

Measurement and Data: Grade 5

Stage 1 Desired Results

ESTABLISHED GOALS:

Competencies:

- **Students will demonstrate the ability to reason with two- and three- dimensional figures in order to measure, categorize, and classify.**
- **Students will demonstrate the ability to solve arithmetic and algebraic problems by utilizing effective strategies and applying properties of operations to rational numbers.**
- **Students will demonstrate the ability to measure by converting between units of a system using rational numbers**
- **Students will demonstrate the ability to represent and interpret data WITH graphs involving fractions of a unit.**

Content Standards:

- 5.MD.1 Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.
- 5.MD.2 Make a line plot to display a data set of measurements in fractions of a unit ($\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$). Use operations on fractions for this grade to solve problems involving information presented in line plots. For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally.
- 5.MD.3 Recognize volume as an attribute of solid figures and understand concepts of volume measurement.
- 5.MD.4 Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.
- 5.MD.C.5 Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume.
- MP.3 Construct viable arguments and critique the reasoning of others.
- MP.5 Use appropriate tools strategically.
- MP.6 Attend to Precision.
- MP.8 Look for and express regularity in repeated reasoning.

Transfer

Students will be able to independently use their learning to use measurement processes in everyday life and organize data to construct meaning.

Meaning

ENDURING UNDERSTANDINGS

Students will understand that...

- measurement processes are used in everyday life to describe and quantify the world.
- data displays describe and represent data in alternative ways.

ESSENTIAL QUESTIONS

- **How does “what” we measure influence “how” we measure?**

Acquisition

Students will know...

- the meanings of the prefixes for the metric system
- conversion factors for the common US customary units
- a change in dimension affects measurement.
- that volume as an attribute of a solid figure.
- that multiplying the area of the base ($l \times w = b$), by the height ($b \times h = V$) will result in the volume.
- that finding the volume of a solid figure requires filling it with unit cubes without gaps and overlaps.
- that finding the product of three numbers (to calculate volume) relates to the associative property of multiplication.

vocabulary:

convert, conversion, line plot, unit fraction, volume, unit cube, cubic unit, right rectangular prism, additive

Students will be skilled at...

- converting between measurements within a measurement system.
- solving multi-step word problems involving measurement conversions.
- creating line plots to represent data where the intervals on the axes are fractions of units.
- using operations of fractions to solve real-world problems where the data was presented in line plots.
- using various cubed units when determining volume by counting
- finding the volume of a right rectangular prism by counting cubes, multiplying edge lengths, and using a formula.
- demonstrating that the volume of a right rectangular prism is the same using either packing or multiplying edge lengths.
- finding the volume of a solid figure composed of right rectangular prisms by decomposing it into two non-overlapping parts and adding the volumes of the non-overlapping parts.
- solving real world problems involving volume.

<i>Content Area Literacy Standards</i>	<i>21st Century Skills</i>
not applicable	• <i>reason effectively</i> • <i>solve problems</i> • <i>use and manage information</i>

Stage 2 - Evidence	
<i>Evaluative Criteria</i>	<i>Assessment Evidence</i>
	PERFORMANCE TASK(S):
	OTHER EVIDENCE: STAR math assessment

Stage 3 – Learning Plan	
<i>Summary of Key Learning Events and Instruction</i>	
<i>Language Arts Integration</i>	<i>Mathematics Integration</i>
• 1.OA.1 Use	• 1.OA.1 Use
<i>Technology Integration</i>	<i>District Materials</i>
• 1.OA.1 Use	