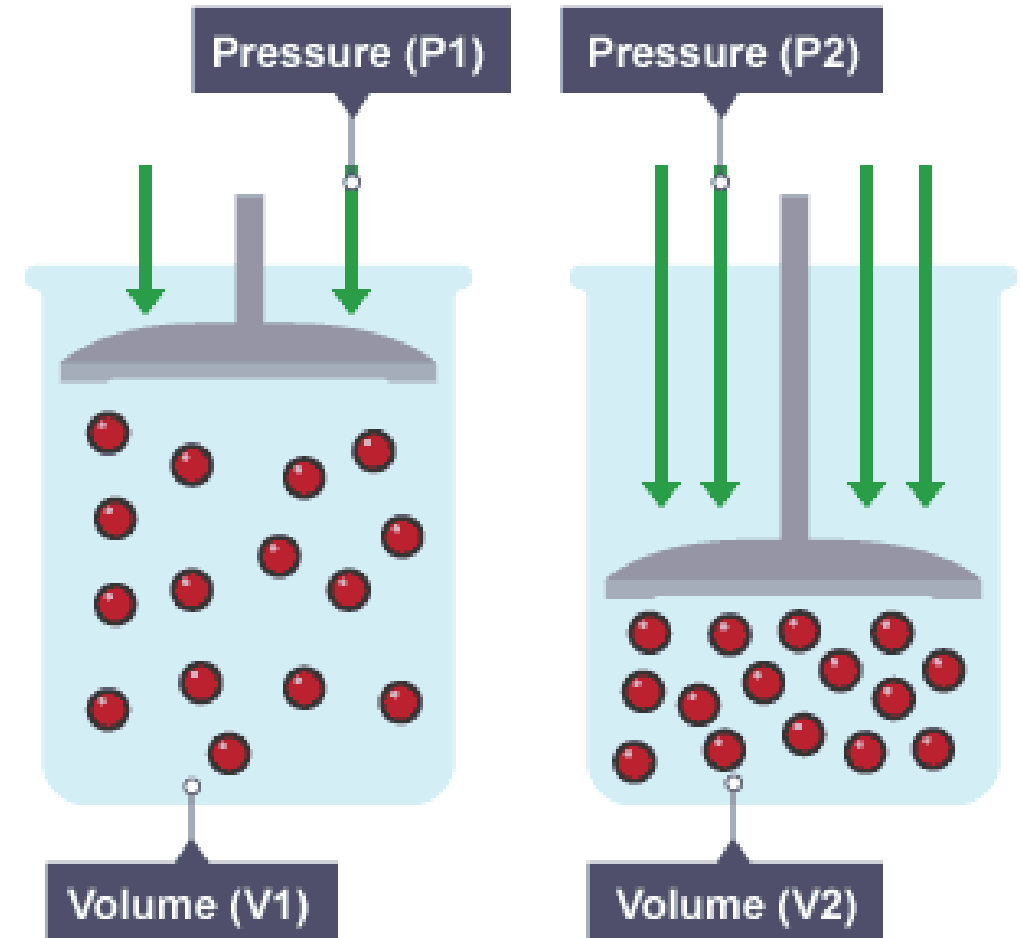
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on gas volume

## Things to include:

Molar volume of gases. One mole of any gas has a volume of  $24 \text{ dm}^3$  or  $24,000 \text{ cm}^3$  at rtp (room temperature and pressure). This volume is called the molar volume of a gas. Calculate the volume of  $0.5 \text{ mol}$  of carbon dioxide at rtp.



## Things to include:

The diagram illustrates a paper chromatography experiment. A rectangular tank is shown with a layer of solvent at the bottom. A piece of paper is suspended vertically by a clip, with its bottom edge in the solvent. The solvent front is indicated by a red arrow. The paper shows several colored spots (yellow, green, blue, pink, red) that have moved up from the solvent. Labels include: Lid, Paper, Solvent Front, and Solvent.

## Task: Produce a flash card on flame tests

## Things to include:

A flame test is an analytic procedure used in chemistry to detect the presence of certain elements, primarily metal ions, based on each element's characteristic emission spectrum. The color of flames in general also depends on temperature; see flame colour.



# GCSE Science Daily Revision Task



**Task:** Produce a flash card on testing for cations

## Things to include:

This test uses sodium hydroxide or aqueous ammonia to test and identify metal ions by the precipitation formed. Sodium Hydroxide or Aqueous Ammonia is added to the solution being tested and the color of precipitation formed allows for identification of the compound.

Name of cation and charge	Symbol of cation
Potassium, +1	K <sup>+</sup>
Calcium, +2	Ca <sup>2+</sup>
Vanadium, +4	V <sup>4+</sup>

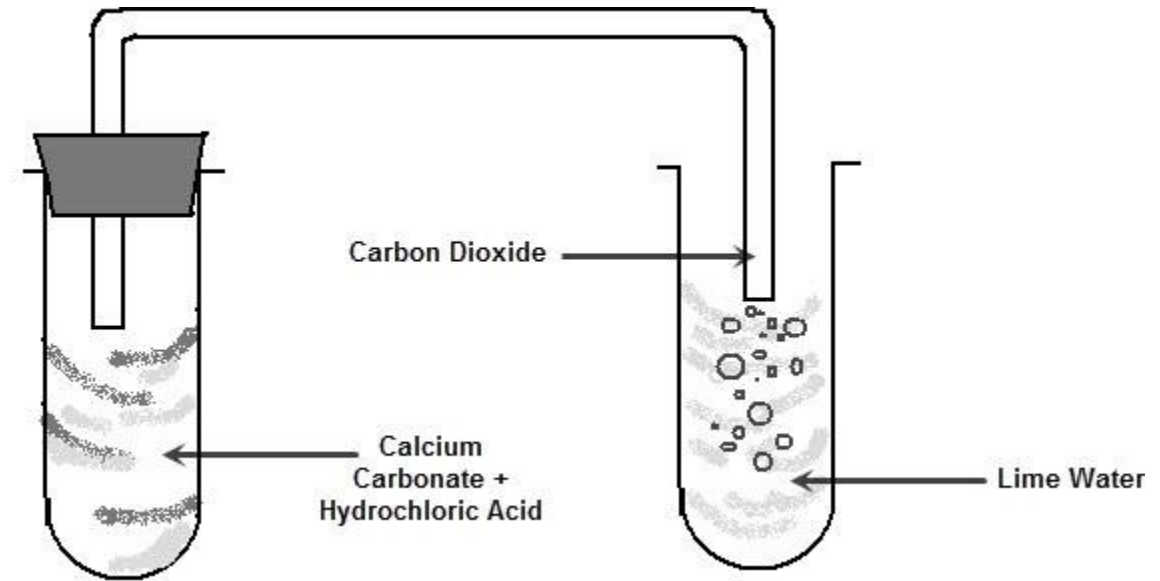
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on testing for carbonates

## Things to include:

An acid, such as dilute hydrochloric acid, is added to the test compound. Carbon dioxide gas bubbles if carbonate ions are present. Limewater is used to confirm that the gas is carbon dioxide. It turns from clear to milky when carbon dioxide is bubbled through.





# GCSE Science Daily Revision Task



**Task:** Produce a flash card on testing for sulphates

## Things to include:

You can test to see if a solution contains sulfate ions by using barium chloride. If barium chloride solution is added to a sample of water containing sulfate ions, barium sulfate is formed. Barium sulfate is insoluble in water, and will be seen as a white precipitate..

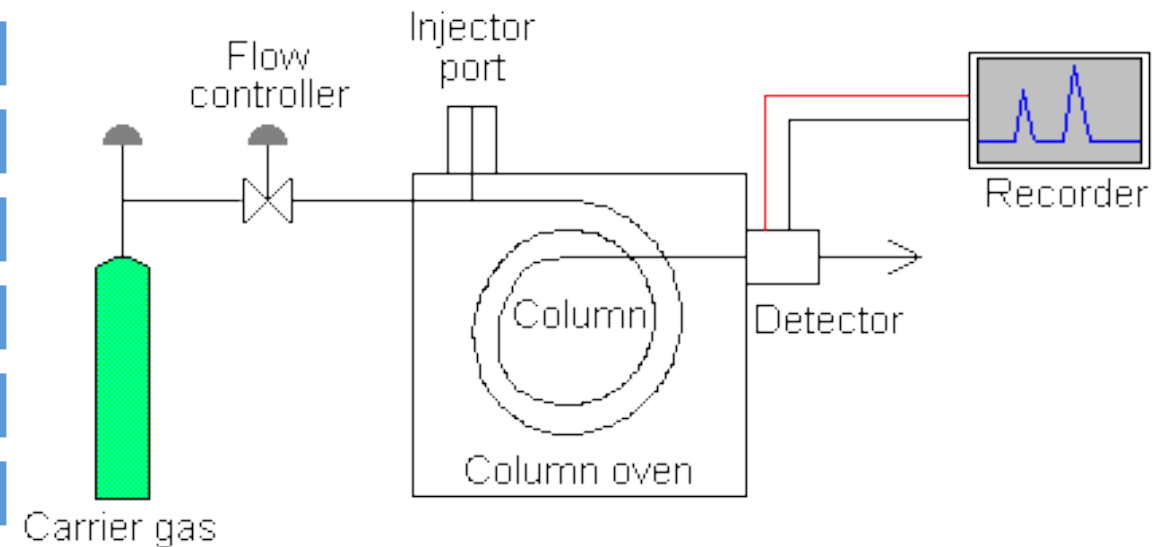


## Task: Produce a flash card on instrumental analysis

## Things to include:

Instrumental methods of analysis rely on machines. There are several different types of instrumental analysis. Some are suitable for detecting and identifying elements, while others are better suited to compounds. In general, instrumental methods of analysis are:

- Fast
- Accurate (they reliably identify elements and compounds)
- Sensitive (they can detect very small amounts of a substance in a small amount of sample)



# GCSE Science Daily Revision Task



**Task:** Produce a flash card on gases in the atmosphere

## Things to include:

According to NASA, the gases in Earth's atmosphere include:

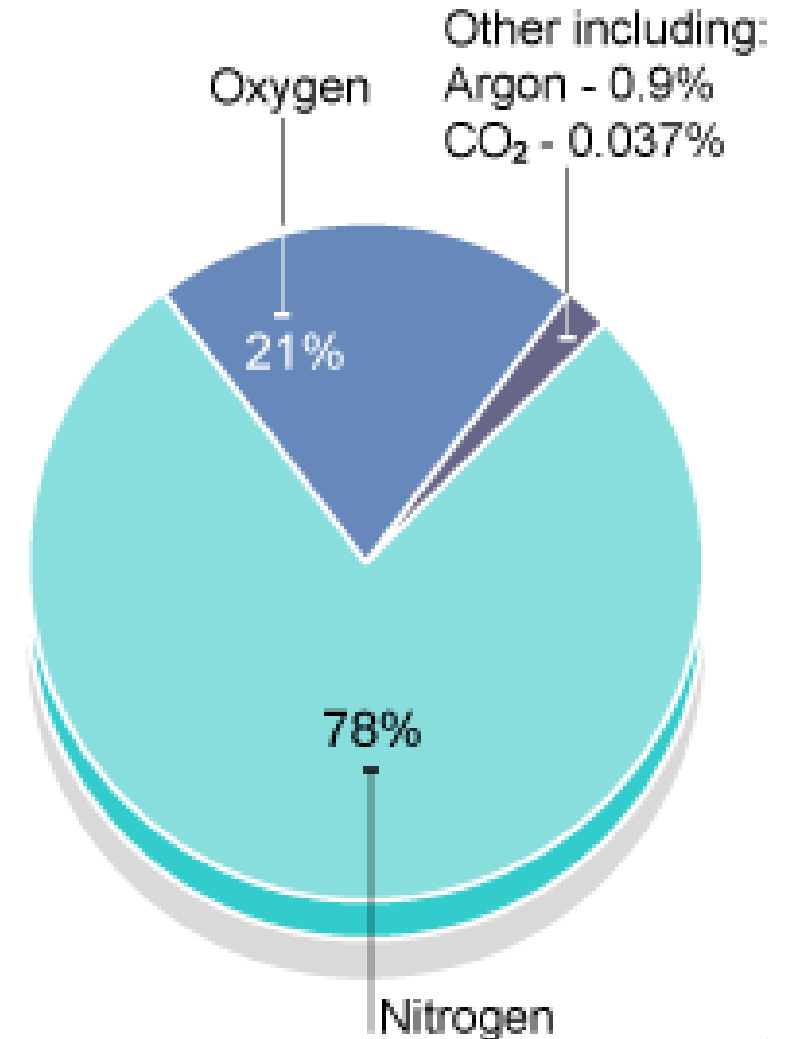
Nitrogen — 78 percent.

Oxygen — 21 percent.

Argon — 0.93 percent.

Carbon dioxide — 0.04 percent.

Trace amounts of neon, helium, methane, krypton and hydrogen, as well as water vapor.



# GCSE Science Daily Revision Task

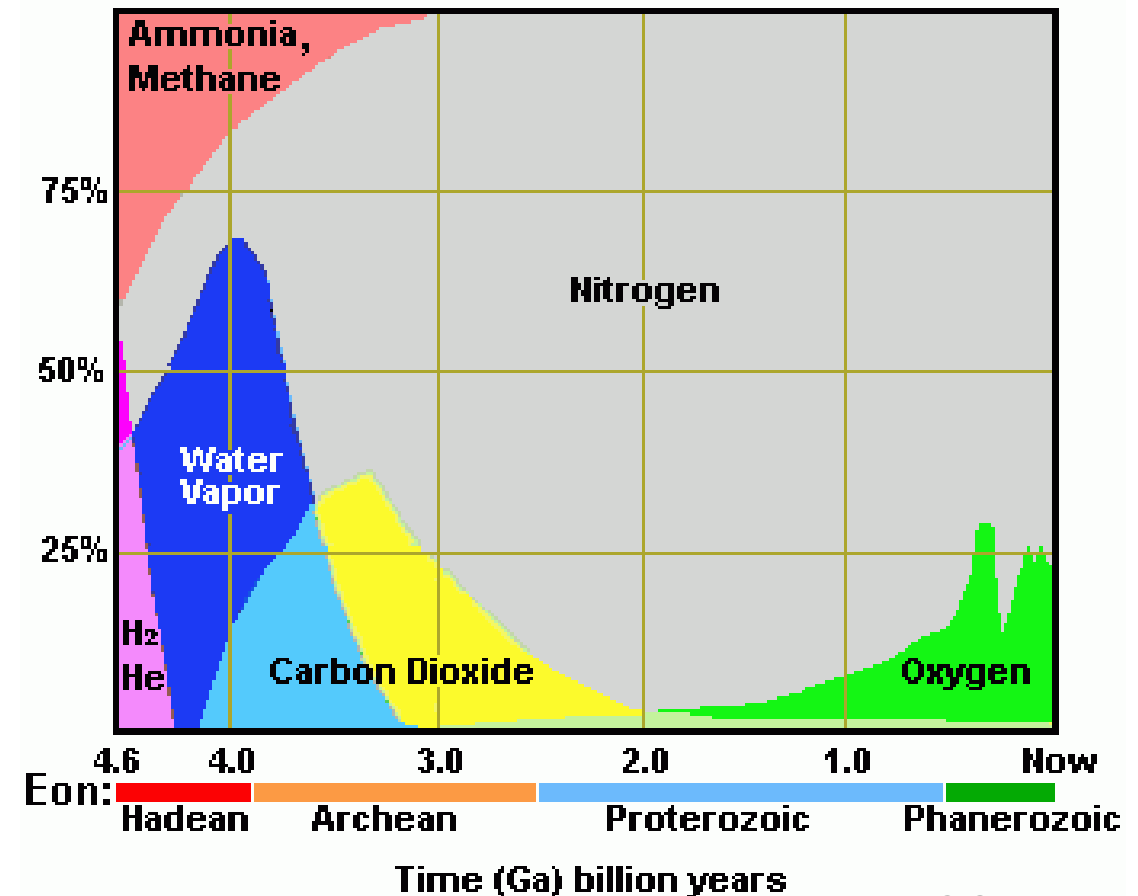


**Task:** Produce a flash card on the development of the atmosphere

## Things to include:

Scientists believe that the Earth was formed about 4.5 billion years ago. Its early atmosphere was probably formed from the gases given out by volcanoes. As the Earth cooled down, most of the water vapour condensed and formed the oceans.

% of Atmosphere Composition of Earth's atmosphere



# GCSE Science Daily Revision Task



**Task:** Produce a flash card on carbon footprint

## Things to include:

A carbon footprint is historically defined as the total set of greenhouse gas emissions caused by an individual, event, organization, or product, expressed as carbon dioxide equivalent



# GCSE Science Daily Revision Task

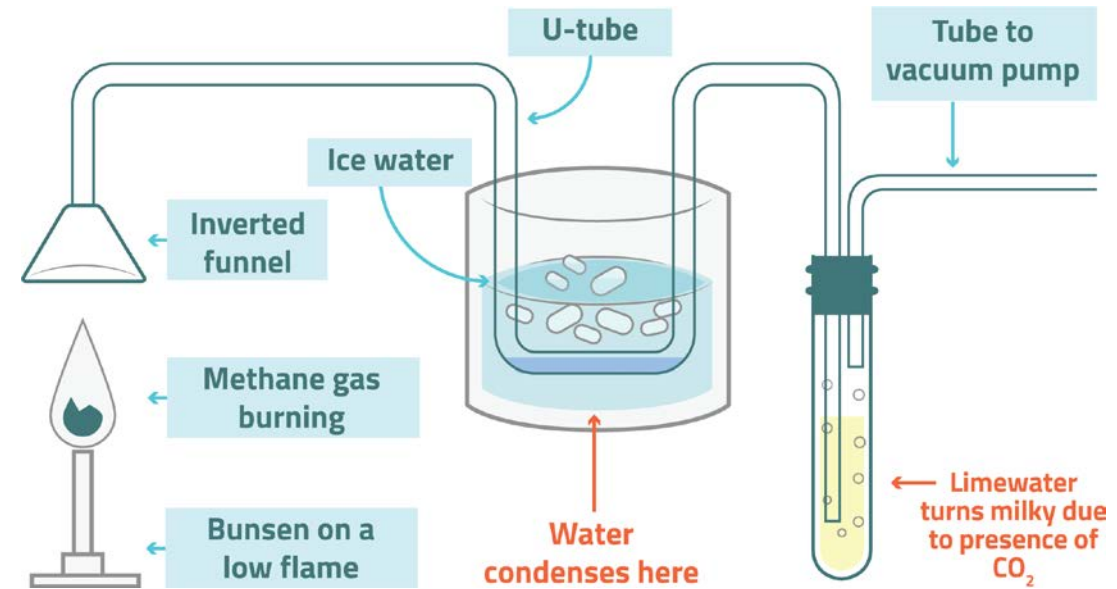


**Task:** Produce a flash card on the combustion of fuels

## Things to include:

Fuels burn when they react with oxygen in the air. The hydrogen in hydrocarbons is oxidised to water (remember that water,  $\text{H}_2\text{O}$ , is an oxide of hydrogen). If there is plenty of air, we get complete combustion and the carbon in hydrocarbons is oxidised to carbon dioxide:

hydrocarbon + oxygen  $\rightarrow$  water + carbon dioxide





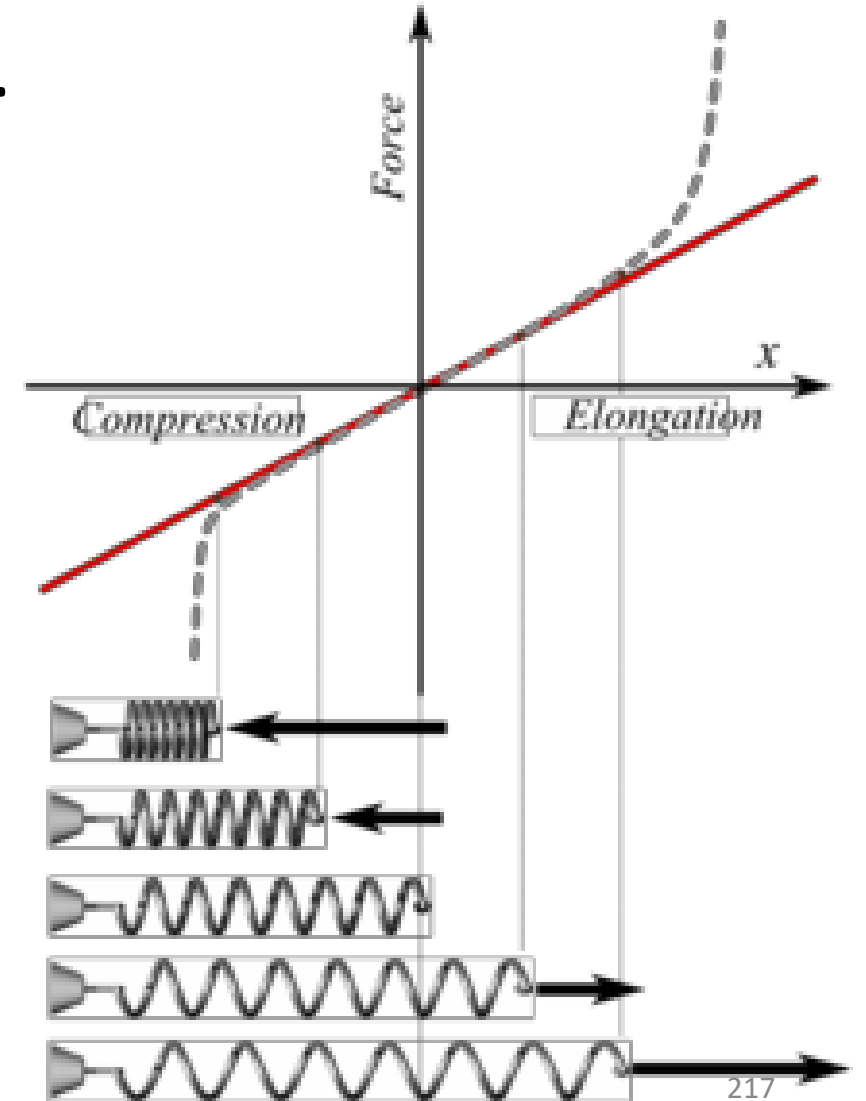


## Things to include:

$$F = k \times e$$

**k** is the 'spring constant' in newtons per metre, N/m

**e** is the extension in metres, m



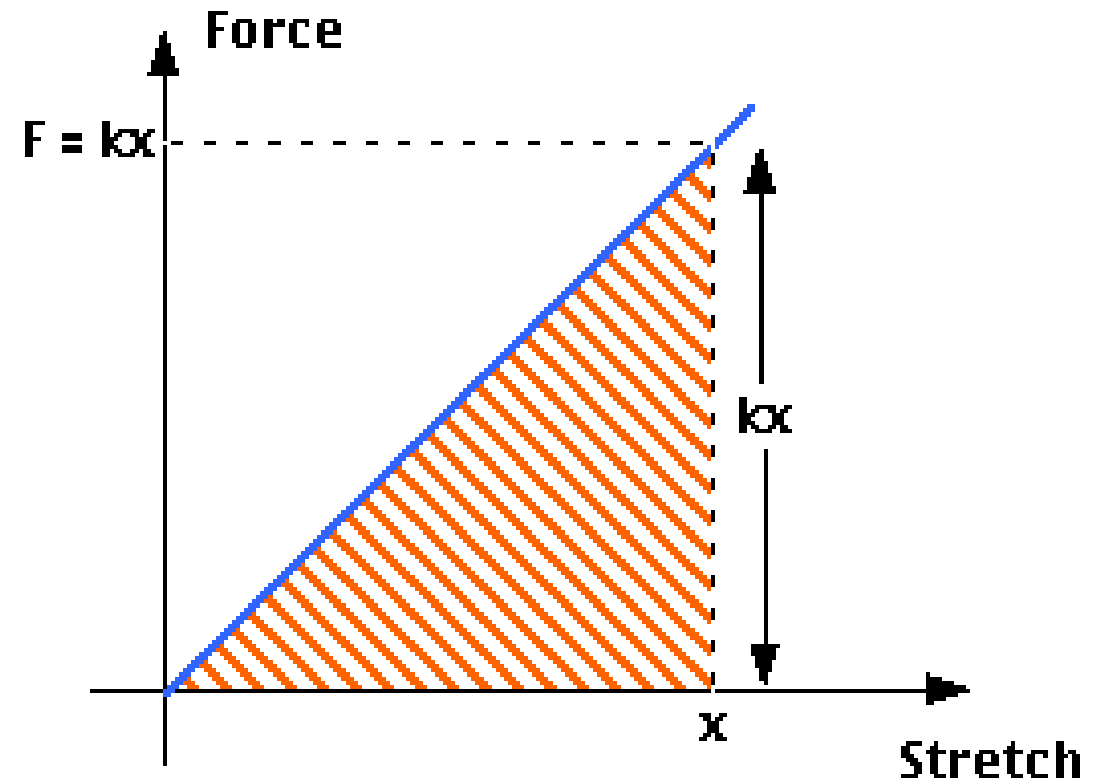
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on work done in stretching a spring

## Things to include:

Elastic potential energy is Potential energy stored as a result of deformation of an elastic object, such as the stretching of a spring. It is equal to the work done to stretch the spring, which depends upon the spring constant  $k$  as well as the distance stretched.



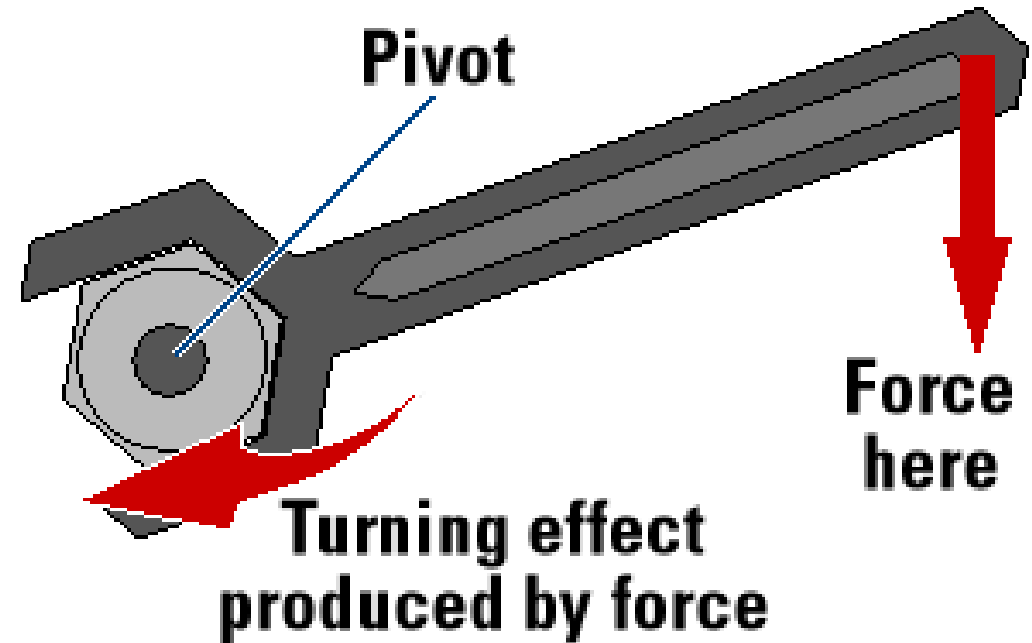
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on turning forces

## Things to include:

The moment of a force is the turning effect of a force. A worker applies a force to a spanner to turn a nut. A force that is applied to an object away from the object's centre makes the object rotate about a fixed point. The point of an object that does not change position when it experiences a moment is the pivot.



## Things to include:

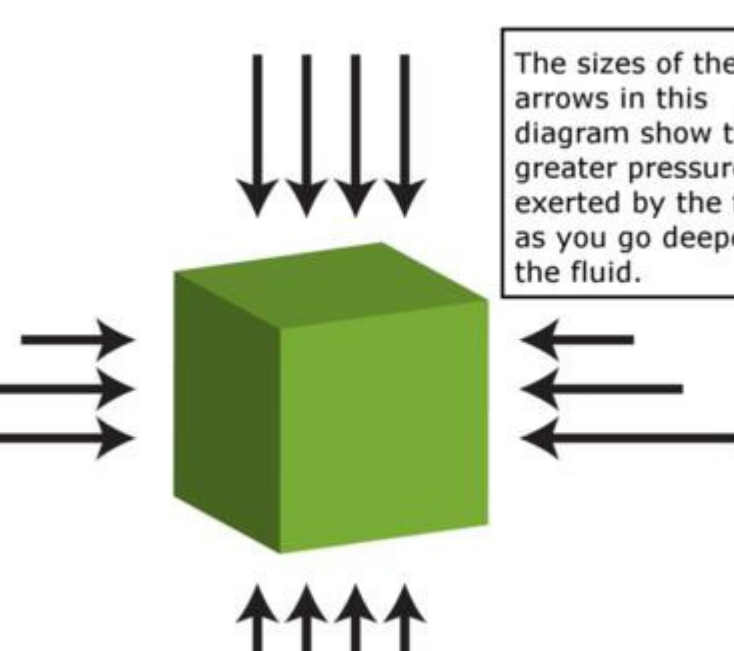
You need to know how to calculate the mechanical advantage obtained by using levers, the velocity ratio in levers and pulley systems, and gear ratio and output speed when using gears.





## Things to include:

# Fluid Pressure



The diagram shows a green cube in the center. Four arrows point down from above, four point up from below, three point left from the left, and three point right from the right. The arrows are longer on the top and bottom faces than on the side faces, indicating greater pressure from above and below. A text box on the right explains that the size of the force arrows shows that greater pressure is exerted by the fluid as you go deeper in the fluid.

The sizes of the force arrows in this diagram show that greater pressure is exerted by the fluid as you go deeper in the fluid.



## Things to include:

Diagram illustrating a vertical column representing a unit area. The column has a height of 50 km, a width of 12 km, and a depth of 1 mb. The column is divided into three horizontal layers: the top layer is 1 mb thick, the middle layer is 100 mb thick, and the bottom layer is 1000 mb thick. The bottom layer is labeled "Unit Area".

## Things to include:

The graph shows the distance traveled by a car over time. The blue line represents a constant speed of 5 m/s for the first 2 seconds. The red line represents a journey that starts at 0 m, increases at 2 m/s to 6 m at 3 seconds, remains stationary at 6 m until 4 seconds, increases to 8 m at 7 seconds, and then returns to 0 m at 10 seconds.

