Math Unit 3 (23-24)

Content Area: **Mathematics**
Course(s): **Mathematics 5**
Time Period: **March**
Length: **12 Weeks- 60 Instructional Days**
Status: **Published**

Unit Overview

Students will be working on:

- Convert and Display Units of Measure
- Plot Points in a Coordinate Plane
- Understand Volume
- Two- Dimensional Shapes

Priority Standards

MATH.5.OA.B.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.
MATH.5.M.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.
MATH.5.M.B.2.a	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.
MATH.5.M.B.2.b	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.
MATH.5.M.B.3	Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and non-standard units.
MATH.5.M.B.4.a	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.
MATH.5.M.B.4.b	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.
MATH.5.M.B.4.c	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.

MATH.5.DL.B.5	Make a line plot to display a data set of measurements in fractions of a unit (½, ¼, ⅛). Use operations on fractions for this grade to solve problems involving information presented in line plots.
MATH.5.G.A.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 (e.g., x-axis and x-coordinate, y-axis and y-coordinate).
MATH.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.
MATH.5.G.B.3	Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category.
MATH.5.G.B.4	Classify two-dimensional figures in a hierarchy based on properties.

Unit Learning Goals and Learning Targets

CCS Priority Standard	Learning Goals	Learning Targets
5.M.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.	-Students will be able to convert among different-sized standard measurement units within a given measurement system	I can write lengths using equivalent metric measures. (11-1) I can write masses and capacities using equivalent metric measures. (11-2) I can write lengths using equivalent customary measures. (11-3) I can write weights using equivalent customary measures. (11-4) I can write capacities using equivalent customary measures. (11.5) I can solve multi-step word problems involving units of measure. (11-7)
MA.5.G.A.1 - [Standard] - 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	-Students will be 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	I can identify and plot points in a coordinate plane. (12-1) I can relate points and find distances in a coordinate plane. (12-2)

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 (e.g., x-axis and x-coordinate, y-axis and y-coordinate).	given point in the plane located by using an ordered pair of numbers, called its coordinates.	I can draw and identify polygons in a coordinate plane. (12-3) I can graph and interpret data in a coordinate plane. (12-4) I can make and interpret line graphs. (12-5)
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.	Students will be able to 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	I can identify and plot points in a coordinate plane. (12-1) I can relate points and find distances in a coordinate plane. (12-2) I can draw and identify polygons in a coordinate plane. (12-3) I can graph and interpret data in a coordinate plane. (12-4) I can make and interpret line graphs. (12-5) I can use a graph to describe the relationship between two numerical patterns. (12-6)
MA.5.M.B.4.a - 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	-Students will be able to 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	I can find volumes of right rectangular prisms. (13-2) I can use a formula to find volumes of rectangular prisms.(13-3) I can find unknown dimensions of rectangular prisms.(13-4)

products as volumes, e.g., to represent the associative property of multiplication.		
MA.5.M.B.4.b - 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.	-Students will be able to 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.	I can use a formula to find volumes of rectangular prisms.(13-3) I can find unknown dimensions of rectangular prisms.(13-4) I can find volumes of composite figures. (13-5)
MA.5.G.B.4 - [Standard] - Classify two-dimensional figures in a hierarchy based on properties.	-Students will be able to classify two-dimensional figures in a hierarchy based on properties.	I can classify triangles by their angles and their sides. (14-1) I can classify quadrilaterals by their angles and their sides. (14-2) I can understand the hierarchy of quadrilaterals. (14-3)
MA.5.G.B.3 - [Standard] - Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category.	-Students will be able to understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category..	I can classify triangles by their angles and their sides. (14-1) I can classify quadrilaterals by their angles and their sides. (14-2) I can understand the hierarchy of quadrilaterals. (14-3)

- Students will be able to 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.
- Students will be able to convert among different-sized standard measurement units within a given measurement system
- Students will be able to 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.
- Students will be able to classify two-dimensional figures in a hierarchy based on properties.
- Students will be able to 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.
- Students will be able to understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category.
- Students will be 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.

Essential Questions

How do we convert measurements within systems?

How do we represent the inside of a 3 dimensional figure?

How do we graph ordered pairs?

What are the properties of 2 dimensional figures?

