Washington Township School District

The mission of the Washington Township Public Schools *is to provide a safe, positive, and progressive educational environment that provides opportunity for all students to attain the knowledge and skills specified in the NJ Learning Standards at all grade levels, so as to ensure their full participation in an ever-changing world as responsible, self-directed and civic-minded citizens.*

Course Title:	**Sixth Grade Mathematics**
Grade Level(s):	6th Grade

Duration:	*Full Year:*	**X**	*Semester:*		*Marking Period:*	

Course Description:	The goal of the sixth-grade mathematics curriculum is to help students develop mathematical reasoning, as well as an understanding of the concepts, skills, and procedures in expressions and equations, the number system, ratios and proportional relationships, geometry, and statistics. Subsequently, an awareness of and appreciation for the rich connections among mathematical strands as well as other disciplines will be developed. The sixth-grade mathematics curriculum development has been guided by a single mathematical standard: All students should be able to reason and communicate proficiently in mathematics. Students should also have knowledge of and skill in the use of the vocabulary, forms of representation, materials, tools, techniques, and intellectual methods of the discipline of mathematics, including the ability to define and solve real-world problems with reason, insight, inventiveness, and technical proficiency.
Grading Procedures:	Each Marking Period will be a composite of quiz scores, test scores, homework, and participation reflecting a student's mastery of the areas outlined above. The student can pass the course with an overall average of 70%. The individual teacher will explain the grading system to the student. Major Assessments: 50% Minor Assessments: 35% Supportive Assessments: 15%
Primary Resources:	New Jersey Student Learning Standards (NJSLS) for Mathematics McGraw Hill Reveal Math, Course 1

Washington Township Principles for Effective Teaching and Learning

- Implementing a standards-based curriculum
- Facilitating a learner-centered environment
- Using academic target language and providing comprehensible instruction
- Adapting and using age-appropriate authentic materials
- Providing performance-based assessment experiences
- Infusing 21st century skills for College and Career Readiness in a global society

Designed by:	Claudia Manuella

Under the Direction of:	Carole English

Written: July 2022

Revised: _____

BOE Approval: _____

Module 1: Ratios and Rates

Unit Description: In this module, students draw on their knowledge of fractions and fraction equivalence to develop understanding of ratios and rates. They use this understanding to build fluency with finding equivalent ratios and rates and finding unit rates. They also apply their understanding of ratios and rates to solve real-world problems.

Unit Duration: 4 Weeks (20 Days)

Desired Results

Standard(s):

6.RP. A Understand ratio concepts and use ratio reasoning to solve problems.

Standards for Mathematical Practice: MP1, MP2, MP3, MP4, MP5, MP6, MP7, MP8

Indicators:

6.RP.A.2 Understand the concept of a unit rate a/b associated with a ratio a:b with b≠0 and use rate language in the context of a ratio relationship.

6.RP.A.3 Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.

Understandings:
Students will understand…

- How ratios can be part-to-whole and part-to-part and write ratios in different forms that express different ratio relationships. They apply their understanding of ratios to solve real-world problems.
- What it means for two ratios to be equivalent and how a ratio table can be used to display and find equivalent ratios.
- How to write ratios as ordered pairs and graph them using the coordinate plane.
- How multiple ratio relationships can be compared by graphing them on the same coordinate plane.
- That they can use a bar diagram to model and solve a real-world problem involving ratios.
- That they can use ratios to represent relationships between customary units of measurement.
- How to compare quantities using rates and unit rates.
- Use bar diagrams to model and solve a real-world problem involving rates.

Essential Question:

- What is a ratio?
- How can you describe how two quantities are related?
- What models can you use to represent ratios?
- Comparisons are helpful for making plans, predictions, and decisions. What math models can you use for making comparisons? Which models are helpful in which situations?
- Compare and contrast using a double number line and equivalent ratios. Which method might be more advantageous to use if the numbers are large?
- Why might it not always be advantageous to use a bar diagram to convert measurement units?

Assessment Evidence

Performance Tasks:

- Ratios and Rates Performance Task

Other Evidence:

- Class Participation
- Teacher Observation and Questioning

• Formative Assessment Math Probe- Ratios and Rates • NA Module Vocabulary Test (RM C1 M1) • Put It All Together (RM C1 M1): Quiz 1-1 to 1-5 • Put It All Together (RM C1 M1): Quiz 1-6 to 1-8	• Successful completion of classwork and homework assignments which may include but are not limited to, lesson Got It questions, close and checks, lesson homework, and supplemental review worksheets. • NA Module Vocabulary Activity (RM C1 M1) • Lesson 1-1 through 1-8 • Practice, Extra Practice, Spiral Review **Reviews:** NA Module Review (RM C1 M1) Dynamic Module Review (RM C1 M1) Dynamic Module Practice (RM C1 M1)

Benchmarks:
Departmental assessments will be developed from the following resources:

On-Level Assessments (Form A)- Three versions of the on-level assessment are available, Form A1, Form A2, and Form A3.

- NA Module Test Form A1 (RM C1 M1)
- NA Module Test Form A2 (RM C1 M1)
- NA Module Test Form A3 (RM C1 M1)

Differentiated Assessments (Form B and C)- Form B represents the approaching-level (AL) assessment. Form C represents the beyond-level (BL) assessment.

Learning Plan

Learning Activities:

Vocabulary in Module #1: Double Number Line, Equivalent Ratios, Part-to-Part Ratio, Part-to-Whole Ratio, Rate, Ratio, Ratio Table, Scaling, Unit Price, Unit Rate, Unit Ratio

1-1 Understanding Ratios: *2 Full Days*
Explore (Online Activity)- Compare Two Quantities
Students will use Web Sketchpad to explore how to maintain the same relationship between two quantities as one of the quantities changes.
Learn (Notes & Discussion)- Understand Ratios
Students will understand the concept of a ratio and how a ratio can be used to compare two quantities.
- **Example #1- Green Paint:** *Students will use reasoning to determine if the same ratio is maintained.*

Learn (Notes & Discussion)- Part-to-Whole and Part-to-Part Ratios
Students will understand the different kinds of ratios that can be used to compare quantities (part-to-whole and part-to-part)
- **Example #2- Florist:** *Students will write and use a part-to-whole ratio to find a new value for one quantity when the other quantity changes.*
- **Example #3- Bakery:** *Students will write and use a part-to-part ratio to find a new value for one quantity when the other quantity changes.*

Apply- Fundraising
Students will come up with their own strategy to solve an application problem involving fundraising
Exit Ticket
Homework Practice (Page 11-12)

1-2 Table of Equivalent Ratios: *3 Full Days*
Explore (Online Activity)- Equivalent Ratios

Students will use tools to explore equivalent ratios

Learn (Notes & Discussions)- Equivalent Ratios and Ratio Tables

Students will understand what it means for two ratios to be equivalent and how a ratio table can be used to display and find equivalent.

- **Example #1- Scale Forward to Find Equivalent Ratios:** *Students will scale forward to find equivalent ratios.*
- **Example #2- Scale Backward to Find Equivalent Ratios:** *Students will scale backward to find equivalent ratios.*
- **Example #3- Scale in Both Directions:** *Students will scale in both directions to find equivalent ratios.*
- **Example #4- Use a Double Number Line to Find Equivalent Ratios:** *Students will use a double number line to find equivalent ratios.*

Apply- Packaging

Students will come up with their own strategy to solve an application problem involving determining the cost of a bag of marbles.

Exit Ticket

Homework Practice (Page 21-22)

1-3 Graphs of Equivalent Ratios: *2 Full Days*

Learn (Notes & Discussion)- Ratios as Ordered Pairs

Students will learn how to write ratios as ordered pairs and graph them in the coordinate plane.

- **Example #1- Graph Ratio Relationships:** *Students will graph a ratio relationship on the coordinate plane.*
- **Example #2- Graph and Interpret Ratio Relationships:** *Students will graph tables of equivalent ratios and interpret the relationship between two quantities.*

Exit Ticket

Homework Practice (Page 27-28)

1-4 Compare Ratio Relationships: *1 Full Day*

Learn (Notes & Discussions)- Use Graphs to Compare Ratio Relationships

Students will understand how multiple ratio relationships can be compared by graphing them on the same coordinate plane.

- **Example #1- Use Graphs to Compare Ratio Relationships:** *Students will graph and compare multiple relationships on the same coordinate plane.*

Learn (Notes & Discussions)- Use Tables to Compare Ratio Relationships

Students will understand how ratio tables can be used to compare multiple ratio relationships.

- **Example #2- Use Tables to Compare Ratio Relationships:** *Students will use ratio tables to compare multiple ratio relationships.*

Apply- Mixing Paint

Students will come up with their own strategy to solve an application problem involving mixing paint colors.

Exit Ticket

Homework Practice (Page 35-36)

1-5 Solve Ratio Problems: *2 Full Days*

Learn (Notes & Discussions)- Use Bar Diagrams to Solve Ratio Problems

Students will understand that they can use a bar diagram to model and solve a real-world problem involving ratios.

- **Example #1- Use Bar Diagrams to Solve Ratio Problems:** *Students will use bar diagrams to solve real-world problems involving part-to-whole ratios.*
- **Example #2- Use Bar Diagrams to Solve Ratio Problems:** *Students will use bar diagrams to solve real-world problems involving part-to-part ratios.*

Learn (Notes & Discussions)- Use Double Number Lines and Equivalent Ratios to Solve Ratio Problems

Students will understand that they can use double number lines and equivalent ratios to solve real-world problems involving ratios.

- **Example #3- Use Double Number Lines and Equivalent Ratios to Solve Ratio Problems:** *Students will use equivalent ratios to solve real-world problems involving part-to-part ratios.*

Apply- Inventory

Students will come up with their own strategy to solve an application problem involving inventory at an office supply store.

Exit Ticket
Homework Practice (Page 45-46)

Put it All Together 1: Lessons 1-1 through 1-5: *½ of a Full Class (Quiz)*

1-6 Convert Customary Measurement Units: *2 Full Days*
Learn (Notes & Discussions)- Use Ratios and Measurement Conversions
Students will understand that they can use unit ratios to represent relationships between Customary units of measurement.
Learn (Notes & Discussions)- Convert Larger Units to Smaller Units
Students will understand that they can use bar diagrams and unit ratios to convert larger units to smaller units.

- **Example #1- Convert Larger Units to Smaller Units:** *Students will use ratio reasoning to convert larger measurement units in the Customary system to smaller measurement units.*

Learn (Notes & Discussions)- Convert Smaller Units to Larger Units
Students will understand that they can use bar diagrams and unit ratios to convert smaller units to larger units.

- **Example #2- Convert Smaller Units to Larger Units:** *Students will use ratio reasoning to convert smaller measurement units in the customary system to larger measurement units.*

Apply- Soccer Practice
Students will come up with their own strategy to solve an application problem involving the amount of water athletes drink during soccer practice.
Exit Ticket
Homework Practice (Page 55-56)

1-7 Understand Rates and Unit Rates: *2 Full Days*
Explore (Online Activity)- Compare Quantities with Different Units
Students will use Web Sketchpad to explore comparing quantities with different units.
Learn (Notes & Discussions)- Understand a Rate and a Unit Rate
Students will understand how to compare quantities using rates and unit rates.

- **Example #1- Find a Unit Rate:** *Students will find a unit rate to solve a real-world problem.*

Learn (Notes & Discussions)- Unit Price
Students will learn how to find unit price to solve a real-world problem.

- **Example #2- Find a Unit Price:** *Students will find a unit price to solve a real-world problem.*

Apply- Travel
Students will come up with their own strategy to solve an application problem involving travel speeds.
Exit Ticket
Homework Practice (Page 63-64)

1-8 Solve Rate Problems: *2 Full Days*
Learn (Notes & Discussions)- Use Bar Diagrams to Solve Rate Problems
Students will understand that they can use bar diagrams to model and solve a real-world problem involving rates.

- **Example #1- Use Bar Diagrams to Solve Rate Problems:** *Students will use bar diagrams to model and solve a real-world problem involving rates.*

Learn (Notes & Discussions)- Use Double Number Lines and Equivalent Rates to Solve Rate Problems
Students will understand that they can use double number lines and equivalent ratios to solve a real-world problem involving rates.

- **Example #2- Use Double Number Lines and Equivalent Rates to Solve Rate Problems:** *Students will use double number lines and equivalent ratios to solve a real-world problem involving rates.*

Apply- Bike-a-thon
Students will come up with their own strategy to solve an application problem involving deciding on a bike-a-thon trail based on riding rate.
Exit Ticket
Homework Practice (Page 71-72)
Formative Assessment Math Probe

Put it All Together 2: Lessons 1-6 through 1-8: *½ of a Full Class (Quiz)*

Reflect on the Module: *2 Full Days*
Use what you learned about ratios and rates to complete the graphic organizer.
Test Practice (Page 75-76)
Unit Test

Resources: Text, online tools associated with text, whiteboard, and laptops

Unit Modifications for Special Population Students	
Advanced Learners	• Refer to green BL (Beyond Level) indicators in Teacher Edition and assign corresponding activities: Beyond Level Differentiated Activities, Extension Activities • Use IXL to enhance targeted skills • Provide opportunities to complete enrichment projects for Unit • Assigning leveled homework • Internet Resources are available and can be accessed from school. • Assign challenge problems
Struggling Learners	• Refer to green AL (Approaching Level) indicators in Teacher Edition and assign corresponding activities; Remediation Activities, Extra Examples, Arrive Math Take Another Look Mini Lessons • Use IXL to enhance targeted skills • Use mathematical tools: Know-Need-Plan, Number Line, Place Value Blocks, Fractions, and Percent's, Coordinate Graphed, and Venn Diagram to provide student with visual models and problem-solving tools. • Demonstration using concrete examples and hands on manipulatives • Place students in diverse groups that will provide strong models of effective group discussion
English Language Learners	• Refer to purple ELL (English Language Learner) indicators in Teacher Edition and assign corresponding activities • Use natural language to explain mathematical concepts and perform mathematical concepts to perform mathematical operations. • Simplification and paraphrasing of instructional languages; direct teaching of key vocabulary • Demonstration using concrete examples • Use of hands-on manipulatives • Use of graphic organizers • If beneficial to the student, utilize the Spanish Student Edition eBook, Course 1
Special Needs Learners	Each special education student has in Individualized Educational Plan (IEP) that details the specific accommodations, modifications, services, and support needed to level the playing field. This will enable that student to access the curriculum to the greatest extent possible in the least restrictive environment. These include: • Variation of time: adapting the time allotted for learning, task completion, or testing • Variation of input: adapting the way instruction is delivered • Variation of output: adapting how a student can respond to instruction

	• Variation of size: adapting the number of items the student is expected to complete • Modifying the content, process or product Additional resources are outlined to facilitate appropriate behavior and increase student engagement. Teachers are encouraged to use the Understanding by Design Learning Guidelines (UDL). These guidelines offer a set of concrete suggestions that can be applied to any discipline to ensure that all learners can access and participate in learning opportunities. The framework can be viewed here www.udlguidelines.cast.org
Learners with a 504	Refer to page four in the Parent and Educator Resource Guide to Section 504 to assist in the development of appropriate plans.

Interdisciplinary Connections

Indicators:

Social Studies:

6.1.12.EconNE.3.a Analyze the impact of money, investment, credit, savings, debt, and financial institutions on the development of the nation and the lives of individuals.

Computer Science and Design Thinking:

8.1.8.DA.1 Organize and transform data collected using computational tools to make it usable for a specific purpose.

8.1.8.DA.5 Test, analyze, and refine computational models

8.1.12.DA.5 Create data visualizations from large data sets to summarize, communicate, and support different interpretations of real-world phenomena.