Time (s)	Distance (m)	Notes
0	0	Start
1	5	Blue line: steady speed
2	10	Blue line ends
3	6	Red line: steady speed
4	6	Red line: stationary
7	8	Red line: stationary
10	0	Red line: steady speed returning to start

# GCSE Science Daily Revision Task

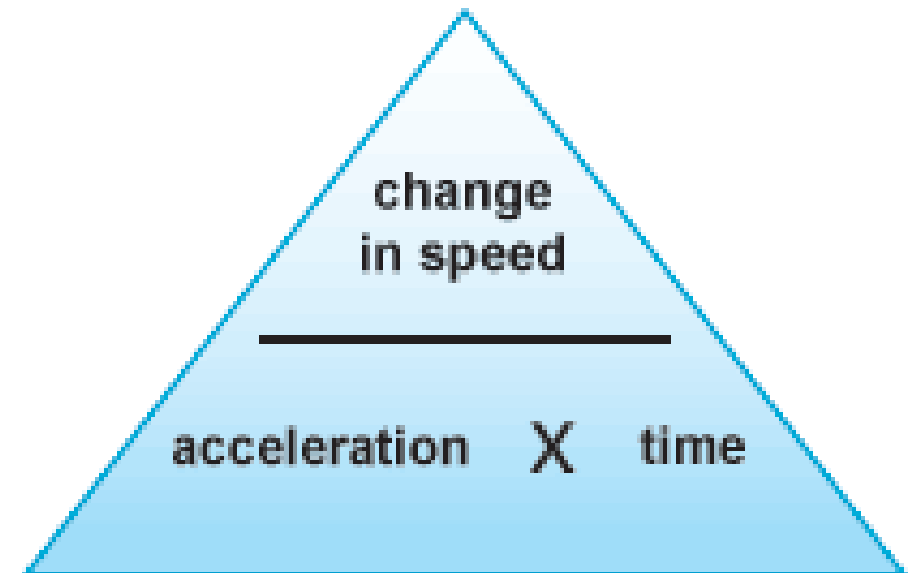


**Task:** Produce a flash card on acceleration

## Things to include:

Acceleration is the rate at which an object changes its speed. It's calculated using the equation:  $\text{acceleration} = \frac{\text{change in speed}}{\text{time taken}}$ .

Speed-time graphs illustrate how the speed of an object changes over time. The steeper the gradient of the line, the greater the acceleration.



# GCSE Science Daily Revision Task

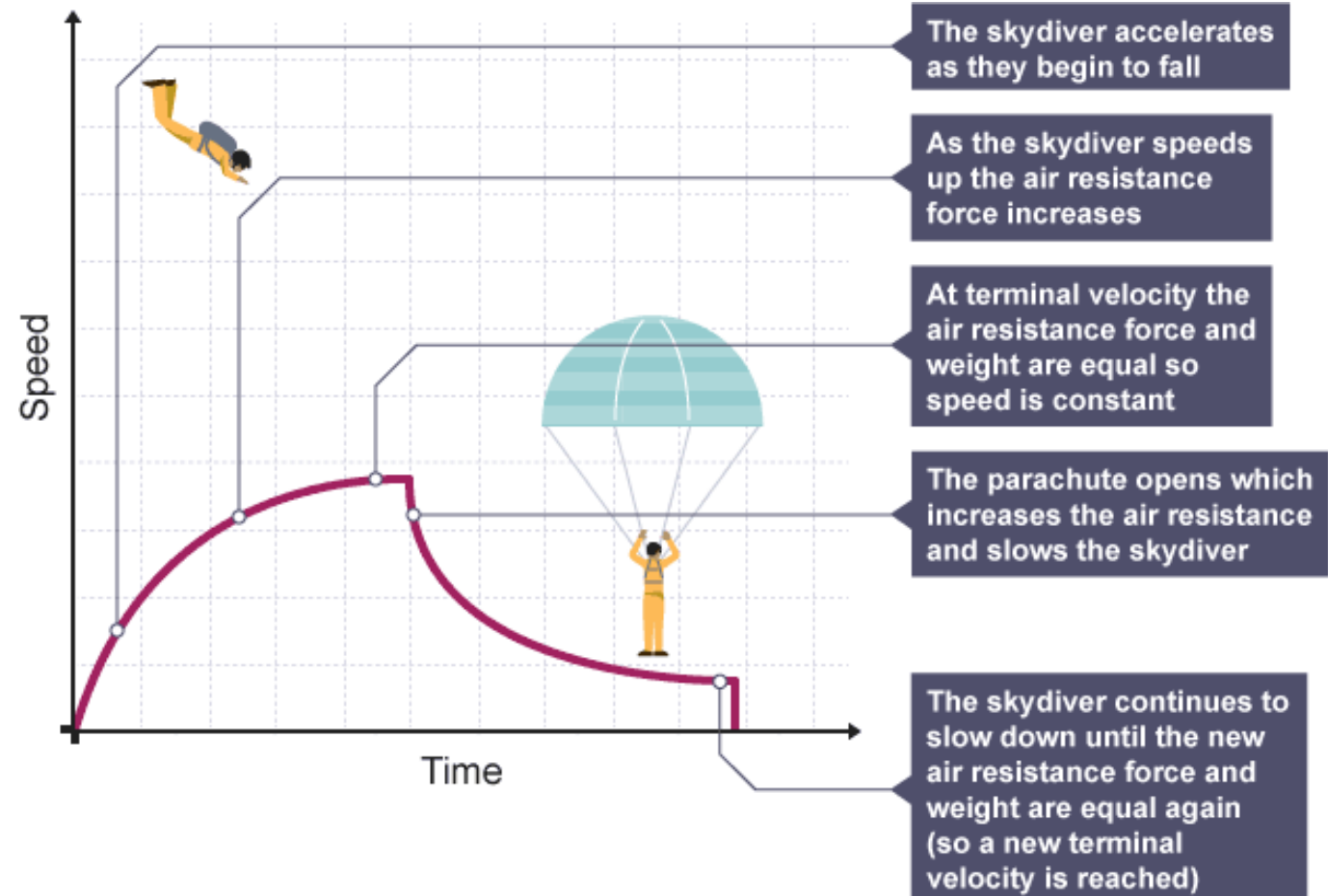


**Task:** Produce a flash card on falling under gravity.

## Things to include:

When an object is dropped, we can identify three stages before it hits the ground:

- At the start, the object accelerates downwards because of its weight. There is no air resistance. There is a resultant force acting downwards.
- As it gains speed, the object's weight stays the same, but the air resistance on it increases. There is a resultant force acting downwards.
- Eventually, the object's weight is balanced by the air resistance. There is no resultant force and the object reaches a steady speed, called the **terminal velocity**.



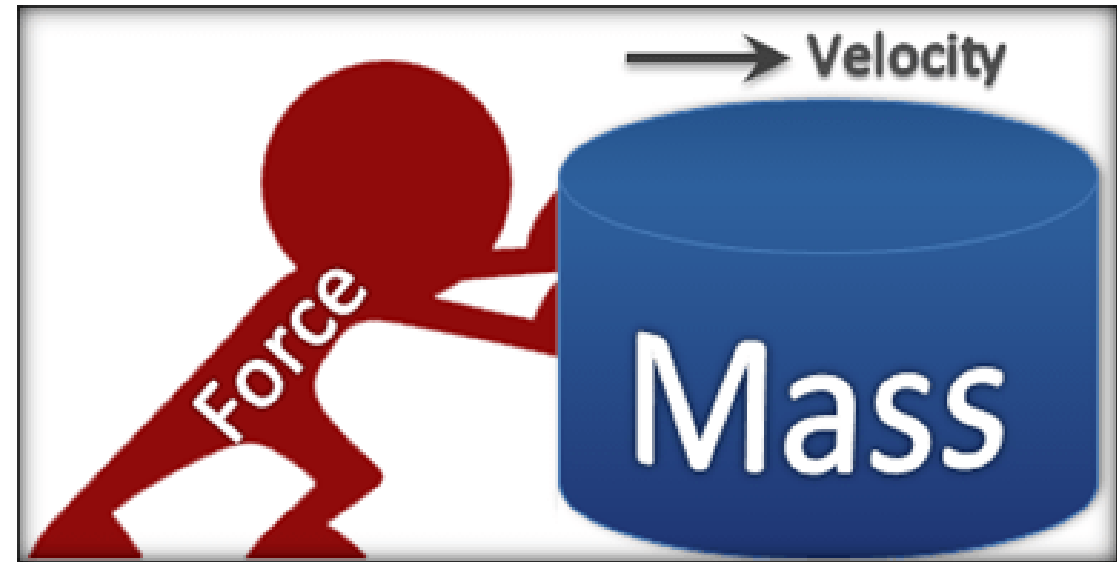
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on Newton's First Law and the consequences of it.

## Things to include:

Newton's first law of motion - sometimes referred to as the law of inertia. An object at rest stays at rest and an object in motion stays in motion with the same speed and in the same direction unless acted upon by an unbalanced force.

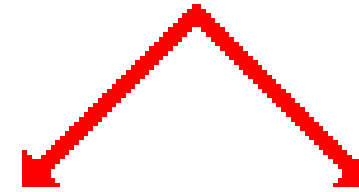


## Things to include:

## Forces are Unbalanced



## There is an acceleration



The acceleration depends directly upon the "net force"

The acceleration depends inversely upon the object's mass.



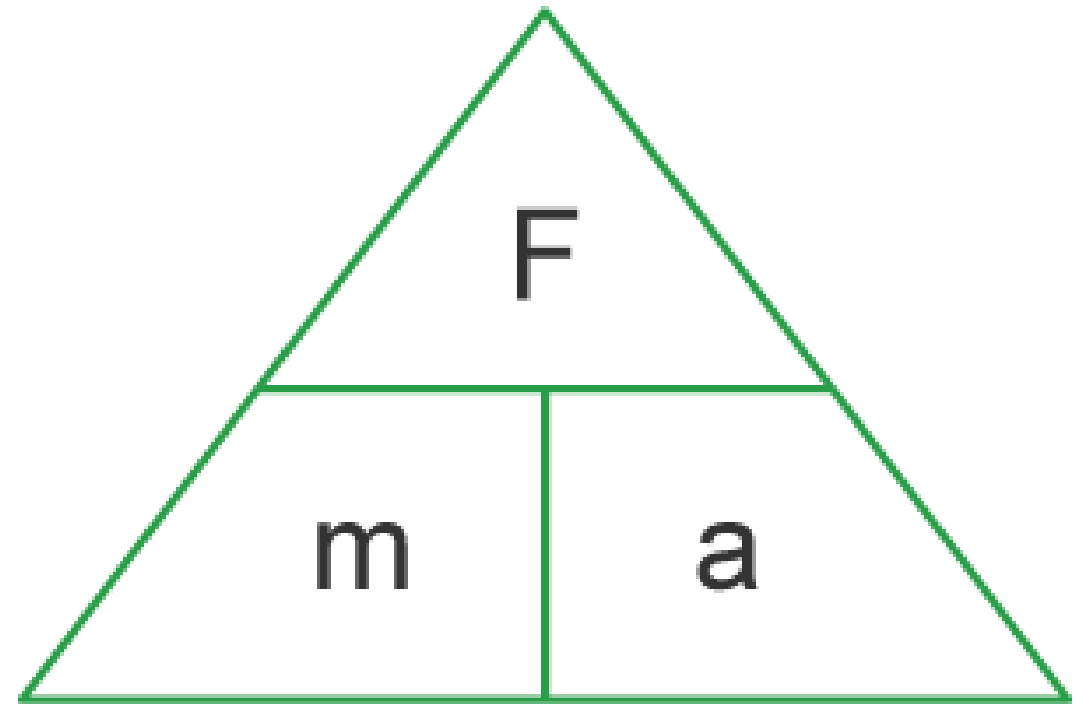
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on inertial mass.

## Things to include:

Inertial mass is a mass parameter giving the inertial resistance to acceleration of the body when responding to all types of force. Gravitational mass is determined by the strength of the gravitational force experienced by the body when in the gravitational field  $g$ .



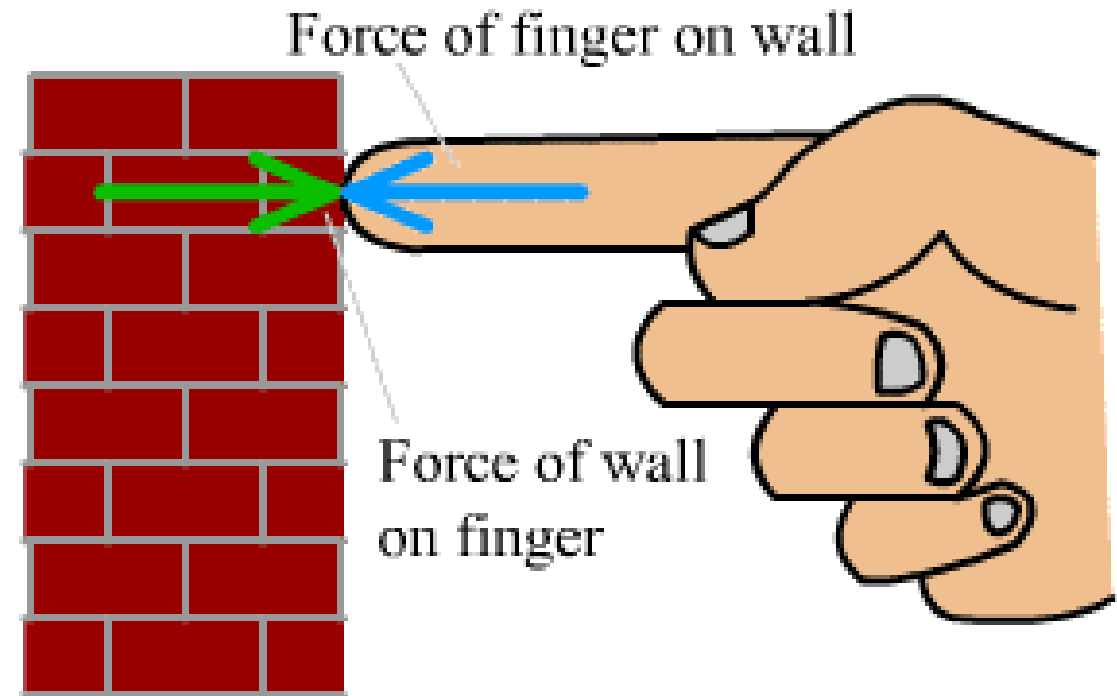
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on Newton's Third Law.

## Things to include:

A force is a push or a pull that acts upon an object as a result of its interaction with another object.... These two forces are called action and reaction forces and are the subject of Newton's third law of motion. Formally stated, Newton's third law is: For every action, there is an equal and opposite reaction.



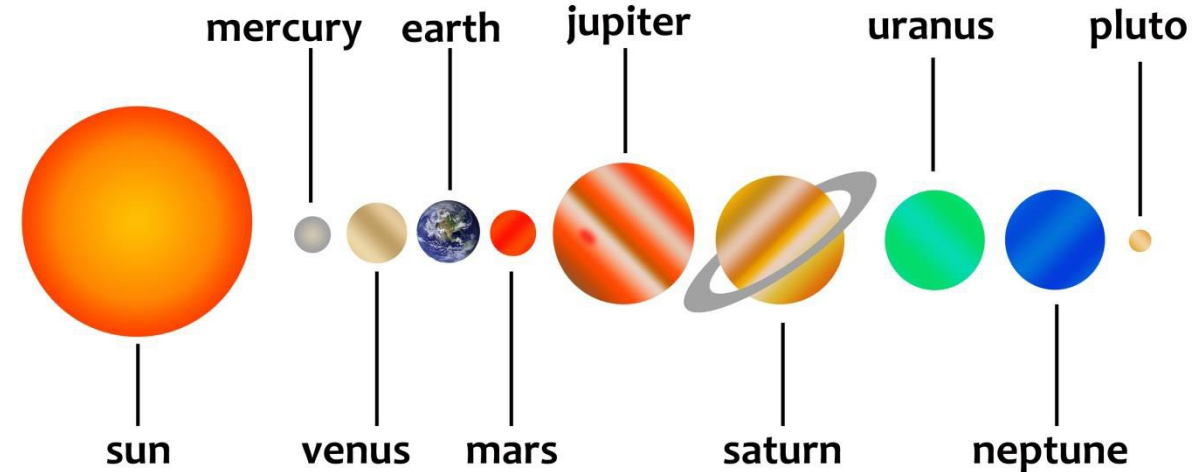
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on the classification of objects within our solar system.

## Things to include:

The objects that make up our solar system can be classified into three main groups: planets, dwarf planets and small solar system bodies. Planets are spherical, orbit around the Sun and have cleared the neighbourhood around their orbits of other smaller bodies.



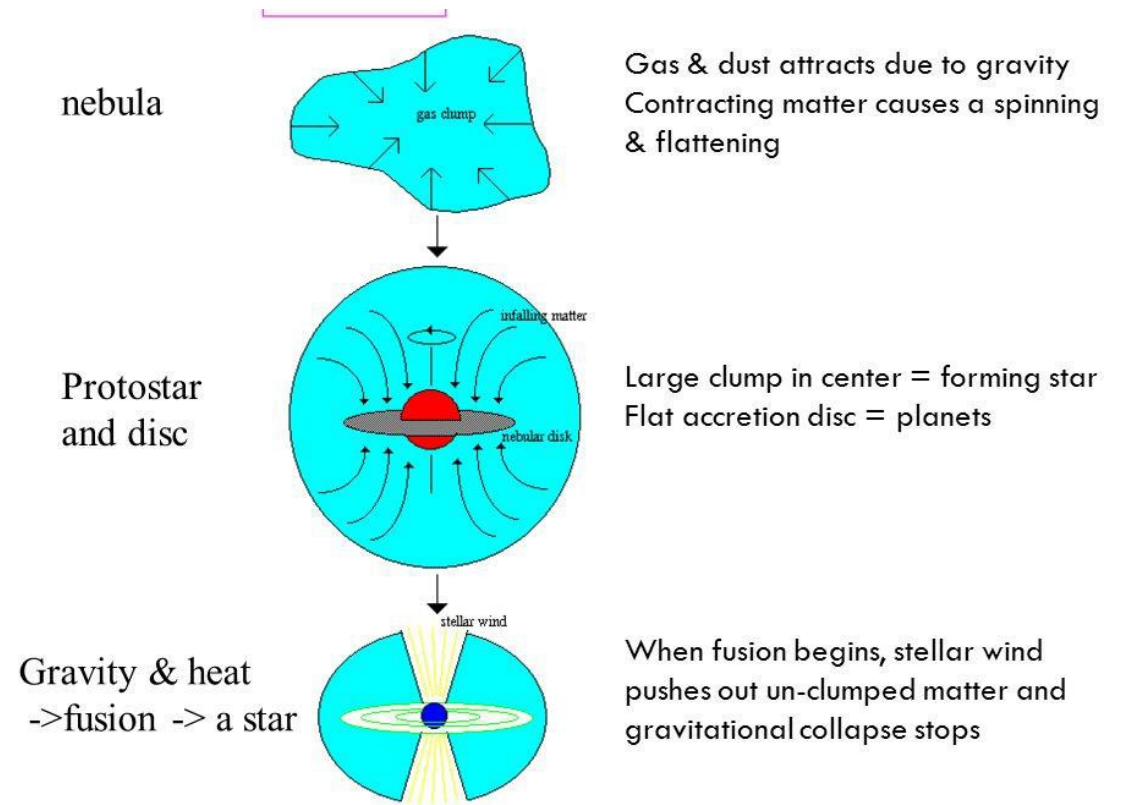
# GCSE Science Daily Revision Task





























**Task:** Produce a flash card on the birth of a star from its beginnings as a nebula to how it reaches main

## Things to include:

A star is born when atoms of light elements are squeezed under enough pressure for their nuclei to undergo fusion. All stars are the result of a balance of forces: the force of gravity compresses atoms in interstellar gas until the fusion reactions begin.



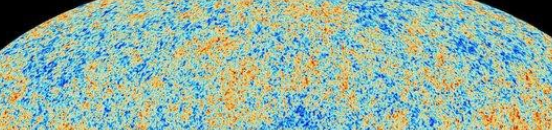
## Things to include:

 Proton	 $\rightarrow$ $\leftarrow$ 	  Deuterium Unstable
 Neutron	 $\rightarrow$ $\leftarrow$  	   Tritium Very Unstable
	  $\rightarrow$ $\leftarrow$ 	   Helium-3 Unstable
	  $\rightarrow$ $\leftarrow$  	    Helium





## Things to include:



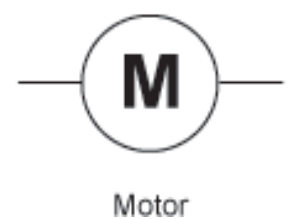
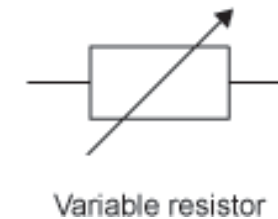
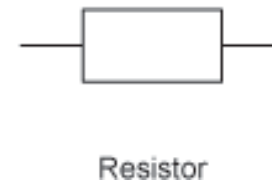
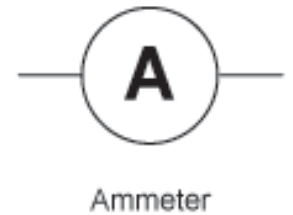
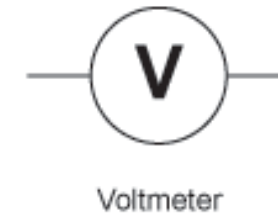
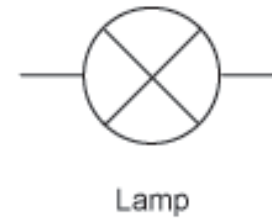
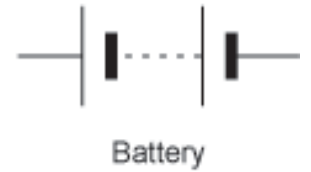
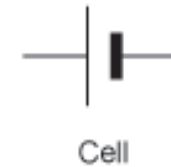
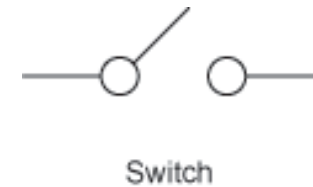
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on how to draw circuit symbols.

## Things to include:

The whole point is to make it easier to see what is connected to what. Here you can see how the symbols for a cell (not a battery!) and a lamp look in a circuit diagram. If you have to draw a circuit diagram from scratch, it is usually easier to draw the circuit symbols first, and then add all the wires.



# GCSE Science Daily Revision Task



**Task:** Produce a flash card on the equation for electric current as the rate of flow of charge

## Things to include:

The size of an electric current is the rate of flow of electric charge. You can calculate the size of a current using this equation:

$$I = Q \div t$$

**I** is the current in amperes (amps), A

**Q** is the charge in *coulombs*, C

**t** is the time in seconds, s

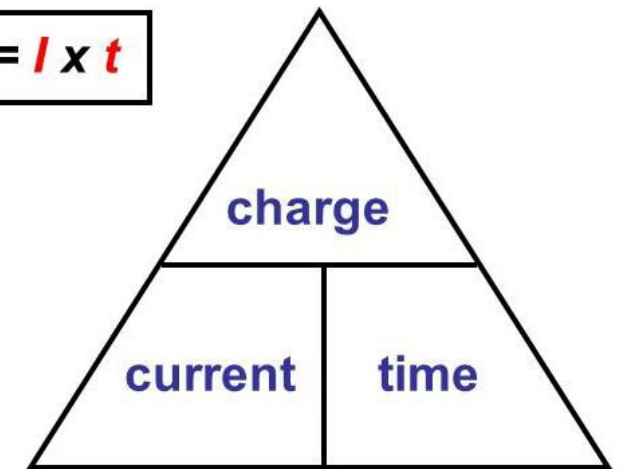
## Charge-current equation

$$\text{electric charge} = \text{current} \times \text{time}$$

$$Q = I \times t$$

also:  $I = Q \div t$

and:  $t = Q \div I$



[illegible]

## Things to include:

Current here = 5A

Current here = 5A

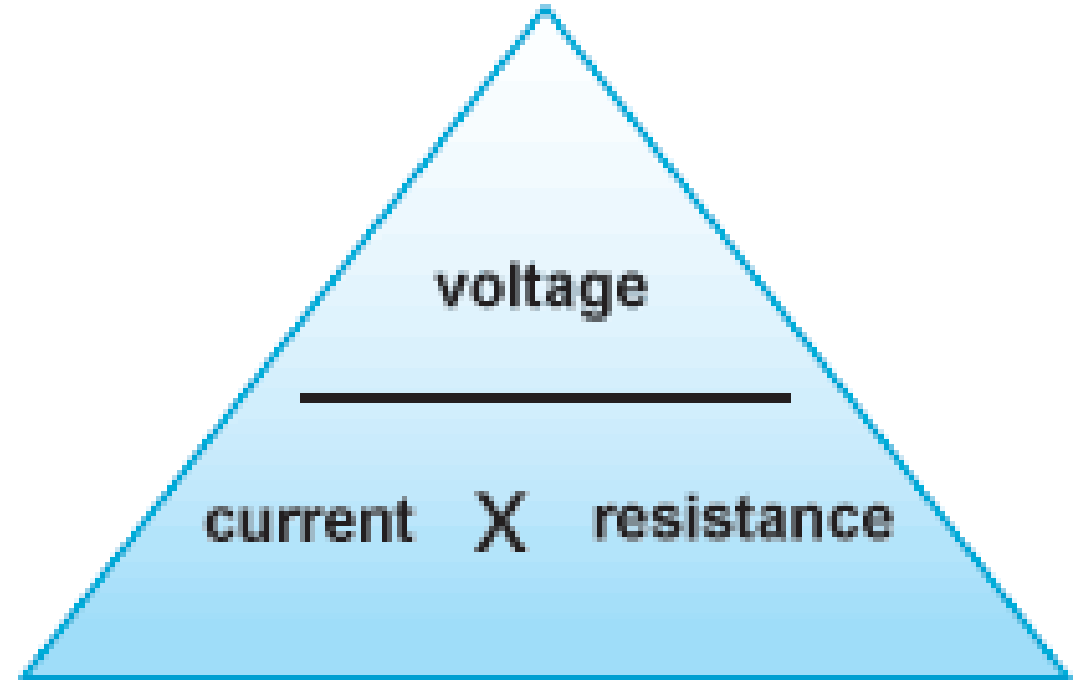
Current here = 5A

Current here = 5A

## Task: Produce a flash card on resistance

## Things to include:

Resistance is measured in ohms. It can be calculated from the potential difference across a component and the current flowing through it. The total resistance of a series circuit is the sum of the resistances of the components in the circuit.



# GCSE Science Daily Revision Task

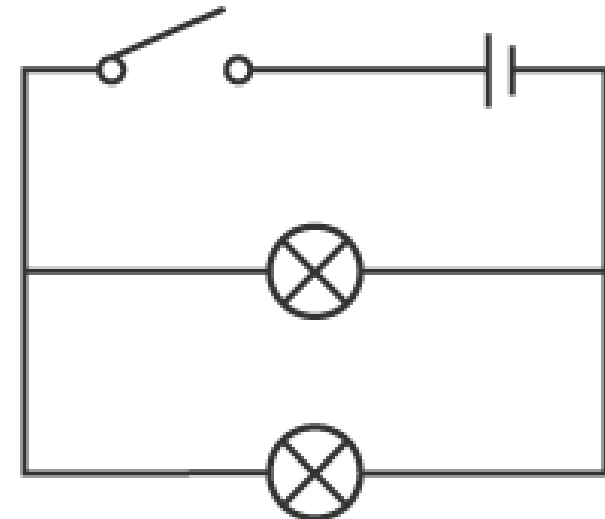
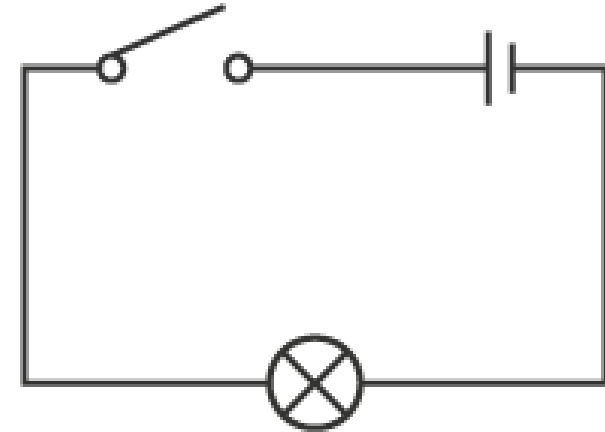


**Task:** Produce a flash card on series and parallel circuits.

## Things to include:

Components that are connected one after another on the same loop of the circuit are connected in series. The *current* that flows across each component connected in series is the same.

Components that are connected on separate loops are connected in parallel. The current is shared between each component connected in parallel. The total amount of current flowing into the junction, or split, is equal to the total current flowing out. The current is described as being conserved.





## Things to include:

The graph displays two periodic voltage signals over time. The vertical axis is labeled  $V$  and ranges from -300 to +300 with major grid lines every 100 units. The horizontal axis represents time  $t$  with major grid lines every 1 unit. A dashed horizontal line is drawn at  $V = 0$ .

