

## Core Science Concepts

|                | Weight   | Volume  | Material  | Matter  |
|----------------|--|---|---|---|
| <b>Grade 3</b> | The weight of objects can be compared using a pan balance and standard (gram) units.   | Two solid objects cannot occupy the same space.<br><br>The amount of 3D space that objects occupy can be compared.                                | Objects can be described in terms of their weight and volume and the materials they are made of (clay, cloth, paper, etc.).<br><br>Materials have observable physical properties such as color, size, texture, flexibility, etc.<br><br>Same size objects can have different weights when they are made of different materials. | Materials can be subdivided into small pieces and the pieces still have weight.   |
| <b>Grade 4</b> | The weight of solids and/or liquids can be compared using a digital scale and can be represented on a weight line or a table.<br><br>Weight is conserved during crushing and reshaping | Liquid and solid volumes can be measured in cubic centimeters.<br><br>When immersed, a solid displaces a liquid volume equal to the solid volume. | The relationship between weight and volume (i.e. density) is a property of solid and liquid materials.  | Matter can be divided into tiny pieces, and even the tiniest pieces have weight and take up space.  |
| <b>Grade 5</b> | Weight is conserved during dissolving, freezing, melting, evaporation and condensation.  | Volume may not be conserved in phase change.  | Air is a mixture of gaseous materials composed of particles too small and spread apart to see.<br><br>Melting, freezing, evaporation and condensation change the form of matter but do not change the material.   | Matter is composed of particles that have weight, occupy space, and are too small to see.<br><br>Gases, liquids and solids are all forms of matter and have weight and take up space. |

A carefully constructed sequence of curriculum progressively builds student understanding about a network of core science concepts across a three-year period. These concepts—weight, volume, material including the material property of density, and matter— provide an important foundation for understanding science in secondary school.