<u>**CONCEPT:** MOLARITY</u>

<u>**Calculate Molarity**</u>

● **Molarity** (M; concentration) represents the number of _____ of *solute* per _____ of *solution*.

Molarity Formula
$\text{Molarity} = \dfrac{\text{solute}}{\text{solution}}$

> **EXAMPLE:** Calculate the molarity of a solution prepared by dissolving 23.7 g NaOH in enough water to make 2.50 L of solution.

<u>**Using Molarity to Calculate Unknowns**</u>

● Problems with a Molarity value present can use a **given amount** and **conversion factors** to isolate an **end amount**.

   □ The molarity value itself can represent one of those **conversion factors**.

   □ For example, 5.8 M NaCl represents 5.8 moles NaCl within 1.0 L of solution.

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> **EXAMPLE:** How many grams of Na_3PO_4 (MW: 163.94 g/mol) are present in 300.0 mL of a 0.550 M Na_3PO_4 solution?

PRACTICE: What volume in (µL) of 0.125 M HBr contains 0.170 moles HBr?

PRACTICE: Hypernatremia is a medical condition where a patient has high levels of sodium in their blood, and is the result of the body containing too little water. A patient has a measured sodium level of 165 mM. If 30.0 mL of their blood were drawn, what mass (in ng) of sodium would be present?

PRACTICE: 2.64 grams of an unknown compound was dissolved in water to yield 150 mL of solution. The concentration of the solution was 0.075 M. What was the molecular weight of the substance?

PRACTICE: A solution with a final volume of 750.0 mL was prepared by dissolving 30.00 mL of benzene (C_6H_6, density = 0.8787 g/mL) in dichloromethane. Calculate the molarity of benzene in the solution.