Empirical Formula of Chlorides

Calculations

1. Calculate the slope of the graphs. This slope will give you the ratio of metal chloride mass to metal mass
2. In terms of moles,
   Slope = ((atomic mass of metal) + (atomic mass Cl) **r)/(**atomic mass metal)
   where **r** is the ratio of metal to Cl in the metal chloride
3. Solve for **r**
   r is the ratio of metal to chloride in the compound
4. If r = about 1, the formula is MCl
   If r = about 2, the formula is MCl_2
   If r = about 3, the formula is MCl_3
   M is the Metal:

Example: Calcium Chloride

Slope of the graph is 2.7

2.7 = (40.0g/mol Ca + 35.5**r** g/mol Cl)/40.0 g/mol Ca
2.7 = 1 + 35.5**r**/40.0
1.7 = 35.5**r**/40.0
r = (1.7 x 40.0) / 35.5
r = 1.94

Thus the ratio of Ca to Cl in Calcium Chloride is about 1:2

The empirical formula of Calcium Chloride is $CaCl_2$