

EXAMPLE OF MOLAR MASS CALCULATION

Actual meaning: Mass you need to weigh out to get 1 mole of substance.

Assume: 1 mole H_2O

$$\left(\frac{2 \text{ atom H}}{1 \text{ molecule } H_2O} = \frac{2 \text{ mole H}}{1 \text{ mole } H_2O} \right)$$

so:

$$\underbrace{\left(\frac{2 \text{ mole H}}{1 \text{ mole } H_2O} \right) \left(\frac{1 \text{ g H}}{1 \text{ mole H}} \right)}_{\text{mass of H in } 1 \text{ mole } H_2O} + \underbrace{\left(\frac{1 \text{ mole O}}{1 \text{ mole } H_2O} \right) \left(\frac{16 \text{ g O}}{1 \text{ mole O}} \right)}_{\text{mass of O in } 1 \text{ mole } H_2O} = \frac{18 \text{ g } H_2O}{1 \text{ mole } H_2O}$$

Abbreviated form (to be used in showing work)

$$\text{molar mass } H_2O; \quad 2(1 \text{ g H}) + 1(16 \text{ g O}) = \frac{18 \text{ g } H_2O}{1 \text{ mole } H_2O}$$

(mm)

Special Case (when Cl has an odd subscript)

$$\text{mm } NaCl = 1(23 \text{ g Na}) + 1(35.5 \text{ g Cl}) = \frac{58.5 \text{ g } NaCl}{1 \text{ mole } NaCl}$$

round to whole number
↓
= $\frac{59 \text{ g } NaCl}{1 \text{ mole } NaCl}$