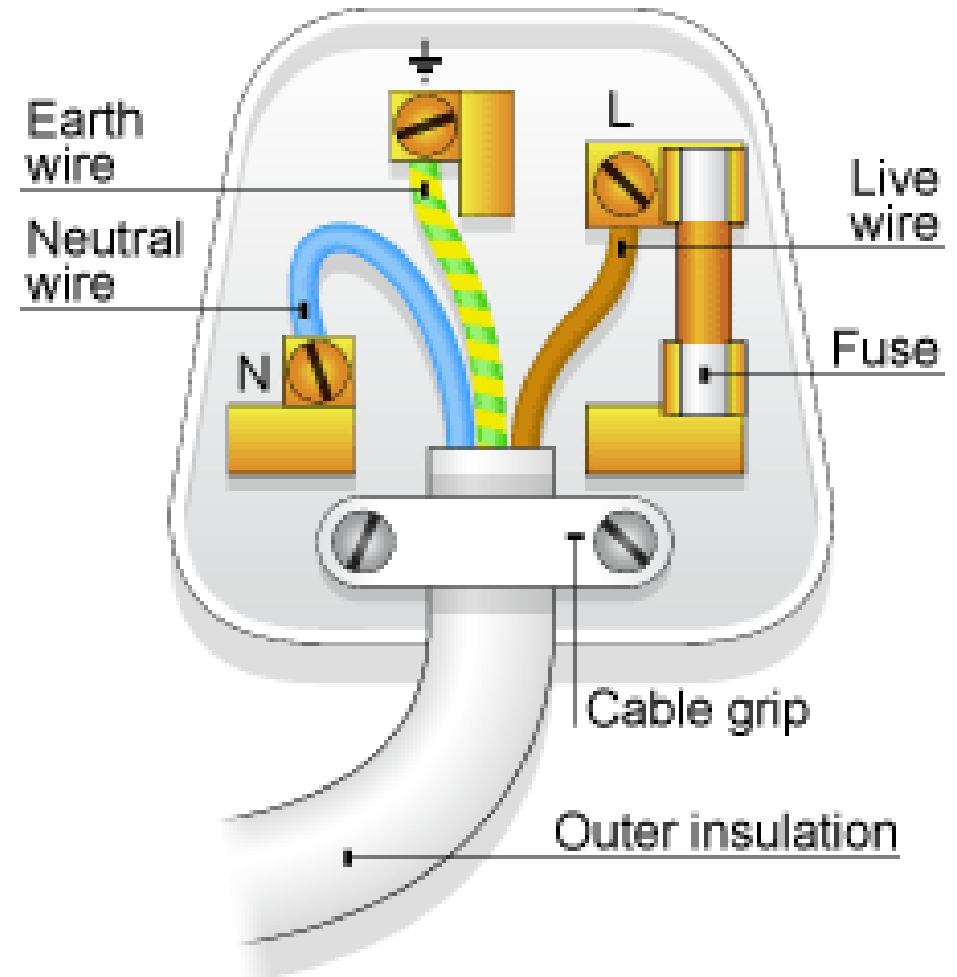
- The red signal is a sine wave with an amplitude of 300 and a period of 2 units of time. It starts at  $(0, 0)$ , reaches a minimum of -300 at  $t = 0.5$ , crosses zero at  $t = 1$ , reaches a maximum of +300 at  $t = 1.5$ , and returns to zero at  $t = 2$ .
- The blue signal is a sine wave with a much smaller amplitude of approximately 20 and the same period of 2 units of time. It also starts at  $(0, 0)$ , reaches a minimum of about -20 at  $t = 0.5$ , crosses zero at  $t = 1$ , reaches a maximum of about +20 at  $t = 1.5$ , and returns to zero at  $t = 2$ .

## Things to include:

**Task:** Produce a flash card on the name, colour and function of each wire in a three core electrical cable.

## Things to include:

A mains electricity cable contains two or three inner wires. Each has a core of copper, because copper is a good conductor of electricity. The outer layers are flexible plastic, because plastic is a good electrical insulator.



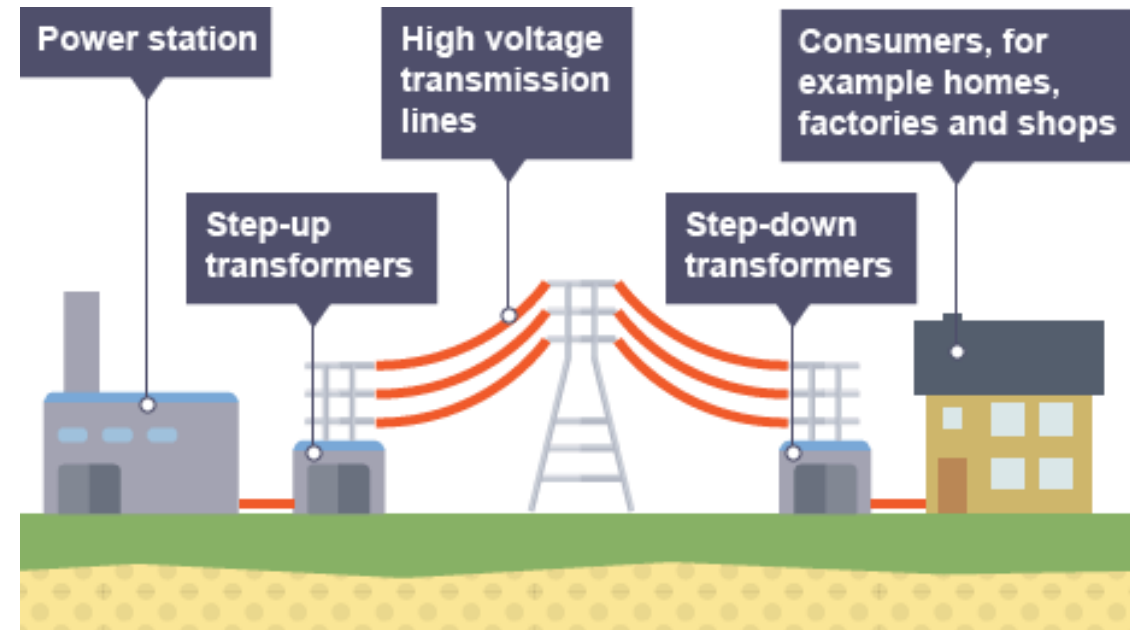
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on the National Grid.

## Things to include:

Electricity is transferred from power stations to consumers through the wires and cables of the National Grid. When a current flows through a wire some energy is lost as heat. The higher the current, the more heat is lost. To reduce these losses, the National Grid transmits electricity at a low current. This needs a high voltage.



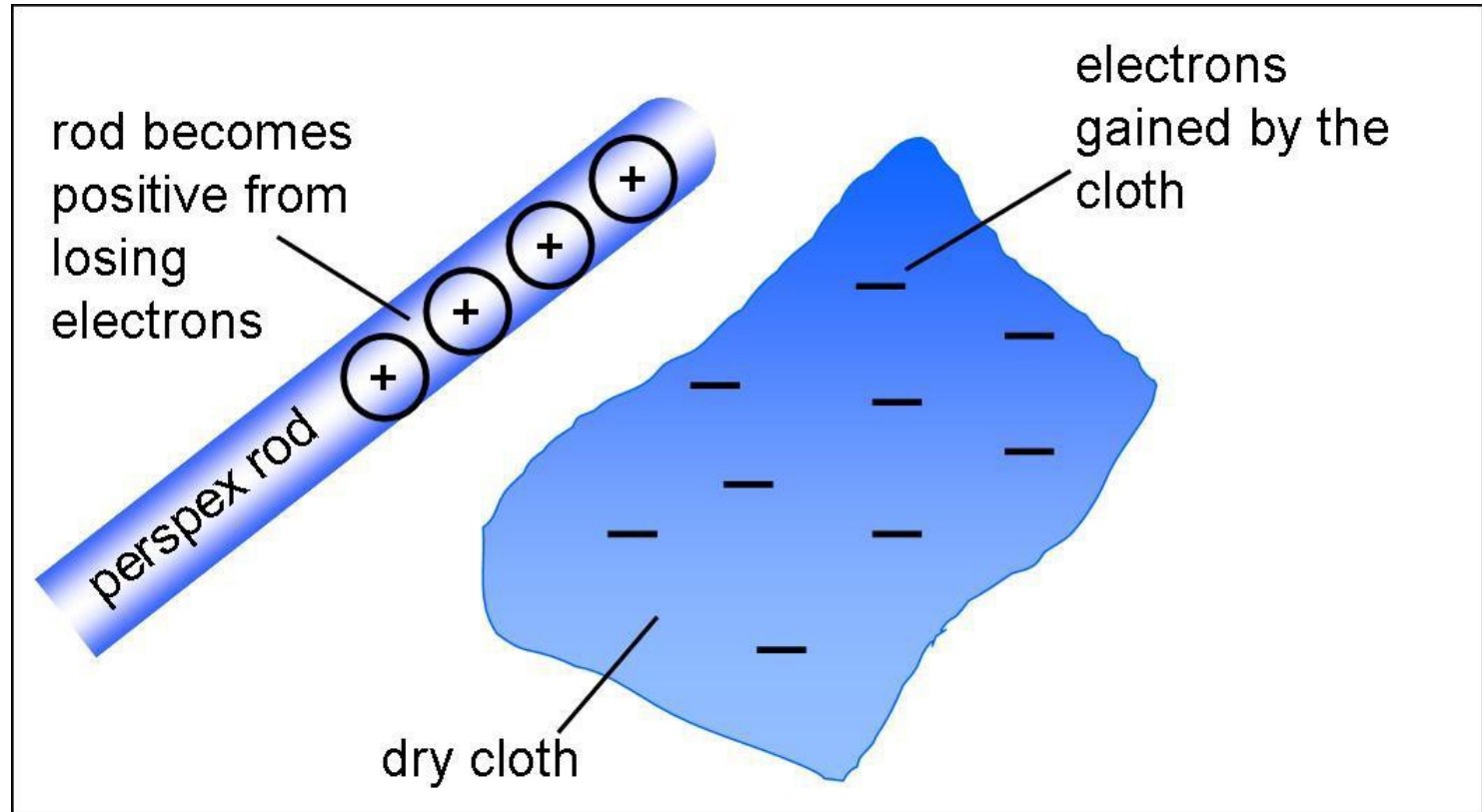
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on static charges.

## Things to include:

Static electricity is an imbalance of electric charges within or on the surface of a material. The charge remains until it is able to move away by means of an electric current or electrical discharge.



**Things to include:**

Permanent magnet strength depends upon the material used in its creation. The strength of an electromagnet can be adjusted by the amount of electric current allowed to flow into it. As a result, the same electromagnet can be adjusted for different strength levels





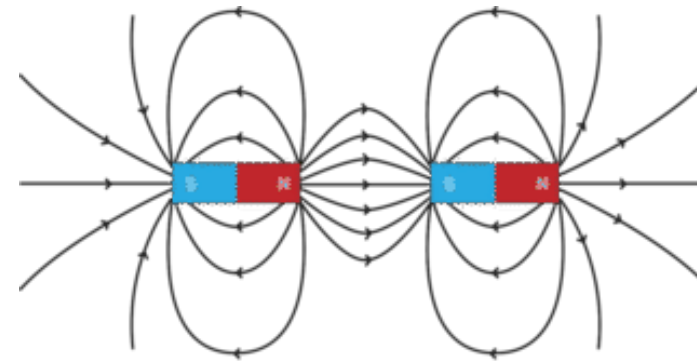
# GCSE Science Daily Revision Task



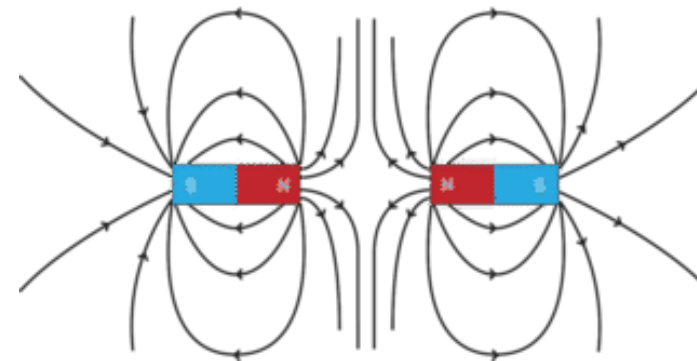
**Task:** Produce a flash card on how magnets exert forces on magnetic materials due to their magnetic fields.

## Things to include:

Magnets exert forces on magnetic materials due to their magnetic fields. The region around a magnet where a force acts on another magnet or on a magnetic material (iron, steel, cobalt, and nickel) is called the magnetic field.



Lines of force around a north and south pole join together



Lines of force around two north poles push apart

# GCSE Science Daily Revision Task

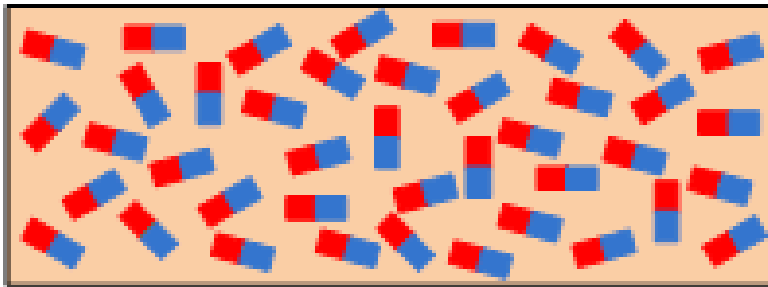


**Task:** Produce a flash card on the difference between magnets and magnetic materials.

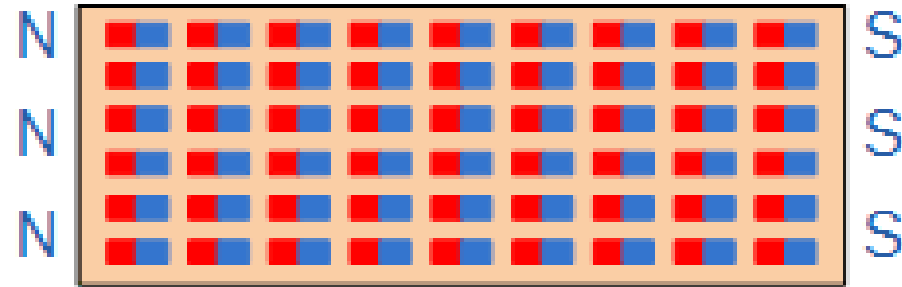
## Things to include:

Magnets are made from magnetic materials. These are metals that can be magnetised or will be attracted to a magnet. Most materials are not magnetic, but iron, cobalt and nickel are magnetic. Steel is mostly iron, so steel is magnetic too.

### Magnetic Materials



Loose and Random  
Magnetic Domains



Effect of Magnetization  
Domains Lined-up in Series

## Things to include:

A diagram of Earth showing its magnetic field. The Earth is represented as a sphere with a blue and green surface. A large bar magnet is placed inside the Earth, with its South (S) pole at the top and its North (N) pole at the bottom. The top of the Earth is labeled "Geographic north pole" and the bottom is labeled "Geographic south pole". Black curved lines with arrows represent the magnetic field lines, which emerge from the North magnetic pole (at the bottom) and loop back to the South magnetic pole (at the top). Several small circular icons with red and white compass needles are shown around the Earth, indicating the direction of the magnetic field at those locations.

# GCSE Science Daily Revision Task

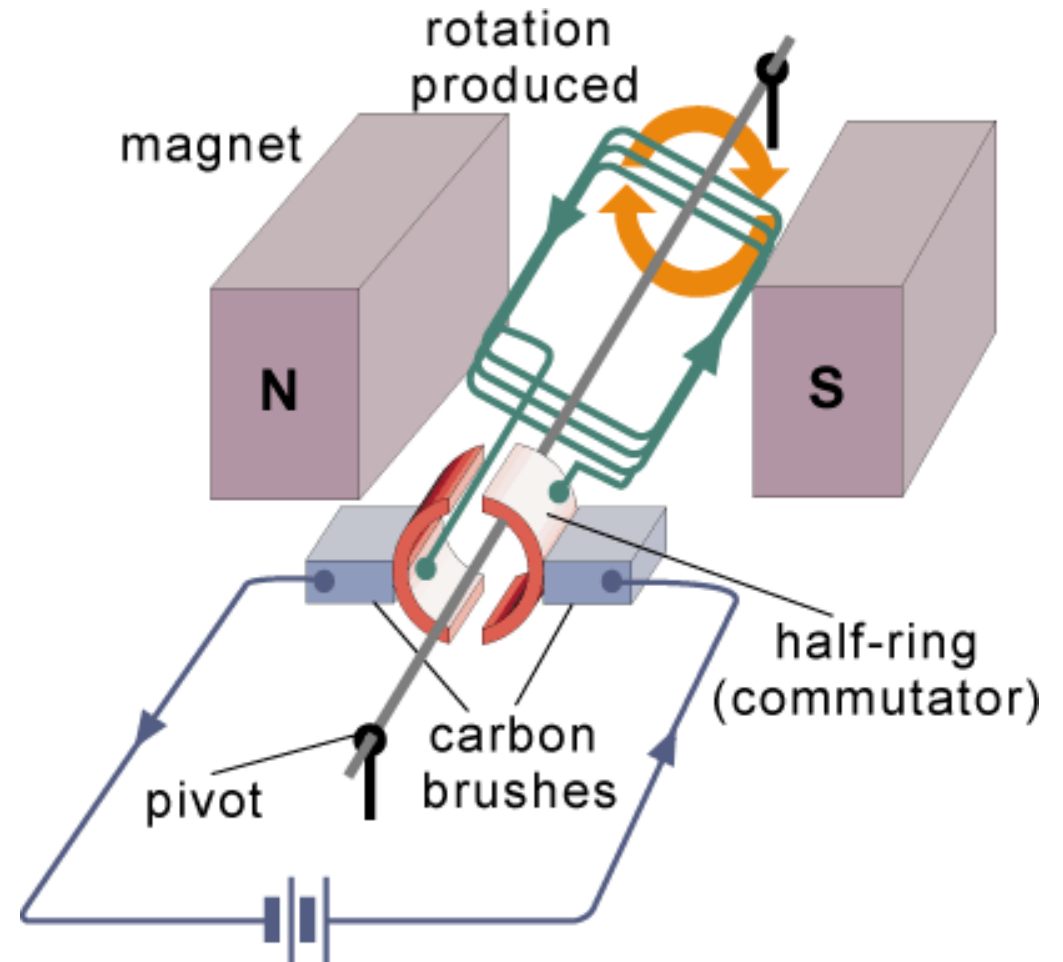


**Task:** Produce a flash card on how motors rotate due to the interaction of magnetic fields.

## Things to include:

Electric motors use the motor effect. A simple electric motor can be built using a coil of wire that is free to rotate between two opposite magnetic poles.

When an electric current flows through the coil, the coil experiences a force and moves. One side moves up and the other side moves down



# GCSE Science Daily Revision Task



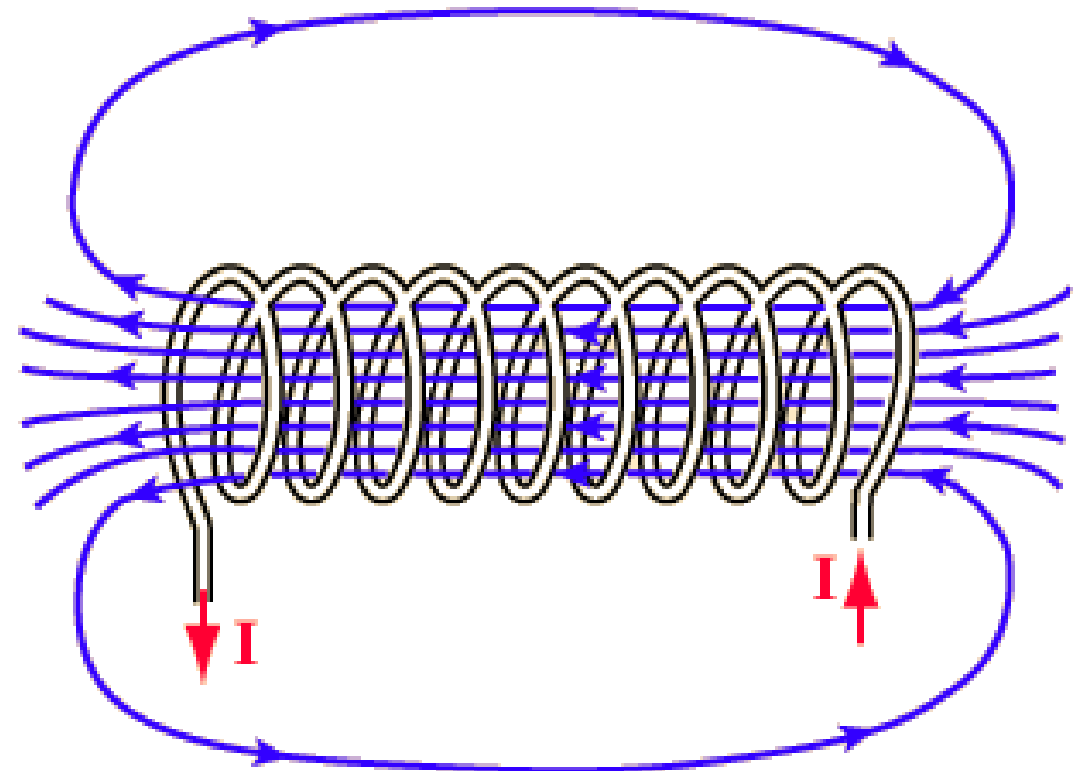
**Task:** Produce a flash card on the factors that affect the size of the force on a conductor.

## Things to include:

The size of the force on a wire carrying a current in a magnetic field can be increased by:

- increasing the size of the current
- increasing the strength of the magnetic field

The speed of a motor can be increased by either increasing the size of the current or by increasing the strength of the magnetic field.



## Things to include:

The diagram illustrates the internal components of a dynamic speaker. A large orange rectangular block represents the permanent magnet. Inside this magnet is a coil of wire. The coil is positioned between the two curved, grey-colored sections of the magnet, which form a gap. A cone, shown in grey and orange, is attached to the coil. The cone is shown vibrating, with concentric circles around its base indicating the sound waves it produces. A dust cap is located at the center of the cone's base. Electrical signals are shown entering the coil from the left, with a green arrow pointing right and a green arrow pointing left. The electrical connections are labeled with a minus sign (-) and a plus sign (+). The entire assembly is labeled with various parts: Permanent magnet, Coil, Cone, Dust cap, and Cone vibrates. The number 251 is visible in the bottom right corner.



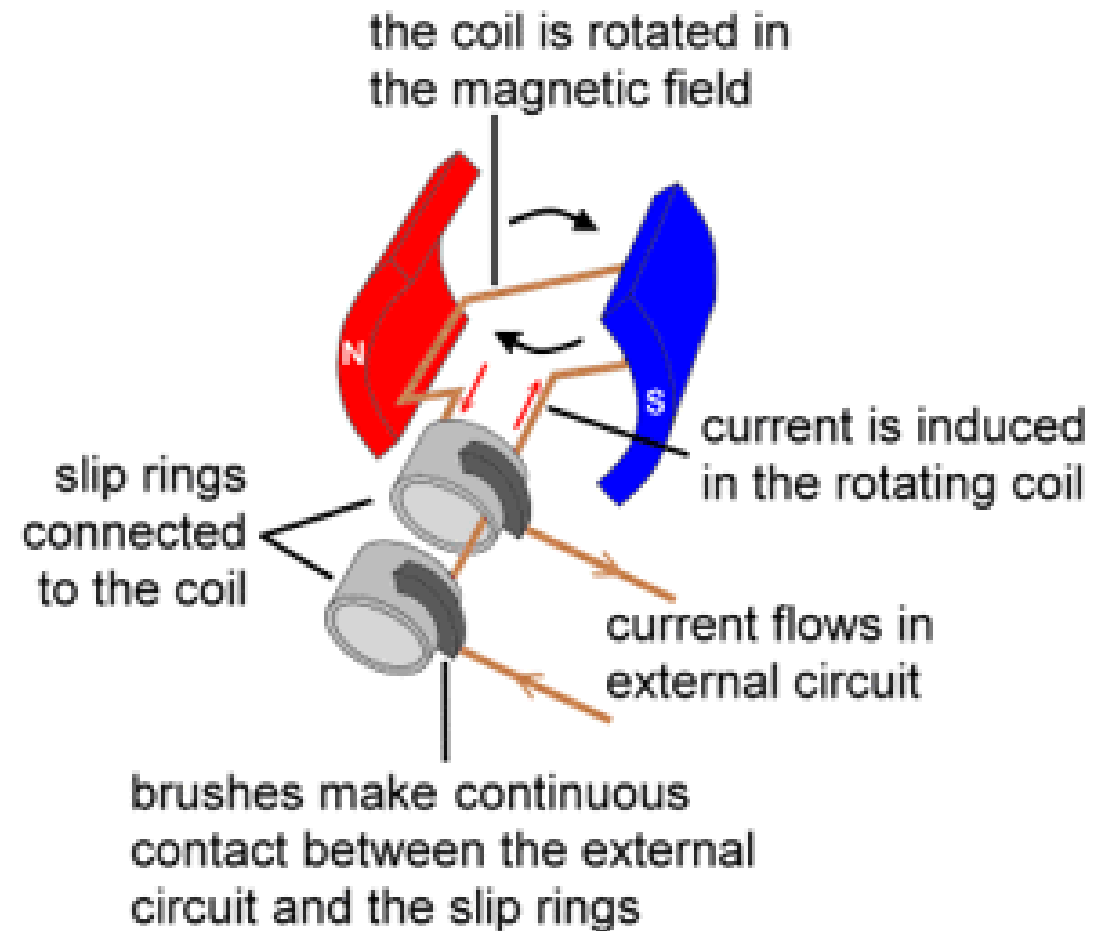
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on how a generator generates electricity.

## Things to include:

Making AC electricity. When a wire is moved in the magnetic field of a generator, the movement, magnetic field and current are all at right angles to each other. If the wire is moved in the opposite direction, the induced current also moves in the opposite direction. having more turns of wire in the coil.



# GCSE Science Daily Revision Task

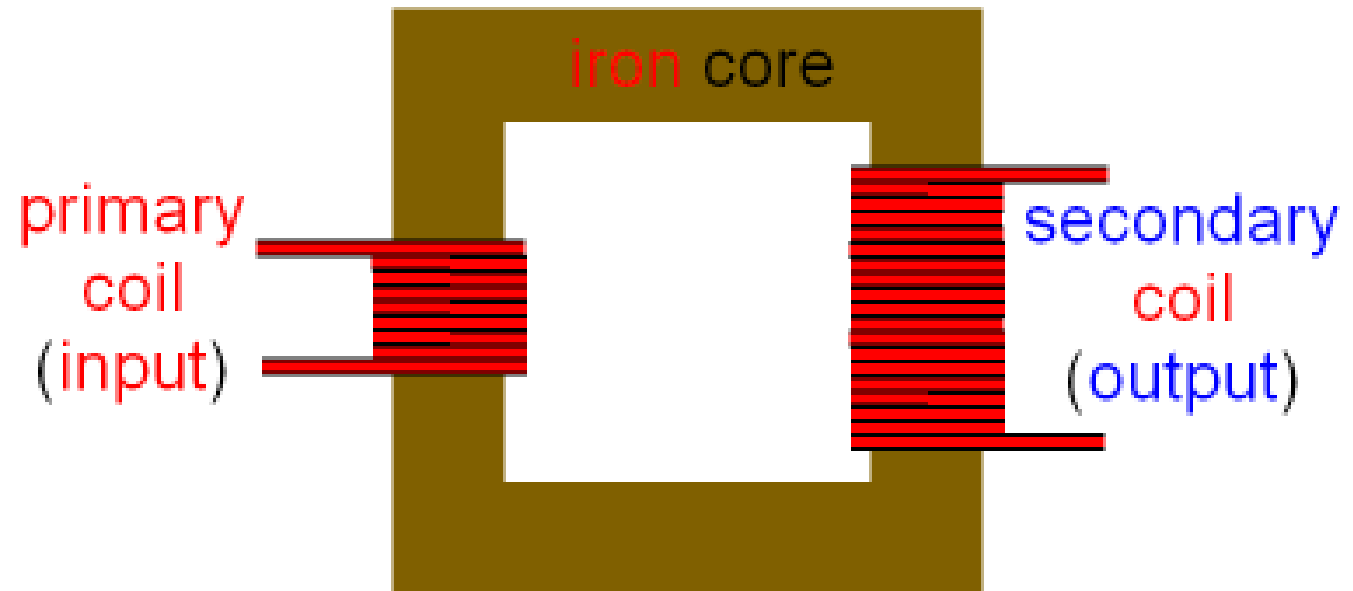


**Task:** Produce a flash card on the construction of a simple transformer

## Things to include:

A transformer needs an *alternating current* that will create a **changing magnetic field**. A changing magnetic field also induces a changing voltage in a coil. This is the basis of how a transformer works:

- The primary coil is connected to an AC supply.
- An alternating current passes through a primary coil wrapped around a soft iron core.
- The changing current produces a changing magnetic field.
- This induces an alternating voltage in the secondary coil.
- This induces an alternating current (AC) in the circuit connected to the secondary coil.



