

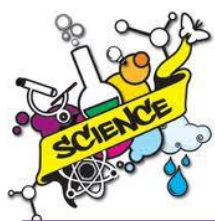
Lesson 3

Lesson	Resources	Context
3	<p data-bbox="369 625 1240 668">Writing word equations worksheet, scissors, glue.</p> <p data-bbox="369 868 1137 911">Understanding equations assessment sheet.</p> <p data-bbox="369 996 794 1039">Writing word equations.</p>	<p data-bbox="1263 629 1740 786">Students to construct word equations using worksheet provided.</p> <p data-bbox="1263 865 1599 908">Assessment phase.</p> <p data-bbox="1263 982 1470 1025">Homework.</p>

Starter – Title: Representing Chemical Reactions

Quickly take your seat and spend these few minutes to review the keywords for a quick spelling quiz!





Title: Representing Chemical Reactions

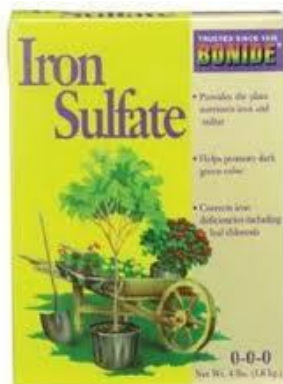
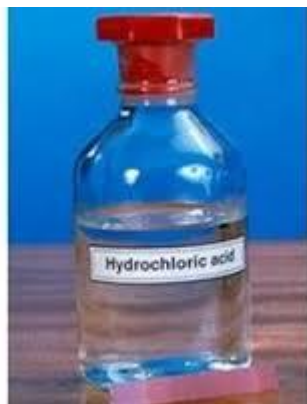
Homework: Word equations sheet

Level	Learning Objectives	Key Words	SPAG
All	Write simple word equations for chemical reactions.	Reactant Product Word equation Symbol equation	<ul style="list-style-type: none">To use accurate terminology when explaining ideas
Most	Write word equations for chemical reactions.		
Some	Write simple symbol equations for each of the reactions.		



Main Activity - Task

	Activity	Expectations
All	Name the following substances: H_2O , CO_2 , HCl , Fe , Ca AND write down if they are an element or a compound.	Write down the name of each next to the formula/symbol in your book.
+	Try these: $NaCl$, $MgSO_4$, $FeSO_4$	Write down the name of each next to the formula/symbol in your book.



Main Activity - Task

	Activity
All	Name the following substances: H_2O , CO_2 , HCl , Fe , Ca AND write down if they are an element or a compound.
+	Try these: $NaCl$, $MgSO_4$, $FeSO_4$

Water - compound

Carbon dioxide - compound

Hydrochloric acid - compound

Iron - element

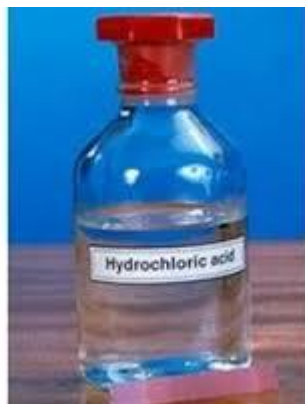
Calcium - element

Write down the name of

Sodium chloride/salt - compound

Magnesium sulfate - compound

Iron sulfate - compound



Main Activity – Modelling



Write down the key points for writing equations.

When a **metal** and a **non metal** join together the name of the metal always comes first and the name of the non metal second.

The ending on the non metal changes to **IDE**:

e.g. magnesium and oxygen becomes magnesium oxide

Challenge: What would it be written as using symbols?

Can you remember where to find out if your element is a metal or non-metal?



Main Activity – Modelling



Write down the key points for writing equations.

When a **non metal** and **oxygen** join together the name of the non metal always comes first and the name of the oxygen second.

The ending on the oxygen changes to **IDE**:

e.g. carbon and oxygen becomes carbon **mon**oxide

Why do we use the pre-fix **mon**?

What would carbon and 2 oxygen's become? carbon **di**oxide

Challenge: What would each be written as using symbols?