Technology Education:

9.3.ST.1 Use technology to acquire, manipulate, analyze, and report data.

9.3.ST-ET.5 Apply the knowledge learned in STEM to solve problems.

9.3.ST-SM.2 Apply science and mathematics concepts to the development of plans, processes and projects that address real world problems.

9.4.12.O.11 Apply active listening skills to obtain and clarify information.

9.4.12.O.32 Effectively use information technology to gather, store and communicate data in appropriate formats.

9.4.12.O.(1).8 Select and use a range of communications technologies, including word processing, spreadsheet, database, presentation, email, and Internet applications to locate and display information.

9.4.12.O.5 Demonstrate use of concepts, strategies, and systems for obtaining and conveying ideas and information to enhance communication.

Financial Literacy:

9.4.12.CT.2 Explain the potential benefits of collaborating to enhance critical thinking and problem solving (e.g., 1.3E.12profCR3.a).

English Language Arts:

RI.6.4 Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings.

RI.6.7 Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.

W.6.1.B Support claim(s) with clear reasons and relevant evidence, using credible sources and demonstrating an understanding of the topic or text.

L.6.6 Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge.

Science:

MS-ETS1-1 Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, considering relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.
MS-ETS1-2 Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
MS-ETS1-3 Analyze data from test to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet criteria for success.
MS-ETS1-4 Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.

Integration of 21st Century Skills

Indicators:

From the Partnership for 21st Century Skills (P21), the deeper learning competencies and skills for 21st century learning in this unit include collaboration, communication, and critical thinking.

- Use various types of reasoning (inductive, deductive, etc.) as appropriate to the situation.
- Use systems thinking.
- Reflect critical on learning experiences and processes.
- Solve different kinds of non-familiar problems in both conventional and innovative ways.
- Identify and ask significant questions that clarify various points of view and lead to better solutions.
- Articulate thoughts and ideas effectively using oral, written, and nonverbal communication skills in a variety of forms and contexts.
- Listen effectively to decipher meaning, including knowledge, values, attitudes, and intentions.
- Use communication for a range of purposes (e.g., to inform, instruct, motivate, and persuade).
- Collaborate with others.

Module 2: Fractions, Decimals, and Percents

Unit Description: In this module, students draw on their knowledge of fractions, decimals, ratios, and rates to build fluency with finding percent of a quantity. They apply their fluency with percent to solve real-world problems involving finding the whole, given the part and the percent. Students need to have a thorough understanding of the prerequisite skills required for this module which are to generate equivalent ratios and express fractions as decimals.

Unit Duration: 3 Weeks (15 Days)

Desired Results

Standard(s):

6.RP. A Understand ratio concepts and use ratio reasoning to solve problems.

Standards for Mathematical Practice: MP1, MP2, MP3, MP4, MP5, MP6, MP7, MP8

Indicators:

6.RP.A.3 Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.

6.RP.A.3.C Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means $\frac{30}{100}$ times the quantity); solve problems involving finding the whole, given a part and the percent.

Understandings:
Students will understand…

- That they can use 10x10 grids and bar diagrams to model percent.
- That 10x0 grids can be used to model percent's greater than 100% and less than 1%.
- How to relate fractions, decimals, and percent.
- How to use bar diagrams, ratio tables, equivalent ratios, and double number lines to find the percent of a number.
- How to use benchmark percent's and rounding to estimate the percent of a number.
- How a bar diagram, a ratio table, a double number line, or equivalent ratios can be used to find the whole, given the part and the percent.

Essential Questions:

- How can you use fractions, decimals, and percent to solve everyday problems?
- A fraction is part of a whole. What is a fraction of a fraction? Why does it matter?
- How can you use a bar diagram to determine a percentage?
- When writing equivalent ratios, will you need to find the percent, part, or whole?
- Why do we use rounding to estimate the percent of a number?
- When writing a fraction as a percent, why do you find an equivalent ratio with a denominator of 100?
- When using a ratio table, how do you scale back to 1% from 100%?

Assessment Evidence

Performance Tasks:

- Fractions, Decimals, and Percent's Performance Tasks
- Formative Assessment Math Probe- Fractions, Decimals, and Percents
- NA Module Vocabulary Test (RM C1 M2)
- Put It All Together (RM C1 M2): Quiz 2-1 to 2-3
- Put It All Together (RM C1 M2): Quiz 2-4 to 2-6

Other Evidence:

- Class Participation
- Teacher Observation and Questioning
- Successful completion of classwork and homework assignments which may include but are not limited to, lesson Got It questions, close and checks, lesson homework, and supplemental review worksheets.
- NA Module Vocabulary Activity (RM C1 M2)
- Lesson 2-1 through 2-6
  - Practice, Extra Practice, Spiral Review

	Reviews: Dynamic Module Review (RM C1 M2) Dynamic Module Practice (RM C1 M2)

Benchmarks:
Departmental assessments will be developed from the following resources:

On-Level Assessments (Form A)- Three versions of the on-level assessment are available, Form A1, Form A2, and Form A3.

- NA Module Test Form A1 (RM C1 M2)
- NA Module Test Form A2 (RM C1 M2)
- NA Module Test Form A3 (RM C1 M2)

Differentiated Assessments (Form B and C)- Form B represents the approaching-level (AL) assessment. Form C represents the beyond-level (BL) assessment.

Learning Activities:

Vocabulary in Module #2: Benchmark Percent's, Percent

2-1 Understanding Percent's: *1 Full Day*
Learn (Notes & Discussion)- Use 10x10 Grids to Model Percent's
Students will understand that 10x10 grids can be used to model percent's
- **Example #1- Identify the Percent:** *Students will identify the percent modeled by a 10x10 grid.*
- **Example #2- Model the Percent:** *Students will model a percent using a 10x10 grid.*

Learn (Notes & Discussion)- Use Bar Diagrams to Model Percent's
Students will understand how bar diagrams can be used to model percent.
- **Example #3- Identify the Percent:** *Students will identify the percent modeled by a bar diagram.*
- **Example #4- Model the Percent:** *Students will model a percent by using a bar diagram.*

Exit Ticket
Homework Practice (Page 83-84)

2-2 Percent's Greater Than 100% and Less Than 1 %: *1 Full Day*
Learn (Notes & Discussion)- Percent's Greater Than 100%
Students will understand that 10x10 grids can be used to model percent's greater than 100%.
- **Example #1- Identify the Percent:** *Students will identify a percent, that is greater than 100%, modeled by 10x10 grids.*
- **Example #2- Model the Percent:** *Students will use 10x10 grids to model percent's greater than 100% and write a percent to represent a real-world context.*

Learn (Notes & Discussion)- Percent's Less Than 1%
Students will understand what a percent less than 1% means, and that 10x10 grids can be used to model percent's less than 1%.
- **Example #3- Identify the Percent:** *Students will identify a percent, that is less than 1%, modeled by 10x10 grids.*
- **Example #4- Model the Percent:** *Students will use a 10x10 grid to model a percent less than 1%.*

Exit Ticket
Homework Practice (Page 91-92)

2-3 Relate Fractions, Decimals, and Percent's: *3 Full Days*
Explore (Online Activity)- Percent's and Ratios
Students will explore writing ratios as percent.
Learn (Notes & Discussion)- Relate Percents to Fractions and Decimals

Students will understand that they can write a percent as a fraction and a decimal by first writing the percent as a rate per 100.

- **Example #1- Write Percent as Fractions and Decimals:** *Students will write percent as fractions and decimals by first writing the percent as a rate per 100.*

Learn (Notes & Discussion)- Relate Fractions to Percent's and Decimals

Students will understand that they can write a fraction as a percent and a decimal by first finding an equivalent ratio with 100 as the denominator.

- **Example #2- Write Fractions as Percent's and Decimals:** *Students will write fractions as percent and decimals by first finding an equivalent ratio with 100 as the denominator.*
- **Example #3- Write Mixed Numbers as Percent's:** *Students will write a mixed number as a percent.*

Learn (Notes & Discussion)- Relate Decimals to Percent's and Fractions

Students will understand how to write a decimal as a percent and then as a fraction by first writing the decimal as a fraction with a denominator of 100.

- **Example #4- Write Decimals as Percent's and Fractions:** *Students will understand how to write a decimal as a percent and then as a fraction by first writing the decimal as a fraction with a denominator of 100.*

Apply- School

Students will come up with their own strategy to solve an application problem involving time spent studying.

Exit Ticket

Homework Practice (Page 101-102)

Put it All Together 1: Lessons 2-1 through 2-3: *½ of a Full Class (Quiz)*

2-4 Percent of a Number: *3 Full Days*

Explore (Online Activity)- Percent of a Number

Students will use bar diagrams to explore percent of a number.

Learn (Notes & Discussion)- Find the Percent of a Number

Students will understand how to use bar diagrams, ratio tables, equivalent ratios, and double number lines to find the percent of a number.

- **Example #1- Find the Percent of a Number:** *Students will use a rate per 100 to find the percent of a number.*
- **Example #2- Find the Percent of a Number:** *Students will use bar diagrams, double number lines, and equivalent ratios to find the percent of a number.*
- **Example #3- Find the Percent of a Number:** *Students will use ratio tables and equivalent ratios to find the percent of a number when the percent is greater than 100%.*
- **Example #4- Find the Percent of a Number:** *Students will use ratio tables and equivalent ratios to find the percent of a number when the percent is less than 1%.*

Apply- Book Fair

Students will come up with their own strategy to solve an application problem involving attendance.

Exit Ticket

Homework Practice (Page 111-112)

2-5 Estimate the Percent of a Number: *1 Full Day*

Learn (Notes & Discussion)- Estimate the Percent of a Number

Students will learn how to use benchmark percent's and rounding to estimate the percent of a number.

- **Example #1- Estimate the Percent of a Number:** *Students will use bar diagrams and equivalent ratios to solve a real-world problem that involves estimating the percent of a number.*
- **Example #2- Estimate the Percent of a Number:** *Students will use a bar diagram to solve a real-world problem involving the percent of a number.*

Apply- Financial Literacy

Students will come up with their own strategy to solve an application problem involving sales tax.

Exit Ticket

Homework Practice (Page 127-128)

2-6 Find the Whole: *2 Full Days*

Learn (Notes & Discussion)- Find the Whole

Students will understand how a bar diagram, a ratio table, a double number line, or equivalent ratios can be used to find the whole, given the part and the percent.

- **Example #1- Find the Whole:** *Students will use bar diagrams and equivalent ratios to solve a real-world problem involving finding the whole.*
- **Example #2- Find the Whole:** *Students will use bar diagrams and double number lines to solve a real-world problem that involves finding the whole.*

Apply- Sales
Students will come up with their own strategy to solve an application problem involving selling bags of popcorn.
Exit Ticket
Homework Practice (Page 127-128)

Put it All Together 2: Lessons 2-4 through 2-6: *½ of a Full Class (Quiz)*

Reflect on the Module: *2 Full Days*
Use what you learned about fractions, decimals, and percent to complete the graphic organizer.
Test Practice (Page 131-132)
Unit Test

Resources: Text, online tools associated with text, whiteboard, and laptops

Unit Modifications for Special Population Students	
Advanced Learners	• Refer to green BL (Beyond Level) indicators in Teacher Edition and assign corresponding activities: Beyond Level Differentiated Activities, Extension Activities • Use IXL to enhance targeted skills • Provide opportunities to complete enrichment projects for Unit • Assigning leveled homework • Internet Resources are available and can be accessed from school. • Assign challenge problems
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Special Needs Learners	Each special education student has in Individualized Educational Plan (IEP) that details the specific accommodations, modifications, services, and support needed to level the playing field. This will enable that student to access the curriculum to the greatest extent possible in the least restrictive environment. These include: • Variation of time: adapting the time allotted for learning, task completion, or testing • Variation of input: adapting the way instruction is delivered • Variation of output: adapting how a student can respond to instruction • Variation of size: adapting the number of items the student is expected to complete • Modifying the content, process or product Additional resources are outlined to facilitate appropriate behavior and increase student engagement. Teachers are encouraged to use the Understanding by Design Learning Guidelines (UDL). These guidelines offer a set of concrete suggestions that can be applied to any discipline to ensure that all learners can access and participate in learning opportunities. The framework can be viewed here www.udlguidelines.cast.org
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8.1.8.DA.5 Test, analyze, and refine computational models

8.1.12.DA.5 Create data visualizations from large data sets to summarize, communicate, and support different interpretations of real-world phenomena.

Technology Education:

9.3.ST.1 Use technology to acquire, manipulate, analyze, and report data.

9.3.ST-ET.5 Apply the knowledge learned in STEM to solve problems.

9.3.ST-SM.2 Apply science and mathematics concepts to the development of plans, processes and projects that address real world problems.

9.4.12.O.11 Apply active listening skills to obtain and clarify information.

9.4.12.O.32 Effectively use information technology to gather, store and communicate data in appropriate formats.

9.4.12.O.(1).8 Select and use a range of communications technologies, including word processing, spreadsheet, database, presentation, email, and Internet applications to locate and display information.

9.4.12.O.5 Demonstrate use of concepts, strategies, and systems for obtaining and conveying ideas and information to enhance communication.

Financial Literacy:

9.4.12.CT.2 Explain the potential benefits of collaborating to enhance critical thinking and problem solving (e.g., 1.3E.12profCR3.a).

English Language Arts:

RI.6.4 Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings.

RI.6.7 Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.
W.6.1.B Support claim(s) with clear reasons and relevant evidence, using credible sources and demonstrating an understanding of the topic or text.
L.6.6 Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge.
Science:
MS-ETS1-1 Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, considering relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.
MS-ETS1-2 Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
MS-ETS1-3 Analyze data from test to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet criteria for success.
MS-ETS1-4 Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.

Integration of 21st Century Skills

Indicators:

From the Partnership for 21st Century Skills (P21), the deeper learning competencies and skills for 21st century learning in this unit include communication, creativity, and critical thinking.

- Develop, implement, and communicate new ideas to others effectively.
- View failure as an opportunity to learn; understand that creativity and innovation is a long-term, cyclical process of small successes and frequent mistakes.
- Use various types of reasoning (inductive, deductive, etc.) as appropriate to the situation.
- Use systems thinking.
- Reflect critical on learning experiences and processes.
- Solve different kinds of non-familiar problems in both conventional and innovative ways.
- Identify and ask significant questions that clarify various points of view and lead to better solutions.
- Articulate thoughts and ideas effectively using oral, written, and nonverbal communication skills in a variety of forms and contexts.
- Listen effectively to decipher meaning, including knowledge, values, attitudes, and intentions.
- Use communication for a range of purposes (e.g., to inform, instruct, motivate, and persuade).

Module 3: Compute with Multi-Digit Numbers and Fractions

Unit Description: In this module, students draw on their knowledge of basic computation to develop understanding of computation with multi-digit numbers and fractions. They use their understanding to build fluency with the four basic operations involving whole numbers and decimals, and division of fractions and mixed numbers. They also apply their understanding of fractions to write and solve real-world story contexts.

Unit Duration: 3 Weeks (16 Days)

Desired Results

Standard(s):

6.NS. A Apply and extend previous understandings of multiplication and division to divide fractions by fractions.

Standards for Mathematical Practice: MP1, MP2, MP3, MP4, MP5, MP6, MP7, MP8

Indicators:

6.NS.A.1 Interpret and compute quotients of fractions and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem.

6.NS.B.3 Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.

Understandings:
Students will understand…

- The parts of a division problem.
- How to fluently add and subtract multi-digit decimals when the number of decimal places is not the same.
- Those multiplicative inverses, or reciprocals, are two numbers with a product of 1.
- That they can use various strategies to divide fractions by fractions.
- That they can use various strategies to divide a fraction by a whole number.