# GCSE Science Daily Revision Task



**Task:** Produce a flash card on the transformer equation

## Things to include:

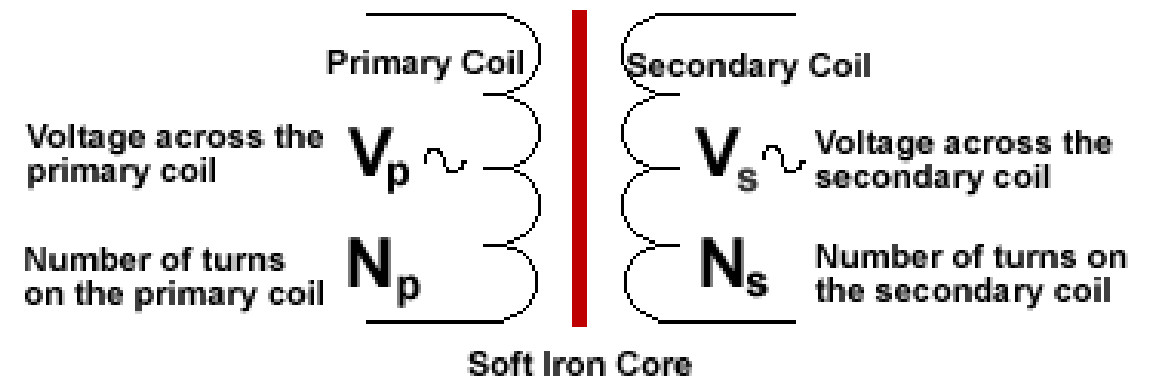
The ratio between the voltages in the coils is the same as the ratio of the number of turns in the coils.

primary voltage / secondary voltage = turns on primary / turns on secondary

This can also be written as:

$$V_p/V_s = N_p/N_s$$

## Transformer Symbol



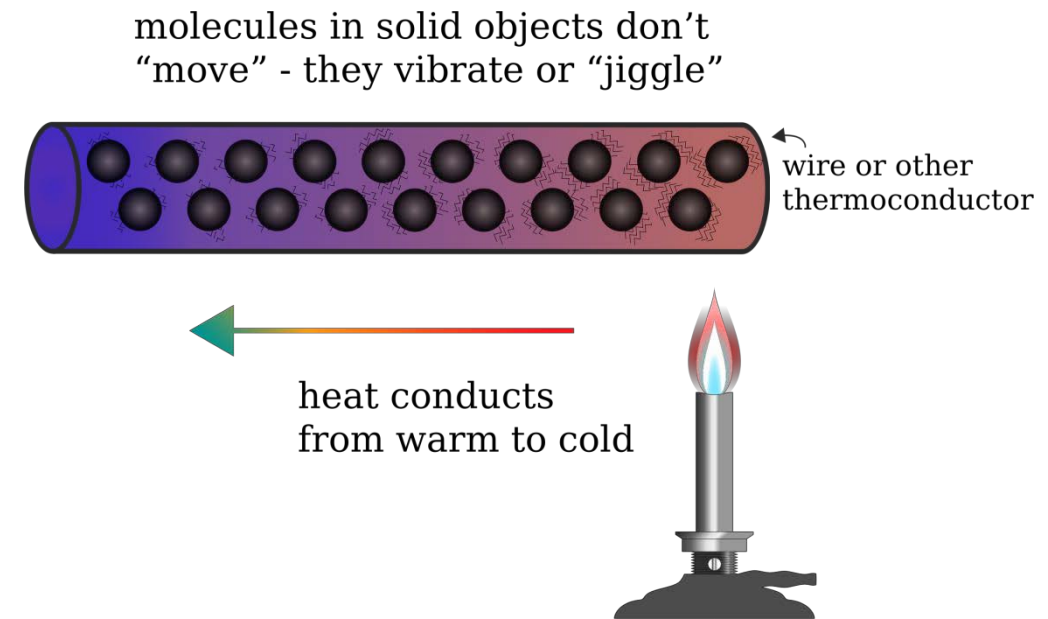
# GCSE Science Daily Revision Task



**Task:** Produce an flash card on conduction

## Things to include:

- Heat conduction (or thermal conduction) is the movement of heat from one solid to another one that has different temperature when they are touching each other. For example, we can warm our hands by touching hot-water bottles



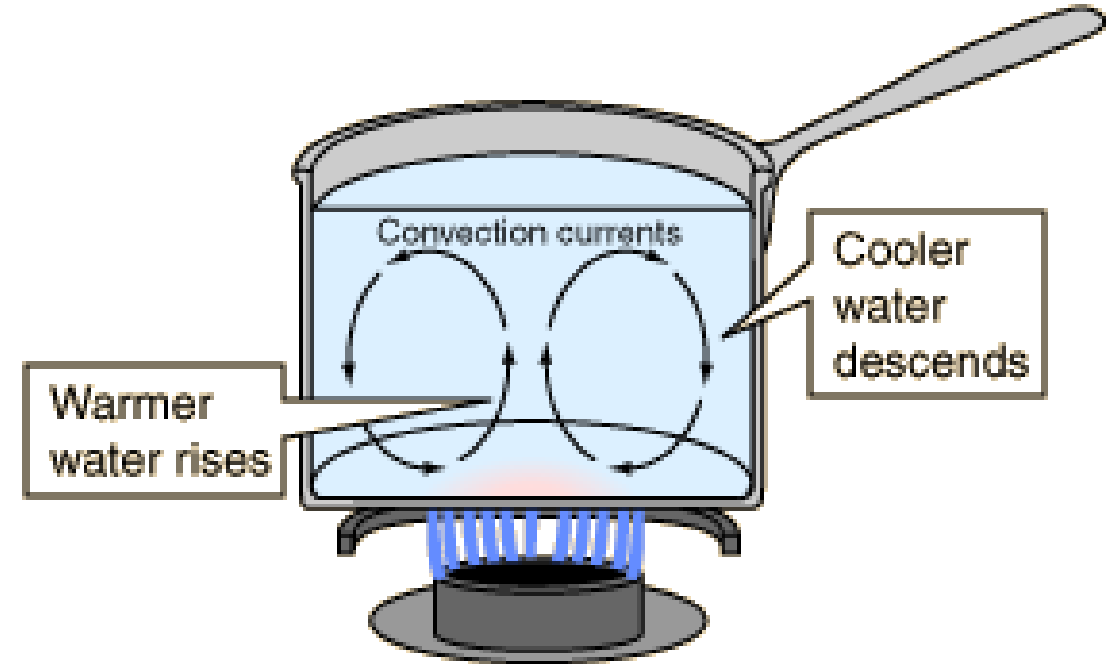
# GCSE Science Daily Revision Task



**Task:** Produce an flash card on convection

## Things to include:

Convective heat transfer, often referred to simply as convection, is the transfer of heat from one place to another by the movement of fluids. Convection is usually the dominant form of heat transfer in liquids and gases.



# GCSE Science Daily Revision Task



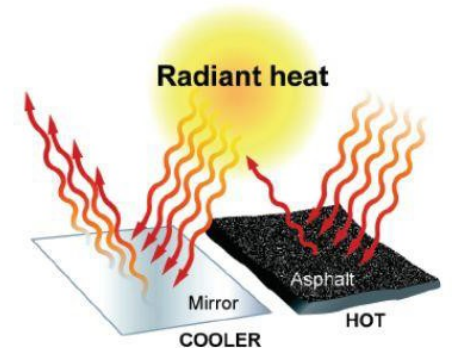
**Task:** Produce an flash card on thermal radiation

## Things to include:

**Radiation** is a method of **heat** transfer that does not rely upon any contact between the **heat** source and the **heated** object as is the case with conduction and convection. **Heat** can be transmitted through empty space by **thermal radiation** often called infrared **radiation**. This is a type electromagnetic **radiation**.

## Thermal radiation

- Thermal radiation is also *absorbed* by objects.
- The amount of thermal radiation absorbed depends on the surface of a material.
- Dark surfaces absorb most of the thermal radiation they receive.
- Silver or mirrored surfaces reflect thermal radiation





## Task: Produce an flash card on evaporation & condensation

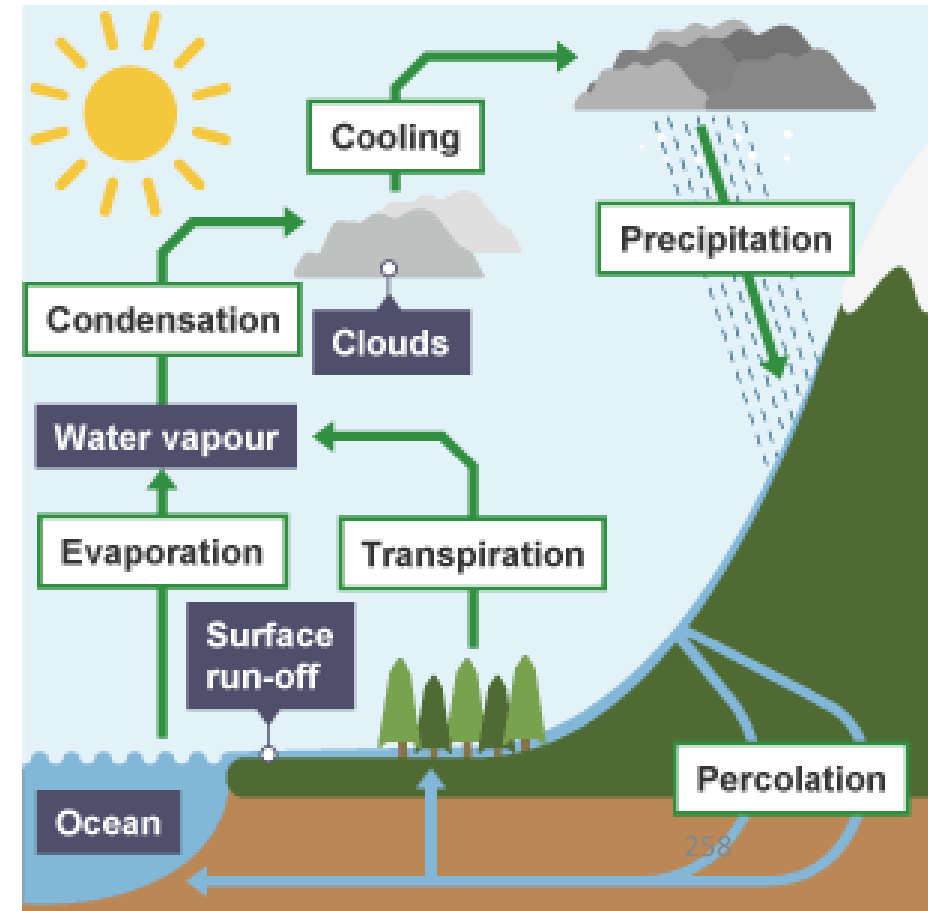
## Things to include:

## Evaporation

The particles in a liquid have different energies. Some will have enough energy to escape from the liquid and become a gas. The remaining particles in the liquid have a lower average kinetic energy than before, so the liquid cools down as evaporation happens. This is why sweating cools you down. The sweat absorbs energy from your skin so that it can continue to evaporate.

## Condensation

The particles in a gas have different energies. Some may not have enough energy to remain as separate particles, particularly if the gas is cooled down. They come close together and bonds form between them. Energy is released when this happens. This is why steam touching your skin can cause scalds: not only is the steam hot, but energy is released into your skin as the steam condenses.



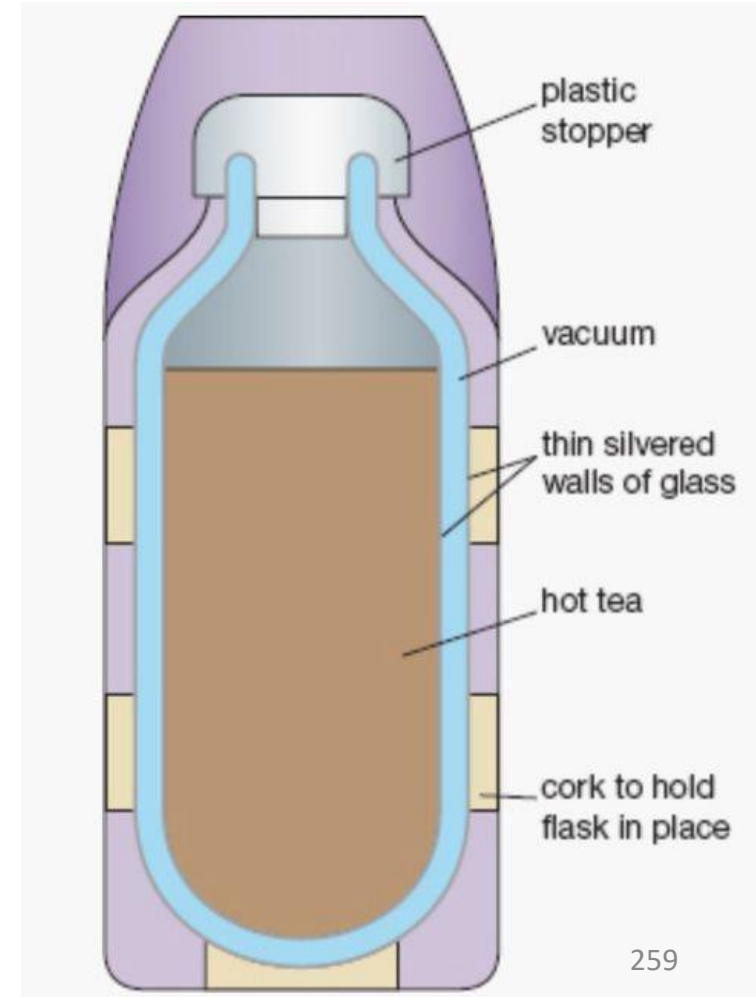
# GCSE Science Daily Revision Task



**Task:** Produce an flash card on the thermos flask

## Things to include:

Vacuum (or thermos) flasks are used to prevent heat loss by preventing heat from travelling (It keeps things hot or cold). A vacuum flask holds the liquid in the middle of the flask and surrounds it with a vacuum (this means there is no air in it, which is a great insulator)



# GCSE Science Daily Revision Task



**Task:** Produce an flash card on insulation

## Things to include:

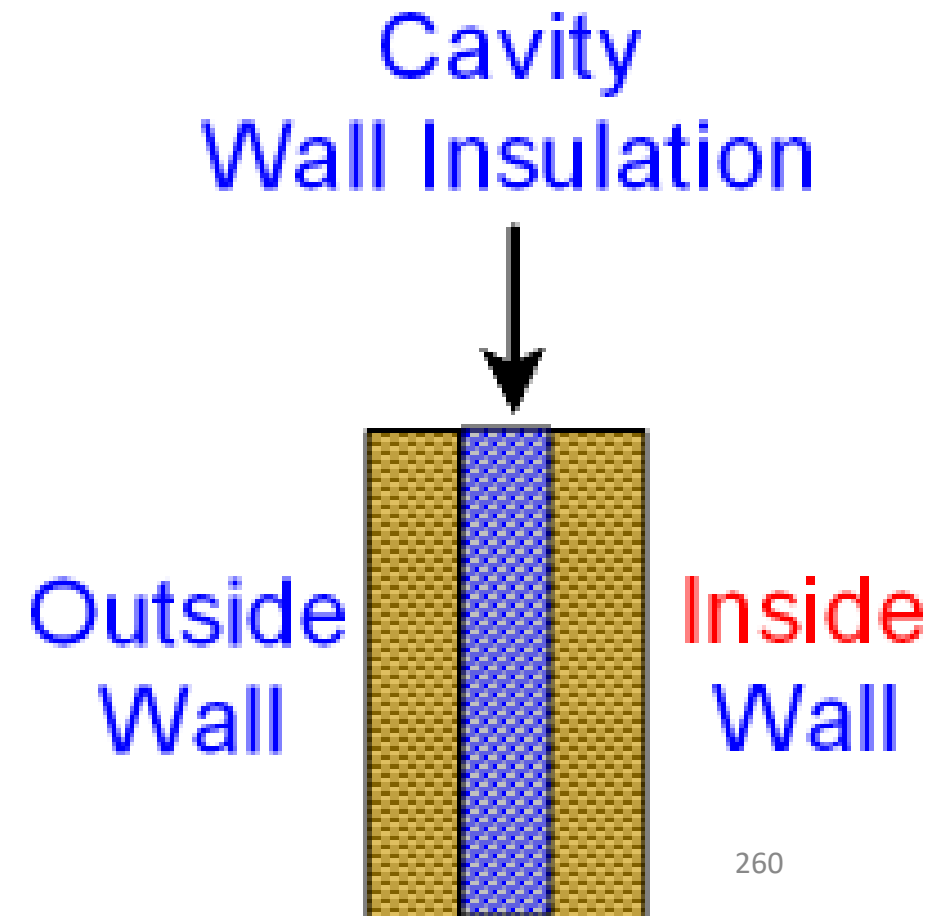
### Ways to reduce heat loss

There are some simple ways to reduce heat loss, including fitting carpets, curtains and draught excluders.

Heat loss through windows can be reduced using double glazing. There may be air or a *vacuum* between the two panes of glass. Air is a poor conductor of heat, while a vacuum can only transfer heat energy by radiation.

Heat loss through walls can be reduced using cavity wall insulation. This involves blowing insulating material into the gap between the brick and the inside wall, which reduces the heat loss by conduction. The material also prevents air circulating inside the cavity, therefore reducing heat loss by convection.

Heat loss through the roof can be reduced by laying loft insulation. This works in a similar way to cavity wall insulation



# GCSE Science Daily Revision Task



**Task:** Produce an flash card on forms of energy & conservation

## Things to include:

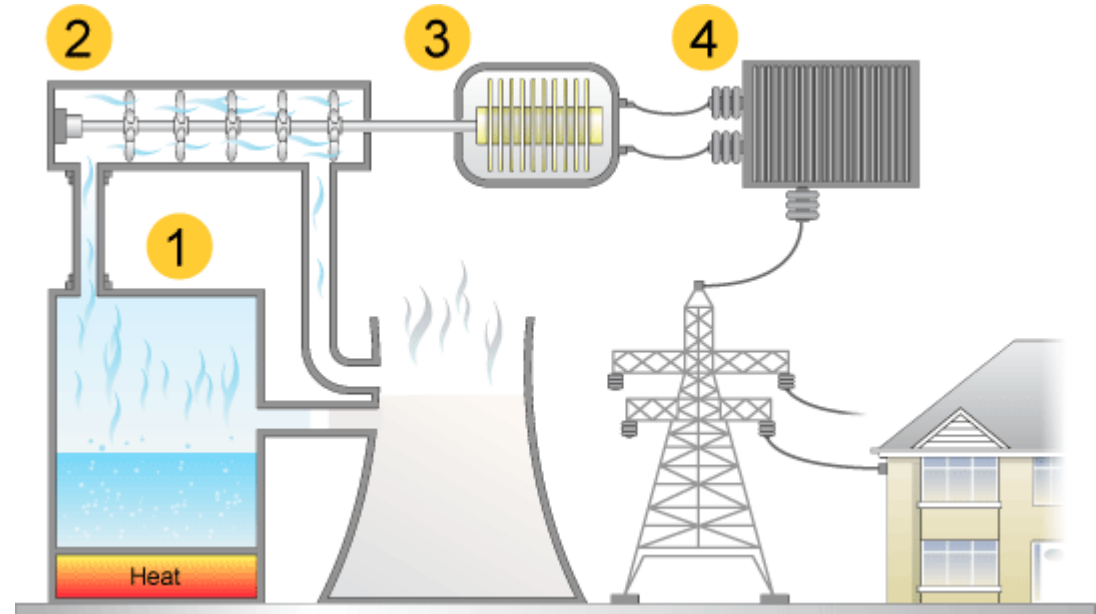
You should be able to recognise the main types of energy. One way to remember the different types of energy is to learn this sentence:

**Most Kids Hate Learning GCSE Energy Names**



## Things to include:

- fuel is burned to boil water to make steam
- steam makes a turbine spin
- spinning turbine turns a generator which produces electricity
- electricity goes to the transformers to produce the correct voltage.



## Things to include:

A diagram of a wind turbine. It features a central nacelle containing a generator, which is mounted on a tall tower. The tower is supported by a foundation. Three blades are attached to the nacelle. Labels with leader lines point to the 'nacelle containing generator', 'blade', 'tower', and 'foundations'. The foundation is shown as a grey trapezoidal shape embedded in an orange ground area.



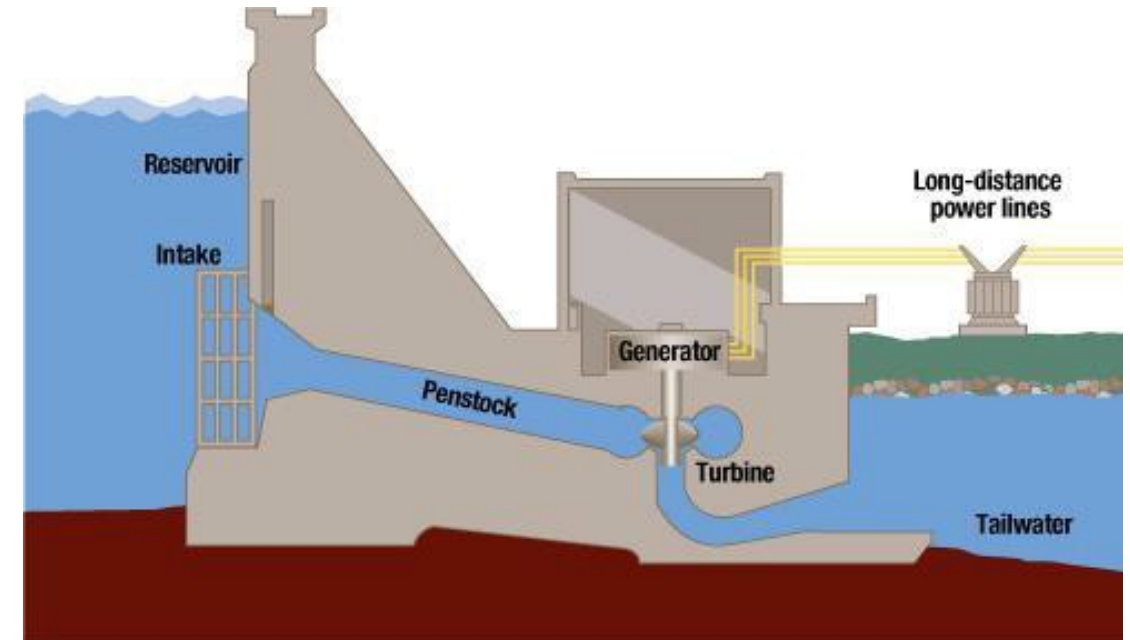
# GCSE Science Daily Revision Task



**Task:** Produce an flash card on hydroelectricity

## Things to include:

**Hydroelectricity** is the term referring to electricity generated by hydropower; the production of electrical power through the use of the gravitational force of falling or flowing water.



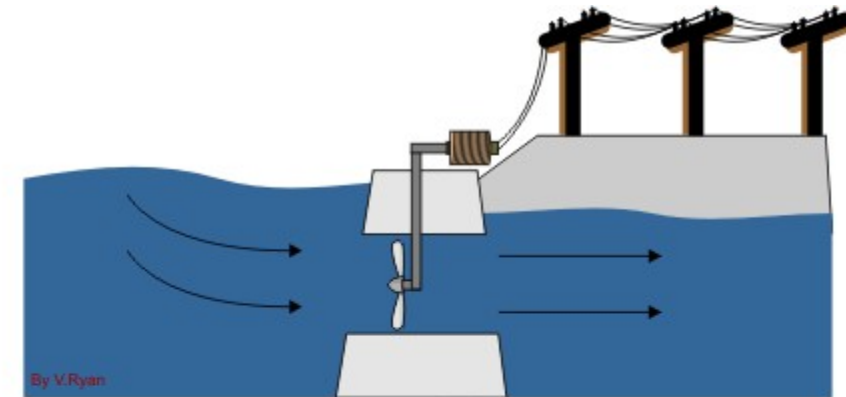
# GCSE Science Daily Revision Task



**Task:** Produce an flash card on tidal power

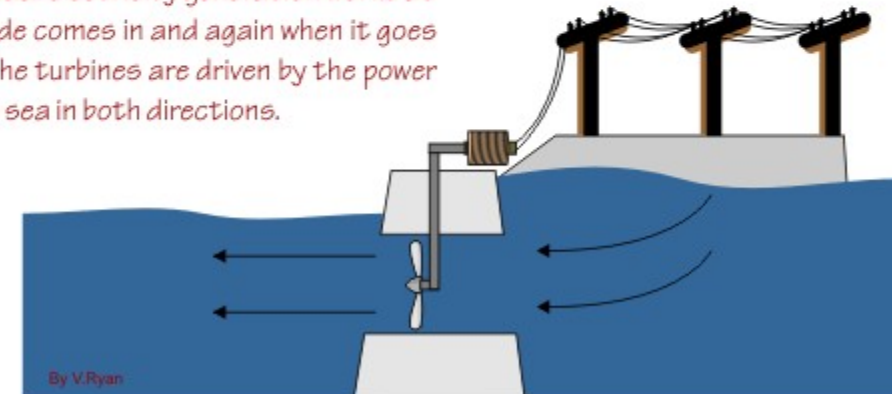
## Things to include:

**Tidal power** or **tidal energy** is a form of hydropower that converts the energy obtained from **tides** into useful forms of **power**, mainly **electricity**. Although not yet widely used, **tidal power** has potential for future **electricity** generation. **Tides** are more predictable than wind energy and solar **power**.



TIDE COMING IN

*This tidal electricity generation works as the tide comes in and again when it goes out. The turbines are driven by the power of the sea in both directions.*



TIDE GOING OUT

## Things to include:

A pump pushes cold water from the storage tank through pipes in the solar panel. The water is heated by heat energy from the sun and returns to the tank. In some systems, a conventional boiler may be used to increase the temperature of the water.



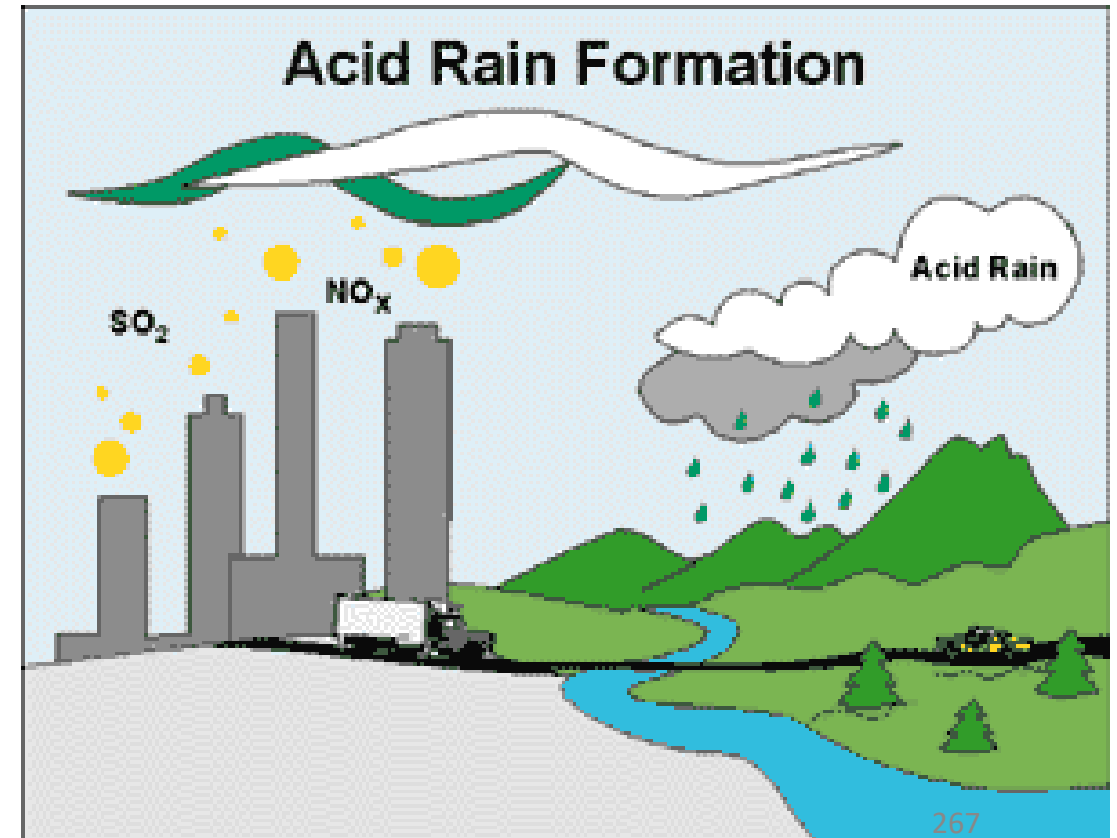
# GCSE Science Daily Revision Task



**Task:** Produce an flash card on acid rain

## Things to include:

Rainfall made so acidic by atmospheric pollution that it causes environmental harm, chiefly to forests and lakes. The main cause is the industrial burning of coal and other fossil fuels, the waste gases from which contain sulphur and nitrogen oxides which combine with atmospheric water to form acids.



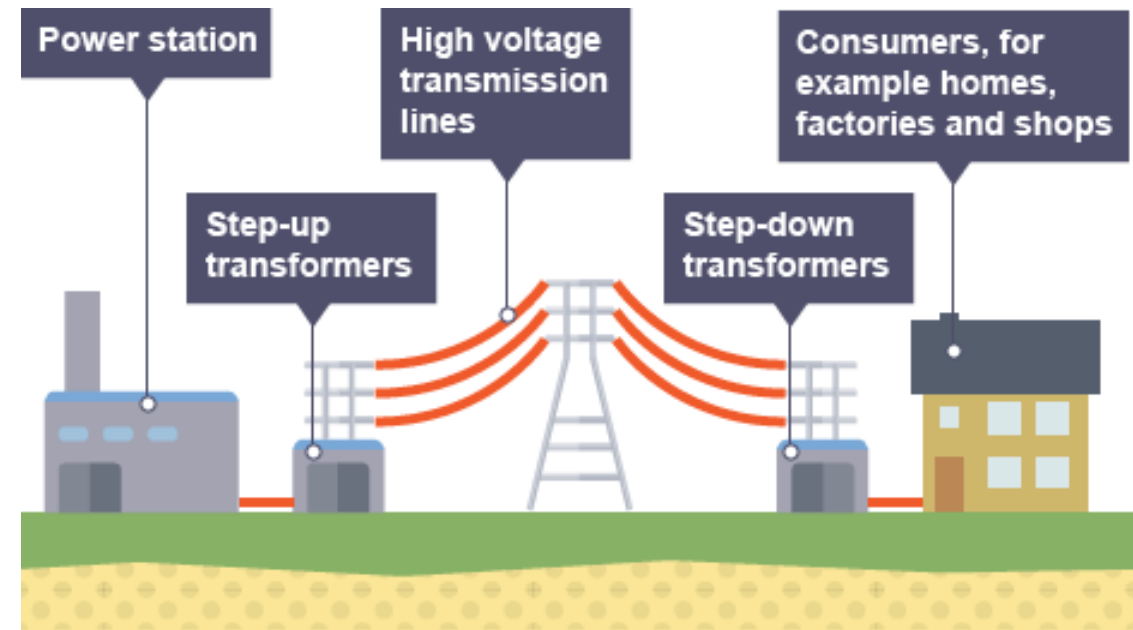
# GCSE Science Daily Revision Task



**Task:** Produce an flash card on the national grid

## Things to include:

Electricity is distributed from power stations to consumers through the **National Grid**, which allows distant power stations to be used. It also allows a mix of different energy resources to be used efficiently to supply the country's electricity, whatever the local demand.



