

**SAU 50
Grade 5
Mathematics
Geometry**

Geometry: describe, analyze, compare, and classify [two-dimensional shapes](#) and understand [volume](#).

SAU 50 District Competency:

Students will independently use their learning to design and create a visual representation using spatial relationships and measurement.

Essential Questions

- How do we define locations on a two dimensional plane, and how can it help you?
- How does geometry describe real world objects and their relationship to one another?
- How does the volume affect the design of rectangular prism?

Acquisition

Students will demonstrate the following to meet the standards.

- I can graph, identify and write coordinate points on the first quadrant of the coordinate plane.
- I can use points on a coordinate graph to model a real world problem.
- I can interpret coordinate values on a graph to solve real world problems.
- I can classify two-dimensional shapes based on attributes within the hierarchy of properties.
- I can convert measurement units within a given measurement system to solve multi-step problems.
- I can find the volume of a rectangular prism by counting unit cubes and deriving the formula.
- I can model the volume the rectangular prism 3 different ways.
- I can apply the formulas $V = l \times w \times h$ and $V = b \times h$ to find volumes of right rectangular prisms to solve real-world mathematical problems.

Standards

NH College and Career Ready Standards

Key to Standard Notation:

5.G.1: 5 (*grade level*) **G** (*domain: Geometry*) or **MD** (*Measurement and Data*) **1** (*number of the standard*)

Geometry

Graph points on the coordinate plane to solve real-world and mathematical problems.

5.G.1: Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (*x-axis* and *x-coordinate*, *y-axis* and *y-coordinate*).

5.G.2: Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.

Classify two-dimensional figures into categories based on their properties.

5.G.3: Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category.

5.G.4: Classify two-dimensional figures in a hierarchy based on properties.

Operations and Algebraic Thinking

Analyze patterns and relationships.

5.OA.3: Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane.

Measurement and Data

Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.

5.MD.1: Convert among different-sized standard measurement units within a given measurement system, and use these conversions in solving multi-step, real world systems.

5.MD.3: Recognize volume as an attribute of solid figures and understand concepts of volume measurement.

5.MD.3a: A cube with side length 1 unit, called a "unit cube," is said to have "one cubic unit" of volume, and can be used to measure volume.

5.MD.3b: A solid figure which can be packed without gaps or overlaps using n unit cubes is said to have a volume of n cubic units.

5.MD.4: Measure volume by counting unit cubes, using cubic cm, cubic in, cubic ft, and

improvised units.

5.MD.5: Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume.

5.MD.5a: Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent threefold whole-number products as volumes, to represent the associative property of multiplication.

5. MD.5b: Apply the formulas $V = l \times w \times h$ and $V = b \times h$ for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real world and mathematical problems.

5.MD.5c: Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems.

[New Hampshire College and Career Ready Standards](#)

References:

National Governors Association Center for Best Practices, Council of Chief State School Officers. (2010). *Common Core Standards for Mathematics* (United States, National Governors Association Center for Best Practices, Council of Chief State School Officers). Retrieved August 10, 2016, from http://www.corestandards.org/assets/CCSSI_Math%20Standards.pdf

Math is fun/definitions. (n.d.). Retrieved April 17, 2017, from <http://www.mathisfun.com/definitions>