

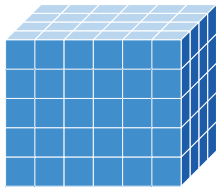
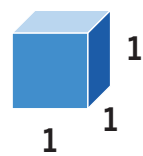
Mathematical Background

Here is an overview of the content your students will learn in this unit.

Volume, Factors, and Expressions

Understanding Concepts of Volume and Developing Volume Formulas TEKS 5.4.G, 5.4.H, 5.6.A, 5.6.B

- A **unit cube** is a cube with a side length of 1 unit.
- Volume** is the amount of space a three-dimensional object takes up. It can be measured by packing an object with unit cubes so that there are no gaps or overlaps.
 - » The volume of a unit cube is 1 cubic unit.
 - » Volume is measured in **cubic units**, such as cubic inches, cubic feet, or cubic centimeters.
- Rectangular prisms** are composed of layers, or equal groups of unit cubes. Describing the volume can be done by thinking about layers in different ways.
- The volume of any rectangular prism can be determined by:
 - » Multiplying the dimensions, $V = \ell \times w \times h$ or $V = s \times s \times s$ for a cube.
 - » Multiplying the area of a base and its corresponding height, $V = Bh$.



Face

side
front
top

Description

6 layers of 20 cubes
4 layers of 30 cubes
5 layers of 24 cubes

Volume expressions

$6 \times 4 \times 5$ 6×20

Identifying Prime and Composite Numbers TEKS 5.4.A

- Whole numbers are made up of the product of 2 or more factors.
- Whole numbers are either **prime** or **composite**.
 - » A prime number has only 2 factors: 1 and itself.
 - » A composite number has more than 2 factors.

Prime	Composite
7 is a prime number.	12 is a composite number.
Its factors are:	Its factors are:
7 and 1	12, 6, 4, 3, 2, 1

Simplifying Numerical Expressions, Including up to 2 Levels of Grouping TEKS 5.4.E, 5.4.F

- To **simplify** a numerical expression means to determine its value.
- The order of operations indicates which operations should be performed first when simplifying a numerical expression.
 - » Perform all operations within grouping symbols first. Then multiply or divide in order from left to right. Last, add or subtract in order from left to right.
 - » **Parentheses** () and **brackets** [] are considered grouping symbols because they group operations together.

$8 + 3 \times 10 = 8 + 30$ **Multiply first.**
 $= 38$ **Then add.**

$(8 + 3) \times 10 = 11 \times 10$ **Add first. ()**
 $= 110$ **Then multiply.**

$4 \times [15 - (6 + 1)] = 4 \times [15 - 7]$ **Add first. ()**
 $= 4 \times 8$ **Then subtract. []**

Unit Investigation

Lesson 1 is the Unit Investigation. Students determine the relative capacities of containers to build curiosity and apply their own knowledge in a variety of ways. Use the **Caregiver Connection** to help students continue to explore the math they will see in the unit.

Caregiver Connection

Students may enjoy comparing the capacities of different containers from home to further develop their spatial reasoning. Encourage them to identify those with a surprisingly large or small capacity.