[illegible]

## Things to include:



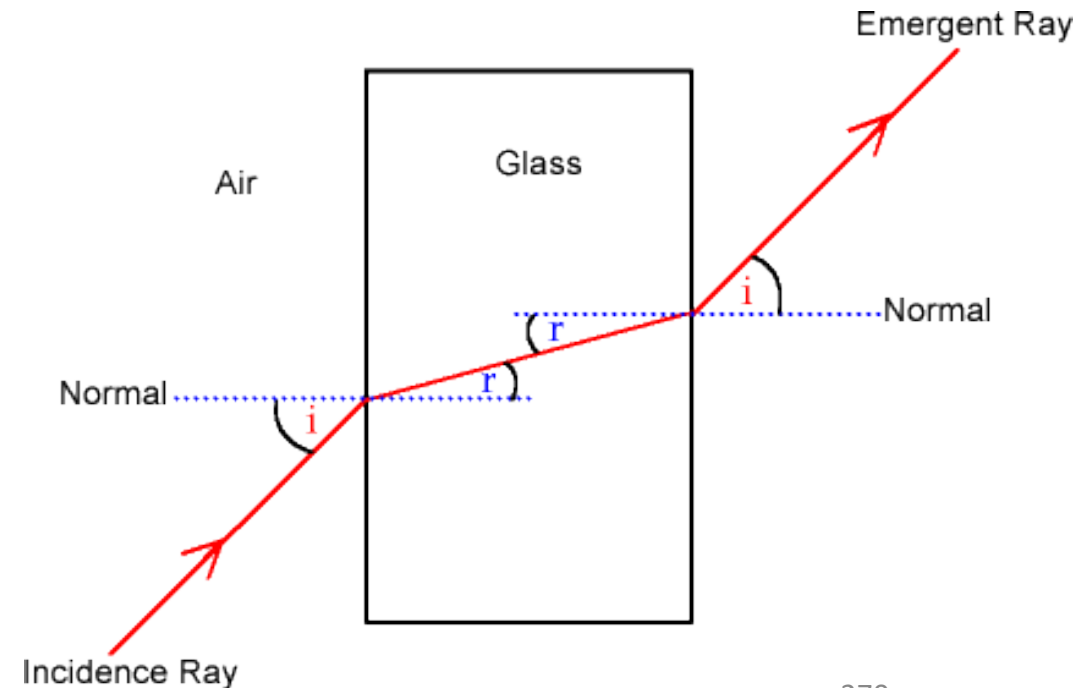
# GCSE Science Daily Revision Task



**Task:** Produce an flash card on refraction

## Things to include:

- A diagram of the leaf
- A description of what different cells do
- How the leaf is adapted to carry out photosynthesis



# GCSE Science Daily Revision Task



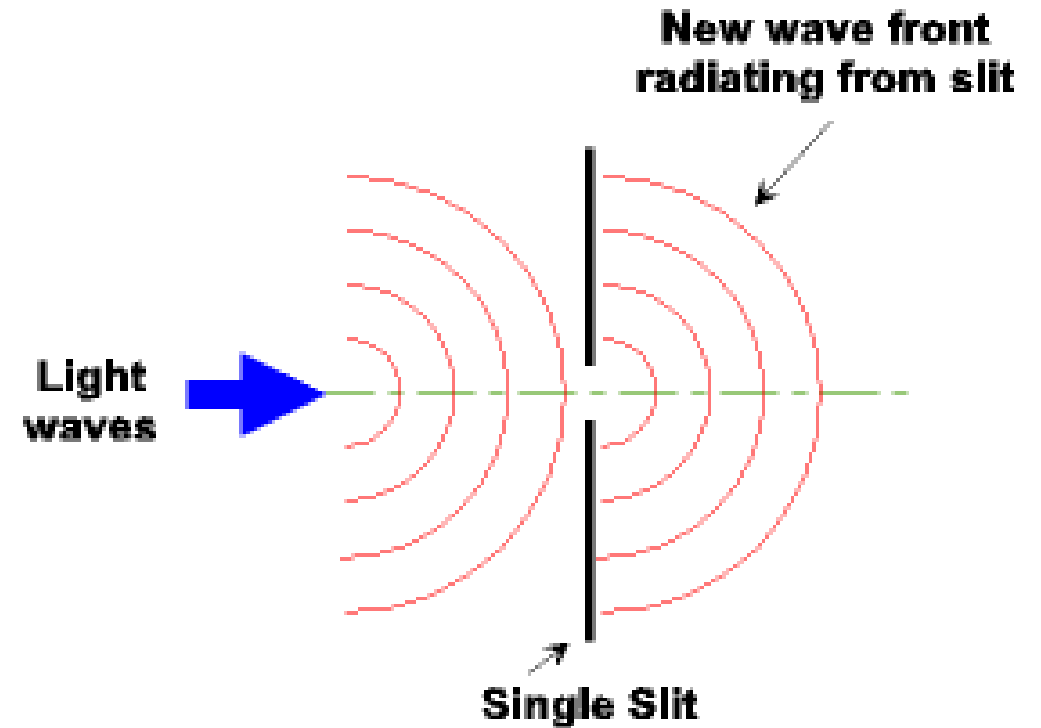
**Task:** Produce an flash card on diffraction

## Things to include:

When waves meet a gap in a barrier, they carry on through the gap. However, the waves spread out to some extent into the area beyond the gap. This is **diffraction**.

You should know that the amount of diffraction depends on the *wavelength* and the size of the gap.

The extent of the spreading depends on the **width** of the gap compared with the **wavelength** of the waves. The smaller the width of the gap compared with the wavelength of the wave, the stronger the diffraction. For example, when waves spread into a harbour, they spread out more if the harbour mouth is narrow.



## Things to include:

The diagram illustrates the electromagnetic spectrum as a horizontal green arrow pointing from left to right. Above the arrow, on the left, is a red sine wave with a long wavelength, labeled "long wavelength, low frequency". On the right, above the arrow, is a red sine wave with a short wavelength, labeled "short wavelength, high frequency". Below the arrow, the following labels are written in blue, rotated 45 degrees counter-clockwise: "Radio waves", "Microwaves", "Infra-red", "Visible Light", "Ultra-violet", "X-rays", and "Gamma rays".

## Things to include:

The diagram illustrates the expansion of the universe over time. A vertical axis on the left is labeled "Time (~15 billion years)". The horizontal axis at the bottom is labeled "Expanding universe". The central part of the diagram shows a cross-section of the universe's expansion. At the bottom, a yellow starburst is labeled "Big Bang". Above it, a red starburst is labeled "Farthest supernova". The top of the diagram is labeled "Present". Arrows point outwards from the center, indicating expansion. The region between the Big Bang and the Farthest supernova is labeled "Slowing expansion", and the region between the Farthest supernova and the Present is labeled "Accelerating expansion".

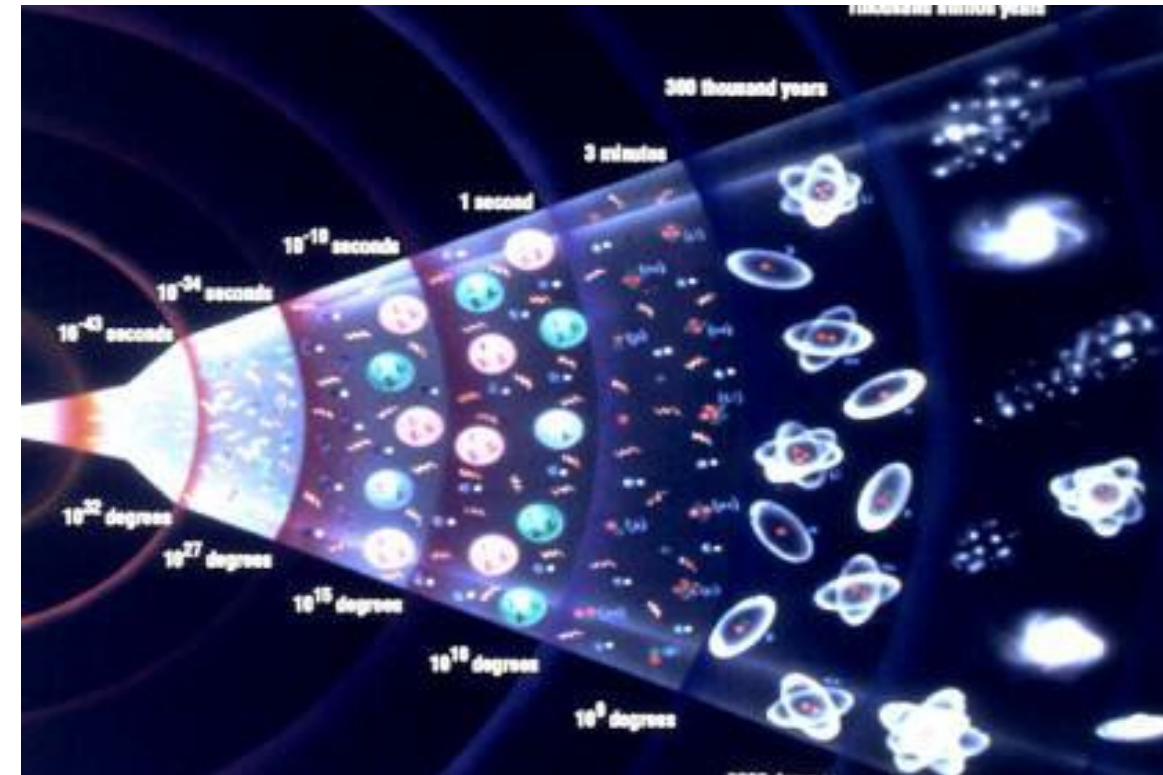
# GCSE Science Daily Revision Task



**Task:** Produce an flash card on the Big Bang

## Things to include:

Scientists have gathered a lot of evidence and information about the Universe. They have used their observations to develop a theory called the **Big Bang**. The theory states that about 13.7 billion years ago all the matter in the Universe was concentrated into a single incredibly tiny point.





# GCSE Science Daily Revision Task



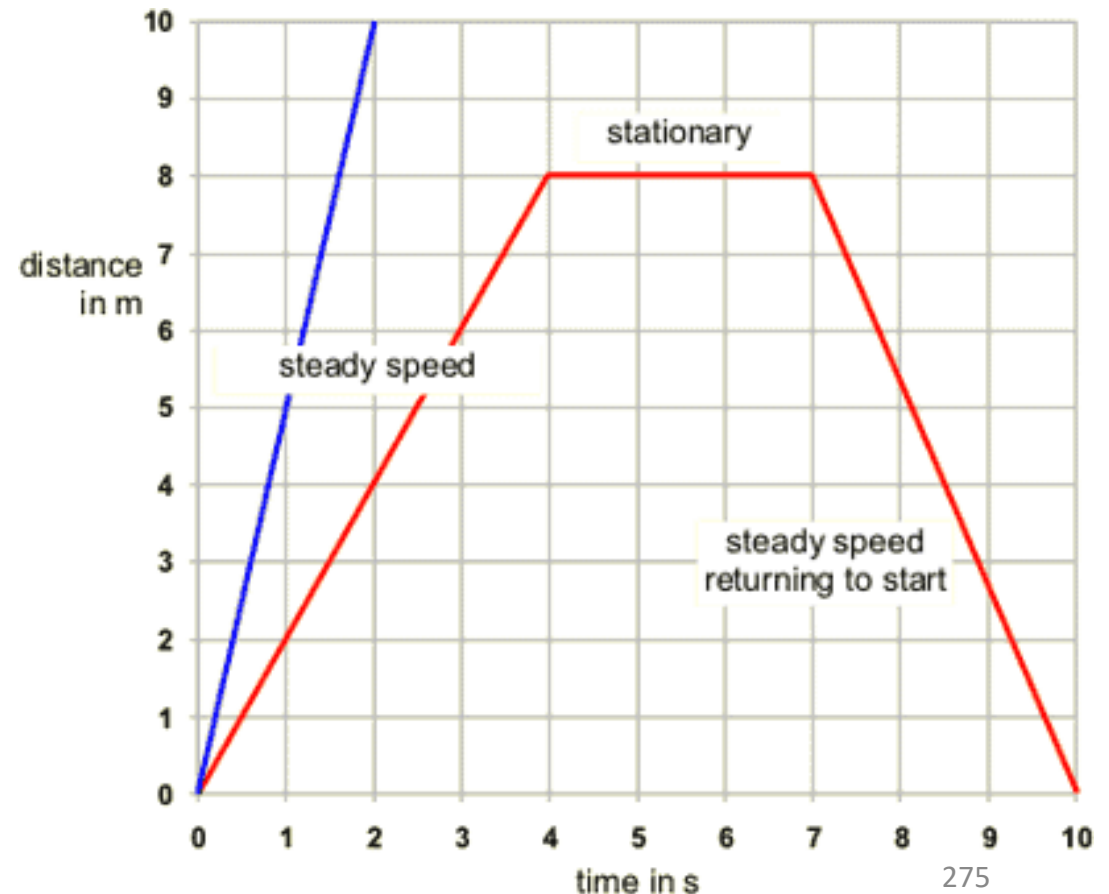
**Task:** Produce an flash card on distance time graphs

## Things to include:

The gradient of a **distance-time graph** represents the speed of an object.

The velocity of an object is its speed in a particular direction. The slope on a **velocity-time graph** represents the acceleration of an object.

The **distance** travelled is equal to the area under a **velocity-time graph**.

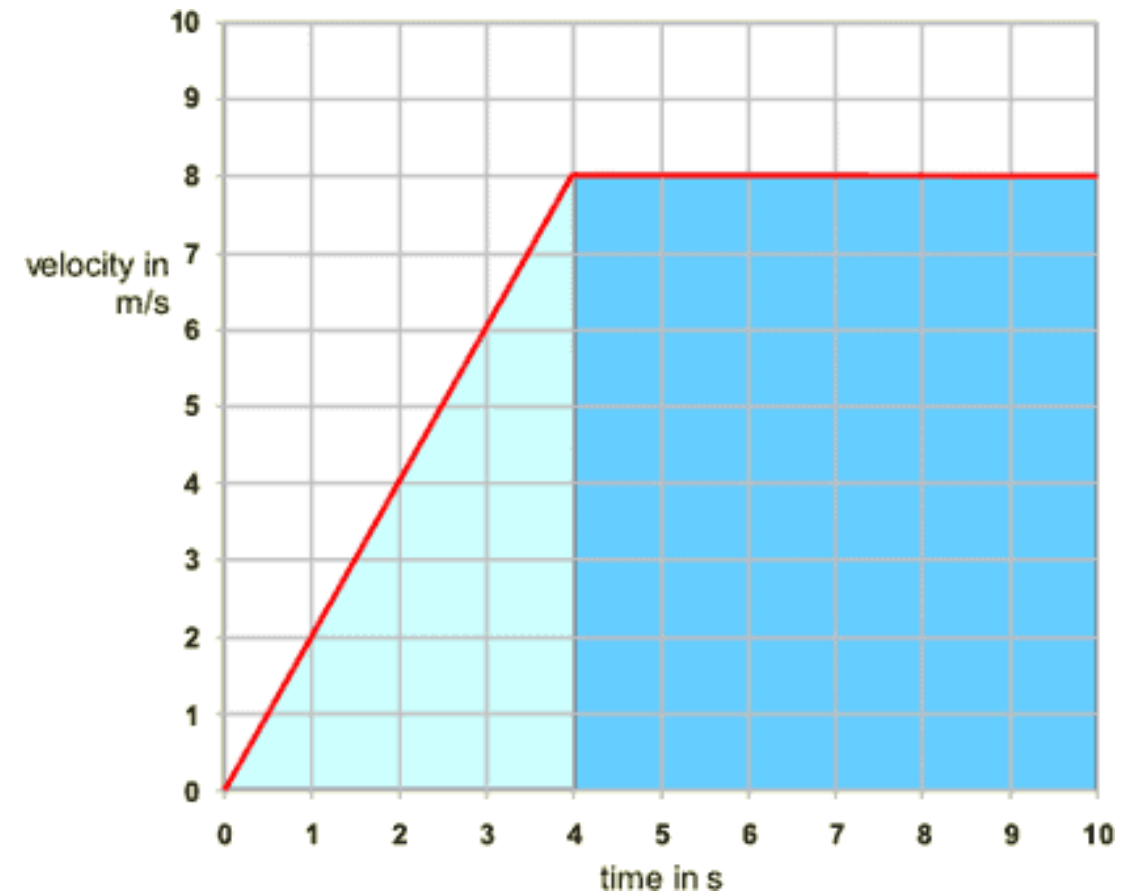




## Task: Produce an flash card on velocity time graphs

## Things to include:

When an object is moving with a constant **velocity**, the line on the **graph** is horizontal. When the horizontal line is at zero **velocity**, the object is at rest. ... The diagram shows some typical lines on a **velocity-time graph**. The steeper the line, the greater the acceleration of the object.



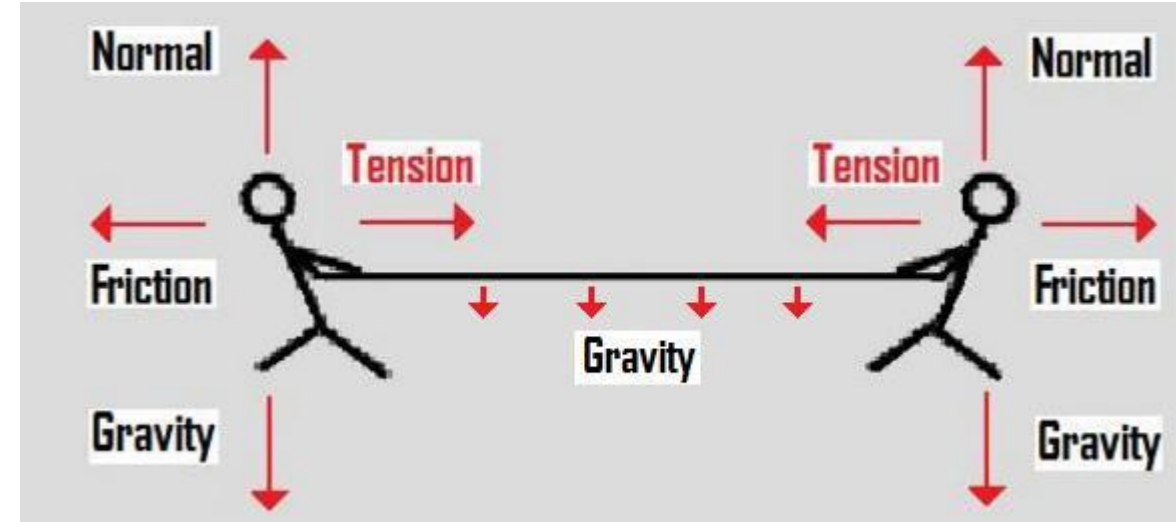
# GCSE Science Daily Revision Task



**Task:** Produce an flash card on forces

## Things to include:

**Forces** are pushes or pulls. They are measured in newtons. Unbalanced **forces** change the way something is moving. The mass of an object is how much matter it contains. The weight of an object is the **force** caused by gravity pulling down on the mass.



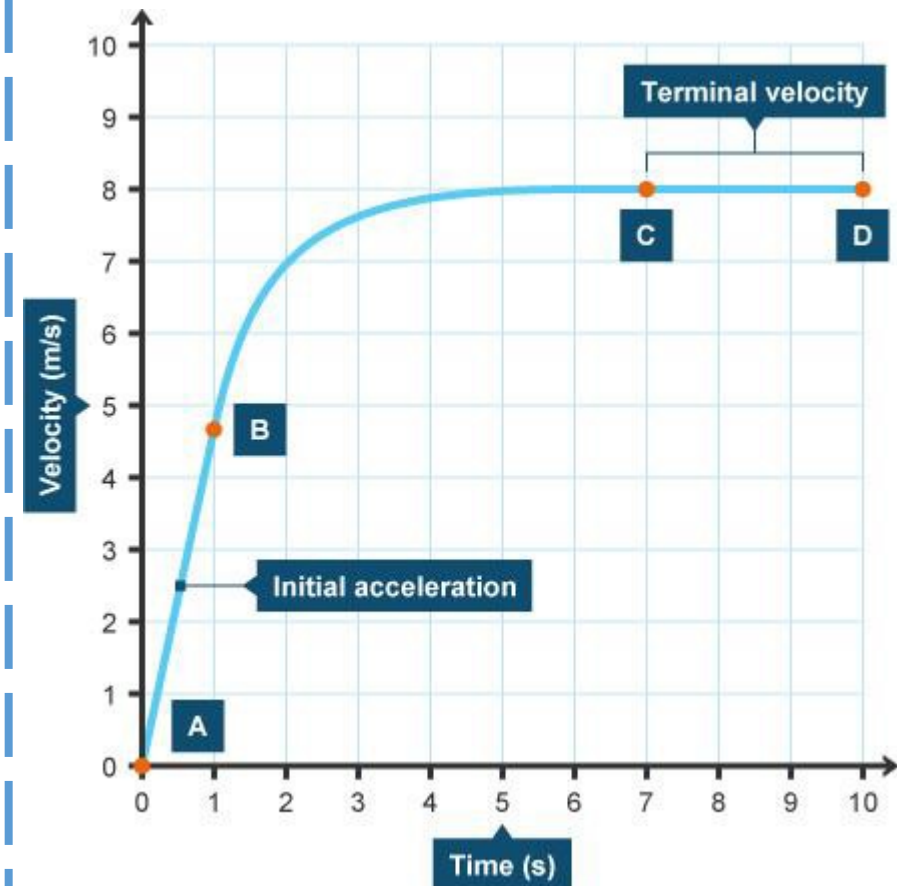
## Things to include:

Speed (mph)	Thinking Distance (metres)	Braking Distance (metres)	Total Stopping Distance (metres)	Total Stopping Distance (feet)	Total Stopping Distance (car lengths)
20	6	6	12	40	3
30	9	14	23	75	6
40	12	24	36	118	9
50	15	38	53	175	13
60	18	55	73	240	18
70	21	75	96	315	24

average car length = 4 metres

## Things to include:

1. At the start, the object accelerates downwards because of its weight. There is no air resistance. There is a resultant force acting downwards.
2. As it gains speed, the object's weight stays the same, but the air resistance on it increases. There is a resultant force acting downwards.
3. Eventually, the object's weight is balanced by the air resistance. There is no resultant force and the object reaches a steady speed, called the **terminal velocity**.



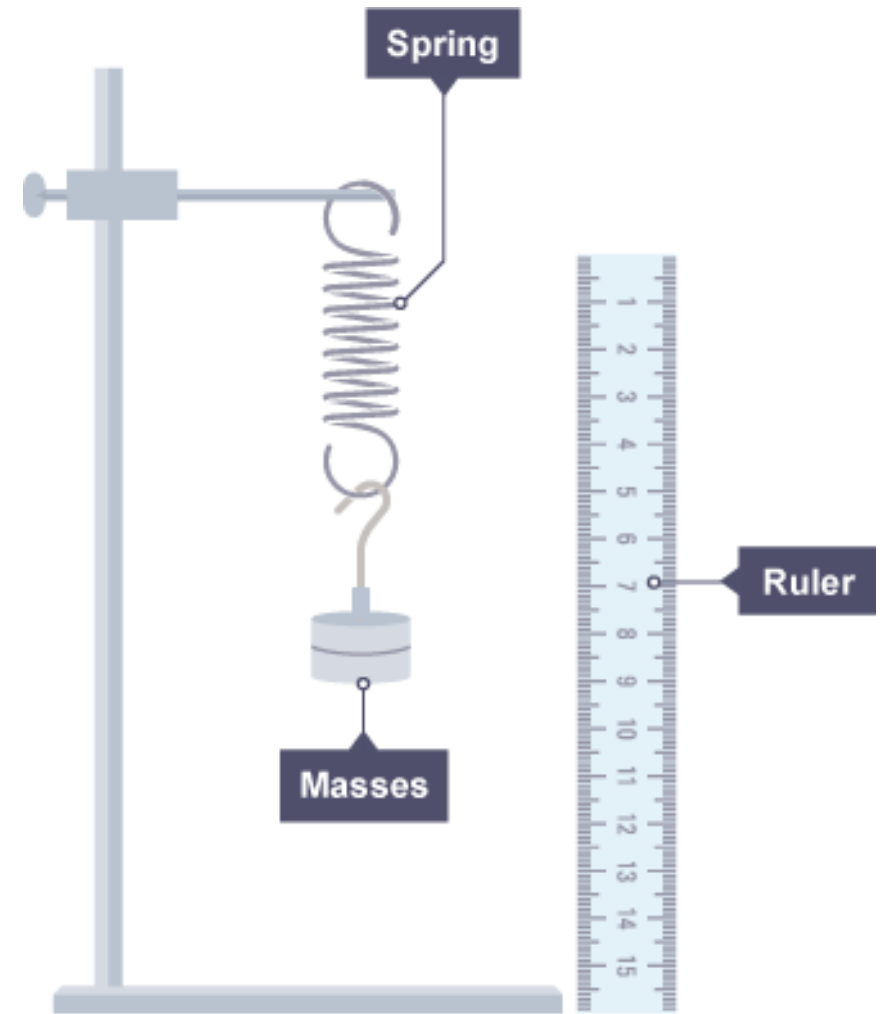
# GCSE Science Daily Revision Task



**Task:** Produce an flash card on stretching

## Things to include:

The spring constant  $k$  is different for different objects and materials. It is found by carrying out an experiment. For example, the unloaded length of a spring is measured. Different numbers of *slotted masses* are added to the spring and its new length measured each time. The extension is the new length minus the unloaded length



## Things to include:

The amount of work done is expressed in the equation:  $\text{work done} = \text{force} \times \text{distance}$ .

10 N force applied  
box moved by 2 m



# GCSE Science Daily Revision Task

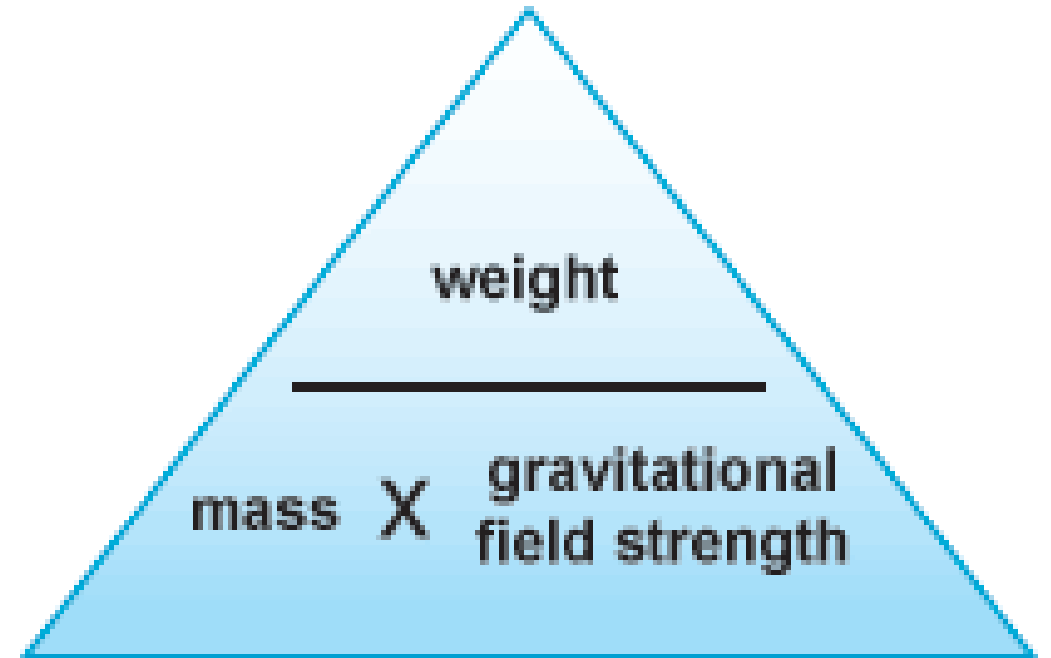


**Task:** Produce an flash card on gravitational potential energy

## Things to include:

On Earth we always have the force of **gravity** acting on us. When we're above the Earth's surface we have **potential** (stored) energy. This is called **gravitational potential energy**. The amount of gravitational potential energy an object on Earth has depends on its:

- mass
- height above the ground



[illegible]

## Things to include:

$$\text{K.E.} = \frac{1}{2}mv^2$$

$v$  = velocity (m/s)

K.E. = kinetic energy (J)

# GCSE Science Daily Revision Task



**Task:** Produce an flash card on momentum

**Things to include:**

**Momentum.** A change in **momentum** happens when a force is applied to an object that is moving or is able to move. The total **momentum** in an explosion or collision stays the same.

$$\text{momentum} = p = mv$$

So, as 'force is the rate of change (how fast it changes) of momentum'...

$$F = \frac{\Delta p}{t}$$

F = force (N)  
t = time (s)  
p = momentum (Ns)

$$F = \frac{\Delta mv}{t}$$

m = mass (kg)  
v = velocity (m/s)

$$F = m \frac{\Delta v}{t}$$

But acceleration 'a' is the change in velocity divided by time - the rate of change in velocity. So...

$$F = ma$$

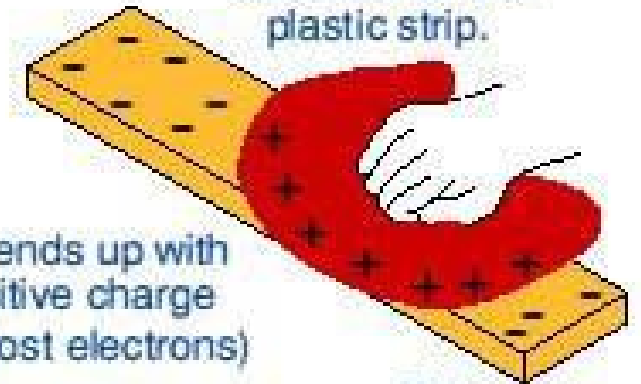
a = acceleration  
(m/s<sup>2</sup>)

## Things to include:

A substance that **gains** electrons becomes **negatively charged**, while a substance that **loses** electrons becomes **positively charged**.

- If the charges are the same - **they repel**
- If the charges are opposite - **they attract**
- If one is charged and the other is not - **they attract**

The cloth leaves electrons on the plastic strip.



Cloth ends up with a positive charge (It has lost electrons)

Strip ends up with  
a negative charge  
(It has gained electrons)

# GCSE Science Daily Revision Task



**Task:** Produce an flash card on electric circuits

## Things to include:

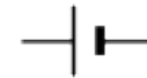
Electrical circuits can be represented by circuit diagrams. The various electrical components in the circuit are shown by using standard symbols. Components can be connected in series, or in parallel. The current and potential difference (voltage) are different in series and parallel circuits.