Materials and Resources

*Big Ideas Materials

*Stop watches/timers

*Multiplication and division charts

*Manipulatives (cubes, money, coins, counters)

*Paper (chart, graph, lined, and blank)

*Dry erase boards

Fabulous, Fraction Stories (Martha Crunch)

Grid paper

Counters

Number Lines

Masking Tape

Index Cards

Money

Number Lines

Google Classroom Math

Khan Academy Math

Reflex Math

Freckle Math

Math Aids http://www.math-aids.com/Fractions/

Math Drills Printable Worksheets https://www.math-drills.com/fractions/fractions_convert_improper_to_mixed_001.php

K5 Learning Geometry http://www.k5learning.com/free-math-worksheets/fifth-grade-5/geometry

Better Lessons (Measurement) https://betterlesson.com/community/directory/fifth_grade/measurement

Utilize TPT and purchase games/activities for Daily 3 in Math

Volumeville City Project

Unit Assessments

- Big Idea assessments
- Big Ideas End of Year Assessment
- iReady
- NJSLA

Learning Plan and Pacing Guides

Time Frame	Lesson	Standard(s)	Target
Chapter 11 **11 days**	Chapter 11 Opener: Convert and Display Units of Measure	Performance Task Preview & Vocabulary	
	Lesson 11.1: Length in Metric Units	5.M.A.1	Write lengths using equivalent metric measures.
	Lesson 11.2: Mass and Capacity in Metric Units	5.M.A.1	Write masses and capacities using equivalent metric measures.
	Lesson 11.3: Length in Customary Units	5.M.A.1	Write lengths using equivalent customary measures.
	Lesson 11.4: Weight in Customary Units	5.M.A.1	Write weights using equivalent customary measures.

	Lesson 11.5: Capacity in Customary Units	5.M.A.1	Write capacities using equivalent customary measures.
	Lesson 11.6: Make and Interpret Line Plots	5.DL.B.5	Make line plots and use them to solve problems.
	Lesson 11.7: Problem Solving: Measurement	5.M.A.1 5.DL.B.5	Solve multi-step word problems involving units of measure
	End of Chapter 11: Convert and Display Units of Measure	Day 1 Performance Task	
	End of Chapter 11: Convert and Display Units of Measure	Day 2 Centers	
	End of Chapter 11: Convert and Display Units of Measure	Day 3 Chapter Assessment	
Chapter 12 **11 days**	Chapter 12 Opener: Patterns in the Coordinate Plane	Performance Task Preview & Vocabulary	
	Lesson 12.1: Plot Points in a Coordinate Plane	5.G.A.1 5.G.A.2	Identify and plot points in a coordinate plane.
	Lesson 12.2: Relate Points in a Coordinate Plane	5.G.A.1 5.G.A.2	Relate points and find distances in a coordinate plane
	Lesson 12.3: Draw Polygons in a Coordinate Plane	5.G.A.1 5.G.A.2	Draw and identify polygons in a coordinate plane.
	Lesson 12.4: Graph Data	5.G.A.1 5.G.A.2	Graph and interpret data in a coordinate plane.
	Lesson 12.5: Make and Interpret Line Graphs	5.G.A.1 5.G.A.2	Make and interpret line graphs.
	Lesson 12.6: Numerical Patterns	5.OA.B.3	Create and describe numerical patterns.
	Lesson 12.7: Graph and Analyze Relationships	5.OA.B.3 5.G.A.2	Use a graph to describe the relationship between two numerical patterns.
	End of Chapter 12: Patterns in the Coordinate Plane	Day 1 Performance Task	
	End of Chapter 12: Patterns in the	Day 2 Centers	

	Coordinate Plane		
	End of Chapter 12: Patterns in the Coordinate Plane	Day 3 Chapter Assessment	
Chapter 13 **9 days**	Chapter 13 Opener: Understand Volume	Performance Task Preview & Vocabulary	
	Lesson 13.1: Understand the Concept of Volume	5.M.B.2a, 5.M.B.2b 5.M.B.3	Count to find volumes of solid figures.
	Lesson 13.2: Find Volumes of Right Rectangular Prisms	5.M.B.3 5.M.B.4a	Find volumes of right rectangular prisms.
	Lesson 13.3: Apply the Volume Formula	5.M.B.4a 5.M.B.4b	Use a formula to find volumes of rectangular prisms.
	Lesson 13.4: Find Unknown Dimensions	5.M.B.4a 5.M.B.4b	Find unknown dimensions of rectangular prisms.
	Lesson 13.5: Find Volumes of Composite Figures	5.M.B.4b 5.M.B.4c	Find volumes of composite figures.
	End of Chapter 13: Understand Volume	Day 1 Performance Task	
	End of Chapter 13: Understand Volume	Day 2 Centers	
	End of Chapter 13: Understand Volume	Day 3 Chapter Assessment	
Chapter 14 **7 days**	Chapter 14 Opener: Classify Two-Dimensional Shapes	Performance Task Preview & Vocabulary	
	Lesson 14.1: Classify Triangles	5.G.B.4	Classify triangles by their angles and their sides.
	Lesson 14.2: Classify Quadrilaterals	5.G.B.3 5.G.B.4	Classify quadrilaterals by their angles and their sides.
	Lesson 14.3: Relate Quadrilaterals	5.G.B.3 5.G.B.4	Understand the hierarchy of quadrilaterals.
	End of Chapter 14: Classify Two-Dimensional Shapes	Day 1 Performance Task	

