

Name _____ Date _____ Period _____ 6 Reteach 6.5

Chem 07-24 Mole Mass Conversions - 6 Reteach - Chemical Quantities

The molar mass of an element or a compound is used to convert grams of a substance into moles or to convert moles of a substance into grams.

Example 1

How many grams are in 0.33 moles of calcium carbonate?

Solution Process

First write out the formula for calcium carbonate. CaCO_3

Second, determine the molar mass for calcium carbonate.

Use the molar mass to convert from moles to grams.

$$\frac{1 \text{ mole Ca} \mid 40.08 \text{ g Ca}}{\mid 1 \text{ mole Ca}} = 40.08 \text{ g Ca}$$

$$\frac{1 \text{ mole C} \mid 12.01 \text{ g C}}{\mid 1 \text{ mole C}} = 12.01 \text{ g C}$$

$$\frac{3 \text{ moles O} \mid 16.00 \text{ g O}}{\mid 1 \text{ mole O}} = 48.00 \text{ g O}$$
$$\frac{100.09 \text{ g CaCO}_3}{\text{mole}}$$

$$\frac{0.33 \text{ moles CaCO}_3 \mid 100.09 \text{ g CaCO}_3}{\mid 1 \text{ mole CaCO}_3} = 33 \text{ g CaCO}_3$$

Converting from grams to moles uses the same conversion factor.

Example 2

Determine the number of moles in 54.5 g of CaCO_3 .

Solution Process

$$\frac{54.5 \text{ g CaCO}_3 \mid 1 \text{ mole CaCO}_3}{\mid 100.09 \text{ g CaCO}_3} = 0.545 \text{ mole CaCO}_3$$

Practice Problems

- Find the mass in grams of each quantity.
 - 8 moles lead IV oxide
 - 0.75 moles hydrogen sulfide
 - 0.001 moles SiH_4
 - 1.5×10^{-2} moles oxygen gas molecules
 - 2.3 moles $\text{HC}_2\text{H}_3\text{O}_2$
- Find the number of moles in each quantity.
 - 0.5 g sodium bromide
 - 13.5 g magnesium nitrate
 - 1.02 g MgCl_2
 - 0.001 g CHCl_3
 - 1.5×10^{-3} g $\text{C}_3\text{H}_6(\text{OH})_2$