Essential Questions:

- How are operations with fractions and decimals related to operations with whole numbers?
- You know how to use place value to do whole-number operations. How can you extend the use of place value to decimal operations?
- How is working with decimals easier than with fractions?
- Can you identify the quotient, dividend, and divisor?
- What does “annexing a zero” mean?
- How could you check to make sure the quotient is correct?
- How do you know when you are done dividing?
- How does annexing a zero help you correctly add or subtract the numbers?
- What is a reciprocal?
- Why do we write the mixed number and the whole number as fractions?
- Why do we multiply by the reciprocal?
- Explain why it makes sense that the quotient is less than the dividend.

Assessment Evidence

Performance Tasks:

- Compute with Multi-Digit Numbers and Fractions Performance Task

Other Evidence:

- Class Participation
- Teacher Observation and Questioning

• Formative Assessment Math Probe- Estimate Quotients • NA Module Vocabulary Test (RM C1 M3) • NA Module Test Form A3 (RM C1 M3) • Put It All Together (RM C1 M3): Quiz 3-1 to 3-2 • Put It All Together (RM C1 M3): Quiz 3-3 to 3-5	• Successful completion of classwork and homework assignments which may include but are not limited to, lesson Got It questions, close and checks, lesson homework, and supplemental review worksheets. • NA Module Vocabulary Activity (RM C1 M3) • Lesson 3-1 through 3-5 • Practice, Extra Practice, Spiral Review **Reviews:** Module Review (RM C1 M3) Dynamic Module Practice (RM C1 M3)

Benchmarks:
Departmental assessments will be developed from the following resources:

On-Level Assessments (Form A)- Three versions of the on-level assessment are available, Form A1, Form A2, and Form A3.

- NA Module Test Form A1 (RM C1 M3)
- NA Module Test Form A2 (RM C1 M3)
- NA Module Test Form A3 (RM C1 M3)

Differentiated Assessments (Form B and C)- Form B represents the approaching-level (AL) assessment. Form C represents the beyond-level (BL) assessment.

Learning Plan

Learning Activities:

Vocabulary in Module #3: Dividend, Divisor, Inverse Property of Multiplication, Multiplicative Inverse, Quotient, Reciprocal

3-1 Divide Multi-Digit Whole Numbers: *2 Full Days*
Learn (Notes & Discussion)- Divide Multi-Digit Numbers
Students will understand the parts of a division problem.
- **Example #1- Divide Multi-Digit Numbers:** *Students will fluently divide multi-digit whole numbers with whole number quotients.*

Learn (Notes & Discussion)- Divide Multi-Digit Numbers
Students will learn how to fluently divide multi-digit whole numbers by annexing zeros.
- **Example #2- Divide Multi-Digit Numbers:** *Students will fluently divide multi-digit whole numbers by annexing zeros.*
- **Example #3- Divide Multi-Digit Numbers:** *Students will fluently divide multi-digit whole numbers by annexing zeros.*

Apply- Fundraising
Students will come up with their own strategy to solve an application problem involving making bags of cookies to sell for a fundraiser.
Exit Ticket
Homework Practice (Page 141-142)

3-2 Compute with Multi-Digit Decimals: *2 Full Days*
Learn (Notes & Discussion)- Add and Subtract Multi-Digit Decimals
Students will learn how to fluently add and subtract multi-digit decimals when the number of decimal places is not the same.

- **Example #1- Add Multi-Digit Decimals:** *Students will fluently add multi-digit decimals when the number of decimal places is not the same.*
- **Example #2- Subtract Multi-Digit Decimals:** *Students will fluently subtract multi-digit decimals when the number of decimal places is not the same.*
- **Example #3- Subtract Multi-Digit Decimals:** *Students will fluently subtract multi-digit decimals when the number of decimal places is not the same.*

Learn (Notes & Discussion)- Multiply Multi-Digit Decimals
Students will learn how to fluently multiply multi-digit decimals.

- **Example #4- Multiply Multi-Digit Decimals:** *Students will fluently multiply multi-digit decimals.*

Learn (Notes & Discussion)- Divide Decimals
Students will learn how to divide multi-digit decimals.

- **Example #5- Divide Multi-Digit Decimals:** *Students will fluently divide multi-digit decimals.*

Apply- Shopping
Students will come up with their own strategy to solve an application problem involving shopping at a farmer's market.
Exit Ticket
Homework Practice (Page 153-154)
Formative Assessment Math Probe

Put it All Together 1: Lessons 3-1 through 3-2: *½ of a Full Class*

3-3 Divide Whole Numbers by Fractions: *3 Full Days*
Learn (Notes & Discussion)- Reciprocals
Students will understand that multiplicative inverses, or reciprocals, are two numbers with a product of 1.

- **Example #1- Find Reciprocals:** *Students will find the reciprocal of a unit fraction.*
- **Example #2- Find Reciprocals of Fractions:** *Students will find the reciprocal of a fraction that is not a unit fraction.*
- **Example #3- Find Reciprocals of Whole Numbers:** *Students will find the reciprocal of a whole number.*

Explore (Online Activity)- Divide Whole Numbers by Fractions
Students will explore how to use models to divide whole numbers by fractions.
Learn (Notes & Discussion)- Divide Whole Numbers by Fractions
Students will understand that visual models and equations can be used to divide whole numbers by fractions.

- **Example #4- Divide Whole Numbers by Fractions:** *Students will divide whole numbers by fractions when the quotients are whole numbers.*
- **Example #5- Divide Whole Numbers by Fractions:** *Students will divide whole numbers by fractions when the quotients are not whole numbers.*

Apply- Cooking
Students will come up with their own strategy to solve an application problem involving following a recipe.
Exit Ticket
Homework Practice (Page 165-166)

3-4 Divide Fractions by Fractions: *2 Full Days*
Learn (Notes & Discussion)- Divide Fractions by Fractions
Students will understand that they can use various strategies to divide fractions by fractions.

- **Example #1- Divide Fractions by Fractions:** *Students will divide fractions by fractions.*
- **Example #2- Find and Interpret Quotients:** *Students will divide fractions by fractions and interpret the quotients.*

Learn (Notes & Discussion)- Write Story Contexts
Students will understand how a story context can be written to represent an expression involving the division of fractions.

- **Example #3- Write Story Contexts:** *Students will write a story for a problem involving division of fractions.*

Apply- Food
Students will come up with their own strategy to solve an application problem involving making snack bags of different kinds of nuts.
Exit Ticket
Homework Practice (Page 175-176)

3-5 Divide with Whole and Mixed Numbers: *3 Full Days*
Explore (Online Activity)- Divide Fractions by Whole Numbers
Students will use Web Sketchpad to explore how to divide fractions by whole numbers.
Learn (Notes & Discussion)- Divide Fractions by Whole Numbers
Students will understand that they can use various strategies to divide a fraction by a whole number.

- **Example #1- Divide Fractions by Whole Numbers:** *Students will divide fractions by whole numbers.*

Learn (Notes & Discussion)- Divide Mixed Numbers
Students will learn how to divide with mixed numbers

- **Example #2- Divide Mixed Numbers:** *Students will divide a mixed number by a whole number.*
- **Example #3- Divide Mixed Numbers:** *Students will divide a mixed number by a mixed number.*

Apply- Decorating
Students will come up with their own strategy to solve an application problem involving area of mirrors.
Exit Ticket
Homework Practice (Page 185-186)

Put it All Together 2: Lessons 3-3 through 3-5: *½ of a Full Class*

Reflect on the Module: *2 Full Days*
Use what you learned about fractions and decimals to complete the graphic organizer.
Test Practice (Page 189-190)
Unit Test

Resources: Text, online tools associated with text, whiteboard, and laptops

Unit Modifications for Special Population Students	
Advanced Learners	• Refer to green BL (Beyond Level) indicators in Teacher Edition and assign corresponding activities: Beyond Level Differentiated Activities, Extension Activities • Use IXL to enhance targeted skills • Provide opportunities to complete enrichment projects for Unit • Assigning leveled homework • Internet Resources are available and can be accessed from school. • Assign challenge problems
Struggling Learners	• Refer to green AL (Approaching Level) indicators in Teacher Edition and assign corresponding activities; Remediation Activities, Extra Examples, Arrive Math Take Another Look Mini Lessons • Use IXL to enhance targeted skills • Use mathematical tools: Know-Need-Plan, Number Line, Place Value Blocks, Fractions, and Percents, Coordinate Graphs, and Venn Diagram to provide student with visual models and problem-solving tools. • Demonstration using concrete examples and hands on manipulatives • Place students in diverse groups that will provide strong models of effective group discussion
English Language Learners	• Refer to purple ELL (English Language Learner) indicators in Teacher Edition and assign corresponding activities • Use natural language to explain mathematical concepts and perform mathematical concepts to perform mathematical operations. • Simplification and paraphrasing of instructional languages; direct teaching of key vocabulary

	• Demonstration using concrete examples • Use of hands-on manipulatives • Use of graphic organizers • If beneficial to the student, utilize the Spanish Student Edition eBook, Course 1
Special Needs Learners	Each special education student has in Individualized Educational Plan (IEP) that details the specific accommodations, modifications, services, and support needed to level the playing field. This will enable that student to access the curriculum to the greatest extent possible in the least restrictive environment. These include: • Variation of time: adapting the time allotted for learning, task completion, or testing • Variation of input: adapting the way instruction is delivered • Variation of output: adapting how a student can respond to instruction • Variation of size: adapting the number of items the student is expected to complete • Modifying the content, process or product Additional resources are outlined to facilitate appropriate behavior and increase student engagement. Teachers are encouraged to use the Understanding by Design Learning Guidelines (UDL). These guidelines offer a set of concrete suggestions that can be applied to any discipline to ensure that all learners can access and participate in learning opportunities. The framework can be viewed here www.udlguidelines.cast.org
Learners with a 504	Refer to page four in the Parent and Educator Resource Guide to Section 504 to assist in the development of appropriate plans.

Interdisciplinary Connections

Indicators:

Social Studies:

6.1.12.EconNE.3.a Analyze the impact of money, investment, credit, savings, debt, and financial institutions on the development of the nation and the lives of individuals.

Computer Science and Design Thinking:

8.1.8.DA.1 Organize and transform data collected using computational tools to make it usable for a specific purpose.

8.1.8.DA.5 Test, analyze, and refine computational models

8.1.12.DA.5 Create data visualizations from large data sets to summarize, communicate, and support different interpretations of real-world phenomena.

Technology Education:

9.3.ST.1 Use technology to acquire, manipulate, analyze, and report data.

9.3.ST-ET.5 Apply the knowledge learned in STEM to solve problems.

9.3.ST-SM.2 Apply science and mathematics concepts to the development of plans, processes and projects that address real world problems.

9.4.12.O.11 Apply active listening skills to obtain and clarify information.

9.4.12.O.32 Effectively use information technology to gather, store and communicate data in appropriate formats.

9.4.12.O.(1).8 Select and use a range of communications technologies, including word processing, spreadsheet, database, presentation, email, and Internet applications to locate and display information.

9.4.12.O.5 Demonstrate use of concepts, strategies, and systems for obtaining and conveying ideas and information to enhance communication.

Financial Literacy:
9.4.12.CT.2 Explain the potential benefits of collaborating to enhance critical thinking and problem solving (e.g., 1.3E.12profCR3.a).
English Language Arts:
RI.6.4 Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings.
RI.6.7 Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.
W.6.1.B Support claim(s) with clear reasons and relevant evidence, using credible sources and demonstrating an understanding of the topic or text.
L.6.6 Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge.
Science:
MS-ETS1-1 Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, considering relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.
MS-ETS1-2 Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
MS-ETS1-3 Analyze data from test to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet criteria for success.
MS-ETS1-4 Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.

Integration of 21st Century Skills

Indicators:

From the Partnership for 21st Century Skills (P21), the deeper learning competencies and skills for 21st century learning in this unit include communication, and critical thinking.

- Use various types of reasoning (inductive, deductive, etc.) as appropriate to the situation.
- Use systems thinking.
- Reflect critical on learning experiences and processes.
- Solve different kinds of non-familiar problems in both conventional and innovative ways.
- Identify and ask significant questions that clarify various points of view and lead to better solutions.
- Articulate thoughts and ideas effectively using oral, written, and nonverbal communication skills in a variety of forms and contexts.
- Listen effectively to decipher meaning, including knowledge, values, attitudes, and intentions.
- Use communication for a range of purposes (e.g., to inform, instruct, motivate, and persuade).

Module 4: Integers, Rational Numbers, and the Coordinate Plane

Unit Description: In this module, students draw on their knowledge of whole numbers and number lines to develop understanding of integers, rational numbers, and the coordinate plane. They use their understanding to build fluency with representations of integers and absolute value, comparing and ordering rational numbers, and graphing points and finding distance on the coordinate plane. They also apply their understanding of integers, rational numbers, and the coordinate plane to solve real-world problems.

Unit Duration: 3 Weeks (21 Days)

Desired Results

Standard(s):

6.NS.C Apply and extend previous understandings of numbers to the system of rational numbers.

Standards for Mathematical Practice: MP1, MP2, MP3, MP4, MP5, MP6, MP7, MP8

Indicators:

6.NS.C.5 Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.

6.NS.C.6 Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.

6.NS.C.7 Understand ordering and absolute value of rational numbers.

6.NS.C.8 Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.

Understandings:

Students will understand that…

- Students will use integers on a number line to represent quantities.
- Students will find the opposites of integers and use opposites to understand absolute value.
- Students will compare and order integers using a number line.
- Students will reason about rational numbers using a number line.
- Students will identify ordered pairs, points, and quadrants and graph ordered pairs on the coordinate plane.
- Students will graph reflections of points within the coordinate plane.
- Students will use absolute value to find the distance between points on the coordinate plane.

Essential Questions:

- How are integers and rational numbers related to the coordinate plane?
- Why is 0 its own opposite?
- How does a number line help to organize a set of integers?
- Why is the absolute value of a number not the same as the opposite of a number?
- When comparing two numbers, is the number farther to the left on a number line always the lesser number?
- When comparing two numbers, is the number closer to 0 always the lesser number?
- How can a fraction be written as a decimal?
- What happens to the coordinates of a point when a point is reflected across an axis?
- How can you use absolute value to find distance on the coordinate plane?

Assessment Evidence

Performance Tasks:	**Other Evidence:**
• Integers, Rational Numbers, and the Coordinate Plane Performance Task • Formative Assessment Math Probe- Compare Rational Numbers • Module Vocabulary Test (RM C1 M4) • Put It All Together (RM C1 M4): Quiz 4-1, 4-3, and 4-4 • Put It All Together (RM C1 M4): Quiz 4-5 to 4-7	• Class Participation • Teacher Observation and Questioning • Successful completion of classwork and homework assignments which may include but are not limited to, lesson Got It questions, close and checks, lesson homework, and supplemental review worksheets. • Module Vocabulary Activity (RM C1 M4) • Lesson 4-1 through 4-7 • Practice, Extra Practice, Spiral Review **Reviews:** Module Review (RM C1 M4) Dynamic Module Practice (RM C1 M4)

Benchmarks:
Departmental assessments will be developed from the following resources:

On-Level Assessments (Form A)- Three versions of the on-level assessment are available, Form A1, Form A2, and Form A3.

- NA Module Test Form A1 (RM C1 M4)
- NA Module Test Form A2 (RM C1 M4)
- NA Module Test Form A3 (RM C1 M4)

Differentiated Assessments (Form B and C)- Form B represents the approaching-level (AL) assessment. Form C represents the beyond-level (BL) assessment.

