Unit Plan 4: Mathematics - Measurement and Data (Grade 5)

Content Area: **Mathematics**
Course(s): **Math 5**
Time Period: **Marking Period 4**
Length: **April to June**
Status: **Published**

Established Goals/Standards

Please choose the appropriate Goals/Standards from the Standards tab above.

MA.5.NF.A.1	Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators.
MA.5.NF.A.2	Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers.
MA.5.NF.B.3	Interpret a fraction as division of the numerator by the denominator ($a/b = a \div b$). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem.
MA.5.NF.B.4	Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.
MA.5.MD.A.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.
MA.5.MD.B.2	Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots.
MA.5.MD.C	Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.
MA.5.MD.C.3	Recognize volume as an attribute of solid figures and understand concepts of volume measurement.
MA.5.MD.C.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.
MA.5.MD.C.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.
MA.5.MD.C.4	Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and non-standard units.
MA.5.MD.C.5	Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume.
MA.5.MD.C.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, e.g., to represent the associative property of multiplication.
MA.5.MD.C.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.
MA.5.MD.C.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.
MA.5.G.A.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.

Essential Questions

Please add your Essential Questions by clicking on the Lists tab above.

- How can line plots be used to represent data and answer questions?
- How can numbers be used to describe certain data sets?
- How can three-dimensional shapes be represented and analyzed?
- What are customary measurement units and how are they related?
- What are metric measurement units and how are they related?
- What does the volume of a rectangular prism mean and how can it be found?

Enduring Understanding

Please add your Enduring Understandings by clicking on the Lists tab above.

- Each type of graph is most appropriate for certain kinds of data. A line plot organizes data on a number line and is useful for showing visually how a set of data is distributed.
- Organize and represent data on a line plot and use the information from the line plot and operations to solve problems.
- Relationships between measurement units of the same length can be expressed as an equation. (ex. 1 meter = 100 cm)
- Relationships exist between customary and metric units that enable you to convert between units of length, capacity, and weight by multiplying or dividing.
- Three-dimensional or solid figures have length, width, and height. Many can be described, classifed, and analyzed by their faces, edges, and vertices.
- Volume can be found by multiplying its base area by its height or its length by its width by its height.
- Volume is a measure of the amount of space inside a solid figure. Volume can be measured by counting the number of cubic units needed to fill a three dimensional object.

Content

Students will be able to:

- identify three-dimensional shapes according to faces, edges, and vertices.
- identify different views of a solid.

- use objects to act out and break apart problems into simpler ones in order to reach a solution.
- determine the volume of rectangular solids.
- count cubic units and use formulas to find the volume of rectangular prisms.
- find volumes of irregular solids.
- use objects and reasoning to find the volume of solid figures.
- convert from one unit of customary length (inches, feet, yards, and miles) to another.
- convert from one unit of customary capacity (gallons, quarts, pints, cups, and fluid ounces) to another.
- convert from one customary unit weight (ounces, pounds, and tons) to another and apply this skill to compare quantities.
- convert one metric unit of length (kilometer, meter, centimeter, and millimeter) into another.
- convert from one metric unit of capacity (liter and millimeter) to another.
- convert from one metric unit of mass (milligrams, grams, and kilograms) to another.
- find the hidden question or questions to solve multiple-step problems.
- learn and understand how to draw line plots, interpret points, and recognize outliers.
- collect data and record data in frequency tables and line plots then interpret the results.
- learn how to make a line plot from data in a frequency table.
- learn how to use the information in a line plot to solve problems involving the data.
- write math explanations that relate to line graphs that show data changing over time.

Vocabulary students will know:

three-dimensional shape

cube

edge

face

vertex (plural: vertices)

cone

cylinder

prism

pyramid

volume

cubic unit

data

frequency table

line plot

outlier

sample

survey

Resources

Envision Resources

- www.pearsonsuccessnet.com
- textbook
- student online resources
- Daily Common Core Review
- Quick Checks
- Reteaching/Practice
- Math Centers

Unit lesson flipcharts

Make Solid Figure Activity

Online Games from teacher website

Mad Minutes

Survey Activity