## Generic Stoichiometry

Z*(aq)* + 2 Y*(aq)* 🡪 5 M*(s)* + T2*(g)*

Given the following information:

 Z = 20 g/mol

#  Y = 10 g/mol

#  M = 6 g/mol

 T = 5 g/mol

If you combine 100 g of solution Z with 1.8 x 1024 molecules of solution Y; how many moles of M will precipitate out of solution? What volume of T2 gas will be produced at STP?

 Z*(aq)* + 2 Y*(aq)* 🡪 5 M*(s)* + T2*(g)*

 100 g 1.8 x 1024 molecules x mol

 / 20 g/mol /6.02 x 1023 molecules/mol

 [2:5]

"Have" 5 mol Z 3 mol Y

# "Need" 1.5 mol Z 10 mol Y

 [2:1]

x mol M = 1.8 x 1024 ~~molecules Y~~  x (1 mol Y) x (5 mol M) = mol M

 (6.02 x 1023 ~~molecules Y~~) (2 mol Y)

x L T2 = 3 ~~mol Y~~ x (1 mol T2) x (22.4 L T2) = L T2

 (2 ~~mol Y~~) (1 mol T2)