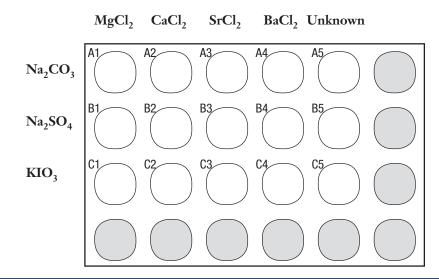


## Periodic Trends and the Properties of Elements

## Data Table A. Activity of Metals

		Calcium		Magnesium		Aluminum	
Reaction with H <sub>2</sub> O	Observations						
	Litmus test	Before?	After?	Before?	After?	Before?	After?
Reaction with HCl	Observations	Initial temp Final temp		Initial temp Final temp		Initial temp Final temp	
	Match test (optional)						

## Data Table B. Solubility of Alkaline Earth Metal Compounds



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## Post-Lab Questions (Use a separate sheet of paper to answer the following questions.)

- 1. Which group IIA metal, magnesium or calcium, is more active? Cite your evidence.
- 2. Which period 3 metal, magnesium or aluminum, is more active? Cite your evidence.
- 3. Rank the three metals tested in Part A from most active to least active.
- 4. Write a general statement describing the periodic trend in metal activity across a group (vertical column) of the periodic table.
- 5. Write a general statement describing the periodic trend in metal activity within a period (horizontal row) of the periodic table.
- 6. Locate the following metals on the periodic table: *magnesium*, *potassium*, and *sodium*. Based on your answers to Questions #4 and 5, rank these metals in order of their expected activity, from most active to least active.
- 7. Litmus paper changes color in acidic (red) and basic (blue) solutions. The word alkaline is a synonym for basic. Why are the two words "alkaline" and "earth" used to name the Group IIA metals?
- 8. In Part B, which alkaline earth metal formed the most precipitates? The fewest?
- 9. Write a general statement that describes the periodic trend in the solubility of alkaline earth metal compounds.
- 10. Use the solubility pattern observed for the known and unknown alkaline earth compounds in Part B to deduce the identity of the unknown alkaline earth metal. Explain your reasoning.
- 11. *(Optional)* Using Equation 1 in the Background Section as an example, write a chemical equation for each precipitateforming reaction that was observed for *strontium* in Part B. Include the abbreviations (aq) and (s) to show what compound is responsible for the precipitate in each case.