Titration Problem Steps

1. Write and balance the equation

$$\text{Acid} + \text{Base} \rightarrow H_2O + \text{salt} + (CO_2)$$

Salt forms from positive ion from base and negative ion from acid. Charge should add to zero

(CO_2 only forms if base is a carbonate)

2. Use molarity (M) and volume (L) of the acid or base to find the moles of that acid or base. M x V(L) = moles

3. Use the coefficients from the balanced equation to find moles of the unknown acid or base.

$$\text{moles unknown} = (\text{moles known})\left(\frac{\text{unknown coefficient}}{\text{known coefficient}}\right)$$

4. Use the moles you have just determined to find either a molarity or mass %

Mass % (purity)	Molarity
Moles known (from step 3) x Molar mass of unkown = Mass of unknown ↓ $\left(\frac{\text{mass of unknown}}{\text{mass of impure sample}}\right)$ x100 = % purity	$\frac{\text{Moles known (from step 3)}}{\text{Volume (L) of unknown}}$ = Molarity

- Volumes must be in liters (L). Divide mL by 1000 to convert to L.