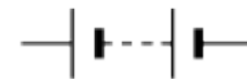
switch (open)



switch (closed)



cell



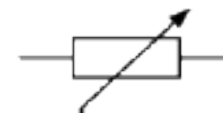
battery



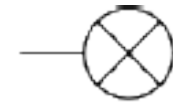
diode



resistor



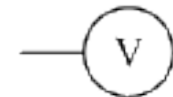
variable resistor



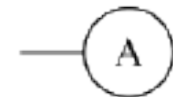
lamp



fuse



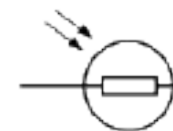
voltmeter



ammeter



thermistor



LDR

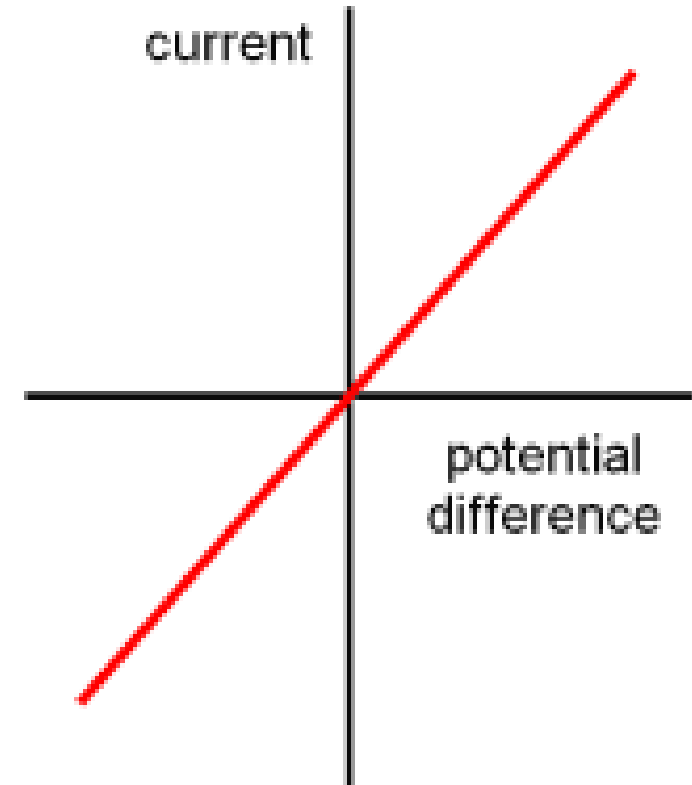
# GCSE Science Daily Revision Task



**Task:** Produce an flash card on resistance

## Things to include:

An electric current flows when charged particles called electrons move through a conductor. The moving electrons can collide with the *atoms* of the *conductor*. This is called resistance and it makes it harder for current to flow. These collisions make the conductor hot. It is this that makes a lamp filament hot enough to glow.





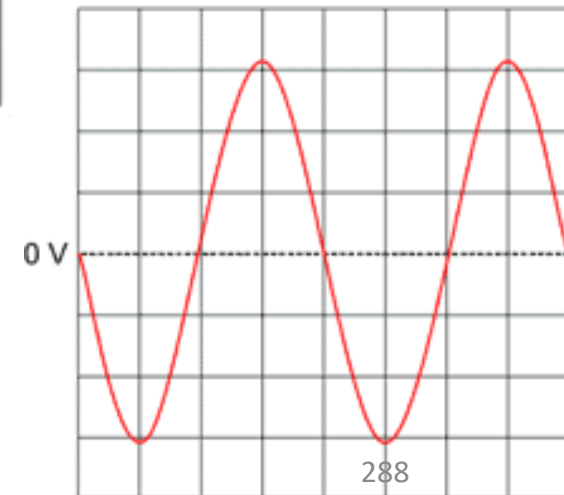
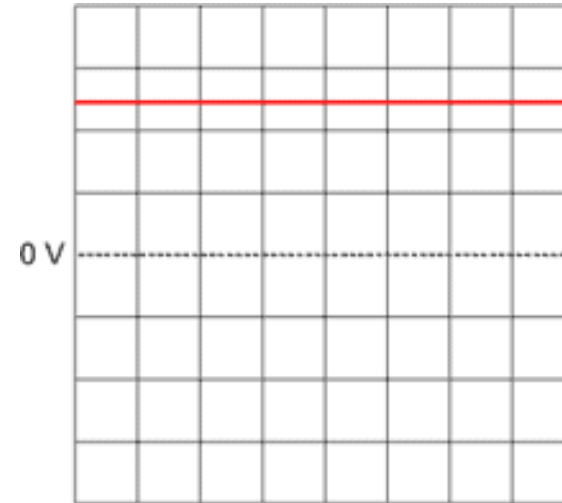
# GCSE Science Daily Revision Task



**Task:** Produce an flash card on alternating & direct current

## Things to include:

- If the current flows in only one direction it is called direct current, or DC. Batteries and solar cells supply DC electricity. A typical battery may supply 1.5V. The diagram shows an oscilloscope screen displaying the signal from a DC supply.
- If the current constantly changes direction it is called alternating current, or AC. Mains electricity is an AC supply. The UK mains supply is about 230V. It has a frequency of 50Hz (50 hertz), which means that it changes direction and back again 50 times a second. The diagram shows an oscilloscope screen displaying the signal from an AC supply.

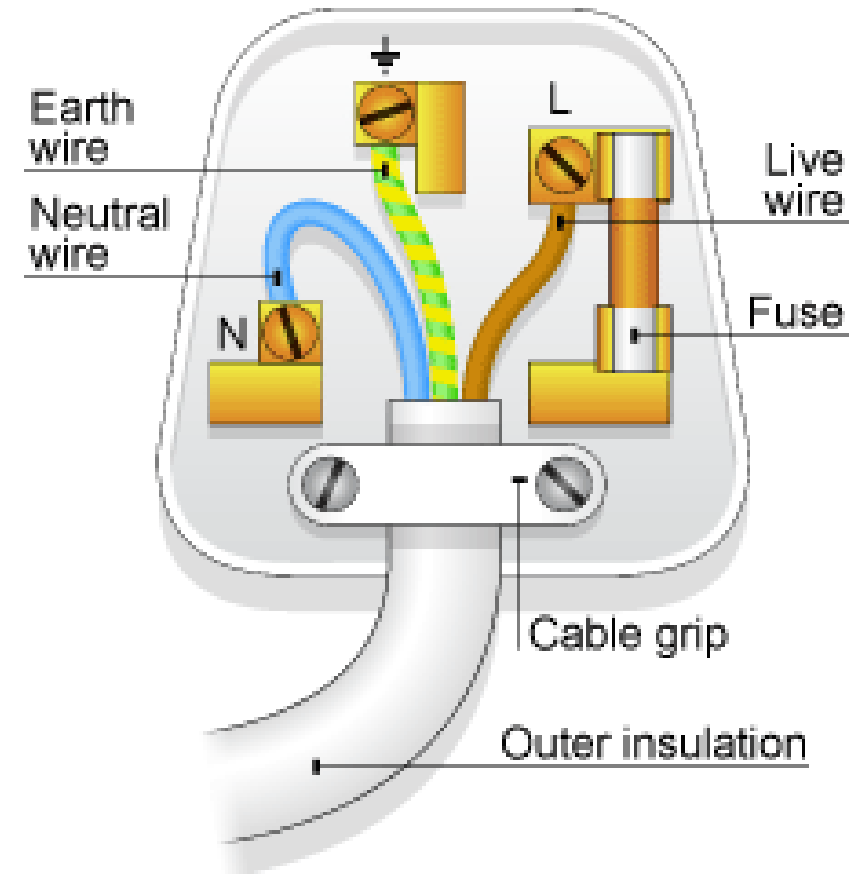


## Task: Produce an flash card on cables & plugs

## Things to include:

## The features of a plug are:

- The case is made from tough plastic or rubber, because these materials are good electrical insulators.
- The three pins are made from brass, which is a good conductor of electricity.
- There is a *fuse* between the live terminal and the live pin.
- The fuse breaks the circuit if too much current flows.
- The cable is secured in the plug by a cable grip. This should grip the cable itself, and not the individual wires inside it.



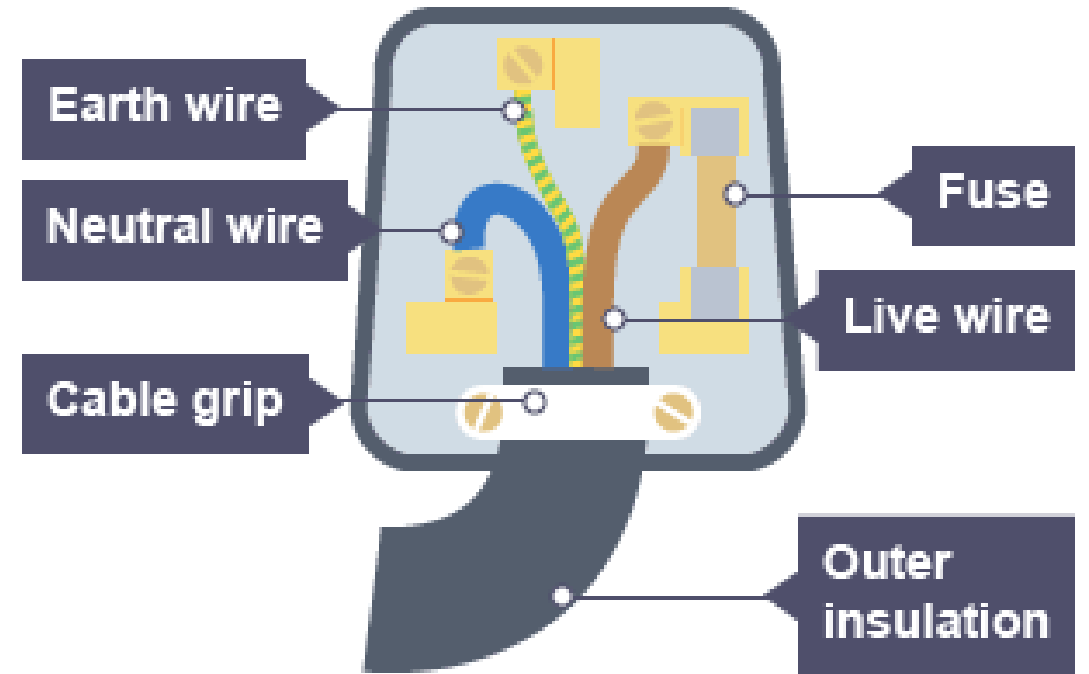
## Task: Produce an flash card on fuses

## Things to include:

The **fuse** breaks the circuit if a fault in an appliance causes too much current flow.

This protects the wiring and the appliance if something goes wrong.

The **fuse** contains a piece of wire which melts easily.




# GCSE Science Daily Revision Task



**Task:** Produce an flash card on alpha radiation

What is alpha ( $\alpha$ ) radiation?


Description	2 neutrons, 2 protons <b>Note:</b> – An alpha particle is the same as a helium nucleus	
Electric charge	+2	
Relative atomic mass	4	
Penetrating power	Stopped by paper or a few centimetres of air	
Ionizing effect	Strongly ionizing	
Effect of magnetic/ electric field	Weakly deflected	

# GCSE Science Daily Revision Task



**Task:** Produce an flash card on beta radiation

What is beta ( $\beta$ ) radiation?


Description	High energy electron 
Electric charge	-1
Relative atomic mass	1/1860
Penetrating power	Stopped by a few millimetres of aluminium
Ionizing effect	Weakly ionizing
Effect of magnetic/ electric field	Strongly deflected

# GCSE Science Daily Revision Task



**Task:** Produce an flash card on gamma radiation

## Gamma ( $\gamma$ ) radiation

Description	High energy electromagnetic radiation 
Electric charge	0
Relative atomic mass	0
Penetrating power	Stopped by several centimetres of lead or several metres of concrete
Ionizing effect	Very weakly ionizing
Effect of magnetic/ electric field	Not deflected



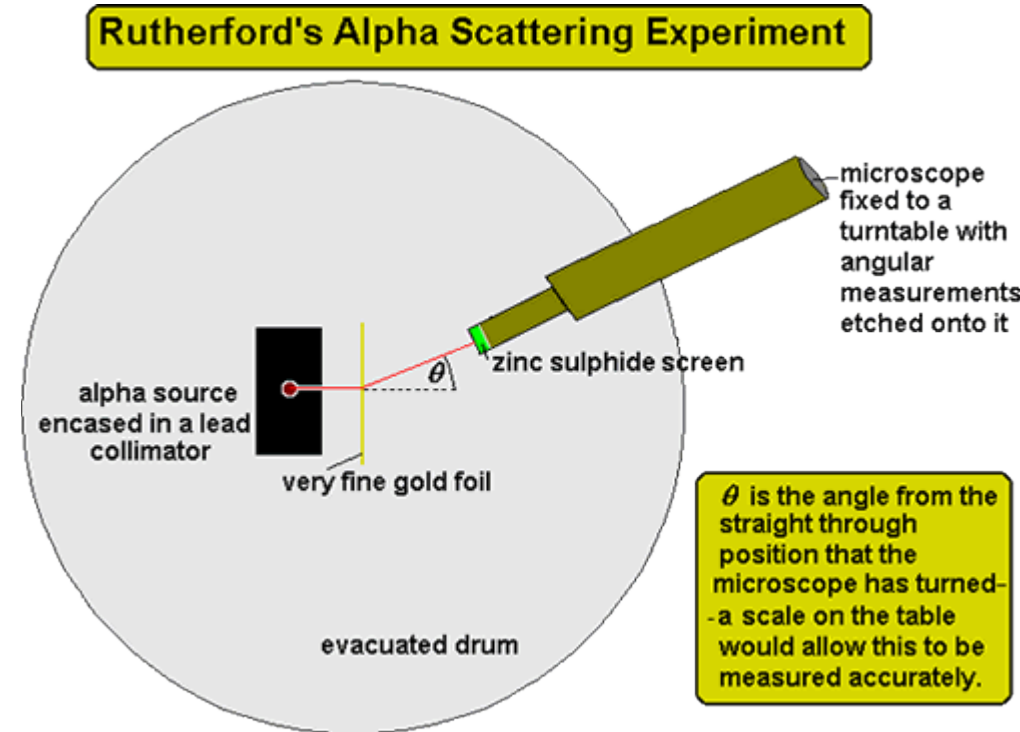
# GCSE Science Daily Revision Task



**Task:** Produce an flash card on the discovery of the nucleus

## Things to include:

A beam of alpha particles was aimed at very thin gold foil and their passage through the foil detected. The scientists expected the alpha particles to pass straight through the foil, but something else also happened. Some of the alpha particles emerged from the foil at different angles, and some even came straight back. The scientists realised that the positively charged alpha particles were being repelled and deflected by a tiny concentration of positive charge in the atom. As a result of this experiment, the plum pudding model was replaced by the nuclear model of the atom.



# GCSE Science Daily Revision Task



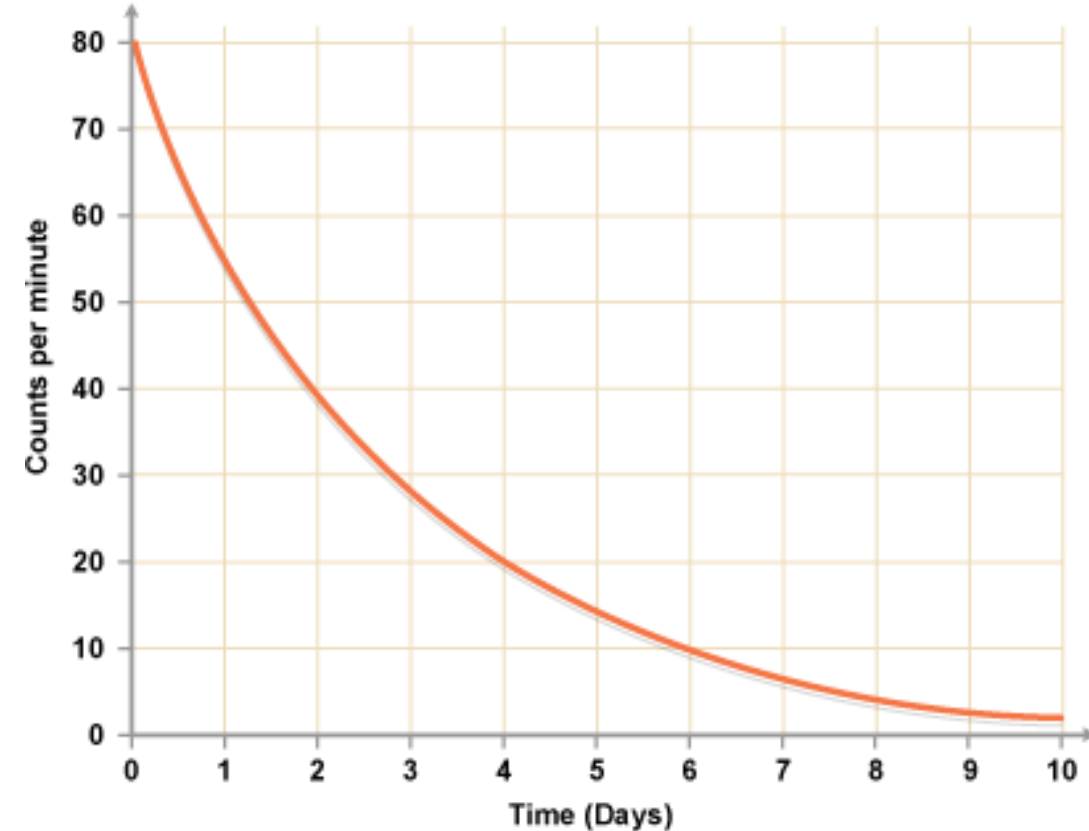
**Task:** Produce an flash card on half life

## Things to include:

There are two definitions of half-life, but they mean essentially the same thing:

- the time it takes for the number of nuclei of the isotope in a sample to halve
- the time it takes for the count rate from a sample containing the isotope to fall to half its starting level

Different radioactive isotopes have different half-lives.



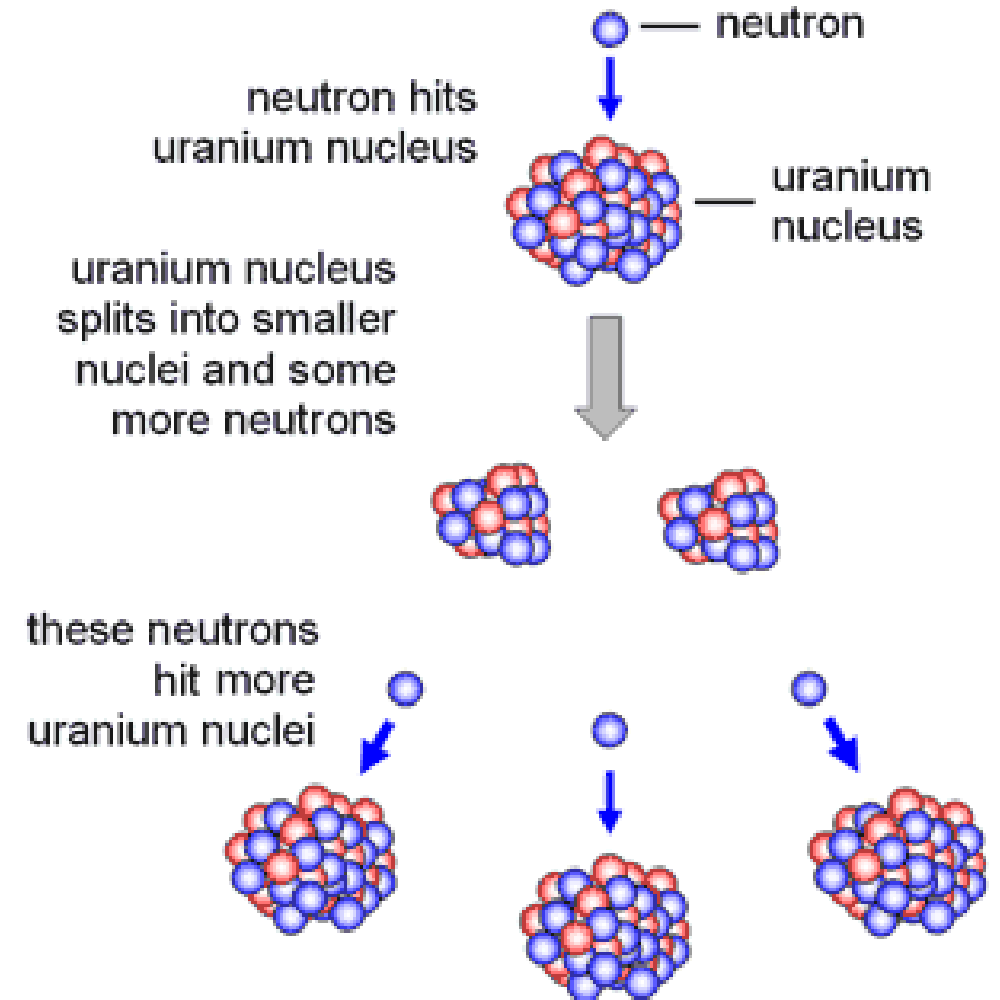
# GCSE Science Daily Revision Task



**Task:** Produce an flash card on fission

## Things to include:

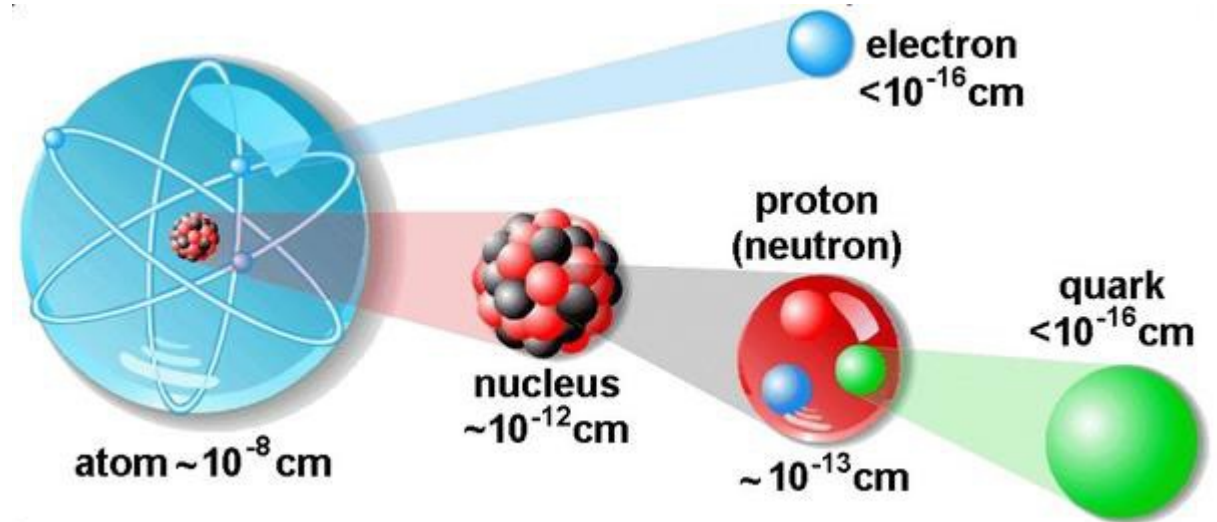
The process of splitting a nucleus is called nuclear **fission**. Uranium or plutonium isotopes are normally used as the fuel in nuclear reactors, because their atoms have relatively large nuclei that are easy to split, especially when hit by neutrons. ... the nucleus splits into two smaller nuclei, which are radioactive.



**Task:** Produce a flash card on the size and structure of an atom.

## Things to include:

An atom is a million times smaller than the thickest human hair. The diameter of an atom ranges from about 0.1 to **0.5 nanometers** ( $1 \times 10^{-10} \text{ m}$  to  $5 \times 10^{-10} \text{ m}$ ).



## Things to include:

The diagram illustrates the progression of atomic theory through three models:

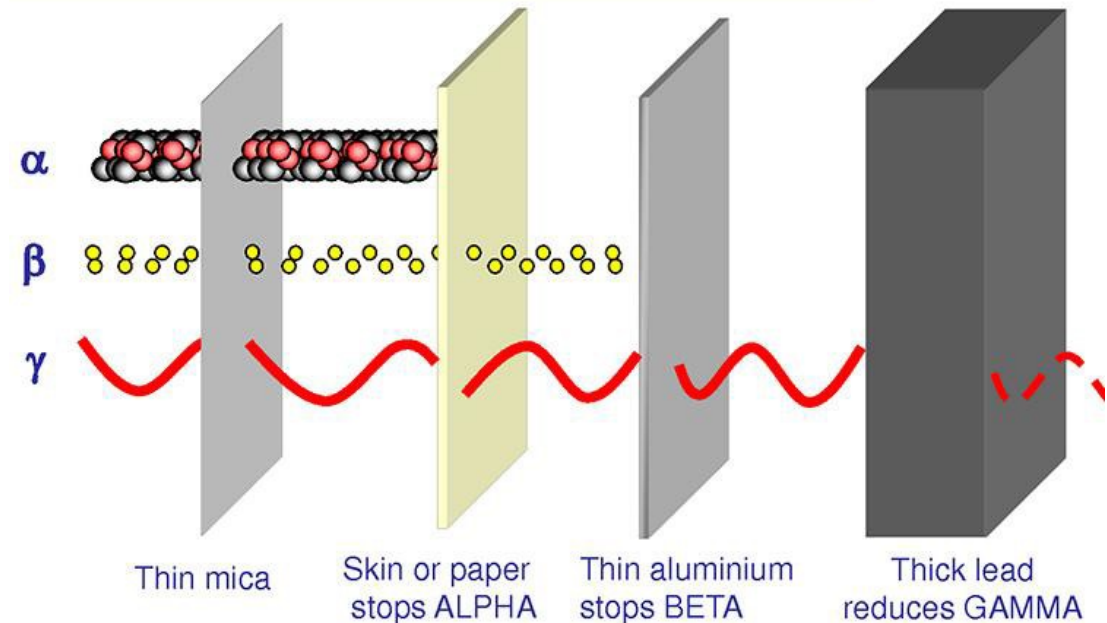
- Dalton Model (1803):** A large red sphere representing an atom. It is described as a "Tiny, solid sphere". The text states: "1803 John Dalton pictures atoms as tiny, indestructible particles, with no internal structure."
- Thomson Model (1897):** A large red sphere with small black dots (electrons) embedded on its surface. It is labeled "Sphere with positive charge throughout" and "Negatively charged particle (electron)". The text states: "1897 J.J. Thomson, a British scientist, discovers the electron. The later leads to his 'plum-pudding' model. He pictures electrons embedded in a sphere of positive electrical charge."
- Rutherford Model (1911):** A central green sphere (nucleus) with red dots (electrons) orbiting in elliptical paths. It is labeled "Path of a moving electron" and "Nucleus". The text states: "1911 New Zealand physicist Ernest Rutherford finds that an atom has a small, positively charged dense nucleus. Electrons move around the nucleus."

A timeline at the bottom marks the years 1800, 1805, 1895, 1900, 1905, and 1910, with vertical lines connecting the models to their respective years.



## Things to include:

## The penetration power of the three types of radiation.





# GCSE Science Daily Revision Task



**Task:** Produce a flash card on safety precautions taken when dealing with radioactive sources.

## Things to include:

You cannot do much to reduce your exposure to natural background radiation, but great care is needed when handling radioactive materials.

The safety precautions are:

- keep exposure times as short as possible
- monitor exposure with a film dose badge
- label radioactive sources clearly
- store radioactive sources in shielded containers
- wear protective clothing



# GCSE Science Daily Revision Task



**Task:** Produce a flash card on background radiation and sources of it.

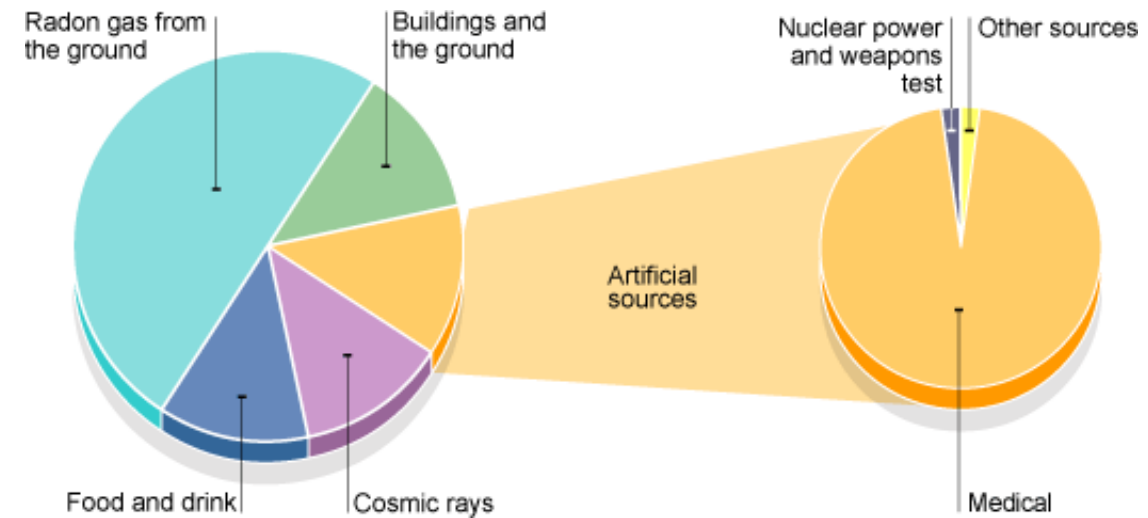
## Things to include:

Natural sources of background radiation include:

**Cosmic rays** - radiation that reaches the Earth from space

**Rocks and soil** - some rocks are radioactive and give off radioactive radon gas

**Living things** - plants absorb radioactive materials from the soil and these pass up the food chain



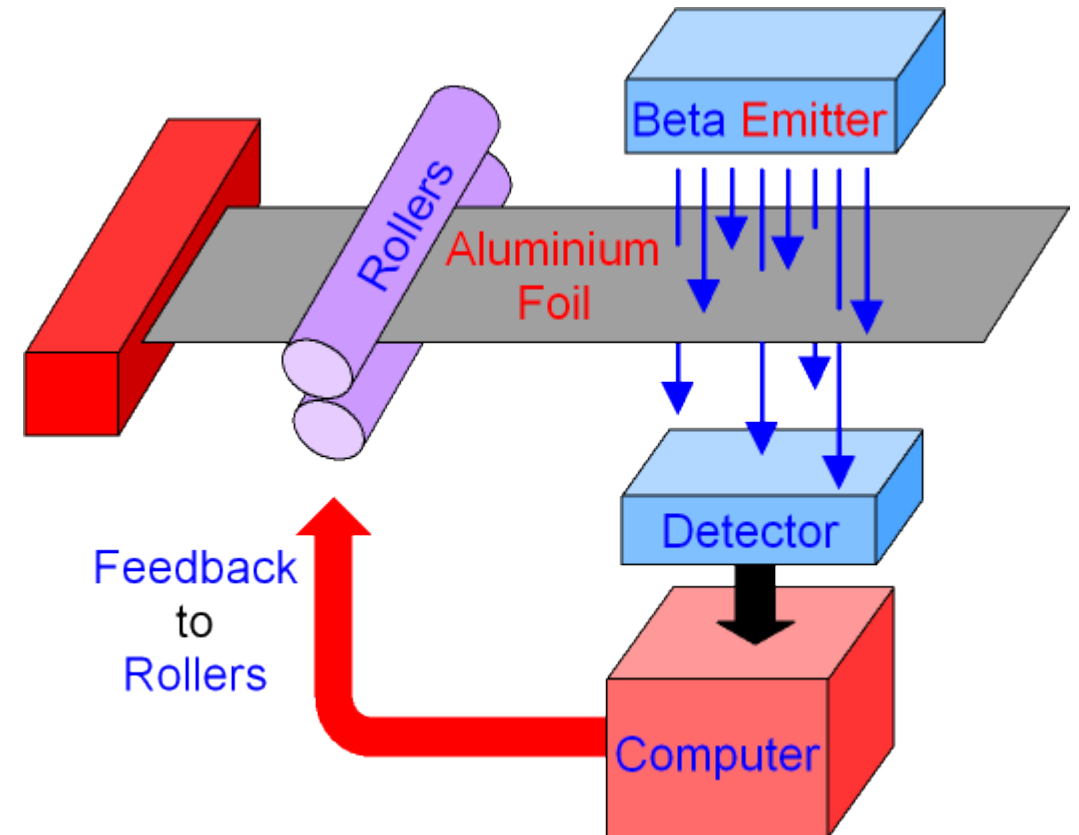
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on uses of nuclear radiation.

