

CHAPTER OVERVIEW

5: The Mole and Chemical Formulas

The mole concept is central to any chemistry calculation based on experimental results. The mole is how we relate the unbelievably small atoms and molecules that make something up to the measurable properties such as mass which we may observe in a laboratory setting. A proper understanding of the mole concept is essential in order to do any calculations on experimental data. The mole concept is introduced in this chapter, and will appear again in many of the forthcoming chapters. Mastering the concepts in those later chapters is dependent upon mastering the mole concept in this chapter. This might be the most important chapter in the textbook!

Because of the centrality of the mole concept throughout this textbook, here are a few guidelines you might want to consider as you begin studying this chapter:

- Refresh your understanding of conversion factors by reviewing the appropriate section of this textbook. Conversion factors are necessary in order to do all of the mole calculations introduced in this chapter.
- Master each section of this chapter before moving on to the next section. Perhaps more so than in any chapter we have looked at so far, the sections of this chapter build on each other. You might imagine it like a staircase, where you have to step on the first step before you can move on to the next one.
- Do additional homework problems if you are struggling to understand the concepts. The exercise section of this chapter includes links to additional homework sets and answer keys that you may practice if necessary.

[5.1: Avogadro's Number](#)

[5.2: Conversions Between Moles and Atoms](#)

[5.3: Molar Mass](#)

[5.4: Conversions Between Moles and Mass](#)

[5.5: Conversions Between Mass and Number of Particles](#)

[5.6: Percent Composition](#)

[5.7: Determining Empirical Formulas](#)

[5.8: Percent of Water in a Hydrate](#)

[5.9: Determining Molecular Formulas](#)

[5.10: Mole Road Map](#)

[5.E: The Mole Concept \(Exercises\)](#)

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