Main Activity – Modelling



Write down the key points for writing equations.

Sometimes a **metal** is joined to a group of atoms which contain a **non metal** which is combined with **oxygen**, the ending of this non metal and oxygen changes to **ATE**:

e.g. SO_4 sulphur + oxygen = **sulphate**
 NO_3 nitrogen + oxygen = **nitrate**
 CO_3 carbon + oxygen = **carbonate**



Main Activity – Task



Cut and stick the answers into your book.

Representing Chemical Reactions

It takes much less time to write about chemical reactions using word equations than in proper sentences.

You are going to use some cards to write word equations for some chemical reactions.

Equipment

- scissors
- glue stick

Writing word equations

- 1 Read the reaction cards. Each card gives you some information about a chemical reaction.
- 2 Use the equation cards to make equations for each reaction. For each reaction, the reaction card does not tell you all the names of the substances in the equation – you need to work some of them out yourself!
- 3 Cut out and stick the equations and reaction cards into your book.

Reaction cards

Magnesium is used in emergency flares for boats. The sailor lights the flare and the burning magnesium reacts quickly with oxygen in the air. The flare shoots into the air and you see a brilliant firework.

Iron is used to make cars. It is covered with a layer of rust protection. If the layer is damaged, the iron starts to react and it forms red iron oxide, which we call rust.

Sodium is a very reactive metal. An exciting reaction happens when hot sodium is dropped into a jar of chlorine gas. A bright flash happens and a white solid is left behind.

Hydrogen is a 'fuel of the future' for cars. One way of making hydrogen is to split up water (hydrogen oxide) using electricity. This is expensive because of the cost of the electricity.



Most

Complete the task by **writing** word equations for the chemical reactions. Then try writing them for your reactions from Lesson 1.



Some

Complete the task and **write** simple symbol equations for each of the reactions.

All

Complete the task by **writing** simple word equations for the chemical reactions.

Main Activity – ANSWERS

Magnesium is used in emergency flares for boats. The sailor lights the flare and the burning magnesium reacts quickly with oxygen in the air. The flare shoots into the air like a brilliant firework so rescue boats can see it.



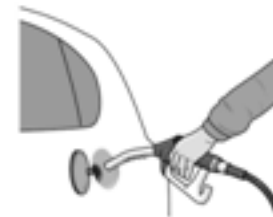
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Magnesium + oxygen
→ magnesium oxide

iron + oxygen → iron
oxide

Sodium + chlorine →
sodium chloride

water → hydrogen
and oxygen



Write a word equation to sum up the following reactions:

1. Iron objects react with water and oxygen to form hydrated iron oxide.
2. Magnesium reacts with oxygen to form magnesium oxide.
3. Carbon burns in a good supply of oxygen to form carbon dioxide.
4. Carbon burns in a limited supply of oxygen to form carbon monoxide.
5. Hydrochloric acid reacts with magnesium to form magnesium chloride and hydrogen.

Main Activity – AfL Answers

PEER ASSESS - Swap your work with the person next to you.



1. Iron + water + oxygen \rightarrow hydrated iron oxide.
2. Magnesium + oxygen \rightarrow magnesium oxide.
3. Carbon + oxygen \rightarrow carbon dioxide.
4. Carbon + oxygen \rightarrow carbon monoxide.
5. Magnesium + hydrochloric acid \rightarrow magnesium chloride + hydrogen.

How did you do? / 5 and as a %



Assessment Phase

Understanding equations

Task 1: Word equations (All)

1 Complete these word equations:

a magnesium + _____ → magnesium oxide

b copper + oxygen → _____

c _____ + sulphur → iron sulphide

d _____ + chlorine → calcium chloride

e magnesium + _____ → magnesium oxide

2 Now try to think of some
write word equations for



Most

Complete task one by **writing** word equations for the chemical reactions.



Some

Complete task two by **writing** simple symbol equations for each of the reactions.

All

Complete task one by **writing** simple word equations for the chemical reactions.

Plenary

Link the keyword to the definition.