## Things to include:

Uses of beta radiation. Beta radiation is used for tracers and monitoring the thickness of materials. Doctors may use radioactive chemicals called tracers for medical imaging. ... Radiation is used in industry in detectors that monitor and control the thickness of materials such as paper, plastic and aluminium.



## Things to include:

```
graph TD; A[Coal  
Store of chemical energy] --> B[Energy transferred as heat]; B --> C[Water and steam  
Store of heat energy]; C --> D[Energy transferred as movement]; D --> E[Turbine]; E --> F[Energy transferred as movement]; F --> G[Generator]; G --> H[Energy transferred as electricity];
```

The diagram illustrates the energy conversion process in a coal power station. It begins with **Coal**, which is a **Store of chemical energy**. This energy is **transferred as heat** to **Water and steam**, which then **store heat energy**. The energy is then **transferred as movement** to a **Turbine**. The turbine's energy is again **transferred as movement** to a **Generator**, which finally **transfers the energy as electricity**. The process is represented by a vertical flowchart with icons for coal, steam, a turbine, and a lightning bolt.

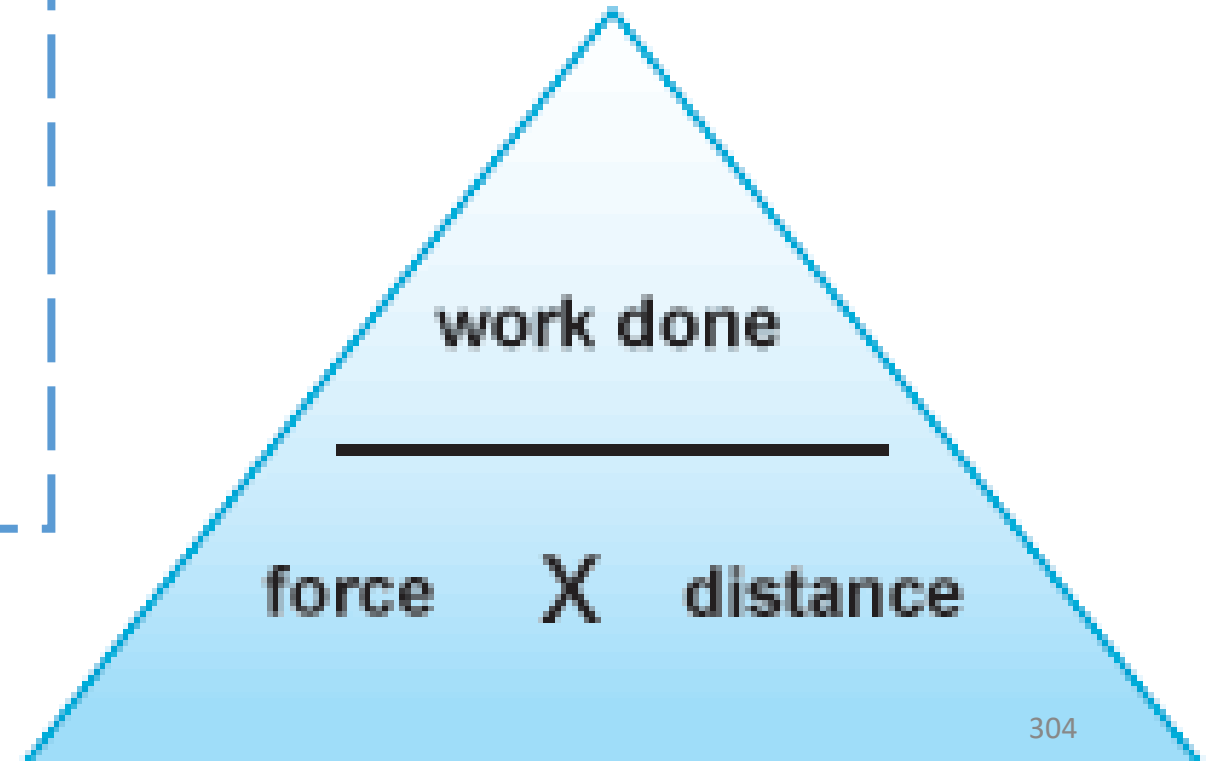
[illegible]

## Things to include:

Work done is measured in joules, J

Force is measured in newtons, N

Distance is measured in metres, m



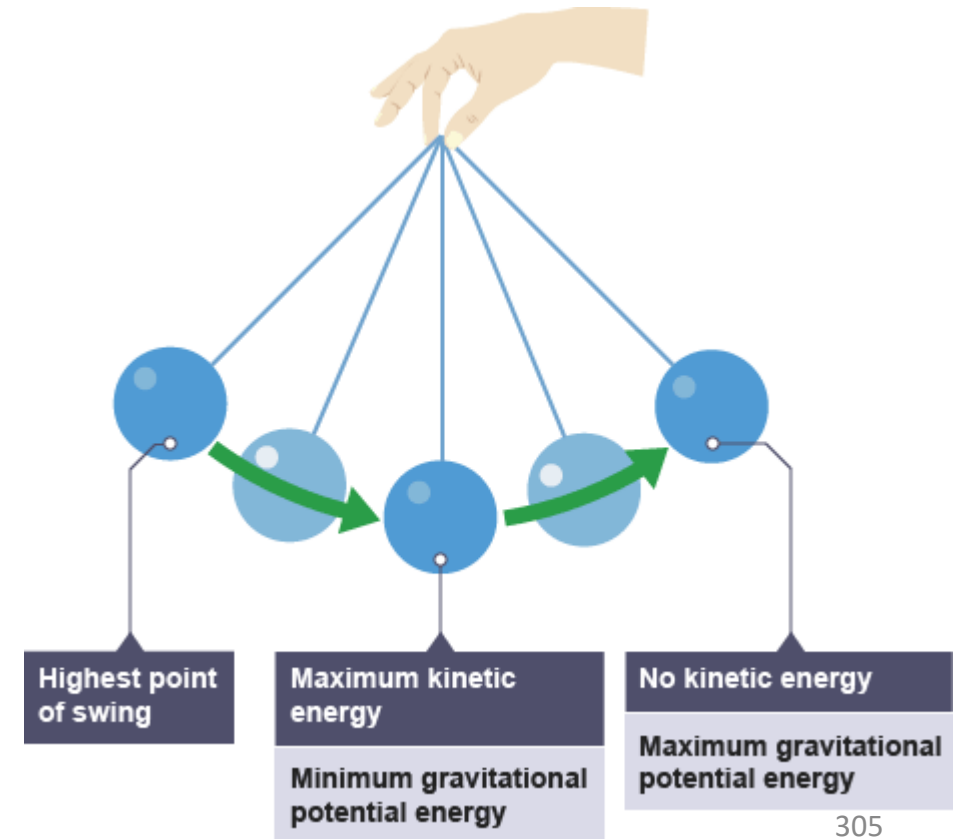
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on calculations to include kinetic energy, elastic potential energy and gravitational potential energy.

## Things to include:

The amount of 'kinetic energy' that all moving objects have depends on their speed and mass. When a car brakes the kinetic energy is changed into heat energy.





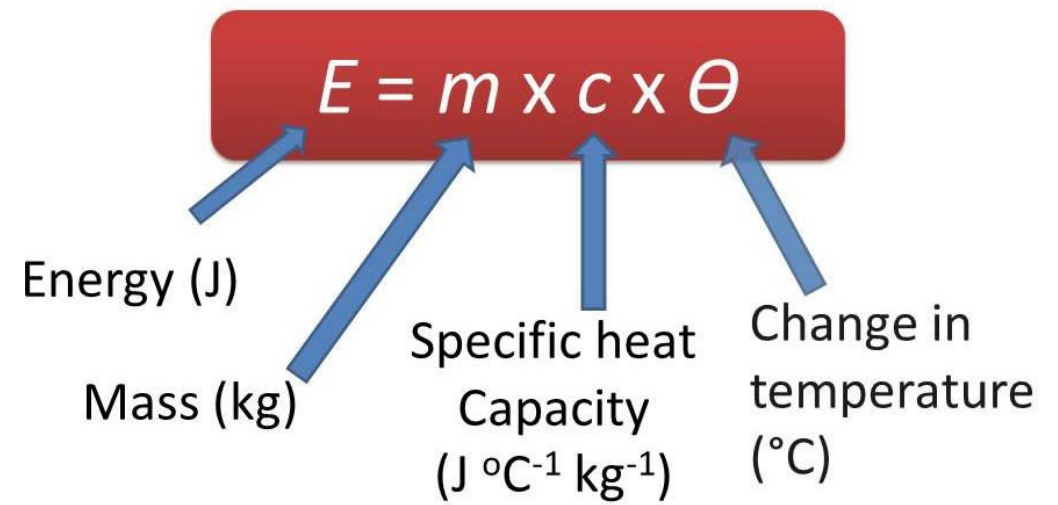
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on the specific heat capacity of a substance is the amount of energy required to change the temperature of one kilogram of the substance by one degree Celsius.

## Things to include:

The specific heat capacity of a substance is the amount of energy needed to change the temperature of 1 kg of the substance by 1°C. Different substances have different specific heat capacities



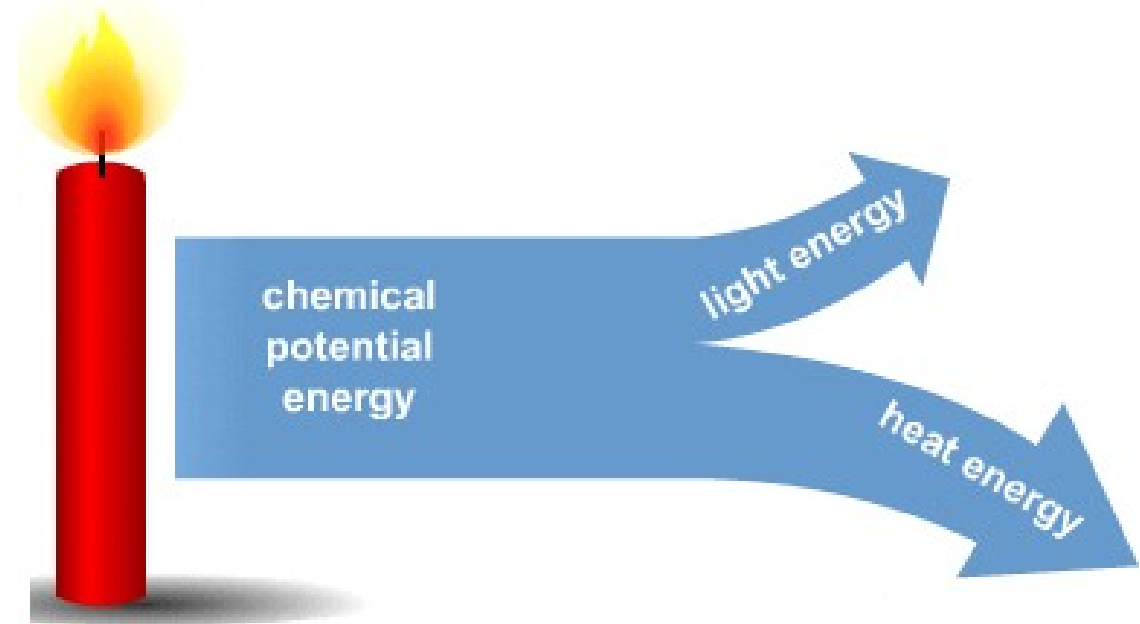
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on energy transfers

## Things to include:

Sankey diagrams summarise all the **energy transfers** taking place in a process. The thicker the line or arrow, the greater the amount of **energy** involved. The Sankey diagram for an electric lamp below shows that most of the electrical **energy** is **transferred** as heat rather than light.



# GCSE Science Daily Revision Task



**Task:** Produce a flash card on calculating efficiency.

## Things to include:

The efficiency of a device such as a lamp can be calculated using this equation:

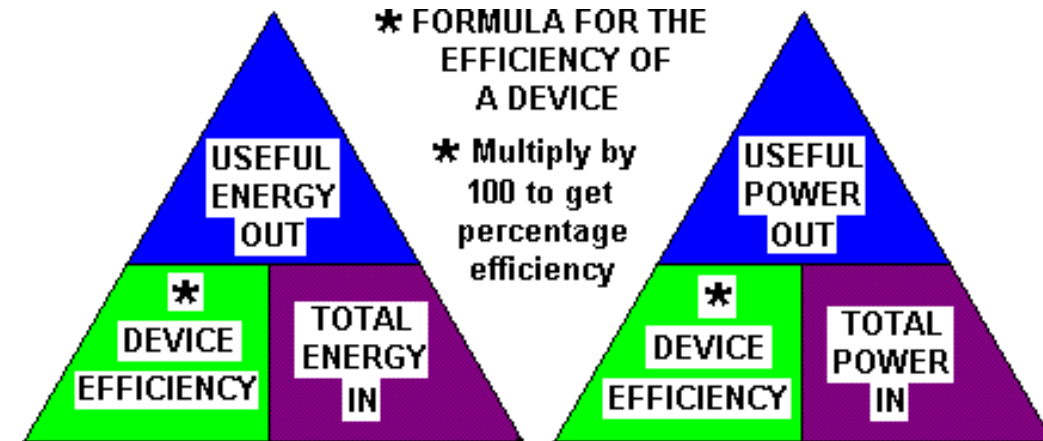
$$\text{efficiency} = (\text{useful energy transferred} \div \text{energy supplied}) \times 100$$

The efficiency of the filament lamp is  $(10 \div 100) \times 100 = 10\%$ .

This means that 10% of the electrical energy supplied is transferred as light energy (90% is transferred as heat energy).

The efficiency of the energy-saving lamp is  $(75 \div 100) \times 100 = 75\%$ . This means that 75% of the electrical energy supplied is transferred as light energy (25% is transferred as heat energy).

Note that the efficiency of a device will always be less than 100%.

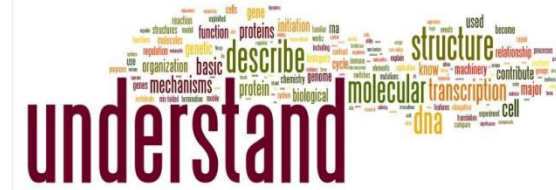


Density is the **mass per unit volume**. It can be measured in several ways.

The unit for density is  $\text{kg/m}^3$ . The density of water is approximately  $1000 \text{ kg/m}^3$  and the density of air is approximately  $1.2 \text{ kg/m}^3$ .

A diagram showing a blue Eureka can on a grey tripod stand. A dark blue sphere is suspended inside the can by a thin wire. A spout on the right side of the can is positioned above a tall, narrow measuring cylinder. The measuring cylinder has a scale with horizontal lines. Labels with leader lines point to the 'Eureka can' and the 'Measuring cylinder'. The page number '309' is in the bottom right corner.

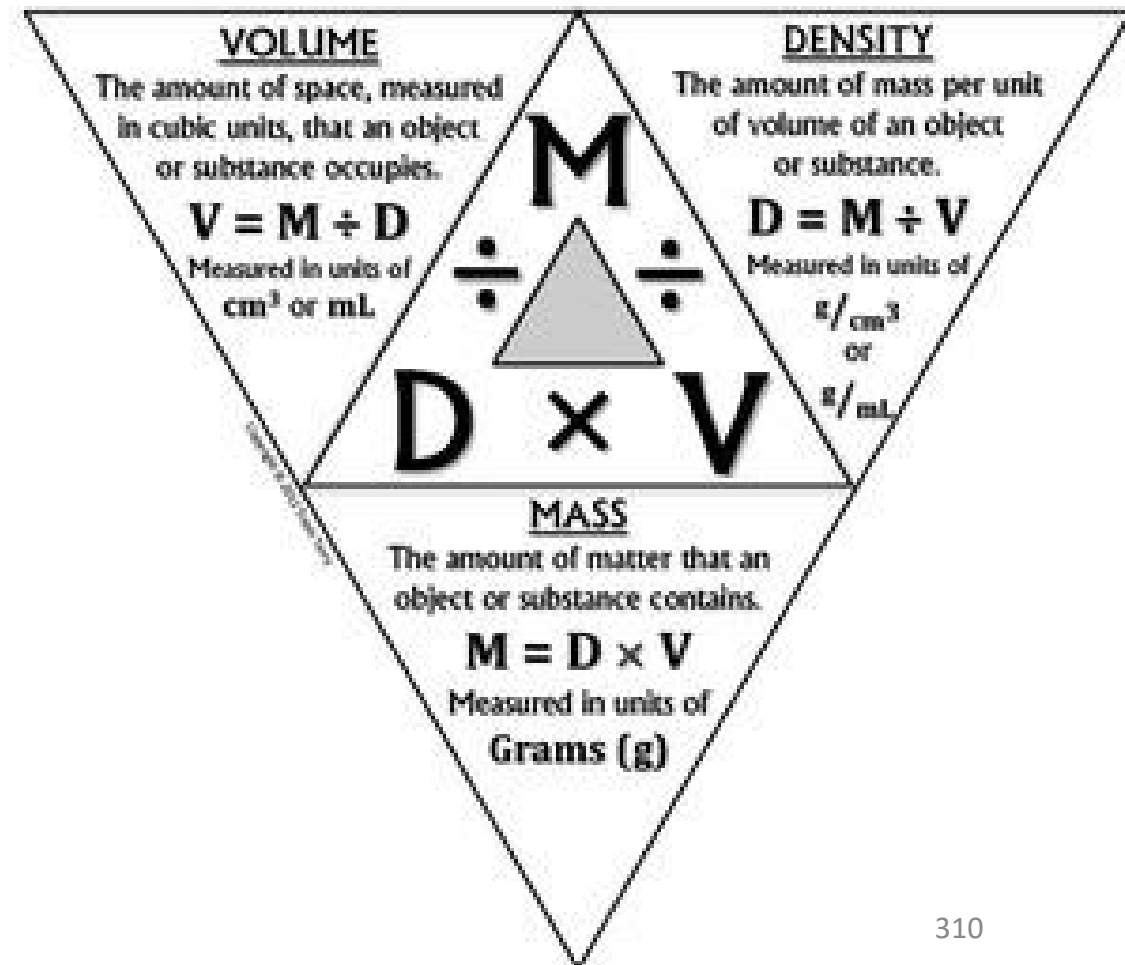
# GCSE Science Daily Revision Task




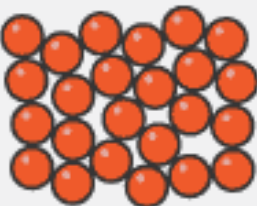

**Task:** Produce a flash card on the equation for density

## Things to include:

Density is the mass per unit volume. This means that the density of any solid, liquid or gas can be found by dividing its mass in kilograms by its volume in cubic metres.



## Things to include:

	Solid	Liquid	Gas
Arrangement of particles	Close together Regular pattern	Close together Random arrangement	Far apart Random arrangement
Movement of particles	Vibrate on the spot	Move around each other	Move quickly in all directions
Diagram			



# GCSE Science Daily Revision Task



**Task:** Produce a flash card on the particle model of matter to explain density of materials.

## Solids

Properties	Why they are like this
They have a fixed shape and cannot flow	The particles cannot move from place to place
They cannot be compressed or squashed	The particles are close together and have no space to move into

## Liquids

Properties	Why they are like this
They flow and take the shape of their container	The particles are free to move around each other
They cannot be compressed or squashed	The particles are close together and have no space to move into

## Gases

Properties	Why they are like this
They flow and completely fill their container	The particles can move quickly in all directions
They can be compressed or squashed	The particles are far apart and have space to move into

[illegible]

## Things to include:

A heating curve is a graph showing the temperature of a substance plotted against the amount of energy it has absorbed. You may also see a cooling curve, which is obtained when a substance cools down and changes state.



[illegible]

## Things to include:

The diagram illustrates the three states of matter and the transitions between them. It consists of three test tubes arranged horizontally. The first test tube on the left contains ice cubes and is labeled "Ice (s)". The middle test tube contains liquid water and is labeled "Water (l)". The third test tube on the right contains steam (represented by wavy lines) and is labeled "Steam (g)". A red arrow labeled "Heat" points from the ice to the water, and another red arrow labeled "Heat" points from the water to the steam. Blue arrows point back from the water to the ice and from the steam to the water, indicating the reverse processes of cooling.

## Things to include:

# GCSE Science Daily Revision Task



**Task:** Produce a flash card on specific latent heat.

## Things to include:

The heat energy that is taken in or given out by a substance when it changes state is called latent heat. When a substance changes from solid to liquid, the latent heat involved is called the latent heat of fusion. When the substance changes from a liquid to a vapour, latent heat of vaporisation is involved.

$$E = m \times L_v$$

Where,  $m$ =mass of substance in kg  
 $L_v$ = latent heat of vaporisation in J/kg  
 $E$ = Energy in J

$$E = m \times L_f$$

Where,  $m$ =mass of substance in kg  
 $L_f$ = latent heat of fusion in J/kg  
 $E$ = Energy in J

## Things to include:

The diagram illustrates the three states of matter and the energy changes during phase transitions. It is divided into three vertical panels: Solid, Liquid, and Gas. Above the panels, a black arrow labeled "ADD ENERGY" points to the right, with two red curved arrows indicating transitions from Solid to Liquid and from Liquid to Gas. Below the panels, a black arrow labeled "REMOVE ENERGY" points to the left, with two blue curved arrows indicating transitions from Gas to Liquid and from Liquid to Solid. The Solid panel shows particles in a tight, ordered grid. The Liquid panel shows particles in a disordered, close-packed arrangement. The Gas panel shows particles that are widely spaced and moving independently.



# GCSE Science Daily Revision Task

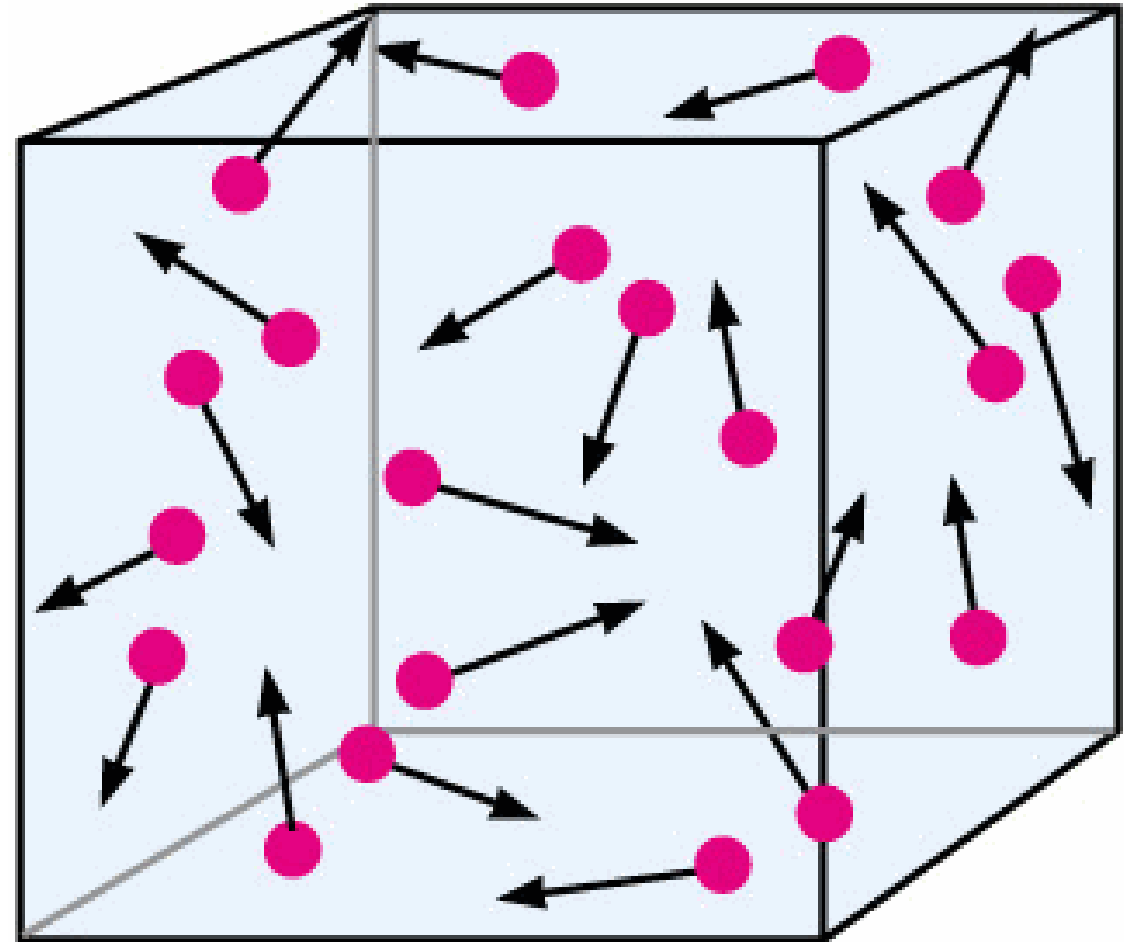


**Task:** Produce a flash card on how gases exert forces on the walls of their containers.

## Things to include:

The particles in a gas move quickly in all directions, but they don't get far before they bump into each other or the walls of their container. When gas particles hit the walls of their container they cause pressure. The more particles that hit the walls, the higher the pressure.

This is why the pressure in a tyre or balloon goes up when more air is pumped in.



# GCSE Science Daily Revision Task

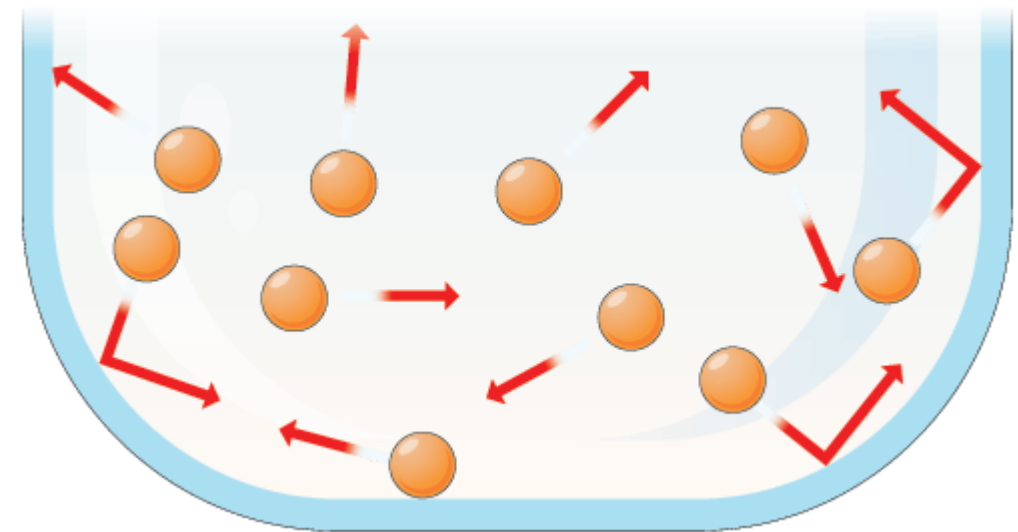


**Task:** Produce a flash card on how changing the temperature of a gas affects the pressure exerted.

## Things to include:

If a gas is heated up, its particles move around more quickly. They hit the walls of their container harder and more often. This increases the pressure. Sometimes the pressure gets so great that the container bursts.

This is why balloons and tyres burst if you blow them up too much. It's also why deodorant spray cans carry warning signs to tell you not to leave them in the sunshine. If they get too hot they explode.



# GCSE Science Daily Revision Task



**Task:** Produce a flash card on features of transverse and longitudinal waves.

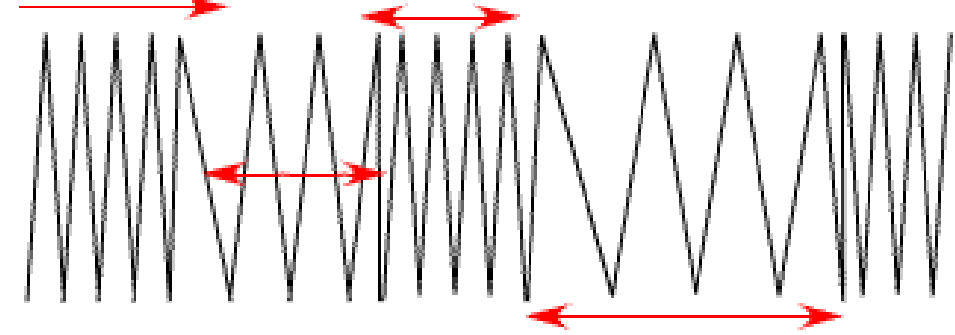
## Things to include:

Light and other types of electromagnetic radiation are transverse waves. Water waves and S waves (a type of seismic wave) are also transverse waves. In transverse waves, the vibrations are at right angles to the direction of travel.

Sound waves and waves in a stretched spring are longitudinal waves. P waves (relatively fast moving longitudinal seismic waves that travel through liquids and solids) are also longitudinal waves. In longitudinal waves, the vibrations are along the same direction as the direction of travel.