End of Chapter 14: Classify Two-Dimensional Shapes	Day 2 Centers
End of Chapter 14: Classify Two-Dimensional Shapes	Day 3 Chapter Assessment

Strategies for Multilingual Learners

For Spanish Speaking, students can use the Student Edition Spanish book, multi-language dictionary and Family Letters in Spanish for parents. Others need one on one support, vocabulary flashcards, eliminate word problems (computational problems only), pictures clues, use Google Translate, peer buddy

- Family Letters in Spanish
- Multi-Language Dictionary
- Student Edition Spanish book

Strategies for Students in Need of Intervention

Strategy	**Learner Focus (G&T, ELL, etc)**
When students struggle with facts: Reflex Math, multiplication chart, flash cards, timed tests	ACES/Struggling
When students struggle with word problems: highlight clue words, underline question, break down steps, read aloud, review vocabulary	ACES/Struggling
Reteach Pages for each chapter	ACES/Struggling
Skill Review Handbook	ACES/Struggling

- Chart with keywords for word problems to determine operation used
- Visual Vocabulary/ Vocabulary journal
- 1:1 Conferencing
- Big Ideas Reteaching pages/problems
- Choice Boards-Ex: Word Problems, fractions, measurement
- Constant progress monitoring and use of data to drive instruction
- Draw pictures to solve problems
- Extended pacing for lessons
- Flexible Grouping based on Iready Scores
- Highlight key terms in word problems
- Incorporate centers that focus on skills that students are struggling with
- Independent Study on topic of interest
- Iready
- LearnZillion videos on topics of study
- Manipulatives (ex. place value chart, fraction strips, etc.)
- Math games on topics of instruction/ review
- Pre-typed notes on unit of study
- Provide opportunities for higher-level activities to be completed
- Skill Reteach Workbook
- Small group and flexible grouping based on the progress monitoring data (Tier 1,2 and/or 3 interventions)
- Tic-Tac Toe Boards- Ex: Word Problems with varying degrees of difficulty
- Tiered Activities/ Lessons
- Use graph paper
- Use of a calculator for multi-step problems
- Use of Prodigy Math

Strategies for Enrichment

*Enrichment and extension pages in each lesson

*Khan Academy- 6th grade standards

* Desmos

*Iready Pathway- 6th grade standards

- Desmos
- Enrichment and extension pages in each lesson
- Iready Pathway-6th grade standards
- Khan Academy- 6th grade standards

Technology Integration

- 8.1.5.A.1 Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems.
- 8.1.5.A.4 Graph data using a spreadsheet, analyze and produce a report that explains the analysis of the data.
- Better Lessons (Measurement) https://betterlesson.com/community/directory/fifth_grade/measurement
- K5 Learning Geometry http://www.k5learning.com/free-math-worksheets/fifth-grade-5/geometry
- Khan Academy
- Math Aids http://www.math-aids.com/Fractions/
- Math Drills Printable Worksheets https://www.math-drills.com/fractions/fractions_convert_improper_to_mixed_001.php
- 8.2.5.C.4 Collaborate and brainstorm with peers to solve a problem evaluating all solutions to provide the best results with supporting sketches or models.
- Iready
- Nearpod
- Prodigy
- SplashMath

Interdisciplinary Connections

- Next Gen Science Standards (5. Earth's Systems Unit have connections to 5.G.2)
- Next Gen Science Standards (5. Matter and Energy in Organisms and Ecosystems Unit have connections to 5.MD.A.1)
- Next Gen Science Standards (5. Space Systems: Stars and the Solar System Unit have connections to 5.NBT.A.2 and 5.G.A.2)
- Next Gen Science Standards (5. Structure and Properties of Matter Unit have connections to 5.NBT.A.1; 5.NF.B.7; 5.MD.A.1; 5.MD.C.3; 5.MD.C.4)
- L.5.4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 5 reading and content, choosing flexibly from a range of strategies.
- Reading Connection: RI.5.4. Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 5 topic or subject area.
- RI.5.9 Integrate and reflect on (e.g. practical knowledge, historical/cultural context, and background knowledge) information from several texts on the same topic in order to write or speak about the subject knowledgeably.

21st Century Life & Career Ready Practices

- CRP6. Demonstrate creativity and innovation.
- CRP11. Use technology to enhance productivity.
- CRP2. Apply appropriate academic and technical skills.
- CRP4. Communicate clearly and effectively and with reason.

- CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.