

## CHAPTER OVERVIEW

### 3.1: Basics

In this chapter various physics concepts and definitions needed for the study of sound, acoustics and musical instruments are presented. If these terms are already familiar to you, you may wish to skim this chapter and skip to the next one on simple harmonic motion.

In science words have specific narrow definitions that sometimes don't correspond to their use in everyday language. These definitions are relatively easy to memorize but surprisingly hard to apply correctly. The only way to really understand these concepts and how to apply them is to work the examples (group work, homework, simulation exercises, etc.) that are part of this book.

It is also important to realize that science is in the business of measuring things. This means that, unlike a math class, any number you see is a measurement of something and has a unit attached to it. So we never have 9.5 but we can have 9.5 centimeters or a frequency of 9.5 hertz (Hz). This book uses the metric system but other sets of units are mentioned. Here is a useful site that converts *metric units* to other systems: [Conversion Calculator](#).

#### Key Terms:

Position, displacement, time, velocity, speed, acceleration, mass, weight, density, linear density, force, tension, Newton's three laws, pressure, the ideal gas law, Bernoulli's principle, energy, conservation of energy, power, the first and second laws of thermodynamics.

#### [3.1.1: Basics- Work and Energy](#)

##### [3.1.1.1: Motion and Force](#)

##### [3.1.1.2: Newton's Three Laws](#)

##### [3.1.1.3: Density and Pressure](#)

##### [3.1.1.4: Energy and Power](#)

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#### [3.1.2: Basics- The Molecular Basis of Matter](#)

##### [3.1.2.1: Molecular Dynamics Simulation](#)

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