



Year 8 Chemistry – Atoms, Elements and Compounds



West Kirby
Grammar School

Learning about this topic is important because:

This topic builds up an understanding of what all of the matter we interact with on a daily basis is made up of. This is everything from your own body, to the food you eat, medicines you take, clothes you wear and more.

This builds on:

Y7 Particles – The particle model theory of matter

This leads to:

Chemical reactions (Part 1), Introduction to bonding, The Periodic Table

We will learn:

What are elements?

What are atoms made from?

What are the properties of the subatomic particles?

How can we use the periodic table to determine the structure of an atom?

How are electrons arranged in an atom?

What are metals and non-metals?

What are compounds and how do they form?

How are the properties of compounds different to the elements that combined to make them?

We will develop/practise skills including:

Be able to define atoms, elements and compounds

Drawing a labelled diagram of an atom

Using the periodic table to determine the structure of an atom

Drawing the electron structure of the first 20 elements

Be able to identify a metal or non-metal from its properties

Be able to name simple compounds

Some of the vocabulary that we will use includes:

Element – A pure substance made of only one type of atom.

Atom – The smallest particle of any substance

Compound – A substance made when two or more different elements are chemically joined together.

Nucleus – The centre of an atom that contains protons and neutrons.

Electron – A tiny negatively charged particle that moves around the nucleus.

Neutron – A particle in the nucleus with no electric charge.

Energy Levels – Shells around the nucleus where electrons are found.

Proton – A positively charged particle found in the nucleus of an atom.

You could learn more about this topic by:

[Science for Kids: The Atom \(ducksters.com\)](https://www.ducksters.com/science/atom.php)

[The Periodic Table Song \(2018 Update!\) | SCIENCE SONGS - YouTube](https://www.youtube.com/watch?v=8mHh3uYUo08)

[A Boy And His Atom: The World's Smallest Movie - YouTube](https://www.youtube.com/watch?v=8mHh3uYUo08)



Your teacher will assess your knowledge & understanding throughout the topic by looking at your work, questioning, discussion and giving you feedback in lots of different ways. The key pieces of work in this topic are:



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End of topic test

Assessed homework

Retrieval practice in unit booklet and regular whiteboard quizzes

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KS3 Chemistry – Introduction to Energy and Rates of Reaction

Learning about this topic is important because:

Energy changes are central to chemistry. Some reactions release energy (like burning fuels), while others need energy to start. This links to the idea of Exothermic reaction and Endothermic reaction, which explain why things get hotter or colder during reactions. Rates of reaction tell you how fast a reaction happens. This is important because reactions don't all occur at the same speed. Understanding factors like temperature, concentration, and surface area helps explain why some reactions are quick (like explosions) and others are slow (like rusting).

This builds on:

Y8 Atoms, elements and compounds.

This leads to:

GCSE Chemistry- Energy Changes and Rates of Reaction

We will learn:

How is energy transferred in a chemical reaction?
What is an exothermic reaction and an example?
What is an endothermic reaction and an example?
What is collision theory?
What needs to happen for the chemical reaction to occur?
How do we measure rate of reaction?
What factors affect rate of reaction?
How do we plan an investigation to determine what affects the rate of a reaction?
What are the variables considered in an investigation?

We will develop/practise skills including:

Plan an investigation into rates of reaction and the effect of surface area. Identifying variables in investigations
Risk assess practical work
Analyse experimental data using graphs to draw logical conclusions

Some of the vocabulary that we will use includes:

Exothermic reaction:

A reaction that **releases energy** (usually heat) to the surroundings.

Exothermic reaction:

A reaction that **takes in energy** from the surroundings.

Collision theory:

The idea that reactions happen when particles **collide with enough energy**.

Activation energy:

The **minimum amount of energy** needed to start a reaction.

Concentration:

The **amount of substance** in a given volume.

You could learn more about this topic by:



[Reactions and temperature changes - Exothermic and endothermic reactions - AQA - GCSE Combined Science Revision - AQA Trilogy - BBC Bitesize](#)

[Rate of reaction - Rates of reaction - AQA - GCSE Chemistry \(Single Science\) Revision - AQA - BBC Bitesize](#)



KS3 Chemistry – Introduction to Energy and Rates of Reaction



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Pressure:

The **force of particles hitting the walls** of a container (in gases).

Temperature:

A measure of how **hot or cold** something is.

Surface area:

The **total area of a solid that is exposed**.

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Educake Quizzes



KS3 Chemistry – Chemical Reactions Part 1



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Learning about this topic is important because:

Chemical reactions help us understand the properties of a substance. By studying the way a substance interacts with another substance, we can learn its chemical properties. These properties can be used to identify an unknown sample. By observing chemical reactions, we are able to understand how the natural world works.

This builds on:

Y8 Atoms, elements and compounds, Y7 Separating mixtures

This leads to:

Introduction to Bonding and the Periodic Table, Chemical Reaction (Part 2), Materials Science.

We will learn:

How can we identify a chemical reaction?

What is a physical change?

How can we represent chemical reactions?

How do we balance symbol equations?

What is oxidation and reduction?

What is combustion?

What are the conditions for complete vs incomplete combustion?

What are the general equations for complete and incomplete combustion?

What is a displacement reaction?

What is the test for hydrogen / oxygen / carbon dioxide?

What is thermal decomposition?

We will develop/practise skills including:

Be able to make predictions using scientific knowledge

Be able to plan scientific investigations, ensuring a fair test

Being able to distinguish between chemical reactions and physical changes

Constructing word equations for the reactions in this topic

Constructing and balancing symbol equations for the reactions in this topic

Using information about reactions to compare the reactivity of elements

Identifying variables in investigations

Risk assess practical work

Record data accurately

Analyse experimental data using graphs to draw logical conclusions using good science

Using chemical tests to identify common gases

Some of the vocabulary that we will use includes:

Displacement- When a more reactive element replaces a less reactive element in a compound.

Oxidation- The gain of Oxygen

Reduction- The loss of oxygen

Combustion- A reaction where a substance burns in oxygen, releasing energy (heat and light).

Thermal decomposition- When a compound **breaks down into simpler substances when heated.**

You could learn more about this topic by:

[Chemical reactions - KS3 Chemistry - BBC Bitesize](#)

[6 Chemical Reactions That Changed History - YouTube](#)



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KS3 Chemistry – Chemical Reactions Part 1



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Assessed homework

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