Name:

Word Equations

**CHEMICAL REACTIONS**

Date:

………………………………………………………………………………………………………………………………………………

Success Criteria

* Students will be able to:
* Identify reactants and products in chemical reactions
* Write word equations for chemical reactions

………………………………………………………………………………………………………………………………………………

**Chemical Reactions**

**Complete the passage and answer the questions below:**

*When sodium bicarbonate is added to a solution of citric acid, we see \_\_\_\_\_\_\_\_\_\_\_\_.*

*This is because a new \_\_\_\_\_\_\_\_\_\_\_\_\_\_, carbon dioxide gas, is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.*

*During this reaction \_\_\_\_\_\_\_\_\_\_ and sodium citrate are also produced.*

*If we measured the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, we would find that it goes down as the reaction continues. This is a change in the quantity of heat energy.*

*In this reaction two chemicals join together to form a \_\_\_\_\_\_\_\_\_\_ set of chemicals.*

*Everyday chemical reactions include milk going off and cooking a \_\_\_\_\_\_\_\_\_\_. Things such as water \_\_\_\_\_\_\_\_\_\_\_\_\_\_ or freezing are not chemical reactions as \_\_\_\_\_\_\_\_ new chemicals are produced. These are known as physical changes*

1. What are the starting chemicals and chemicals made in the example above?
2. Give examples of the everyday chemical reactions in the text and think of two others.

**Think, pair, share**

With the person next to you, can you think of any signs of a chemical reaction that are mentioned in the text above? Fill in the box but leave space in case your classmates have any suggestions.

***The signs of a chemical reaction are…***

Reactants and Products

* In a chemical reaction we start with one set of chemicals called the ***reactants***, a reaction happens and we end up with another set called the ***products***.
* **Example**: when hydrogen and oxygen react, they form water

|  |  |
| --- | --- |
| **Reactants** | **Products** |
| Hydrogen and oxygen | Water |

**Word Equations**

To show what is happening during a chemical reaction we can write a word equation. The reactants go on the left side whilst the products go on the right.

We use an arrow not an equal sign (=). The arrow means *“reacts to form*”

**Example:** when hydrogen and oxygen are reacted together, they form water

**Hydrogen + oxygen 🡪 water**

Below are six examples of chemical reactions. State the reactants and products of each reaction, then write a word equation in the space below (use the example as a guide).

1) Methane gas burns in oxygen to produce carbon dioxide and water.

|  |  |
| --- | --- |
| Reactants | Products |
|  |  |

2) Lead nitrate reacts with potassium iodide. This produces a yellow solid called lead iodide and a clear liquid called potassium nitrate

|  |  |
| --- | --- |
| Reactants | Products |
|  |  |

3) In a car, when the engine is started enough energy is produced to combine nitrogen from the air with oxygen to form nitrogen dioxide.

|  |  |
| --- | --- |
| Reactants | Products |
|  |  |

4) To make sodium chloride one possible method is to react hydrochloric acid and sodium hydroxide together. This reaction also produces water

|  |  |
| --- | --- |
| Reactants | Products |
|  |  |

5) Often during an experiment, we find that a gas is produced. An example of this is the production of hydrogen when a metal, such as magnesium, reacts with an acid, such as hydrochloric acid. In this reaction magnesium chloride and hydrogen will be produced.

|  |  |
| --- | --- |
| Reactants | Products |
|  |  |

6) The colour of fireworks comes from the reactions of different metals with oxygen. The production of magnesium oxide gives a bright white colour. This comes from the reaction between magnesium and oxygen. Heat energy is needed for this to happen.

|  |  |
| --- | --- |
| Reactants | Products |
|  |  |

**How did you do?**

**Summarise what you have learned today using the passage at the start**

|  |  |
| --- | --- |
| Be able to Identify reactants and products in chemical reactions |  |
| Be able to write word equations for chemical reactions |  |