Learning Plan

Learning Activities:

Vocabulary in Module #4: Absolute Value, Integer, Negative Integer, Opposite, Positive Integer, Quadrants, Rational Number, Reflection

4-1 Represent Integers: *2 Full Days*
Explore (Online Activity)
Students will explore how integers can be used to represent quantities
Learn (Notes & Discussion)- Use Integers to Represent Quantities
Students will understand what an integer is, how integers can represent real-world quantities, and where integers are located on the number line.

- **Example #1- Use Integers to Represent Quantities:** *Students will write an integer to represent a real-world quantity and explain the meaning of zero in the situation.*

Learn (Notes & Discussion)- Graph Integers on a Number Line
Students will learn how to graph a set of integers on a horizontal or vertical number line.

- **Example #2- Graph Integers on a Number Line:** *Students will graph a set of integers on a number line.*

Exit Ticket
Homework Practice (Page 197-198)

4-2 Opposites and Absolute Value: *2 Full Days*
Explore (Online Activity)- Opposites and Absolute Value
Students will use Web Sketch to explore opposites and absolute value.
Learn (Notes & Discussion)- Find Opposites
Students will understand what the opposite of an integer is, and where it is located on the number line.

- **Example #1- Divide Fractions by Whole Numbers:** *Students will find the opposite of an integer by using a number line.*
- **Example #2- Find Opposites Using Symbols:** *Students will find the opposite of an integer by using symbols.*
- **Example #3- Find Opposites of Integers:** *Students will find the opposite of the opposite of an integer.*

Learn (Notes & Discussion)- Absolute Value of Integers
Students will understand that the absolute value of an integer is the distance the integer is from zero on the number line.

- **Example #4- Find the Absolute Value of Integers:** *Students will find the absolute value of an integer to solve a real-world problem.*

Exit Ticket
Homework Practice (Page 203-204)

4-3 Compare and Order Integers: *2 Full Days*
Learn (Notes & Discussion)- Compare Integers
Students will understand that they can compare two integers by reasoning about their signs and locations on a number line.

- **Example #1- Compare Two Integers:** *Students will write an inequality to compare two integers and explain the meaning of the inequality.*

Learn (Notes & Discussion)- Order Sets of Integers
Students will understand that a number line can be used to order a set of integers.

- **Example #2- Order Sets of Integers:** *Students will order a set of integers.*

Learn (Notes & Discussion)- Distinguish Absolute Value from Order
Students will understand how to distinguish between comparisons of absolute value and comparisons about order.

- **Example #3- Comparisons with Absolute Value:** *Students will distinguish between comparisons of absolute value and comparisons of order.*

Apply- Chemistry
Students will come up with their own strategy to solve an application problem involving freezing points of substances.
Exit Ticket
Homework Practice (Page 203-204)

4-4 Rational Numbers: *2 Full Days*
Learn (Notes & Discussions)- Rational Numbers
Students will understand what a rational number is, and how it includes the sets of natural numbers, whole numbers, and integers.
Learn (Notes & Discussions)- Graph Rational Numbers on a Number Line
Students will understand that rational numbers are points on the number line, and how to use a number line to represent them.

- **Example #1- Graph Sets of Rational Numbers:** *Students will graph a set of rational numbers on a number line.*

Learn- Absolute Value of Rational Numbers
Students will understand that the absolute value of a rational number is the distance the number is from zero on the number line.

- **Example #2- Find Absolute Value of Rational Numbers:** *Students will find the absolute value of a rational number.*

Learn (Notes & Discussions)- Compare Rational Numbers
Students will understand that they can compare two rational numbers by reasoning about their signs and locations on a number line.

- **Example #3- Compare Rational Numbers:** *Students will write an inequality to compare two rational numbers.*

Learn (Notes & Discussions)- Order Rational Numbers
Students will understand how a number line can be used to order a set of rational numbers.

- **Example #4- Order Sets of Rational Numbers:** *Students will order a set of rational numbers.*

Apply- Gardening
Students will come up with their own strategy to solve an application problem involving comparisons to the record weight of a pumpkin.
Exit Ticket
Homework Practice (Page 223-224)
Formative Assessment Math Probe

Put it All Together 1: Lessons 4-1, 4-3, and 4-4: *½ of a Full Class*

4-5 The Coordinate Plane: *3 Full Days*
Explore (Online Activity)- The Coordinate Plane
Students will use Sketchpad to explore the coordinate plane.
Learn (Notes & Discussions)- The Coordinate Plane
Students will understand how to determine the sign of the x- and y- coordinates for ordered pairs graphed within the four quadrants of the coordinate plane.

- **Example #1- Identify the Quadrant:** *Students will identify the quadrant of the coordinate plane in which a given point is located.*
- **Example #2- Identify the Axis:** *Students will identify the axis on which a given point is located.*

Learn (Notes & Discussion)- Identify Ordered Pairs
Students will learn how to identify an ordered pair that represents a point graphed on the coordinate plane.

- **Example #3- Identify Ordered Pairs:** *Students will identify an ordered pair that represents a point graphed on the coordinate plane.*

Learn (Notes & Discussion)- Identify the Points
Students will learn how to identify a point on the coordinate plane given an ordered pair.

- **Example #4- Identify Points:** *Students will identify a point on the coordinate plane given an ordered pair.*

Learn (Notes & Discussion)- Graph Ordered Pairs
Students will learn how to graph ordered pairs with rational number coordinates in the coordinate plane.

- **Example #5- Graph Ordered Pairs:** *Students will graph ordered pairs with rational number coordinates on the coordinate plane.*

Apply- Maps
Students will come up with their own strategy to solve an application problem involving locations of places on a map of a town.
Exit Ticket
Homework Practice (Page 235-236)

4-6 Graph Reflections of Points: *3 Full Days*
Explore (Online Activity)- Reflect a Point
Students will use Sketchpad to explore reflections of points.
Learn (Notes & Discussion)- Reflections of Points
Students will understand that when two ordered pairs differ only by signs, the points are reflections of each other across one or both axes.

- **Example #1- Identify Reflections of Points Across the x-axis:** *Students will write an ordered pair to represent the reflection of a given point across the y-axis.*
- **Example #2- Identify Reflections of Points Across the y-axis:** *Students will write an ordered pair to represent the reflection of a given point across the y-axis.*
- **Example #3- Identify the Axis of Reflection:** *Students will identify the axis of reflection for a point graphed on the coordinate plane.*

Apply- Geography
Students will come up with their own strategy to solve an application problem involving the locations of objects in a neighborhood park.
Exit Ticket
Homework Practice (Page 243-244)

4-7 Absolute Value and Distance: *3 Full Days*
Explore (Online Activity)- Distance on the Coordinate Plane
Students will use Web Sketchpad to explore distance on the coordinate plane.
Learn (Notes & Discussion)- Find Horizontal Distance
Students will learn how to find the horizontal distance between two points with the same y-coordinate.

- **Example #1- Find Horizontal Distance in the Same Quadrant:** *Students will find the horizontal distance between two points in the same quadrant on the coordinate plane.*
- **Example #2- Find Horizontal Distance in Different Quadrants:** *Students will find the horizontal distance between two points in different quadrants on the coordinate plane.*

Learn (Notes & Discussion)- Find Vertical Distance
Students will learn how to find the vertical distance between two points with the same x-coordinate.

- **Example #3- Find Vertical Distance in the Same Quadrant:** *Students will find the vertical distance between two points in the same quadrant on the coordinate plane.*
- **Example #4- Find Vertical Distance in Different Quadrants:** *Students will find the vertical distance between two points in different quadrants on the coordinate plane.*

Apply- Distance
Students will come up with their own strategy to solve an application problem involving determining which friend has a farther distance to travel to a park.
Exit Ticket
Homework Practice (Page 253-254)

Put it All Together 2: Lessons 4-5 through 4-7: *½ of a Full Class*

Reflect on the Module: *2 Full Days*
Use what you learned about fractions and decimals to complete the graphic organizer.
Test Practice (Page 257-258)
Unit Test

Resources: Text, online etools associated with text, whiteboard, and laptops

Unit Modifications for Special Population Students	
Advanced Learners	• Refer to green BL (Beyond Level) indicators in Teacher Edition and assign corresponding activities: Beyond Level Differentiated Activities, Extension Activities • Use IXL to enhance targeted skills • Provide opportunities to complete enrichment projects for Unit • Assigning leveled homework • Internet Resources are available and can be accessed from school. • Assign challenge problems
Struggling Learners	• Refer to green AL (Approaching Level) indicators in Teacher Edition and assign corresponding activities; Remediation Activities, Extra Examples, Arrive Math Take Another Look Mini Lessons • Use IXL to enhance targeted skills • Use mathematical tools: Know-Need-Plan, Number Line, Place Value Blocks, Fractions, and Percents, Coordinate Graphs, and Venn Diagram to provide student with visual models and problem-solving tools. • Demonstration using concrete examples and hands on manipulatives • Place students in diverse groups that will provide strong models of effective group discussion
English Language Learners	• Refer to purple ELL (English Language Learner) indicators in Teacher Edition and assign corresponding activities • Use natural language to explain mathematical concepts and perform mathematical concepts to perform mathematical operations. • Simplification and paraphrasing of instructional languages; direct teaching of key vocabulary • Demonstration using concrete examples • Use of hands-on manipulatives • Use of graphic organizers • If beneficial to the student, utilize the Spanish Student Edition eBook, Course 1

Special Needs Learners	Each special education student has in Individualized Educational Plan (IEP) that details the specific accommodations, modifications, services, and support needed to level the playing field. This will enable that student to access the curriculum to the greatest extent possible in the least restrictive environment. These include: • Variation of time: adapting the time allotted for learning, task completion, or testing • Variation of input: adapting the way instruction is delivered • Variation of output: adapting how a student can respond to instruction • Variation of size: adapting the number of items the student is expected to complete • Modifying the content, process or product Additional resources are outlined to facilitate appropriate behavior and increase student engagement. Teachers are encouraged to use the Understanding by Design Learning Guidelines (UDL). These guidelines offer a set of concrete suggestions that can be applied to any discipline to ensure that all learners can access and participate in learning opportunities. The framework can be viewed here www.udlguidelines.cast.org
Learners with a 504	Refer to page four in the Parent and Educator Resource Guide to Section 504 to assist in the development of appropriate plans.

Interdisciplinary Connections

Indicators:

Social Studies:

6.1.12.EconNE.3.a Analyze the impact of money, investment, credit, savings, debt, and financial institutions on the development of the nation and the lives of individuals.

Computer Science and Design Thinking:

8.1.8.DA.1 Organize and transform data collected using computational tools to make it usable for a specific purpose.

8.1.8.DA.5 Test, analyze, and refine computational models

8.1.12.DA.5 Create data visualizations from large data sets to summarize, communicate, and support different interpretations of real-world phenomena.

Technology Education:

9.3.ST.1 Use technology to acquire, manipulate, analyze, and report data.

9.3.ST-ET.5 Apply the knowledge learned in STEM to solve problems.

9.3.ST-SM.2 Apply science and mathematics concepts to the development of plans, processes and projects that address real world problems.

9.4.12.O.11 Apply active listening skills to obtain and clarify information.

9.4.12.O.32 Effectively use information technology to gather, store and communicate data in appropriate formats.

9.4.12.O.(1).8 Select and use a range of communications technologies, including word processing, spreadsheet, database, presentation, email, and Internet applications to locate and display information.

9.4.12.O.5 Demonstrate use of concepts, strategies, and systems for obtaining and conveying ideas and information to enhance communication.

Financial Literacy:

9.4.12.CT.2 Explain the potential benefits of collaborating to enhance critical thinking and problem solving (e.g., 1.3E.12profCR3.a).

English Language Arts:

RI.6.4 Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings.

RI.6.7 Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.
W.6.1.B Support claim(s) with clear reasons and relevant evidence, using credible sources and demonstrating an understanding of the topic or text.
L.6.6 Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge.
Science:
MS-ETS1-1 Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, considering relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.
MS-ETS1-2 Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
MS-ETS1-3 Analyze data from test to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet criteria for success.
MS-ETS1-4 Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.

Integration of 21st Century Skills

Indicators:

From the Partnership for 21st Century Skills (P21), the deeper learning competencies and skills for 21st century learning in this unit include creativity and critical thinking.

- Develop, implement, and communicate new ideas to others effectively.
- View failure as an opportunity to learn; understand that creativity and innovation is a long-term, cyclical process of small successes and frequent mistakes.
- Use various types of reasoning (inductive, deductive, etc.) as appropriate to the situation.
- Use systems thinking.
- Reflect critical on learning experiences and processes.

Module 5: Numerical and Algebraic Expressions

Unit Description: In this module, students draw on their knowledge of the four basic operations to develop understanding of numerical and algebraic expressions. They use this understanding to build fluency with using powers and exponents, order of operations, and mathematical properties, as well as evaluating multi-step algebraic expressions and generating and simplifying equivalent algebraic expressions to solve real-world problems.

Unit Duration: 4 Weeks (20.5 Days)

Desired Results

Standard(s):

6.NS.B Compute fluently with multi-digit numbers and find common factors and multiples.

6.EE.A Apply and extend previous understandings of arithmetic to algebraic expressions.

6.EE.B Reason about and solve one-variable equations and inequalities.

Standards for Mathematical Practice: MP1, MP2, MP3, MP4, MP5, MP6, MP7, MP8

Indicators:

6.EE.A.1 Write and evaluate numerical expressions involving whole-number exponents.

6.EE.A.2 Write, read, and evaluate expressions in which letters stand for numbers.

Also addresses: 6.NS.B.4, 6.EE.A.2.A, 6.EE.A.2.B, 6.EE.A.2.C, 6.EE.A.3, 6.EE.A.4, and 6.EE.B.6

Understandings:
Students will understand…

- How to write and evaluate powers.
- How to write and evaluate numerical expressions.
- How to write algebraic expressions.
- How to evaluate algebraic expressions.
- How to solve problems by finding the greatest common factor and least common multiple of two whole numbers.
- How to use the distributive property to expand and factor expressions.
- How to identify and generate equivalent algebraic expressions.

Essential Questions:

- How can we communicate the algebraic relationships with mathematical symbols?
- What is the difference between a base and an exponent?
- What does the term factor mean?
- What is a term?
- Why is it important to define the variable?
- How can you determine the value of an algebraic expression for different given values?
- How can you find the GCF of two numbers?
- How can you use mathematical rules and properties to identify equivalent expressions?

Assessment Evidence

Performance Tasks:

- Numerical and Algebraic Expressions Performance Task
- Formative Assessment Math Probe- Equivalent Expressions
- Module Vocabulary Test (RM C1 M5)
- Put It All Together (RM C1 M5): Quiz 5-1 through 5-4

Other Evidence:

- Class Participation
- Teacher Observation and Questioning
- Successful completion of classwork and homework assignments which may include but are not limited to, lesson Got It questions, close and checks, lesson homework, and supplemental review worksheets.

	• NA Module Vocabulary Activity (RM C1 M5) • Lesson 5-1 through 5-7 • Practice, Extra Practice, Spiral Review **Reviews:** NA Module Review (RM C1 M5) Dynamic Module Practice (RM C1 M5)

Benchmarks:
Departmental assessments will be developed from the following resources:

On-Level Assessments (Form A)- Three versions of the on-level assessment are available, Form A1, Form A2, and Form A3.

- NA Module Test Form A1 (RM C1 M5)
- NA Module Test Form A2 (RM C1 M5)
- NA Module Test Form A3 (RM C1 M5)

Differentiated Assessments (Form B and C)- Form B represents the approaching-level (AL) assessment. Form C represents the beyond-level (BL) assessment.

