

## To Form or Not to Form - That is the Question Application

### Problem:

How can you write formulas for the reaction between metals and solutions based on your observations?

### Materials:

test tubes  
forceps  
pieces of iron, lead, copper, zinc, and magnesium  
0.1 M solutions of  $\text{Pb}(\text{NO}_3)_2$ ,  $\text{CuSO}_4$ ,  $\text{AgNO}_3$ ,  $\text{HCl}$ ,  $\text{KI}$

### Hazard Warning:

Wear your safety goggles and apron throughout this experiment. Remember that silver nitrate will stain skin.

### Procedure:

1. Combine each metal with each of the solutions, one at a time.
2. Make a data table to organize your observations, listing which metals produce reactions.
3. Write all of the possible chemical formulas formed during the reactions.

### Summing Up:

1. Explain how you knew that new compounds were formed?
2. Could there be more than one formula for any of the compounds formed from the reactions? Why or why not?
3. Did all of the reactions create new compounds? How could you tell?
4. What is a possible explanation of why some elements reacted with the individual solutions and others did not? Do you see any patterns?