

The Mole

Introduction

What do chemists use to represent how much of a substance they have?

What if you want to know how many atoms or molecules of a substance?

Definition

1 mol =

1 mol =

1 mol =

Summary:

Converting Moles and Particles

Conversion Steps

1. Write out the conversion factor and all variables.
2. Set-up the problem. Write what you start with and multiply by the appropriate conversion factor.
3. Solve the problem for correct significant figures!

Example 1

How many eggs are in a dozen?

Conversion Factor:

How many eggs are in 5 dozen?

Example 2

How many atoms are in a mole?

Conversion Factor:

How many molecules are in 3 moles?

Converting Moles and Mass

What is the basis of the atomic mass unit (amu) on the periodic table?

What is the basis of the mole or Avogadro's number? How is it defined?

Conclusion:

Molar Mass – the mass in grams of one mole of a substance

Elements:

Compounds:

Conversion Factors

Conversion factors will simply use the molar mass of an element or a compound. Write the molar mass for the following:

1. Ca
2. Cl₂
3. CaCl₂

Examples

Convert between moles and mass using molar mass as a conversion factor.

1. 3.57 mol S
2. 2.45 mol H₂
3. 25.0 g C
4. 0.25 g CuSO₄