

## Core Science Concepts for Grade 5 Scientist Case 2

	Weight	Volume	Material	Matter
Grade 3	The weight of objects can be compared using a pan balance and standard (gram) units.	Two solid objects cannot occupy the same space.  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.).  Materials have observable physical properties such as color, size, texture, flexibility, etc.  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.
Grade 4	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.  Weight is conserved during crushing and reshaping	Liquid and solid volumes can be measured in cubic centimeters.  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.
Grade 5	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.  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.  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.