Learning Plan

Learning Activities:

Vocabulary in Module #5: Algebra, Algebraic Expression, Associative Property, Base, Coefficient, Commutative Property, Constant, Defining the Variable, Distributive Property, Equivalent Expressions, Evaluate, Exponent, Factoring the Expression, Greatest Common Factor, Identity Property, Least Common Multiple, Like Terms, Numerical Expression, Order of Operations, Power, Simplest Form, Term, Variable

5-1 Powers and Exponents: *2 Full Days*
Learn (Notes & Discussion)- Products as Powers
Students will learn how to write products of the same factor as powers using whole-number exponents.
- **Example #1- Write Products as Powers:** *Students will write products as powers using whole-number exponents.*
- **Example #2- Write Products as Powers:** *Students will write products as powers using whole-number exponents.*

Learn (Notes & Discussion)- Powers as Products
Students will learn how to evaluate powers with whole-number factors.
- **Example #3- Evaluate Powers:** *Students will evaluate powers with whole-number factors.*
- **Example #4- Evaluate Powers:** *Students will evaluate powers with factors that are fractions.*
- **Example #5- Evaluate Powers:** *Students will evaluate powers with factors that are fractions.*

Apply- Biology
Students will come up with their own strategy to solve an application problem involving the number of bacteria in a petri-dish.
Exit Ticket
Homework (Page 267-268)

5-2 Numerical Expressions: *2 Full Days*
Learn (Notes & Discussion)- Numerical Expressions
Students will understand that the order of operations can be used to evaluate numerical expressions.
- **Example #1- Evaluate Numerical Expressions:** *Students will evaluate numerical expressions with whole numbers.*
- **Example #2- Evaluate Numerical Expressions:** *Students will evaluate numerical expressions with rational numbers.*

Learn (Notes & Discussion)- Write Numerical Expressions

Students will learn how to write a numerical expression to model a real-world problem.

- **Example #3- Write and Evaluate Numerical Expressions:** *Students will write and evaluate a numerical expression that models a real-world problem.*

Apply- Art Supplies
Students will come up with their own strategy to solve an application problem involving art supplies.
Exit Ticket
Homework Practice (Page 276-276)

5-3 Write Algebraic Expressions: *2 Full Days*
Explore (Online Activity)- Write Algebraic Expressions
Students will use algebra tiles to explore writing algebraic expressions.
Learn (Notes & Discussion)- Structure of Algebraic Expressions
Students will learn about the structure of an algebraic expression and how to identify its parts.

- **Example #1- Identify Parts of Algebraic Expressions:** *Students will identify the parts of an algebraic expression.*

Learn (Notes & Discussion)- Write One-Step Algebraic Expressions
Students will learn how to write one-step algebraic expressions.

- **Example #2- Write One-Step Algebraic Expressions:** *Students will write one-step expressions involving addition or subtraction.*
- **Example #3- Write One-Step Algebraic Expressions:** *Students will write one-step expressions involving multiplication and division.*

Learn (Notes & Discussion)- Write Two-Step Algebraic Expressions
Students will learn how to write two-step expressions.

- **Example #4- Write Two-Step Algebraic Expressions:** *Students will write two-step expressions.*
- **Example #5- Write Algebraic Expressions:** *Students will write algebraic expressions to represent the perimeter of a geometric figure.*

Exit Ticket
Homework Practice (Page 286-286)

5-4 Evaluate Algebraic Expressions: *3 Full Days*
Explore (Online Activity)- Algebraic Expressions
Students will use Web Sketchpad to explore algebraic expressions.
Learn (Notes & Discussion)- Evaluate Algebraic Expressions
Students will learn how to evaluate algebraic expressions.

- **Example #1- Evaluate One-Step Algebraic Expressions:** *Students will evaluate one-step algebraic expressions for given rational-number values.*
- **Example #2- Evaluate One-Step Algebraic Expressions:** *Students will evaluate one-step algebraic expressions for given rational-number values.*
- **Example #3- Evaluate Multi-Step Algebraic Expressions:** *Students will evaluate multi-step algebraic expressions for given rational-number values.*
- **Example #4- Use Algebraic Expressions:** *Students will evaluate multi-step algebraic expressions for given rational-number values.*

Apply- Woodworking
Students will write algebraic expressions to represent perimeter of picture frames.
Exit Ticket
Homework Practice (Page 293-294)

Put it All Together 1: Lessons 5-1 through 5-4: *½ of a Full Class*

5-5 Factors and Multiples: *2 Full Days*
Explore (Online Activity)- Greatest Common Factor
Students will explore how to find the greatest common factor of two whole numbers.
Learn (Notes & Discussion)- Greatest Common Factor
Students will learn how to find the greatest common factor of two whole numbers.

- **Example #1- Find the GCF by Using a List of Factors:** *Students will find the greatest common factor of two whole numbers by listing the factors.*

- **Example #2- Find the GCF by Using a Factor Tree:** *Students will find the greatest common factor of two whole numbers by using a factor tree.*

Explore (Online Activity)- Least Common Multiple
Students will use Web Sketchpad to explore how to find the least common multiple of two whole numbers.
Learn (Notes & Discussion)- Least Common Multiple
Students will learn how to find the least common multiple of two whole numbers.

- **Example #3- Find the LCM by Using a List of Multiples:** *Students will find the least common multiple of two whole numbers by listing the multiples.*
- **Example #4- Find the LCM by Using a Number Line:** *Students will find the least common multiple of two whole numbers by using a number line.*

Apply- School Supplies
Students will come up with their own strategy to solve an application problem involving items in the school store.
Exit Ticket
Homework Practice (Page 303-304)

5-6 Use Distributive Property: *3 Full Days*
Explore (Online Activity)- Use Algebra Tiles to Model the Distributive Property
Students will use algebra tiles to explore the Distributive Property.
Learn (Notes & Discussion)- The Distributive Property
Students will understand how the Distributive Property can be applied to multiply a sum by a number.

- **Example #1- Use the Distributive Property:** *Students will use the Distributive Property to expand algebraic expressions.*
- **Example #2- Use the Distributive Property:** *Students will use the Distributive Property to multiply a whole number and a rational number.*

Learn (Notes & Discussion)- Greatest Common Factor and the Distributive Property
Students will learn how to factor expressions using the greatest common factor.

- **Example #3- Use GCF to Factor Numerical Expressions:** *Students will factor numerical expressions by using the greatest common factor.*
- **Example #4- Use GCF to Factor Algebraic Expressions:** *Students will factor algebraic expressions using the greatest common factor.*

Apply- Money
Students will come up with their own strategy to solve an application problem involving calculating change.
Exit Ticket
Homework Practice (Page 313-314)

5-7 Equivalent Algebraic Expressions: *3 Full Days*
Explore (Online Activity)- Properties and Equivalent Expressions
Students will explore using mathematical properties to identify equivalent expressions.
Learn (Notes & Discussion)- Use Properties to Identify Equivalent Expressions
Students will learn how to use mathematical properties to identify equivalent expressions.

- **Example #1- Identify Equivalent Expressions:** *Students will use mathematical properties to identify equivalent expressions.*

Learn (Notes & Discussion)- Use Substitution to Identify Equivalent Expressions
Students will understand that two expressions are equivalent if they have the same value regardless of which value is sustained into them.

- **Example #2 and #3- Determine Equivalency Using Substitution:** *Students will use substitution to identify equivalent expressions.*

Learn (Notes & Discussion)- Combine Like Terms
Students will learn how to combine like terms to simplify expressions.

- **Example #4 and #5- Combine Like Terms:** *Students will combine like terms to simplify algebraic expressions.*

Learn (Notes & Discussion)- Apply Properties to Write Equivalent Expressions
Students will learn how to write equivalent algebraic expressions using mathematical practices.
Example #6- Write Equivalent Expressions: *Students will write equivalent algebraic expressions.*
Apply- Shipping
Students will come up with their own strategy to solve an application problem involving shipping cosmic books.

Exit Ticket
Homework Practice (Page 327-328)
Formative Assessment Math Probe

Reflect on the Module: *2 Full Days*
Use what you learned about numerical and algebraic relationships s to complete the graphic organizer.
Test Practice (Page 331-332)
Unit Test

Resources: Text, online tools associated with text, whiteboard, and laptops

Unit Modifications for Special Population Students	
Advanced Learners	• Refer to green BL (Beyond Level) indicators in Teacher Edition and assign corresponding activities: Beyond Level Differentiated Activities, Extension Activities • Use IXL to enhance targeted skills • Provide opportunities to complete enrichment projects for Unit • Assigning leveled homework • Internet Resources are available and can be accessed from school. • Assign challenge problems
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8.1.8.DA.5 Test, analyze, and refine computational models

8.1.12.DA.5 Create data visualizations from large data sets to summarize, communicate, and support different interpretations of real-world phenomena.

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9.3.ST.1 Use technology to acquire, manipulate, analyze, and report data.

9.3.ST-ET.5 Apply the knowledge learned in STEM to solve problems.

9.3.ST-SM.2 Apply science and mathematics concepts to the development of plans, processes and projects that address real world problems.

9.4.12.O.11 Apply active listening skills to obtain and clarify information.

9.4.12.O.32 Effectively use information technology to gather, store and communicate data in appropriate formats.

9.4.12.O.(1).8 Select and use a range of communications technologies, including word processing, spreadsheet, database, presentation, email, and Internet applications to locate and display information.

9.4.12.O.5 Demonstrate use of concepts, strategies, and systems for obtaining and conveying ideas and information to enhance communication.

Financial Literacy:

9.4.12.CT.2 Explain the potential benefits of collaborating to enhance critical thinking and problem solving (e.g., 1.3E.12profCR3.a).

English Language Arts:

RI.6.4 Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings.

RI.6.7 Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.

W.6.1.B Support claim(s) with clear reasons and relevant evidence, using credible sources and demonstrating an understanding of the topic or text.

L.6.6 Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge.

Science:

MS-ETS1-1 Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, considering relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.
MS-ETS1-2 Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
MS-ETS1-3 Analyze data from test to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet criteria for success.
MS-ETS1-4 Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.

Integration of 21st Century Skills

Indicators:

From the Partnership for 21st Century Skills (P21), the deeper learning competencies and skills for 21st century learning in this unit include collaboration, communication, creativity, and critical thinking.

- Develop, implement, and communicate new ideas to others effectively.
- View failure as an opportunity to learn; understand that creativity and innovation is a long-term, cyclical process of small successes and frequent mistakes.
- Use various types of reasoning (inductive, deductive, etc.) as appropriate to the situation.
- Use systems thinking.
- Reflect critical on learning experiences and processes.
- Solve different kinds of non-familiar problems in both conventional and innovative ways.
- Identify and ask significant questions that clarify various points of view and lead to better solutions.
- Articulate thoughts and ideas effectively using oral, written, and nonverbal communication skills in a variety of forms and contexts.
- Listen effectively to decipher meaning, including knowledge, values, attitudes, and intentions.
- Use communication for a range of purposes (e.g., to inform, instruct, motivate, and persuade).
- Collaborate with others.

Module 6: Equations and Inequalities

Unit Description: In this module, students draw on their knowledge of expressions, inequality symbols, and inverse operations to develop understanding of equations and inequalities. They use their understanding of models, properties of equality, and substitution to build fluency with writing and solving one-step addition, subtraction, multiplication, and division equations. Fluency is also built through writing, solving, and graphing inequalities. They apply their understanding of equations and inequalities to solve multi-step, real-world problems.

Unit Duration: 3 Weeks (16.5 Days)

Desired Results

Standard(s):

6.EE.B Reason about and solve one-variable equations and inequalities.

Standards for Mathematical Practice: MP1, MP2, MP3, MP4, MP5, MP6, MP7, MP8

Indicators:

6.EE.B.6 Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or depending on the purpose at hand, any number in a specified set.

6.EE.B.7 Solve real-world and mathematical problems by writing and solving equations of the form x+p=q and px=q for cases in which p, q and x are all nonnegative rational numbers.

Also addresses: 6.NS.C.6.C, 6.EE.B.5, and 6.EE.B.8

Understandings:
Students will understand…

- How to use substitution to solve one-step equations.
- How to use the Subtraction Property of Equality to write and solve one-step addition equations.
- How to use the Addition Property of Equality to write and solve one-step subtraction equations.
- How to use the Division Property of Equality to write and solve one-step multiplication equations
- How to use the Multiplication Property of Equality to write and solve one-step division equations.
- How to write, solve, and graph inequalities.

Essential Questions:

- How are the solutions of equations and inequalities different?
- How can you use a model to write addition equations?
- How can you use a bar diagram to represent what you know and what you need to find?
- Why is defining a variable an important step in writing the equation for a real-world problem?
- How is solving an addition equation like using a balance?
- How can you use a model to write multiplication and division equations?
- Why is the Division of Equality used when solving a multiplication equation?

Assessment Evidence

Performance Tasks:

- Equations and Inequalities Performance Task
- Formative Assessment Math Probe- Write Equations
- Module Vocabulary Test (RM C1 M6)

Other Evidence:

- Class Participation
- Teacher Observation and Questioning
- Successful completion of classwork and homework assignments which may include but are not limited to, lesson Got It questions, close and checks,

• Put It All Together (RM C1 M6): Quiz 6-1 through 6-5	lesson homework, and supplemental review worksheets. • Module Vocabulary Activity (RM C1 M6) • Lesson 6-1 through 6-6 - Practice, Extra Practice, Spiral Review **Reviews:** Module Review (RM C1 M6) Dynamic Module Practice (RM C1 M6)

Benchmarks:
Departmental assessments will be developed from the following resources:

On-Level Assessments (Form A)- Three versions of the on-level assessment are available, Form A1, Form A2, and Form A3.

- NA Module Test Form A1 (RM C1 M6)
- NA Module Test Form A2 (RM C1 M6)
- NA Module Test Form A3 (RM C1 M6)

Differentiated Assessments (Form B and C)- Form B represents the approaching-level (AL) assessment. Form C represents the beyond-level (BL) assessment.

Learning Plan

Learning Activities:

Vocabulary in Module #6: Addition Property of Equality, Division Property of Equality, Equal Signs, Equation, Guess/Check/Revise Strategy, Inequality, Inverse Operations, Multiplication Property of Equality, Solution, Solve, Subtraction Property of Equality

6-1 Use Substitution to Solve One-Step-Equations: *1 Full Day*
Learn (Notes & Discussion)- Equations
Students will learn how to differentiate an equation from an expression.
Learn (Notes & Discussion)- Solve Equations Using Substitution
Students will learn how to solve equations using substitution.
- **Example #1- Solve Equations Using Substitution:** *Students will use the substitution method to solve one-step equations.*
- **Example #2- Solve Equations Using Substitution:** Students will use the substitution method to solve one-step equations.

Exit Ticket
Homework Practice (Page 339-340)

6-2 One-Step Addition Equations: *3 Full Days*
Explore (Online Activity)- Use Bar Diagrams to Write Addition Equations
Students will explore how to use a model to write addition equations.
Learn (Notes & Discussion)- Write Addition Equations
Students will learn how to model a real-world problem with a one-step addition equation.
- **Example #1- Write Addition Equations:** Students will model a real-world problem with a one-step addition equation.

Explore (Online Activity)- One-Step Addition Equations
Students will explore solving one-step addition equations using a balance.
Learn (Notes & Discussion)- Solve Addition Equations
Students will learn how to solve one-step addition equations using a model and the Subtraction Property of Equality.

