**Chemistry A Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Period\_\_\_\_\_\_**

## First the hamburger analogy

### My recipe for a bacon double cheeseburger is:

* 1 hamburger bun
* 2 hamburger patties
* 2 slices of cheese
* 4 strips of bacon

### Based on this recipe:

1. If I have five bacon double cheeseburgers:
   1. How many hamburger buns do I have?
   2. How many hamburger patties do I have?
   3. How many slices of cheese do I have?
   4. How many strips of bacon do I have?
2. How many bacon double cheeseburgers can you make if you start with:
   1. 1 bun, 2 patties, 2 slices of cheese, 4 strips of bacon
   2. 2 bun, 4 patties, 4 slices of cheese, 8 strips of bacon
   3. 1 dozen bun, 2 dozen patties, 2 dozen slices of cheese, 4 dozen strips of bacon
   4. 1 mole bun, 2 mole patties, 2 mole slices of cheese, 4 mole strips of bacon
   5. 10 bun, 20 patties, 2 slices of cheese, 40 strips of bacon
3. If you had fixings for 100 bacon double cheeseburgers, but when you were cooking you ruined 10 of them. What percentage of the bacon double cheeseburgers do you actually make?

## Now, the chemistry problem.

### Here are two examples of chemical recipes:

* Na+ + Cl- -> NaCl
* 1 mole of H2SO4 + 2 mole NaOH produce 1 mole Na2SO4 + 2 mole H2O

### Based on the recipes above:

1. If I have 1 mole of NaCl
   1. How many moles of sodium do I have?
   2. How many moles of Chloride do I have?
2. If I want to make 5 moles of Na2SO4:
   1. How many moles of H2SO4 do I need?
   2. How many moles of NaOH do I need?
3. How much Na2SO4 can I make if I have:
   1. 1 mole of H2SO4 and 2 mole of NaOH
   2. 10 mole of H2SO4 and 20 mole of NaOH
   3. 0.1 mole of H2SO4 and 0.2 mole of NaOH
   4. 1 mole of H2SO4 and 20 mole of NaOH
   5. 0.42 mole of H2SO4 and 0.65 mole of NaOH
   6. 5 grams of H2SO4 and 5 grams of NaOH