

Periodic Trends Lab

Purpose:

1. To gather data, and then compare and contrast the properties of Magnesium and Calcium metals as they react with water and hydrochloric acid.
2. To use the data gathered to develop a claim about the pattern/trend of reactivity for metals on the periodic table.
3. To use the claim regarding patterns to predict the behavior of other metals on the periodic table.

Background:

Word Bank: (*words can be used more than once, or not used at all!*)

- Anions
- Core
- Group
- Ions
- Lose
- Period
- Protons
- Share
- Cations
- Gain
- Inner
- Isotopes
- Neutrons
- Properties
- Row
- Valence

Chemical behavior is based on the number of _____ electrons in atoms.

The _____ electrons determine the _____ of the atom. Everything in the same _____ has the same number of _____ electrons.

Therefore, things in the same _____ exhibit the same behaviors or

_____. Some atoms want to gain electrons to form _____ and some

atoms want to lose electrons to form _____. Metals want to _____

electrons, and non-metals want to _____ electrons.

Hypothesis: Answer the purpose written above! How do you think the reactions will be different/same? Make sure you are making a hypothesis and not just stating a random guess!

If... [what are you going to do in the lab?]

Then... [what do you expect to see with each thing you do in the lab?]

Because... [tell me what it is about the size of the atoms and the ionization energy of the atoms that is going to explain what you expect to see...you are explaining why your prediction is an EDUCATED guess not just a RANDOM guess!]

If...
Then...
Because...

Materials:

2 pieces of Mg ribbon
2 small chunks of Ca

Distilled H₂O
Phenolphthalein

1.0M HCl
4 beakers

Forceps

Procedure:

- 1. Put on your safety goggles
- 2. Place 1 cm of distilled water in two of the beakers
- 3. Put 1-2 drops of phenolphthalein indicator into each beaker.
(Phenolphthalein turns pink in the presences of a base) **CAUTION:** *Phenolphthalein solution is poisonous and flammable. Do not get it in your mouth; do not swallow any. Be sure there are no flames in the lab when you are using it.*
- 4. Using forceps, put one piece of the Mg ribbon into one of the beakers with water.
- 5. Using forceps put a small chunk of Ca and put it into the other beaker with water
CAUTION: *Do not touch the Ca with your hands.*
- 6. Observe the reactions for several minutes and record the observations in your data table.
- 7. Have the instructor put a small amount of 1.0 M HCl in the two remaining beakers.
- 8. Place the second piece of Mg in one of the beakers with HCl and the second Ca chunk in the other beaker of HCl.
- 10. Observe and record your findings, include how fast the reaction occurred.

Observations		
Metal	Reaction with H ₂ O	Reactions with HCl
Mg		
Ca		