- **Examples #2 and #3- Solve Addition Equations:** *Students will solve one-step addition equations involving whole numbers, using a model and the Subtraction Property of Equality.*

Apply- Money
Students will come up with their own strategy to solve an application problem involving buying books from an online bookstore.
Exit Ticket
Homework Practice (Page 349-350)

6-3 One-Step Subtraction Equations: *2 Full Days*
Explore (Online Activity)- Use Bar Diagrams to Write Subtraction Equations
Students will explore how to use a model to write subtraction equations.
Learn (Notes & Discussion)- Write Subtraction Equations
Students will learn how to model a real-world problem with a one-step subtraction equation.
- **Example #1- Write Subtraction Equations:** *Students will model a real-world problem with a one-step subtraction equation.*

Learn (Notes & Discussion)- Solve Subtraction Equations
Students will learn how to solve one-step subtraction equations using a model and the addition property of equality.
- **Example #2- Solve Subtraction Equations:** *Students will solve one-step subtraction equations involving whole numbers using the Addition Property of Equality.*
- **Example #3- Solve Subtraction Equations:** *Students will solve one-step subtraction equations involving fractions using the Addition Property of Equality.*

Apply-Shopping
Students will come up with their own strategy to solve an application problem involving shopping.
Exit Ticket
Homework Practice (Page 357-358)

6-4 One-Step Multiplication Equations: *2 Full Days*
Explore (Online Activity)- Use Bar Diagrams to Write Multiplication Equations
Students will explore how to use a model to write multiplication equations.
Learn (Notes & Discussion)- Write Multiplication Equations
Students will learn how to model a real-world problem with a one-step multiplication equation.
- **Example #1- Write Multiplication Equations:** *Students will model a real-world problem with a one-step multiplication equation.*

Learn (Notes & Discussion)- Solve Multiplication Equations
Students will learn how to solve a one-step multiplication equation using a model and the Division Property of Equality.
- **Example #2- Solve Multiplication Equations:** *Students will solve one-step multiplication equations using a model and the Division Property of Equality.*
- **Example #3- Solve Multiplication Equations:** *Students will solve one-step multiplication equations involving fractions using the Division Property of Equality.*

Apply-Nutrition
Students will come up with their own strategy to solve an application problem involving grams of sugar per serving.
Exit Ticket
Homework Practice (Page 367-368)

6-5 One-Step Division Equations: *2 Full Days*
Explore (Online Activity)- Use Bar Diagrams to Write Division Equations
Students will explore how to use a model to write division equations.
Learn (Notes & Discussion)- Write Division Equations
Students will learn how to model a real-world problem with a one-step division equation.
- **Example #1- Write Division Equations:** *Students will model a real-world problem with a one-step division question.*

Learn (Notes & Discussion)- Solve Division Equations
Students will learn how to solve one-step division equations using a model and the Multiplication Property of Equality.
- **Example #2- Solve Division Equations:** *Students will solve one-step division equations involving whole numbers using the Multiplication Property of Equality.*

- **Example #3- Solve Division Equations:** *Students will solve one-step division equations involving fractions using the Multiplication Property of Equality.*

Apply-Catering
Students will come up with their own strategy to solve an application problem involving serving portions of food during a party.
Exit Ticket
Homework Practice (Page 375-376)
Formative Assessment Math Probe

Put it All Together 1: Lessons 6-1 through 6-5: *½ of a Full Class*

6-6 Inequalities: *3 Full Days*
Explore (Online Activity)- Inequalities
Students will explore inequalities using a balance and shapes with unknown values.
Learn (Notes & Discussion)- Inequalities
Students will understand how to differentiate between an inequality and an equation.
Learn (Notes & Discussion)- Write Inequalities
Students will learn how to model a real-world problem with an inequality.
- **Example #1- Write Inequalities:** *Students will model a real-world problem with an inequality.*

Learn (Notes & Discussion)- Graph Inequalities
Students will learn how to graph inequalities on a number line.
- **Example #2 and #3- Graph Inequalities:** *Students will graph inequalities involving decimals on a number line.*

Learn (Notes & Discussion)- Find Solutions of an Inequality
Students will learn how to solve one-step inequalities using subtraction.
- **Example #4, #5 and #6- Find Solutions of an Inequality:** *Students will solve one-step inequalities using substitution.*

Apply-Earnings
Students will come up with their own strategy to solve an application problem involving earning money to attend a festival.
Exit Ticket
Homework Practice (Page 389-390)

Reflect on the Module: *2 Full Days*
Use what you learned about equations and inequalities to complete the graphic organizer.
Test Practice (Page 393-394)
Unit Test

Resources: Text, online tools associated with text, whiteboard, and laptops

Unit Modifications for Special Population Students	
Advanced Learners	• Refer to green BL (Beyond Level) indicators in Teacher Edition and assign corresponding activities: Beyond Level Differentiated Activities, Extension Activities • Use IXL to enhance targeted skills • Provide opportunities to complete enrichment projects for Unit • Assigning leveled homework • Internet Resources are available and can be accessed from school. • Assign challenge problems
Struggling Learners	• Refer to green AL (Approaching Level) indicators in Teacher Edition and assign corresponding activities; Remediation Activities, Extra Examples, Arrive Math Take Another Look Mini Lessons

	• Use IXL to enhance targeted skills • Use mathematical tools: Know-Need-Plan, Number Line, Place Value Blocks, Fractions, and Percents, Coordinate Graphed, and Venn Diagram to provide student with visual models and problem-solving tools. • Demonstration using concrete examples and hands on manipulatives • Place students in diverse groups that will provide strong models of effective group discussion
English Language Learners	• Refer to purple ELL (English Language Learner) indicators in Teacher Edition and assign corresponding activities • Use natural language to explain mathematical concepts and perform mathematical concepts to perform mathematical operations. • Simplification and paraphrasing of instructional languages; direct teaching of key vocabulary • Demonstration using concrete examples • Use of hands-on manipulatives • Use of graphic organizers • If beneficial to the student, utilize the Spanish Student Edition eBook, Course 1
Special Needs Learners	Each special education student has in Individualized Educational Plan (IEP) that details the specific accommodations, modifications, services, and support needed to level the playing field. This will enable that student to access the curriculum to the greatest extent possible in the least restrictive environment. These include: • Variation of time: adapting the time allotted for learning, task completion, or testing • Variation of input: adapting the way instruction is delivered • Variation of output: adapting how a student can respond to instruction • Variation of size: adapting the number of items the student is expected to complete • Modifying the content, process or product Additional resources are outlined to facilitate appropriate behavior and increase student engagement. Teachers are encouraged to use the Understanding by Design Learning Guidelines (UDL). These guidelines offer a set of concrete suggestions that can be applied to any discipline to ensure that all learners can access and participate in learning opportunities. The framework can be viewed here www.udlguidelines.cast.org
Learners with a 504	Refer to page four in the Parent and Educator Resource Guide to Section 504 to assist in the development of appropriate plans.

Interdisciplinary Connections
Indicators: **Social Studies:** **6.1.12.EconNE.3.a** Analyze the impact of money, investment, credit, savings, debt, and financial institutions on the development of the nation and the lives of individuals. **Computer Science and Design Thinking:** **8.1.8.DA.1** Organize and transform data collected using computational tools to make it usable for a specific purpose.

8.1.8.DA.5 Test, analyze, and refine computational models
8.1.12.DA.5 Create data visualizations from large data sets to summarize, communicate, and support different interpretations of real-world phenomena.

Technology Education:

9.3.ST.1 Use technology to acquire, manipulate, analyze, and report data.
9.3.ST-ET.5 Apply the knowledge learned in STEM to solve problems.
9.3.ST-SM.2 Apply science and mathematics concepts to the development of plans, processes and projects that address real world problems.
9.4.12.O.11 Apply active listening skills to obtain and clarify information.
9.4.12.O.32 Effectively use information technology to gather, store and communicate data in appropriate formats.
9.4.12.O.(1).8 Select and use a range of communications technologies, including word processing, spreadsheet, database, presentation, email, and Internet applications to locate and display information.
9.4.12.O.5 Demonstrate use of concepts, strategies, and systems for obtaining and conveying ideas and information to enhance communication.

Financial Literacy:

9.4.12.CT.2 Explain the potential benefits of collaborating to enhance critical thinking and problem solving (e.g., 1.3E.12profCR3.a).

English Language Arts:

RI.6.4 Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings.
RI.6.7 Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.
W.6.1.B Support claim(s) with clear reasons and relevant evidence, using credible sources and demonstrating an understanding of the topic or text.
L.6.6 Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge.

Science:

MS-ETS1-1 Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, considering relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.
MS-ETS1-2 Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
MS-ETS1-3 Analyze data from test to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet criteria for success.
MS-ETS1-4 Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.

Integration of 21st Century Skills

Indicators:

From the Partnership for 21st Century Skills (P21), the deeper learning competencies and skills for 21st century learning in this unit include collaboration, communication, creativity, and critical thinking.

- Develop, implement, and communicate new ideas to others effectively.
- View failure as an opportunity to learn; understand that creativity and innovation is a long-term, cyclical process of small successes and frequent mistakes.
- Use various types of reasoning (inductive, deductive, etc.) as appropriate to the situation.
- Use systems thinking.
- Reflect critical on learning experiences and processes.
- Solve different kinds of non-familiar problems in both conventional and innovative ways.
- Identify and ask significant questions that clarify various points of view and lead to better solutions.

- Articulate thoughts and ideas effectively using oral, written, and nonverbal communication skills in a variety of forms and contexts.
- Listen effectively to decipher meaning, including knowledge, values, attitudes, and intentions.
- Use communication for a range of purposes (e.g., to inform, instruct, motivate, and persuade).
- Collaborate with others.

Module 7: Relationships Between Two Variables

Unit Description: In this module, students draw on their knowledge of tables, equations, and the coordinate plane to develop understanding of relationships between two variables. They build fluency with using a table to find variable values, writing equations, and graphing the relationship. They also apply their understanding of relationships between two variables to solve real-world problems.

Unit Duration: 2 Weeks (10.5 Days)

Desired Results

Standard(s):

6.EE.C Represent and analyze quantitative relationships between dependent and independent variables.

Standards for Mathematical Practice: MP1, MP2, MP3, MP4, MP5, MP6, MP7, MP8

Indicators:

6.EE.C.9 Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables and relate these to the equation. For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation d=65t to represent the relationship between distance and time.

Understandings:
Students will understand…

- How to identify and use independent and dependent variables in relationships.
- How to write equations to represent relationships.
- How to write equations and graph lines to represent relationships.
- How to use tables, equations, and graphs to represent relationships.

Essential Questions:

- What are the ways in which a relationship between two variables can be displayed?
- How can you find the rule for a relationship between two variables?
- How can you use the work backward strategy to find each input value, instead of writing and solving an equation?
- What is a coefficient?
- What does it mean to substitute a value into the equation?

	• How is graphing ordered pairs from an equation like graphing ordered pairs from a ratio table? • Why do we write the variables as ordered pairs?

Assessment Evidence

Performance Tasks: • Relationship Between Two Variables Performance Task • Formative Assessment Math Probe-Equations • Module Vocabulary Test (RM C1 M7) • Put It All Together (RM C1 M7): Quiz 7-1 through 7-2	**Other Evidence:** • Class Participation • Teacher Observation and Questioning • Successful completion of classwork and homework assignments which may include but are not limited to, lesson Got It questions, close and checks, lesson homework, and supplemental review worksheets. • Module Vocabulary Activity (RM C1 M7) • Lesson 7-1 through 7-4 - Practice, Extra Practice, Spiral Review **Reviews:** Module Review (RM C1 M7) Dynamic Module Practice (RM C1 M7)

Benchmarks:
Departmental assessments will be developed from the following resources:

On-Level Assessments (Form A)- Three versions of the on-level assessment are available, Form A1, Form A2, and Form A3.

- NA Module Test Form A1 (RM C1 M7)
- NA Module Test Form A2 (RM C1 M7)
- NA Module Test Form A3 (RM C1 M7)

Differentiated Assessments (Form B and C)- Form B represents the approaching-level (AL) assessment. Form C represents the beyond-level (BL) assessment.

Learning Plan

Learning Activities:

Vocabulary in Module #7: Dependent Variable, Independent Variable

7-1 Relationships Between Two Variables: *3 Full Days*
Explore (Online Activity)- Relationships Between Two Variables
Students will use Web Sketchpad to explore the relationship between two variables.
Learn (Notes &Discussion)- Identify Independent and Dependent Variables
Students will learn how to identify independent and dependent variables.
Learn (Notes &Discussion)- Find Dependent Variable Values in a Table
Students will learn how to use a table to find the dependent variable values, given the independent variable values.
- **Example #1- Find Dependent Variable Values in a Table:** *Students will use a table to find the dependent variable values, given the independent variable values.*

Learn (Notes &Discussion)- Find Independent Variable Values in a Table

Students will learn how to use a table to find the independent variable values, given the dependent variable values.

- **Example #2- Find Independent Variable Values in a Table:** *Students will use a table to find the independent variable values, given the dependent variable values.*

Apply- Measurement
Students will come up with their own strategy to solve an application problem involving comparing measurements.
Exit Ticket
Homework Practice (Page 403-404)

7-2 Write Equations to Represent Relationships Represented in Tables: *2 Full Days*
Learn (Notes & Discussion)- Write One-Step Equations
Students will learn how to model a relationship shown in a table with a one-step equation.

- **Example #1- Write One-Step Equations:** *Students will model a relationship shown in a table with a one-step equation.*

Explore (Online Activity)- Relationships with Rules that Require Two Steps
Students will use Web Sketchpad to explore the relationship between two variables when two steps are required.
Learn (Notes &Discussion)- Write Two-Step Equations
Students will learn how to model a relationship shown in a table with a two-step equation.

- **Example #2- Write Two-Step Equations:** *Students will model a relationship shown in a table with a two-step equation.*

Apply-Art
Students will come up with their own strategy to solve an application problem involving painting signs for a school election campaign.
Exit Ticket
Homework Practice (Page 413-414)
Formative Assessment Math Probe

Put it All Together 1: Lessons 7-1 through 7-2: *½ of a Full Class*

7-3 Graphs of Relationships: *1 Full Day*
Learn (Notes & Discussion)- Graph a Relationship from an Equation
Students will learn how to graph a relationship given an equation by creating a table of ordered pairs.

- **Example #1- Graph a Relationship from an Equation:** *Students will graph a relationship given an equation by creating a table of ordered pairs.*

Learn (Notes & Discussion)- Write an Equation from a Graph: *Students will learn how to write the equation of a relationship graphed on the coordinate plane by creating a table of ordered pairs.*

- **Example #2- Write an Equation from a Graph:** *Students will write the equation of a relationship graphed on the coordinate plane, by first creating a table of ordered pairs.*

Exit Ticket
Homework Practice (Page 421-422)

7-4 Multiple Representations: *1 Full Day*
Learn (Notes & Discussion)- Multiple Representations of Relationships
Students will learn that relationships between two variables can be represented in multiple ways (words, tables, equations, and graphs).

- **Example #1- Multiple Representations of Relationships:** *Students will represent a real-world relationship between two variables with an equation, a table, and a graph.*

Exit Ticket
Homework Practice (Page 427-428)

Reflect on the Module: *2 Full Days*
Use what you learned about relationships between two variables to complete the graphic organizer.
Test Practice (Page 431-432)
Unit Test

Resources: Text, online tools associated with text, whiteboard, and laptops

Unit Modifications for Special Population Students	
Advanced Learners	• Refer to green BL (Beyond Level) indicators in Teacher Edition and assign corresponding activities: Beyond Level Differentiated Activities, Extension Activities • Use IXL to enhance targeted skills • Provide opportunities to complete enrichment projects for Unit • Assigning leveled homework • Internet Resources are available and can be accessed from school. • Assign challenge problems
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English Language Learners	• Refer to purple ELL (English Language Learner) indicators in Teacher Edition and assign corresponding activities • Use natural language to explain mathematical concepts and perform mathematical concepts to perform mathematical operations. • Simplification and paraphrasing of instructional languages; direct teaching of key vocabulary • Demonstration using concrete examples • Use of hands-on manipulatives • Use of graphic organizers If beneficial to the student, utilize the Spanish Student Edition eBook, Course 1
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Interdisciplinary Connections

Indicators:

Social Studies:

6.1.12.EconNE.3.a Analyze the impact of money, investment, credit, savings, debt, and financial institutions on the development of the nation and the lives of individuals.

