Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period \_\_\_\_\_

**Single Replacement Reactions Activity**

**(Understanding the Activity Series)**

**Objectives:**

* Students will perform single replacement reactions to understand the relative reactivity of metals
* Students will write and balance chemical equations to represent these reactions

**Procedure:**

1. Place one piece of **lead** shot in wells 1, 5, and 9 in your well plate. Place one piece of **zinc** shot in wells 2, 6, and 10, and place one piece of **copper** shot in wells 3, 7 and 11. **In your second well plate** add one piece of **aluminum** in wells 1, 5, and 9 and add one piece of **magnesium** to wells 2, 6, and 10.
2. Add 5 drops of **Zinc nitrate** (source of Zn+2 (aq) ions) to wells 1, 2, and 3 in well plate #1 and wells 1 and 2 in well plate # 2.
3. Add 5 drops of **Lead nitrate** (source of Pb+2(aq) ions) to wells 5, 6, and 7 of well plate #1, and wells 5 and 6 of well plate #2
4. Add 5 drops of **Copper nitrate** (source of Cu+2(aq) ions) to wells 9, 10 and 11 of well plate #1 and well 9 and 10 of well plate #2.
5. Wait about 1 or 2 minutes. Observe each metal and write your observations in the table below.
6. Observe again after 15 minutes. Describe any changes in the table below.

**Observations:**

**WELL PLATE # 1 WELL PLATE # 2**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Lead** | **Zinc** | **Copper** | X | **Aluminum** | **Magnesium** |
| **Zn(NO3)2**  (after 1-2 minutes) | 1 | 2 | 3 | 4    X | 1 | 2 |
| After 15 minutes |  |  |  | X |  |  |
| **Pb(NO3)2**  (after 1-2 minutes) | 5 | 6 | 7 | 8  X | 5 | 6 |
| After 15 minutes |  |  |  | X |  |  |
| **Cu(NO3)2**  (after 1-2 minutes) | 9 | 10 | 11 | 12    X | 9 | 10 |
| After 15 minutes |  |  |  | X |  |  |