**Chemistry Revision: Reactivity of**

Mastery Matrix Points

|  |
| --- |
| Use evidence to rank metals in order of reactivity |
| Predict what would happen in a displacement reaction between two substance |
| Write ionic half equations for displacement reactions (triple only) |
| Link reactivity to how metals are extract from their ore |
| Describe the reaction of given metals with oxygen  |
| Describe the reaction of given metals with water |
| Describe the reactions of given metals with acids (magnesium, zinc and iron with hydrochloric and sulphuric acid) |
| Explain these reactions in terms of redox reactions, linking to electrons and the species that is oxidised and reduced (triple only) |

Key Knowledge

The more reactive a metal is the \_\_\_\_\_ easily it forms positive ions.

The reactivity series (with 8 metals and 2 non-metals):

1.
2.
3.
4.
5.
6.
7.
8.
9.
10.

Metal displacement reactions are when ……………………………………………………………………………………………………………………………………………………

Oxidation

Definition 1 –

Definition 2 –

Reduction

Definition 1 –

Definition 2 –

Ore –

Low reactivity metals are extracted from their ore by…

High reactivity metals are extracted by…………………………

**Metals**

Understanding and Explaining

1. Describe the reactions below.

|  |  |  |
| --- | --- | --- |
| *Metal* | *Reaction with room temperature water* | *Reaction with dilute acid* |
| Potassium |  |  |
| Sodium  |  |  |
| Lithium  |  |  |
| Calcium  |  |  |
| Magnesium  |  |  |
| Zinc |  |  |
| Iron |  |  |
| Copper |  |  |

1. Explain why metals such as gold do not need to be extracted from an ore.
2. Explain how metals such as copper and iron are extracted from their ores. Include a word equation for the extraction of iron from iron oxide and state which chemical is oxidised and which is reduced.
3. Are these chemicals being oxidised or reduced?

|  |  |
| --- | --- |
| 1. Cu2+ 🡪 Cu
 | 1. I- 🡪 I2
 |
| 1. Cl- 🡪 Cl2
 | 1. I2 🡪 I-
 |
| 1. Zn 🡪 Zn2+
 | 1. Mg 🡪 Mg2+
 |
| 1. Ag+ 🡪Ag
 | 1. Zn2+ 🡪 Zn
 |

1. Write ionic equations for these displacement reactions. The first one is done for you.
2. CuSO4 + Zn 🡪 ZnSO4 + Cu Answer: Cu2++ Zn 🡪 Zn2++ Cu
3. CuSO4 + Pb 🡪 PbSO4 + Cu
4. CuSO4 + Mg 🡪 MgSO4 + Cu
5. Pb(NO3)2 + Zn 🡪 Zn(NO3)2 + Pb
6. Pb(NO3)2 + Mg 🡪 Mg(NO3)2 + Pb
7. Zn(NO3)2 + Mg 🡪 Mg(NO3)2 + Zn