Computer Science and Design Thinking:

8.1.8.DA.1 Organize and transform data collected using computational tools to make it usable for a specific purpose.

8.1.8.DA.5 Test, analyze, and refine computational models

8.1.12.DA.5 Create data visualizations from large data sets to summarize, communicate, and support different interpretations of real-world phenomena.

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9.3.ST-ET.5 Apply the knowledge learned in STEM to solve problems.

9.3.ST-SM.2 Apply science and mathematics concepts to the development of plans, processes and projects that address real world problems.

9.4.12.O.11 Apply active listening skills to obtain and clarify information.

9.4.12.O.32 Effectively use information technology to gather, store and communicate data in appropriate formats.

9.4.12.O.(1).8 Select and use a range of communications technologies, including word processing, spreadsheet, database, presentation, email, and Internet applications to locate and display information.

9.4.12.O.5 Demonstrate use of concepts, strategies, and systems for obtaining and conveying ideas and information to enhance communication.

Financial Literacy:

9.4.12.CT.2 Explain the potential benefits of collaborating to enhance critical thinking and problem solving (e.g., 1.3E.12profCR3.a).

English Language Arts:

RI.6.4 Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings.

RI.6.7 Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.

W.6.1.B Support claim(s) with clear reasons and relevant evidence, using credible sources and demonstrating an understanding of the topic or text.

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MS-ETS1-1 Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, considering relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.
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MS-ETS1-4 Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.

Integration of 21st Century Skills

Indicators:

From the Partnership for 21st Century Skills (P21), the deeper learning competencies and skills for 21st century learning in this unit include communication and critical thinking.

- Use various types of reasoning (inductive, deductive, etc.) as appropriate to the situation.
- Use systems thinking.
- Reflect critical on learning experiences and processes.
- Solve different kinds of non-familiar problems in both conventional and innovative ways.
- Identify and ask significant questions that clarify various points of view and lead to better solutions.
- Articulate thoughts and ideas effectively using oral, written, and nonverbal communication skills in a variety of forms and contexts.
- Listen effectively to decipher meaning, including knowledge, values, attitudes, and intentions.
- Use communication for a range of purposes (e.g., to inform, instruct, motivate, and persuade).

Module 8: Area

Unit Description: In this module, students draw on their knowledge of polygons, basic computation, and the coordinate plane to develop understanding of area. They use their understanding to build fluency with finding the area of parallelograms, triangles, trapezoids, and regular polygons. They also build fluency with finding area by using coordinates of polygons on the coordinate plane. They apply their understanding of area to solve multi-step, real-world problems.

Unit Duration: 3 Weeks (15 Days)

Desired Results

Standard(s):

6.EE.A Apply and extend previous understandings of arithmetic to algebraic expressions.

6.G.A Solve real-world and mathematical problems involving area, surface area, and volume.

Standards for Mathematical Practice: MP1, MP2, MP3, MP4, MP5, MP6, MP7

Indicators:

6.G.A.1 Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.

6.G.A.3 Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.

Understandings: *Students will understand…* • How to find and use the area of parallelograms. • How to find and use the area of triangles. • How to find and use the area of trapezoids by composing and decomposing into other shapes. • How to find the area of regular polygons by decomposing the figure into other figures. • How to use the coordinate plane to draw and find attributes of polygons.	**Essential Questions:** • How are the areas of triangles and rectangles used to find the areas of other polygons? • The word parallel is found within the word parallelogram. What does parallel mean? • How is finding the area of a parallelogram like finding the area of a rectangle? How is it different? • What do *b* and *h* represent in the area formula? • How can you use the area of a parallelogram to find the area of a triangle? • What formula will you use to find the area? • What does it mean to decompose a figure?

Assessment Evidence

Performance Tasks: • Area Performance Task • Formative Assessment Math Probe- Area Card Sort • Module Vocabulary Test (RM C1 M8) • Put It All Together (RM C1 M8): Quiz 8-1 through 8-4	**Other Evidence:** • Class Participation • Teacher Observation and Questioning • Successful completion of classwork and homework assignments which may include but are not limited to, lesson Got It questions, close and checks, lesson homework, and supplemental review worksheets. • Module Vocabulary Activity (RM C1 M8) • Lesson 8-1 through 8-5 - Practice, Extra Practice, Spiral Review **Reviews:** Module Review (RM C1 M8) Dynamic Module Practice (RM C1 M8)

Benchmarks:
Departmental assessments will be developed from the following resources:

On-Level Assessments (Form A)- Three versions of the on-level assessment are available, Form A1, Form A2, and Form A3.

- NA Module Test Form A1 (RM C1 M8)
- NA Module Test Form A2 (RM C1 M8)
- NA Module Test Form A3 (RM C1 M8)

Differentiated Assessments (Form B and C)- Form B represents the approaching-level (AL) assessment. Form C represents the beyond-level (BL) assessment.

Learning Plan

Learning Activities:

Vocabulary in Module #8: Base, Congruent Figures, Height, Parallelogram, Regular Polygon, Trapezoid

8-1 Area of Parallelograms: *2 Full Days*
Explore (Online Activity)- Area of Parallelograms
Students will use Web Sketchpad to explore the area of a parallelogram.
Learn (Notes & Discussion)- Area of Parallelograms
Students will understand how the area of a parallelogram is related to the area of a rectangle.
- **Example #1- Find Area of Parallelograms:** *Students will find the area of a parallelograms.*
- **Example #2- Find Missing Dimensions of Parallelograms:** *Students will find the missing the dimension of a parallelogram when given the area.*

Apply- Landscaping
Students will come up with their own strategy to solve an application problem involving landscaping a city park.
Exit Ticket
Homework Practice (Page 441-442)

8-2 Area of Triangles: *3 Full Days*
Explore (Online Activity)- Parallelograms and Area of Triangles
Students will use Web Sketchpad to explore how the area of a triangle is related to the area of parallelograms.
Learn (Notes & Discussion)- Area of Triangles
Students will understand how they can use the area formula for a parallelogram to find the area formula for a triangle.
- **Example #1- Find the Area of Right Triangles:** *Students will find the area of a right triangle.*

Explore (Online Activity)- Area of Triangles
Students will use Web Sketchpad to explore the area of a triangle.
- **Example #2- Find Area of Triangles:** *Students will find the area of a triangle.*
- **Example #3- Find Missing Dimensions of Triangles:** *Students will find the missing dimension of a triangle when given the area.*

Apply- Home Improvement
Students will come up with their own strategy to solve an application problem involving the cost of painting a cabin.
Exit Ticket
Homework Practice (Page 449-450)

8-3 Area of Trapezoids: *2 Full Days*
Learn (Notes & Discussion)- Find the Area of Trapezoids by Decomposing
Students will understand how to decompose a trapezoid and apply the area formulas for a rectangle and a triangle to find the area of a trapezoid.
- **Example #1- Find Area of Trapezoids by Decomposing:** *Students will decompose a trapezoid and apply the area formulas for a rectangle and a triangle to find the area of a trapezoid.*

Learn (Notes & Discussion)- Find Area of Trapezoids by Composing
Students will learn how to compose two congruent trapezoids into a parallelogram to find the area of a trapezoid.

- **Example #2- Find Area of Trapezoids:** *Students will find the area of a trapezoid by composing and using the formula for the area of a trapezoid.*
- **Example #3- Find Area of Trapezoids by Using the Formula:** *Students will use an area formula to solve a real-world problem involving a right trapezoid.*
- **Example #4- Find Area of Trapezoids:** *Students will use an area formula to solve a real-world problem involving a trapezoid.*
- **Example #5- Find Missing Dimensions of Trapezoids:** *Students will find the missing dimension of a trapezoid given its area.*

Apply- Budgets
Students will come up with their own strategy to solve an application problem involving determine if enough money was budgeted for repaving a project.
Exit Ticket
Homework Practice (Page 461-462)
Formative Assessment Math Probe

8-4 Area of Regular Polygons: *2 Full Days*
Explore (Online Activity)- Area of Regular Polygons
Students will use Web Sketchpad to explore how the area of triangles, parallelograms, and trapezoids can be used to find the area of regular polygons.
Learn (Notes & Discussion)- Area of Regular Polygons
Students will learn how to find the area of regular polygons by decomposing them into triangles, parallelograms, and trapezoids.
- **Example #1- Find Area of Regular Polygons:** *Students will find the area of regular polygons by decomposing them into triangles, parallelograms, and trapezoids.*

Apply- Home Improvement
Students will come up with their own strategy to solve an application problem involving the cost to cover a floor with tiles.
Exit Ticket
Homework Practice (Page 467-468)

Put it All Together 1: Lessons 8-1 through 8-4: *½ of a Full Class*

8-5 Polygons on the Coordinate Plane: 3 Full Days
Explore (Online Activity)- Explore the Coordinate Plane
Students will use Web Sketchpad to explore finding perimeter and area on the coordinate plane.
Learn (Notes & Discussion)- Draw Polygons on the Coordinate Plane
Students will learn how to draw polygons in the first quadrant of the coordinate plane given coordinates for the vertices.
Learn (Notes & Discussion)- Find Perimeter and Area on the Coordinate Plane
Students will learn how to use coordinates to find the perimeter of a polygon on the coordinate plane.
- **Example #1- Find Perimeter of an Irregular Figure:** *Students will find the perimeter of an irregular figure given the figure and coordinates drawn on a coordinate plane*.
- **Example #2- Find Perimeter Using Coordinates:** *Students will find the perimeter of a polygon given the coordinates of the vertices.*
- **Example #3- Find Area Using Coordinates:** *Students will find the area of a polygon given the coordinates of the vertices.*

Apply- Business Finance
Students will come up with their own strategy to solve an application problem involving selecting a rental space in a mall.
Exit Ticket
Homework Practice (Page 477-478)

Reflect on the Module: *2 Full Days*
Use what you learned about area to complete the graphic organizer.
Test Practice (Page 481-482)
Unit Test

Resources: Text, online tools associated with text, whiteboard, and laptops

Unit Modifications for Special Population Students	
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9.4.12.O.5 Demonstrate use of concepts, strategies, and systems for obtaining and conveying ideas and information to enhance communication.

Financial Literacy:

9.4.12.CT.2 Explain the potential benefits of collaborating to enhance critical thinking and problem solving (e.g., 1.3E.12profCR3.a).

English Language Arts:

RI.6.4 Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings.

RI.6.7 Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.

W.6.1.B Support claim(s) with clear reasons and relevant evidence, using credible sources and demonstrating an understanding of the topic or text.

L.6.6 Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge.

Science:

MS-ETS1-1 Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, considering relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.

MS-ETS1-2 Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.

MS-ETS1-3 Analyze data from test to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet criteria for success.

MS-ETS1-4 Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.

Integration of 21st Century Skills

Indicators:

From the Partnership for 21st Century Skills (P21), the deeper learning competencies and skills for 21st century learning in this unit include collaboration, communication, creativity, and critical thinking.

- Develop, implement, and communicate new ideas to others effectively.
- View failure as an opportunity to learn; understand that creativity and innovation is a long-term, cyclical process of small successes and frequent mistakes.
- Use various types of reasoning (inductive, deductive, etc.) as appropriate to the situation.
- Use systems thinking.
- Reflect critical on learning experiences and processes.
- Solve different kinds of non-familiar problems in both conventional and innovative ways.
- Identify and ask significant questions that clarify various points of view and lead to better solutions.
- Articulate thoughts and ideas effectively using oral, written, and nonverbal communication skills in a variety of forms and contexts.
- Listen effectively to decipher meaning, including knowledge, values, attitudes, and intentions.
- Use communication for a range of purposes (e.g., to inform, instruct, motivate, and persuade).
- Collaborate with others.

Module 9: Volume and Surface Area

Unit Description: In this module, students draw on their knowledge of polygons and area to develop understanding of volume and surface area. They use this understanding to build fluency with finding the volume of rectangular prisms and making and using nets to find the surface area of rectangular prisms, triangular prisms, and pyramids. They also apply their understanding of volume and surface area to solve multi-step, real-world problems.

Unit Duration: 2.5 Weeks (13.5 Days)

Desired Results

Standard(s):

6.G.A. Solve real-world and mathematical problems involving area, surface area, and volume.

Standards for Mathematical Practice: MP1, MP2, MP3, MP4, MP5, MP6, MP7

Indicators:

6.G.A.2 Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths and show that the volume is the same as would be found by multiplying the edge lengths of prisms with fractional edge lengths in the context of solving real-world and mathematical problems.

6.G.A.4 Represent three-dimensional figures using nets made up of rectangles and triangles and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.

Also addresses: 6.EE.B.6

Understandings:
Students will understand…

- How to find and use the volume of rectangular prisms.
- How to make nets and find surface area of rectangular prisms.
- How to make nets and find surface area of triangular prisms.
- How to make nets and surface area of pyramids.

Essential Questions:

- How can you describe the size of a three-dimensional figure?
- What do you think a prism/rectangular prism is?
- Why are the formulas, V=Bh and V=lwh, equivalent?
- How can a net help you visualize a three-dimensional figure?
- Is surface area the same as volume?

Assessment Evidence

Performance Tasks:

- Volume and Surface Area Performance Task
- Formative Assessment Math Probe- Volume and Surface Area
- Module Vocabulary Test (RM C1 M9)

Other Evidence:

- Class Participation
- Teacher Observation and Questioning
- Successful completion of classwork and homework assignments which may include but are not limited to, lesson Got It questions, close and checks,

• Put It All Together (RM C1 M9): Quiz 9-1 through 9-2	lesson homework, and supplemental review worksheets. • Module Vocabulary Activity (RM C1 M9) • Lesson 9-1 through 9-4 - Practice, Extra Practice, Spiral Review **Reviews:** Module Review (RM C1 M9) Dynamic Module Practice (RM C1 M9)

Benchmarks:
Departmental assessments will be developed from the following resources:

On-Level Assessments (Form A)- Three versions of the on-level assessment are available, Form A1, Form A2, and Form A3.

- NA Module Test Form A1 (RM C1 M9)
- NA Module Test Form A2 (RM C1 M9)
- NA Module Test Form A3 (RM C1 M9)

Differentiated Assessments (Form B and C)- Form B represents the approaching-level (AL) assessment. Form C represents the beyond-level (BL) assessment.

Learning Plan

Learning Activities:

Vocabulary in Module #9: Cubic Units, Lateral Face, Net, Prism, Pyramid, Rectangular Prism, Slant Height, Surface Area, Three-Dimensional Figure, Triangular Prism, Volume

9-1 Volume of Rectangular Prisms: *2 Full Days*
Learn (Notes & Discussion)- Volume
Students will learn about volume of prisms.
Learn (Notes & Discussion)- Volume of a Rectangular Prism
Students will understand different methods for finding the volume of a rectangular prism with fractional edge lengths.
- **Example #1- Find the Volume of a Rectangular Prism:** *Students will use unit cubes and the volume formula to find the volume of a rectangular prism with fractional edge lengths.*

Learn (Notes & Discussion)- Find Missing Dimensions
Students will learn how to find a missing dimension in a rectangular prism, given the volume.
- **Example #2- Find Missing Dimensions:** *Students will find a missing dimension in a rectangular prism, given the volume.*

Apply- Comparisons
Students will come up with their own strategy to solve an application problem involving comparing the prices of different sizes of theater popcorn.
Exit Ticket
Homework Practice (Page 493-494)
Formative Assessment Math Probe

9-2 Surface Area of Rectangular Prisms: *3 Full Days*
Explore (Online Activity)- Cube Nets
Students will use Web Sketchpad to explore nets of prisms.
Learn (Notes & Discussion)- Make a Net to Represent a Rectangular Prism
Students will learn how to make a net to represent a rectangular prism.
- **Example #1- Make a Net to Represent a Rectangular Prism:** *Students will make a net to represent a rectangular prism.*

Learn (Notes & Discussion)- Surface Area of a Rectangular Prism
Students will learn how to use a net to find the surface area of a rectangular prism.