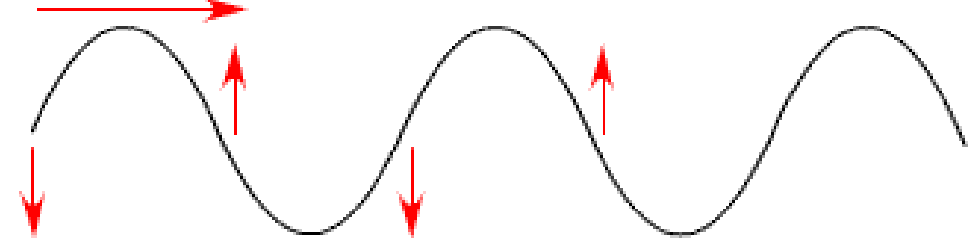
A longitudinal Wave

Energy transfer



A transverse wave

Energy transfer



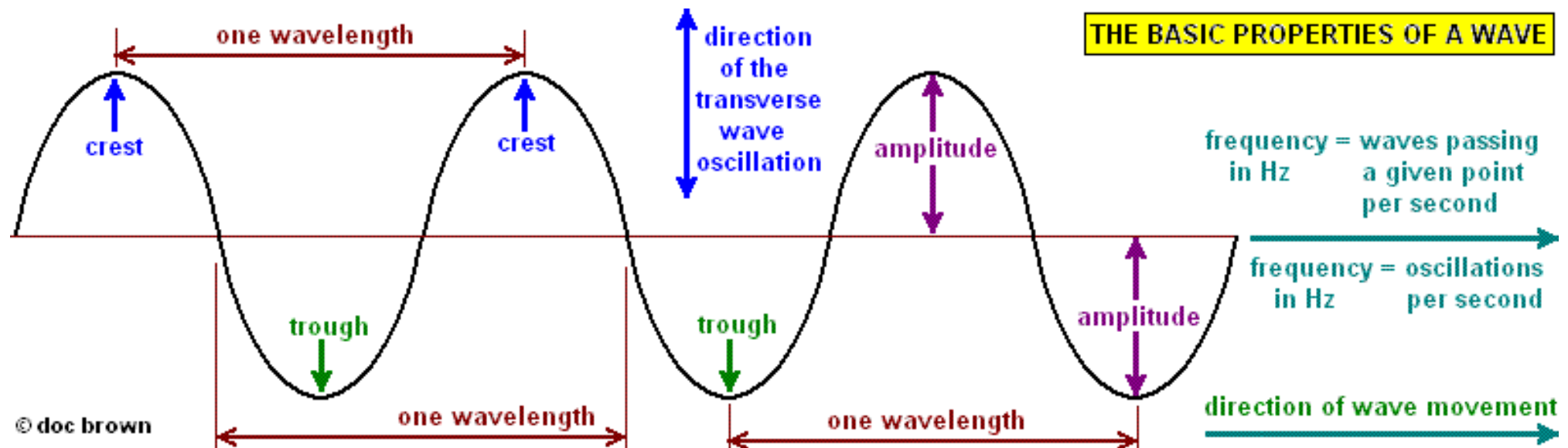
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on properties of waves.

## Things to include:

Waves can be described by their amplitude, wavelength and frequency. The speed of a wave can be calculated from its frequency and wavelength.



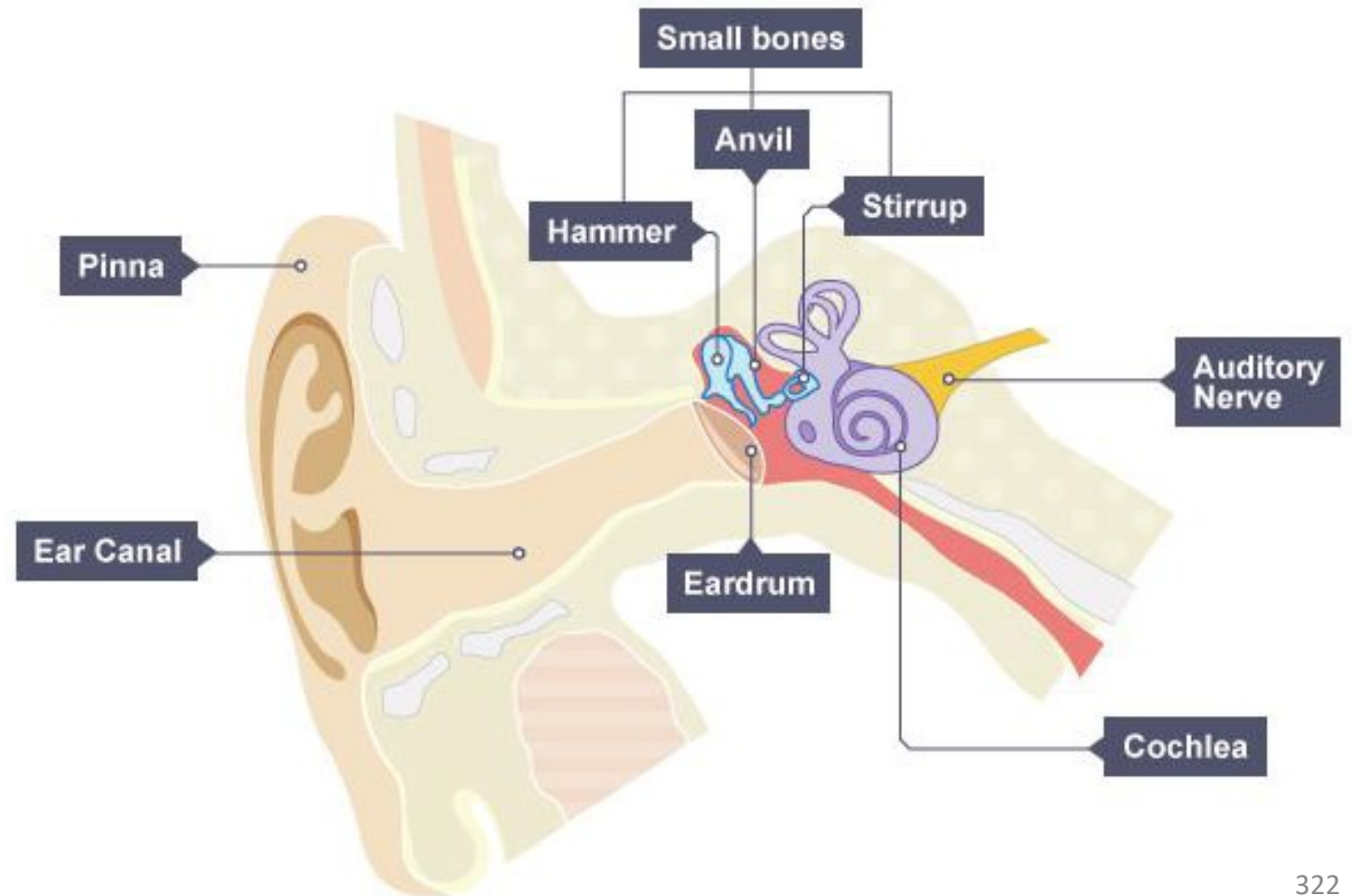
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on how we hear sound.

## Things to include:

Sound waves are longitudinal. Humans hear sounds from 20 - 20 000 Hz. Higher frequencies are called ultrasound.



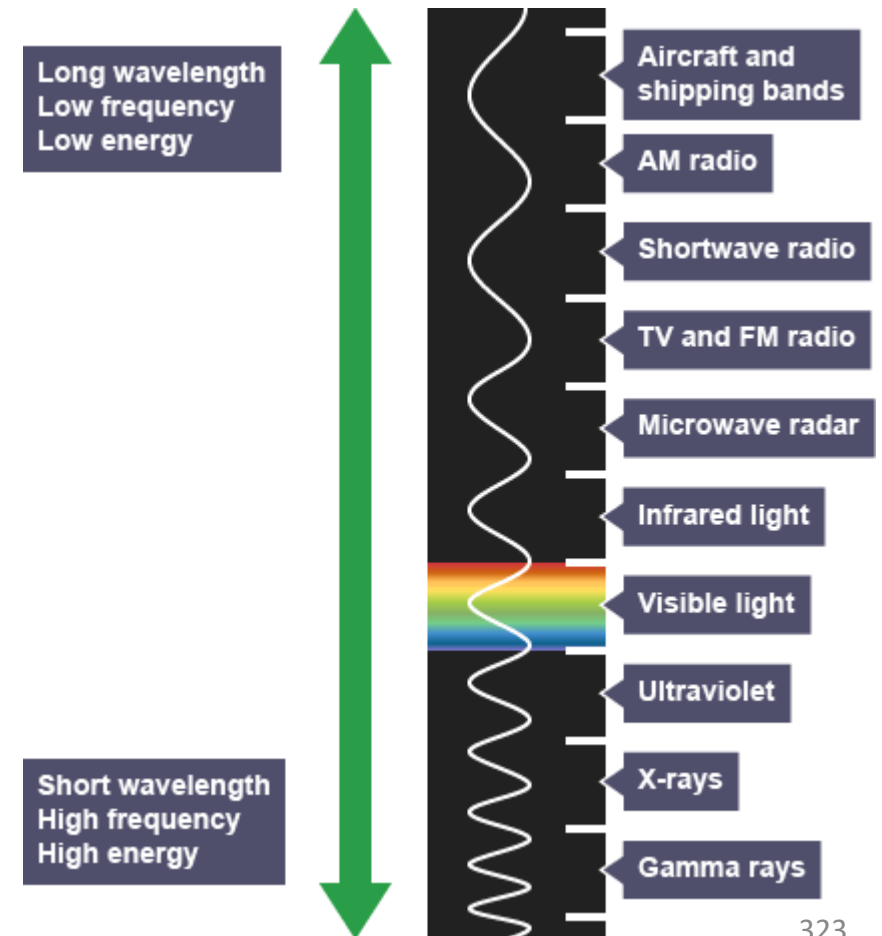
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on properties of electromagnetic waves.

## Things to include:

The main types of electromagnetic radiation. Radio waves have the lowest frequencies and longest wavelengths, while gamma waves have highest frequencies and shortest wavelengths. The wavelengths vary across the electromagnetic spectrum from about 10<sup>-15</sup> m to more than 10<sup>4</sup> m.





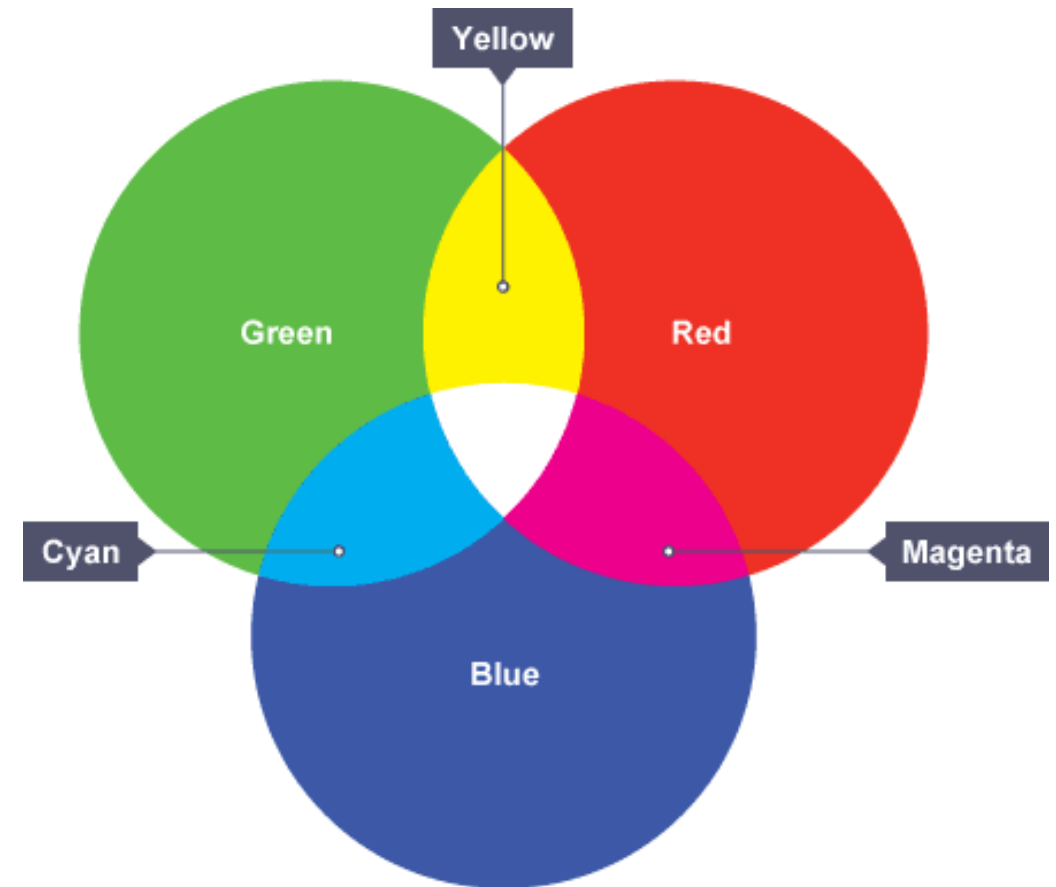
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on how we see the colour of an object.

## Things to include:

There are three primary colours in light: red, green and blue. Light in these colours can be added together to make the secondary colours magenta, cyan and yellow. All three primary colours add together make white light.



# GCSE Science Daily Revision Task



**Task:** Produce a flash card on calculating efficiency.

## Things to include:

The efficiency of a device such as a lamp can be calculated using this equation:

$$\text{efficiency} = (\text{useful energy transferred} \div \text{energy supplied}) \times 100$$

The efficiency of the filament lamp is  $(10 \div 100) \times 100 = 10\%$ .

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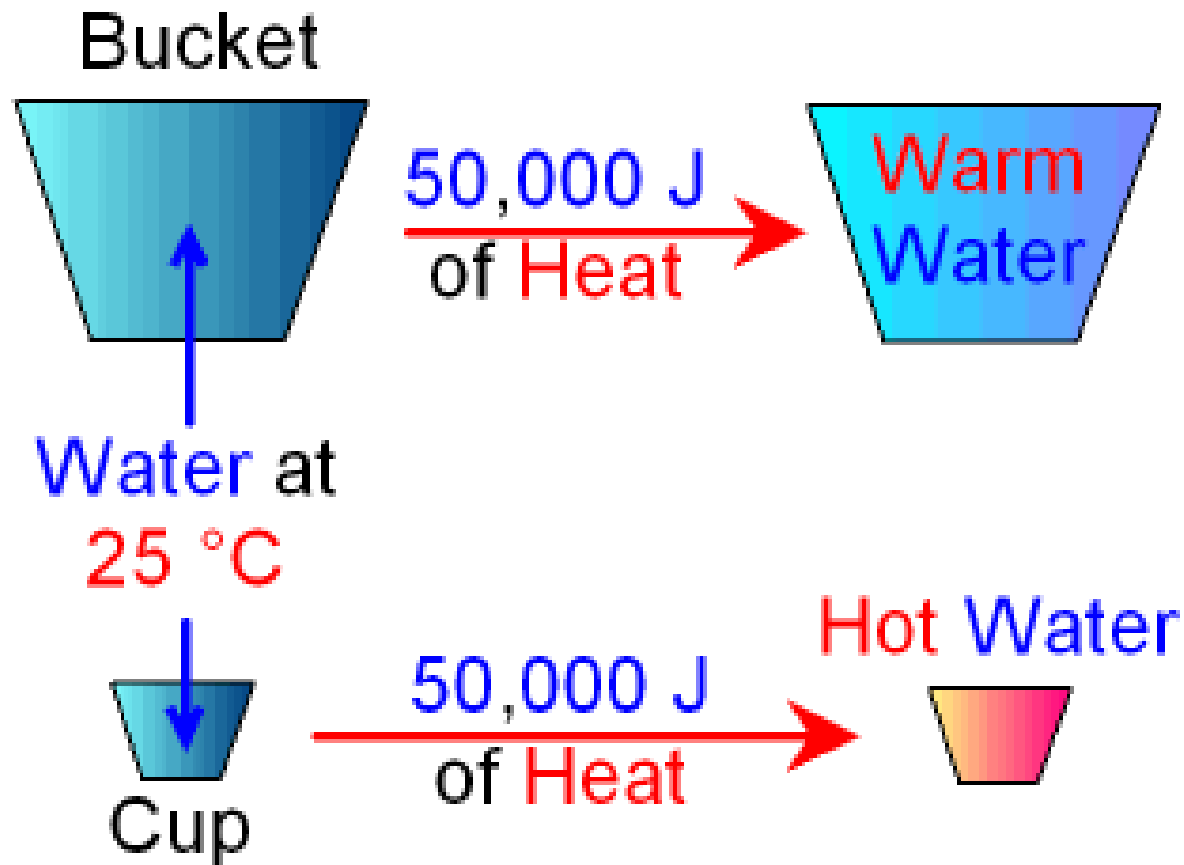
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on heating and temperature.

## Things to include:

Temperature and heat are not the same thing because: temperature is a measure of how hot something is. heat is a measure of the thermal energy contained in an object.

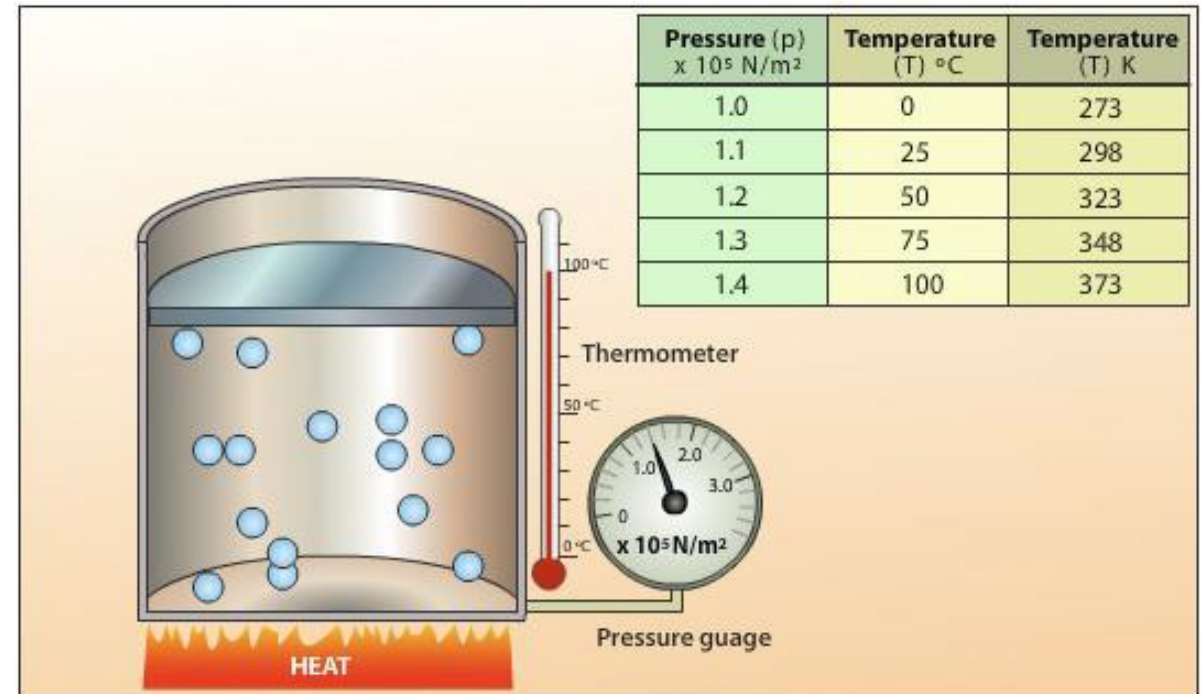


**Task:** Produce a flash card on how changing the temperature of a gas affects the pressure exerted.

## Things to include:

Decreasing the volume of a gas increases the pressure of the gas. An example of this is when a gas is trapped in a cylinder by a piston. If the piston is pushed in, the gas particles will have less room to move as the volume the gas occupies has been decreased.

Because the volume has decreased, the particles will collide more frequently with the walls of the container. Each time they collide with the walls they exert a **force** on them. More collisions mean more force, so the **pressure** will increase. When the volume decreases, the pressure increases. This shows that the pressure of a gas is **inversely proportional** to its volume.



## Things to include:

The diagram illustrates the focusing action of a converging lens. Parallel light rays, labeled "light rays", enter from the left. The lens is labeled "converging lens". The rays converge at a point labeled "focal point (F)". The distance from the lens to the focal point is labeled "focal length".

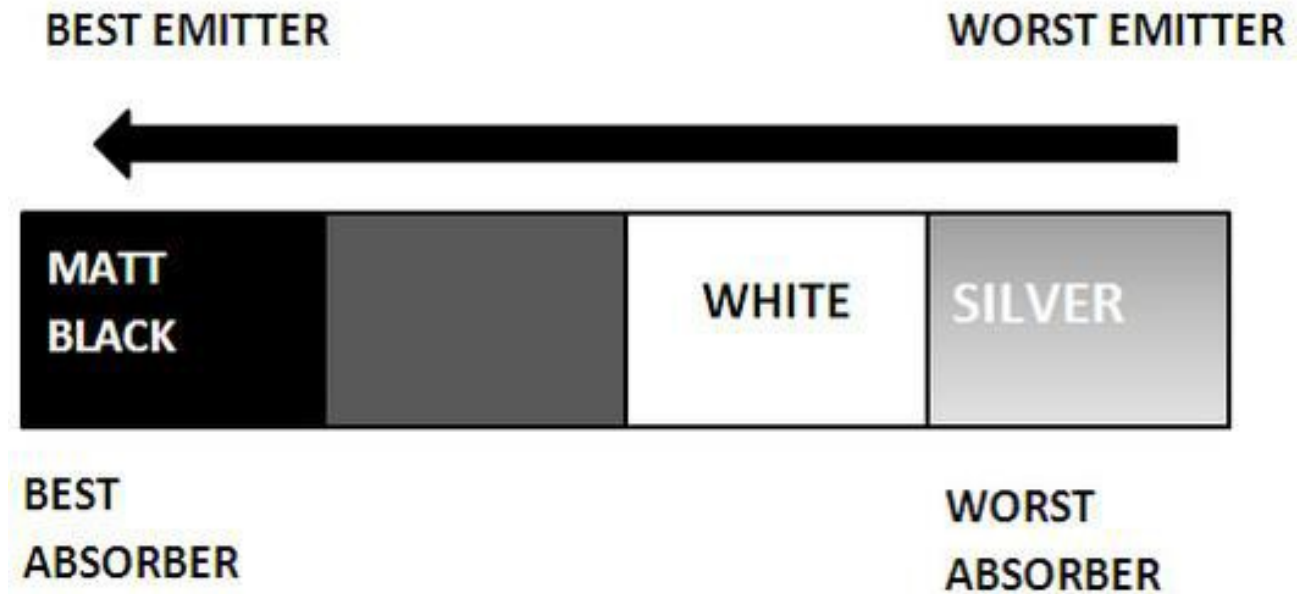
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on emission and absorption of infra-red radiation.

## Things to include:

All objects emit (give out) and absorb (take in) thermal radiation, which is also called infrared radiation. The hotter an object is, the more infrared radiation it emits.





[illegible]

## Things to include:

The diagram illustrates a thermopile experiment. A central triangular object is labeled "Hot Metal" in red. The left face of the triangle is labeled "Matt Black" in blue, and the right face is labeled "Shiny White" in red. Two thermometers, labeled "Thermometers" in red, are positioned above the triangle. Arrows point from the thermometers to the black and white surfaces, indicating they are measuring the temperature of these surfaces.

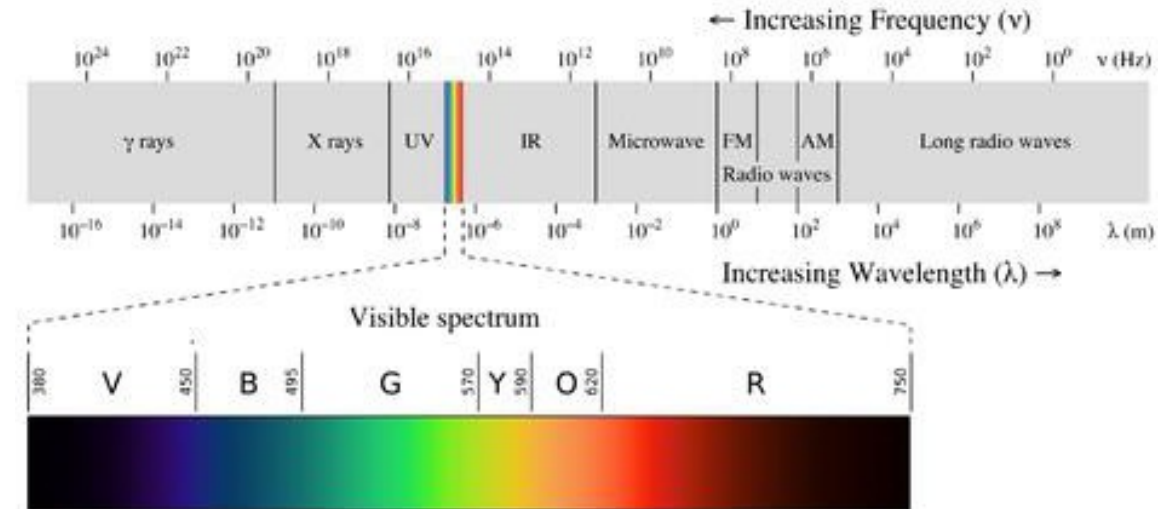
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on how electromagnetic waves are generated.

## Things to include:

Electromagnetic radiation, is a form of energy emitted by moving charged particles. As it travels through space it behaves like a wave, and has an oscillating electric field component and an oscillating magnetic field. These waves oscillate perpendicularly to and in phase with one another.



## Things to include:

frequency	type of electromagnetic radiation	typical use	wavelength
highest	gamma radiation	killing cancer cells	shortest
	x-rays	medical images of bones	
	ultraviolet radiation	sunbeds	
	visible light	seeing	
	infrared radiation	optical fibre communication	
	microwaves	cooking	
lowest	radio waves	television signals	longest

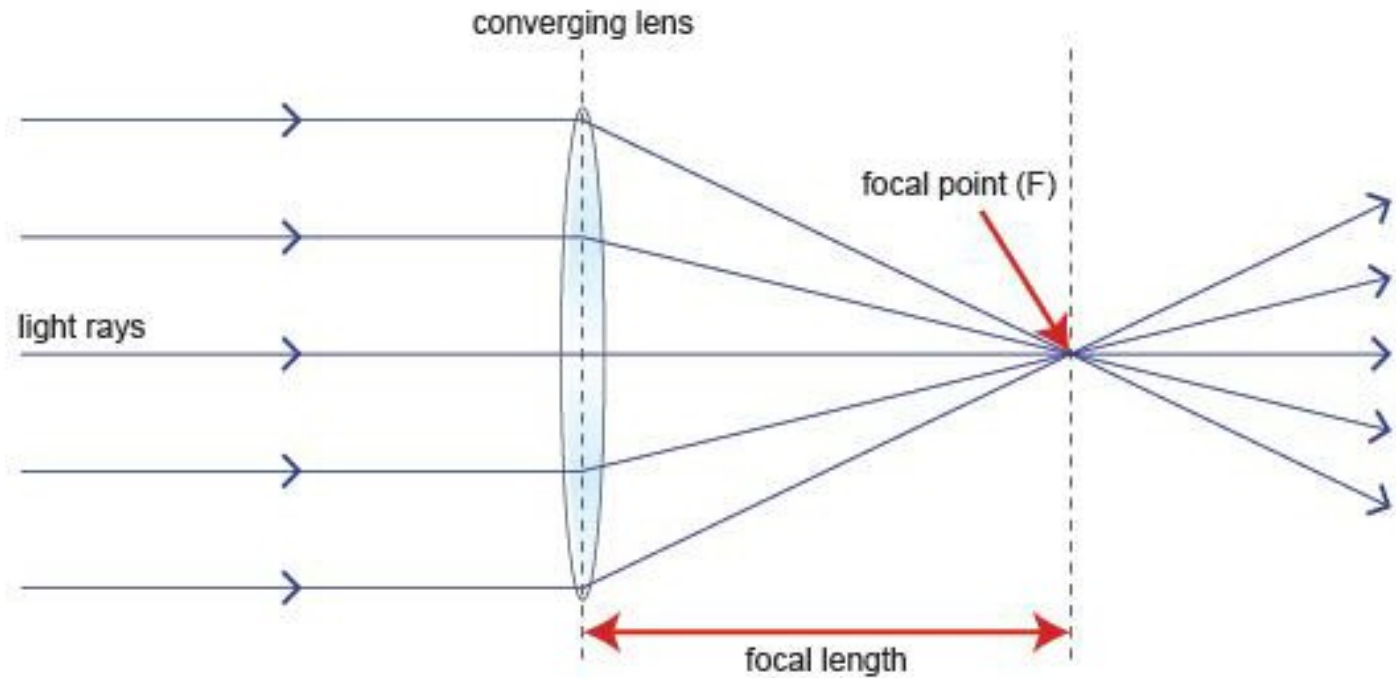
# GCSE Science Daily Revision Task



**Task:** Produce a flash card on concave and convex lenses.

## Things to include:

A lens is transparent block that causes light to refract (changes the direction the light travels in). A converging lens (or convex lens) is curved on both sides. This means the light rays coming out of it come together at a point – they converge.



# GCSE Science Daily Revision Task

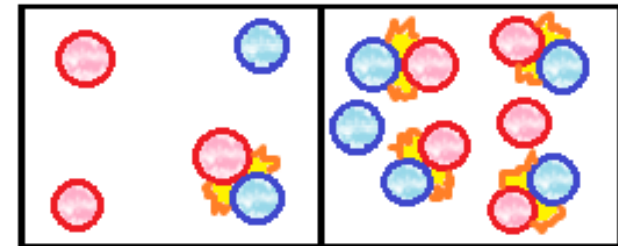


**Task:** Produce a flash card on collision theory

## Things to include:

Chemical reactions can only occur when reacting particles collide with each other and with sufficient energy. The minimum amount of energy particles must have to react is called the activation energy.

Low  
concentration/  
pressure.  
Less collisions  
Little energy



High  
concentration/  
pressure.  
More collisions  
More energy