



# Year 8 Science knowledge organiser

**Module** – Earth

**Topic** – Climate and Earth resources

**Length of topic** – Approx. 9 lessons

**Method of assessment** – Levelled assessment

## Links to prior learning

KS2/KS3 Year 6 Earth Transition topic

- Sedimentary, igneous and metamorphic rocks can be inter converted over millions of years through weathering and erosion, heat and pressure, and melting and cooling. The Rock cycle

## Knowledge to be taught.

- Carbon is recycled through natural processes in the atmosphere, ecosystems, oceans and the Earth's crust (such as photosynthesis and respiration) as well as human activities (burning fuels).
- Greenhouse gases reduce the amount of energy lost from the Earth through radiation and therefore the temperature has been rising as the concentration of those gases has risen.
- Scientists have evidence that global warming caused by human activity is causing changes in climate.
- There is only a certain quantity of any resource on Earth, so the faster it is extracted, the sooner it will run out.
- Recycling reduces the need to extract resources.
- Most metals are found combined with other elements, as a compound, in ores. The more reactive a metal, the more difficult it is to separate it from its compound. Carbon displaces less reactive metals, while electrolysis is needed for more reactive metals.

## Skills to be covered

- Evaluate claims that human activity is causing global warming or climate change.
- Use data to evaluate proposals for recycling materials.

## Working scientifically strands covered

Analyse patterns	✓
Discuss limitations	
Draw conclusions	✓
Present data	✓
Communicate ideas	✓
Construct explanations	✓
Critique claims	✓
Justify opinions	✓
Collect data	✓
Devise questions	
Plan variables	
Test hypothesis	
Estimate risks	✓
Examine consequences	✓
Review theories	✓
Interrogate	

## Assessment

### Levelled assessment Atmosphere in balance

#### Pupils will need to show they can:

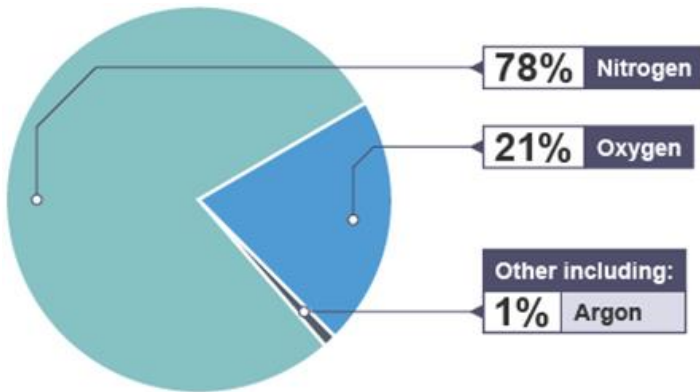
- Identify and explain processes that add carbon dioxide to the atmosphere and those that remove carbon dioxide.
- Use word and formula equations to describe any reactions involved in the changes in carbon dioxide concentrations.
- Explain the likely consequences of increased carbon dioxide concentrations, giving evidence where possible.
- Explain why it is important to recycle giving 1 named example to justify your answer.



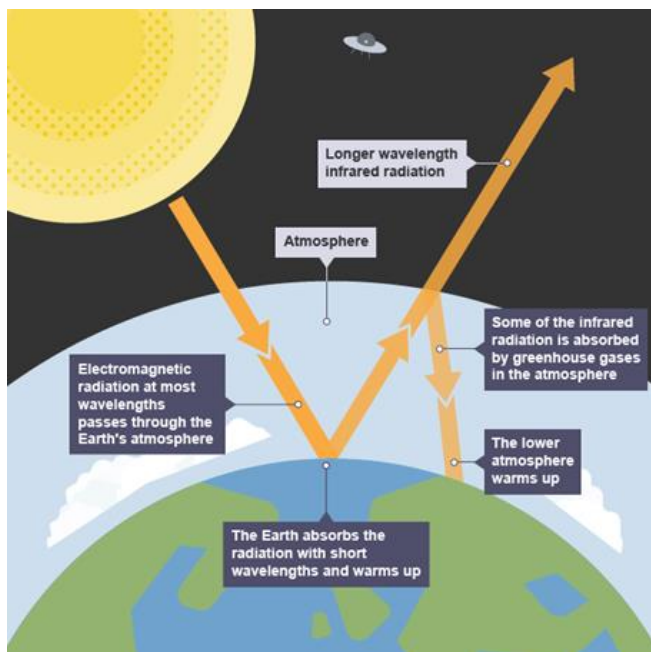
# Year 8 Science knowledge organiser

## Facts

Earth's atmosphere contains around 78 % nitrogen, 21 % oxygen, <1 % carbon dioxide, plus small amounts of other gases.



Methane and carbon dioxide are greenhouse gases. Greenhouse gases trap escaping thermal energy. This is called the greenhouse effect.



A lot of waste still ends up in landfill sites, which is a waste of valuable resources.



## Keywords

**Atmosphere:** The layers of gases that surround the Earth. The important gases in the atmosphere are nitrogen, oxygen and carbon dioxide.

**Carbon cycle:** The processes and events involved in recycling carbon in the environment.

**Carbon sink:** Areas of vegetation, the ocean or the soil, which absorb and store carbon.

**Combustion:** The process of burning by heat.

**Electrolysis:** Using electricity to split up a compound into its elements.

**Extraction:** Separation of a metal from a metal compound.

**Fossil fuel:** Natural, finite fuel formed from the remains of living organisms, eg oil, coal and natural gas.

**Global warming:** The rise in the average temperature of the Earth's surface.

**Greenhouse effect:** The retention of heat in the atmosphere caused by the build-up of greenhouse gases.

**Greenhouse gas:** The gases responsible for global warming - carbon dioxide, methane, nitrous oxide and CFCs (chlorofluorocarbons).

**Mineral:** Naturally occurring metal or metal compound.

**Natural resources:** Minerals that have been made through the formation of the world that can be used for human benefit.

**Ore:** Naturally occurring rock containing sufficient minerals for extraction.

**Photosynthesis:** A chemical process used by plants to make glucose and oxygen from carbon dioxide and water, using light energy.

**Recycling:** Processing a material so that it can be used again.

**Respiration:** The chemical change that takes place inside living cells, which uses glucose and oxygen to release the energy that organisms need to live. Carbon dioxide is a by-product of respiration.

**Resource:** Anything that is useful to people.

**Sustainable:** An activity which does not consume or destroy resources or the environment.