# Warm Up

WANT / HAVE

**Determine the number of moles in 50.0 g of $FeCl_3$.**

$$50.0\text{ g } FeCl_3 \times \frac{1\text{ mol } FeCl_3}{162.20\text{ g } FeCl_3} = \boxed{0.308\text{ mol } FeCl_3}$$

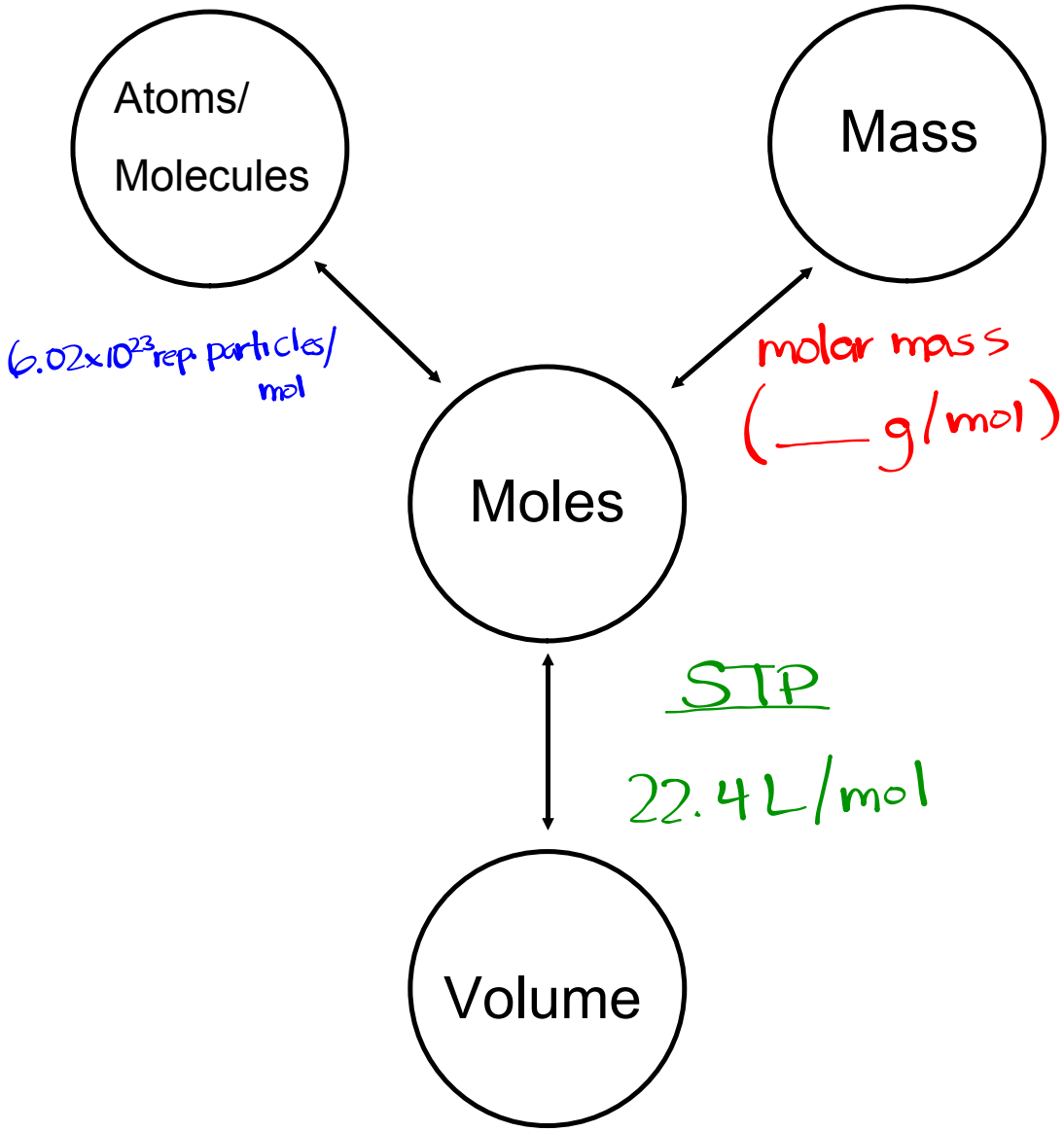
$FeCl_3 \rightarrow (1 \times 55.85) + (3 \times 35.45) = 162.20\text{ g/mol}$

**Find the mass of 7.97 moles of chlorine.**

$$7.97\text{ mol } Cl_2 \times \frac{70.90\text{ g } Cl_2}{1\text{ mol } Cl_2} = \boxed{565\text{ g } Cl_2}$$

$Cl_2 \rightarrow (2 \times 35.45) = 70.90\text{ g/mol}$

# #7,8, 13-15 p. 295


Atoms/
Molecules
Mass
$6.02 \times 10^{23}$ rep. particles/ mol
molar mass
(___ g/mol)
Moles
STP
22.4L/mol
Volume

# Mole-Volume Relationship

**Avagadro's Hypothesis**
Equal volumes of gases at the same temperature and pressure contain equal number of particles.

**Standard temperature and pressure (STP)**
0.$^{o}$C and 101.3kPa

At STP, 1 mol (6.02 x$10^{23}$ representative particles) of any gas contains 22.4 L.

$V_m$ @ STP = 22.4 L/mol

# Calculating Volume at STP

Ex. Determine the volume (L) of oxygen gas that 0.375 mol will occupy at STP.

$$0.375 \text{ mol } O_2 \times \frac{22.4 \text{ L } O_2}{1 \text{ mol } O_2} = 8.40 \text{ L } O_2$$

# Homework

p. 301 #20, 21

p. 303 #24-28, 31