

Activity Series of the Metals

Name _____

Activity with cold water: Obtain 5 test tubes and fill them halfway with cold water. Place a small sample of the following metals into each tube and test the resulting solutions with red litmus paper to determine if a reaction occurred (red litmus turns blue in the presence of hydroxides): Al, Ca, Mg (powder), Na (from instructor), and Zn.

List and write a balanced equation for only the metals that reacted with the cold water in order of **decreasing** activity in the space below:

Activity with warm water: Take the test tubes that **did not** react and place them in a hot water bath. Again, test the solutions with red litmus. List and write a balanced equation for only the metals that reacted with the warm water (do NOT re-write the metals from above) in order of **decreasing** activity in the space below:

Activity with hydrochloric acid: Fill 5 test tubes about 1/3 full of dilute hydrochloric acid. Obtain small pieces of the following metals with as nearly equal surface area as possible: Cu, Fe (assume it is a +2 charge), Mg (ribbon), Zn, and Al. Drop the metals into the test tubes and observe any evidence of reaction. Any gas formed will be presumed to be hydrogen. Do not be hasty in judging the action of metals in acid. The action may start slowly – if nothing is seen, you may gently heat the acid in the water bath to get the reaction started. You do not use litmus for this test. List and write a balanced equation for only the metals that reacted with the acid in order of **decreasing** activity in the space below:

Making an activity series based on observations: List the metals in decreasing order from your labs.

1. _____
2. _____
3. _____
4. _____

5. _____
6. _____
7. **hydrogen**
8. _____

Analysis: Why is hydrogen listed at #7 with one space listed for the remaining metal?