

**The National Orthodox School/ Shmessani**

**Name: …………………….... Worksheet /Reactions of metals**

**Date: Grade 7CS all sections**

**Objectives:**

* **To be able to write word equations for the reactions of metals.**
* **To be able to compare the reactivity of metals.**

**Activity one:**

**Pieces of metals were added in turn to 5ml cold water and to 5ml of 0.5 mol/L hydrochloric acid solution in test tubes. Each test tube was carefully observed to see whether any bubbles of colorless gas formed. Results are tabulated below. A tick means that a gas was formed and a cross means no gas appeared.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Ca** | **Cu** | **Fe** | **Zn** | **Ag** |
| **With water** | **√** | **×** | **×** | **×** | **×** |
| **With HCl** | **√** | **×** | **√** | **√** | **×** |

1. What is the name of the colorless gas being produced?

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

1. Use the results in the table to arrange the metals into three groups: highly reactive, moderately reactive, not reactive.

* *Highly reactive:* ….……………………………………………………………………..…………
* *Moderately reactive:* ……………………………………………………….……………………
* *Not reactive:* …………………………………………………………………….……………………

**Activity two:**

**Complete the word equations below:**

1. Lithium + sulfuric acid → ……………………………..+ hydrogen
2. Beryllium + …………………….. → Beryllium hydroxide + ………………….
3. Magnesium + chlorine → ………………………
4. …………………. + ………………….. → zinc oxide
5. Magnesium + ………………………. → magnesium chloride + ……………………..
6. Sodium + bromine → …………………..
7. Potassium + water → ……………………….. + ………………………..

**Activity three:**

**Most metals react with acids to form hydrogen gas. The speed at which the reactions occur varies depending on the reactivity of the metal.**

**Complete the following table.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Metal** | **Location in the periodic table** | **Reaction with diluted acid**  **(slow/ fast)** | **Reaction with concentrated acid**  **(slow/ fast)** |
| **Sodium** |  |  |  |
| **calcium** |  |  |  |
| **magnesium** |  |  |  |
| **copper** |  |  |  |
| **zinc** |  |  |  |
| **iron** |  |  |  |

**Activity one:**

1. What is the name of the colorless gas being produced?

…………**Hydrogen**…………………………………………………………………………

1. Use the results in the table to arrange the metals into three groups: highly reactive, moderately reactive, not reactive.

* *Highly reactive:* ….……**Calcium**………………………………………..…………
* *Moderately reactive:* ………**zinc, iron**……………………….……………………
* *Not reactive:* ……………**copper, silver**……………….……………………

**Activity two:**

**Complete the word equations below:**

1. Lithium + sulfuric acid → ……**lithium sulfate**…..+ hydrogen
2. Beryllium + ……**water**….. → Beryllium hydroxide + ……**hydrogen**….
3. Magnesium + chlorine → ……**magnesium chloride**…
4. …**zinc**…. + …**oxygen**.. → zinc oxide
5. Magnesium + …**hydrochloric acid**…. → magnesium chloride + …**hydrogen**….
6. Sodium + bromine → …**sodium bromide**.
7. Potassium + water → …**potassium hydroxide**.. + …**hydrogen**..

**Activity three:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Metal** | **Location in the periodic table** | **Reaction with diluted acid**  **(slow/ fast)** | **Reaction with concentrated acid**  **(slow/ fast)** |
| **Sodium** | **G1** | **fast** | **………………** |
| **calcium** | **G2** | **fast** | **……………….** |
| **magnesium** | **G2** | **slow** | **fast** |
| **copper** | **T.M** | **No reaction** | **No reaction** |
| **zinc** | **T.M** | **slow** | **Fast (slower than Mg)** |
| **iron** | **T.M** | **No reaction** | **slow** |