- **Example #2- Surface Area of a Rectangular Prism:** *Students will use a net to find the surface area of a rectangular prism.*

Apply- Home Improvement
Students will come up with their own strategy to solve an application problem involving painting a room.
Exit Ticket
Homework Practice (Page 503-504)

Put it All Together 1: Lessons 9-1 through 9-2: *½ of a Full Class*

9-3 Surface Area of Triangular Prisms: *3 Full Days*
Explore (Online Activity)- Non-Rectangular Prism Nets
Students will use Web Sketchpad to explore nets of prisms with non-rectangular bases.
Learn (Notes & Discussion)- Make a Net to Represent a Triangular Prism
Students will learn how to make a net to represent a triangular prism.
- **Example #1- Make a Net to Represent a Triangular Prism:** *Students will make a net to represent a triangular prism.*

Learn (Notes & Discussion)- Surface Area of a Triangular Prism
Students will learn how to use a net to find the surface area of a triangular prism.
- **Example #2- Surface Area of a Triangular Prism:** *Students will use a net to find the surface area of a triangular prism with bases that are scalene triangles.*
- **Example #3- Find Surface Area of a Triangular Prism:** *Students will use a net to find the surface area of a triangular prism with bases that are equilateral triangles.*

Apply- Food
Students will come up with their own strategy to solve an application problem involving finding the greater unit price.
Exit Ticket
Homework Practice (Page 515-516)

9-4 Surface Area of Pyramids: *2 Full Days*
Learn (Notes & Discussion)- Make a Net to Represent a Pyramid
Students will learn how to make a net to represent a pyramid.
- **Example #1- Make a Net to Represent a Square Pyramid:** *Students will make a net to represent a square pyramid.*
- **Example #2- Make a Net to Represent a Triangular Pyramid:** *Students will make a net to represent a triangular pyramid.*

Learn (Notes & Discussion)- Surface Area of a Pyramid
Students will learn how to use a net to find the surface area of a pyramid.
- **Example #3- Find Surface Area of a Square Pyramid:** *Students will use a net to find the surface area of a square pyramid.*
- **Example #4- Find Surface Area of a Triangular Pyramid:** *Students will use a net to find the surface area of a triangular pyramid.*

Apply- Set Design
Students will come up with their own strategy to solve an application problem involving finding the price to construct pyramids for a school play.
Exit Ticket
Homework Practice (Page 529-530)

Reflect on the Module: *2 Full Days*
Use what you learned about volume and surface area to complete the graphic organizer.
Test Practice (Page 533-534)
Unit Test

Resources: Text, online tools associated with text, whiteboard, and laptops

Unit Modifications for Special Population Students

Advanced Learners	• Refer to green BL (Beyond Level) indicators in Teacher Edition and assign corresponding activities: Beyond Level Differentiated Activities, Extension Activities • Use IXL to enhance targeted skills • Provide opportunities to complete enrichment projects for Unit • Assigning leveled homework • Internet Resources are available and can be accessed from school. • Assign challenge problems
Struggling Learners	• Refer to green AL (Approaching Level) indicators in Teacher Edition and assign corresponding activities; Remediation Activities, Extra Examples, Arrive Math Take Another Look Mini Lessons • Use IXL to enhance targeted skills • Use mathematical tools: Know-Need-Plan, Number Line, Place Value Blocks, Fractions, and Percents, Coordinate Graphed, and Venn Diagram to provide student with visual models and problem-solving tools. • Demonstration using concrete examples and hands on manipulatives • Place students in diverse groups that will provide strong models of effective group discussion
English Language Learners	• Refer to purple ELL (English Language Learner) indicators in Teacher Edition and assign corresponding activities • Use natural language to explain mathematical concepts and perform mathematical concepts to perform mathematical operations. • Simplification and paraphrasing of instructional languages; direct teaching of key vocabulary • Demonstration using concrete examples • Use of hands-on manipulatives • Use of graphic organizers • If beneficial to the student, utilize the Spanish Student Edition eBook, Course 1
Special Needs Learners	Each special education student has in Individualized Educational Plan (IEP) that details the specific accommodations, modifications, services, and support needed to level the playing field. This will enable that student to access the curriculum to the greatest extent possible in the least restrictive environment. These include: • Variation of time: adapting the time allotted for learning, task completion, or testing • Variation of input: adapting the way instruction is delivered • Variation of output: adapting how a student can respond to instruction • Variation of size: adapting the number of items the student is expected to complete • Modifying the content, process or product Additional resources are outlined to facilitate appropriate behavior and increase student engagement. Teachers are encouraged to use the Understanding by Design Learning Guidelines (UDL). These guidelines offer a set of concrete suggestions that can be applied to any discipline to ensure that all learners can access and participate in learning opportunities. The framework can be viewed here www.udlguidelines.cast.org

Learners with a 504	Refer to page four in the Parent and Educator Resource Guide to Section 504 to assist in the development of appropriate plans.

Interdisciplinary Connections

Indicators:

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6.1.12.EconNE.3.a Analyze the impact of money, investment, credit, savings, debt, and financial institutions on the development of the nation and the lives of individuals.

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8.1.8.DA.1 Organize and transform data collected using computational tools to make it usable for a specific purpose.

8.1.8.DA.5 Test, analyze, and refine computational models

8.1.12.DA.5 Create data visualizations from large data sets to summarize, communicate, and support different interpretations of real-world phenomena.

Technology Education:

9.3.ST.1 Use technology to acquire, manipulate, analyze, and report data.

9.3.ST-ET.5 Apply the knowledge learned in STEM to solve problems.

9.3.ST-SM.2 Apply science and mathematics concepts to the development of plans, processes and projects that address real world problems.

9.4.12.O.11 Apply active listening skills to obtain and clarify information.

9.4.12.O.32 Effectively use information technology to gather, store and communicate data in appropriate formats.

9.4.12.O.(1).8 Select and use a range of communications technologies, including word processing, spreadsheet, database, presentation, email, and Internet applications to locate and display information.

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Integration of 21st Century Skills

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- Listen effectively to decipher meaning, including knowledge, values, attitudes, and intentions.
- Use communication for a range of purposes (e.g., to inform, instruct, motivate, and persuade).
- Collaborate with others.

Module 10: Statistical Measures and Displays

Unit Description: In this module, students draw on their knowledge of representing and interpreting data to develop understanding of statistical measures. They use this understanding to build fluency with finding measures of center and variation as well as identifying outliers. They also build fluency with constructing and interpreting dot plots, histograms, and box plots. They apply their understanding of statistical measures to solve real-world problems.

Unit Duration: 3 Weeks (15 Days)

Desired Results

Standard(s):

6.SP.A Develop understanding of statistical variability.

6.SP.B Summarize and describe distributions.

Standards for Mathematical Practice: MP1, MP2, MP3, MP4, MP5, MP6, MP7

Indicators:

6.SP.A.3 Recognize that a measure of center for a numerical data set summarizes all its values with a single number, while a measure of variation describes how its values vary with a single number.

6.SP.B.5 Summarize numerical data sets in relation to their context.

Also addresses: 6.SP.A.1, 6.SP.A.2, 6.SP.B.4, 6.SP.B.5.A, 6.SP.B.5.B, 6.SP.B.5.C, 6.SP.B.5.D

Understandings: *Students will understand…*	**Essential Questions:**
• How to identify and use statistical questions. • How to construct dot plots and histograms using collected data. • How to apply different measures of center. • Interquartile range and construct box plots. • Mean absolute deviation. • Outliers and their effect on measures of center. • How to interpret dot plots, histograms, and box plots.	• How can you determine if a question is a statistical question? • What are some ways you see mean used in real life? • How do you find the range? • How do you think absolute value relates to mean absolute deviation? • How is the mean of a data set found? • How is the median found of a data set? • Why will the mean and median for a symmetric graph always be the same?

	• How do you know the histogram is not symmetric? • What do clusters in the histogram represent?

Assessment Evidence

Performance Tasks:	Other Evidence:
• Statistical Measures and Displays Performance Task • Formative Assessment Math Probe- Measures of Center and Spread • Module Vocabulary Test (RM C1 M10) • Put It All Together (RM C1 M10): Quiz #1 10-1 through 10-3 • Put it All Together (RM C1 M10): Quiz #2 10-2 through 10-7	• Class Participation • Teacher Observation and Questioning • Successful completion of classwork and homework assignments which may include but are not limited to, lesson Got It questions, close and checks, lesson homework, and supplemental review worksheets. • Module Vocabulary Activity (RM C1 M10) • Lesson 10-1 through 10-7 - Practice, Extra Practice, Spiral Review **Reviews:** Module Review (RM C1 M10) Dynamic Module Practice (RM C1 M10)

Benchmarks:
Departmental assessments will be developed from the following resources:

On-Level Assessments (Form A)- Three versions of the on-level assessment are available, Form A1, Form A2, and Form A3.

- NA Module Test Form A1 (RM C1 M10)
- NA Module Test Form A2 (RM C1 M10)
- NA Module Test Form A3 (RM C1 M10)

Differentiated Assessments (Form B and C)- Form B represents the approaching-level (AL) assessment. Form C represents the beyond-level (BL) assessment.

Learning Plan

Learning Activities:

Vocabulary in Module #10: Average, Box Plot, Cluster, Distribution, Dot Plot, First Quartile, Gap, Histogram, Interquartile Range (IQR), Mean, Mean Absolute Deviation, Measures of Center, Measures of Variation, Median, Outlier, Peak, Quartiles, Range, Second Quartile, Statistical Question, Statistics, Symmetric Distribution, Third Quartile

10-1 Statistical Questions: *1 Full Day*
Learn (Notes & Discussion)- Statistical Questions
Students will understand that statistical questions are answered by collecting data and anticipate a variety of responses.
- **Example #1- Identify Statistical Questions:** *Students will identify statistical questions.*

Explore (Online Activity)- Collect Data
Students will explore how statistical questions can produce a variety of answers.
Learn (Notes & Discussion)- Display Data in a Table
Students will learn how to display the responses to a statistical question in a table.

- **Example #2- Display Data in a Table:** *Students will organize the responses to a statistical question in a table and analyze the results*

Exit Ticket
Homework Practice (Page 541-542)

10-2 Dot Plots and Histograms: *1 Full Day*
Learn (Notes & Discussion)- Construct Dot Plots
Students will learn how to construct a dot plot to represent a data set.

- **Example #1- Construct Dot Plots:** *Students will construct a dot plot to represent a data set and summarize the results.*

Learn (Notes & Discussion)- Construct Histograms
Students will learn how to construct a histogram to represent a data set.

- **Example #2- Construct Histograms:** *Students will construct a histogram to represent a data set.*

Exit Ticket
Homework Practice (Page 547-548)

10-3 Measures of Center: *3 Full Days*
Explore (Online Activity)- Mean
Students will explore how to find the mean.
Learn (Notes & Discussion)- Measures of Center
Students will understand that the measures of center are used to represent a data set with a single value.

- **Example #1- Find the Mean:** *Students will calculate the mean to summarize a data set with a single value.*

Learn (Notes & Discussion)- Find a Missing Data Value Using the Mean
Students will understand how the mean can be applied to find a missing value in a data set.

- **Example #2- Find a Missing Data Value Using the Mean:** *Students will apply the mean to find a missing value in a data set.*

Learn (Notes & Discussion)- Find the Median
Students will understand what the median of a data set represents.

- **Example #3- Find the Median Given an Odd Number of Data Values:** *Students will find the median given an odd number of values in a data set.*
- **Example #4- Find the Median Given an Even Number of Data Values:** *Students will find the median given an even number of values in a data set.*

Apply- Track
Students will come up with their own strategy to solve an application problem involving the mean and median of 100-meter dash times.
Exit Ticket
Homework Practice (Page 559-560)

Put it All Together 1: Lessons 10-1 through 10-3: *½ of a Full Class*

10-4 Interquartile Range and Box Plots: *1 Full Day*
Learn (Notes & Discussion)- Measures of Variation
Students will understand that the measures of variation describe the variation of a data set using a single value.

- **Example #1- Find the Range and Interquartile Range:** *Students will describe the variation of a data set using the range and interquartile range.*

Learn (Notes & Discussion)- Construct Box Plots
Students will understand how to construct a box plot to represent a data set.

- **Example #2- Interpret Box Plots:** *Students will analyze the distribution of data displayed in a box plot.*
- **Example #3- Construct and Interpret Box Plots:** *Students will construct a box plot to represent a data set and interpret the distribution of the data.*

Exit Ticket
Homework Practice (Page 567-568)
Formative Assessment Math Probe

10-5 Mean Absolute Deviation: *1 Full Day*
Learn (Notes & Discussion)- Mean Absolute Deviation

Students will understand what the mean absolute deviation of a data set represents, and how to calculate it.

- **Example #1- Find Mean Absolute Deviation:** *Students will find the mean absolute deviation of a data set and explain what it represents.*
- **Example #2- Compare Mean Absolute Deviations:** *Students will compare the mean absolute deviations of two data sets, to compare their variations.*

Exit Ticket
Homework Practice (Page 573-574)

10-6 Outliers: *2 Full Days*
Learn (Notes & Discussion)- Outliers
Students will understand what an outlier is and how to determine if a data value is an outlier.

- **Example #1- Identify Outliers:** *Students will use the definition of an outlier to identify any outliers in a data set.*

Explore (Online Activity)- Mean, Median, and Outliers
Students will use Web Sketchpad to explore how outliers affect the mean and median.
Learn (Notes & Discussion)- Describe the Effect of Outliers
Students will understand the effects an outlier can have on the measures of center.

- **Example #2- Describe the Effect of Outliers:** *Students will describe the effect outliers can have on measures of center.*

Exit Ticket
Homework Practice (Page 581-582)

10-7 Interpret Graphical Displays: *2 Full Days*
Learn (Notes & Discussion)- Interpret Dot Plots
Students will understand that a dot plot can be described by its overall shape.

- **Example #1- Interpret Dot Plots:** *Students will choose the appropriate measure of center and variation to describe a data set represented by a dot plot.*

Learn (Notes & Discussion)- Interpret Histograms
Students will understand that a histogram can be described by its overall shape, including clusters, gaps, and peaks.

- **Example #2- Interpret Histograms:** *Students will describe the shape of a distribution, displayed in a histogram.*

Explore (Online Activity)- Interpret Box Plots
Students will use Web Sketchpad to explore how changes in a data set affect a box plot.
Learn (Notes & Discussion)- Interpret Box Plots
Students will understand how to use the structure of a box plot to interpret the data that it represents.

- **Example #3- Interpret Box Plots:** *Students will use the median and measures of variation to describe a data set represented by a box plot.*

Apply- Travel
Students will come up with their own strategy to solve an application problem involving travel distances of a volleyball team.
Exit Ticket
Homework Practice (Page 591-592)

Put it All Together 2: Lessons 10-2 through 10-7: *½ of a Full Class*

Reflect on the Module: *2 Full Days*
Use what you learned about statistical measures to complete the graphic organizer.
Test Practice (Page 595-596)
Unit Test

Resources: Text, online tools associated with text, whiteboard, and laptops

Unit Modifications for Special Population Students

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