

Unit 1: Number Systems and Operations

Content Area: **Template**
Course(s):
Time Period: **Full Year**
Length: **7 Weeks**
Status: **Published**

UNIT RATIONALE

This unit is designed to support student's understanding of rational numbers. Students will represent mathematical and real-world situations by graphing rational numbers and their opposites on a number line and understand that rational numbers to the left of 0 have a value that is less than rational numbers to the right of 0. Students will compare numbers according to value and magnitude and observe that one number may have a greater value than another but a lesser magnitude or absolute value. Students will calculate the LCM and GCF of two numbers in order to rewrite fractions with a common denominator and to order fractions and mixed numbers from least to greatest. Students will learn to divide fractions by other fractions with like and unlike denominators. Students will demonstrate an understanding of adding and subtracting multi-digit decimals to the thousandths place. Students will demonstrate an understanding of how to multiply decimals using 10-by-10 grids, area models, and the standard algorithm. Students will divide up to four-digit dividends by up to a three-digit divisor using the standard algorithm with and without remainders. Students will divide multi-digit decimals with and without remainders, including interpreting the remainder in the context of the problem. Students will add and subtract multiply and divide rational numbers using real-world problems. Students will learn that the addition of two opposites yields a sum of zero. Finally, students will find the difference of two rational numbers by rewriting subtraction expressions as addition expressions.

ESSENTIAL QUESTIONS

How do mathematicians identify and interpret rational numbers using a number line?

How do mathematicians use number lines to compare and order rational numbers?

How do mathematicians find and use absolute value in real-world situations?

How do mathematicians find and use the GCF or LCM to rewrite and compare fractions?

How do mathematicians order positive and negative rational numbers of different forms?

How do mathematicians divide fractions with like and unlike denominators and mixed numbers?

How do mathematicians use LCM and GCF to add, subtract, multiply, and divide fractions?

How do mathematicians add, subtract, multiply and divide multi-digit decimals?

How do mathematicians solve real-world problems involving operations with multi-digit decimals?

How do mathematicians use a number line to add and subtract positive integers?

How do mathematicians use a number line to add and subtract a negative integer and then assess the results for reasonableness?

How do mathematicians use a number line to add and subtract rational numbers?

How do mathematicians calculate the sum, differences, products and quotients of rational numbers?

How do mathematicians use properties to solve multi-step problems involving positive and negative rational numbers?

STANDARDS

INTERDISCIPLINARY CONNECTIONS: NEW JERSEY STUDENT LEARNING STANDARDS FOR ELA, SOCIAL STUDIES, SCIENCE AND/OR MATHEMATICS

Analyzing and Interpreting Data

SOC.5-8.1.1.1

Construct timelines of the events occurring during major eras including comparative events in world history for the different civilizations.

NEW JERSEY STUDENT LEARNING STANDARDS: CONTENT AREA

New Jersey Common Core - Grade 6 - Mathematics

CCSS.Math.Content.6.NS.B.3

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

CCSS.Math.Content.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.

CCSS.Math.Content.6.NS.C.6c

Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.

CCSS.Math.Content.6.NS.C.7a

Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram.

CCSS.Math.Content.6.NS.C.7b

Write, interpret, and explain statements of order for rational numbers in real-world contexts.

CCSS.Math.Content.6.NS.C.7c

Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation.

CCSS.Math.Content.6.NS.C.7d

Distinguish comparisons of absolute value from statements about order.

New Jersey Common Core - Grade 7 - Mathematics

CCSS.Math.Content.7.G.A.2

Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.

CCSS.Math.Content.7.NS.A.2b

Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then $-(p/q) = (-p)/q = p/(-q)$. Interpret quotients of rational numbers by describing real-world contexts.

MA.7.RP.A.2b	Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.
MA.7.RP.A.3	Use proportional relationships to solve multistep ratio and percent problems.
MA.7.NS.A.1	Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.
MA.7.NS.A.1a	Describe situations in which opposite quantities combine to make 0.
MA.7.NS.A.1b	Understand $p + q$ as the number located a distance $ q $ from p , in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts.
MA.7.NS.A.1c	Understand subtraction of rational numbers as adding the additive inverse, $p - q = p + (-q)$. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.
MA.7.NS.A.1d	Apply properties of operations as strategies to add and subtract rational numbers.
MA.6.NS.B.3	Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.
MA.6.NS.B.4	Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor.
MA.7.NS.A.2b	Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then $-(p/q) = (-p)/q = p/(-q)$. Interpret quotients of rational numbers by describing real-world contexts.
MA.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.
MA.7.NS.A.3	Solve real-world and mathematical problems involving the four operations with rational numbers.
MA.6.NS.C.6c	Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.
MA.6.NS.C.7a	Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram.
MA.6.NS.C.7b	Write, interpret, and explain statements of order for rational numbers in real-world contexts.
MA.6.NS.C.7c	Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation.
MA.6.NS.C.7d	Distinguish comparisons of absolute value from statements about order.

MA.7.G.A.2	Draw (with technology, with ruler and protractor, as well as freehand) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.
MA.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.
MA.7.SP.B.3	Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability.

NEW JERSEY STUDENT LEARNING STANDARDS: CAREER READINESS, LIFE LITERACIES AND KEY SKILLS

TECH.9.4.8.CT.2	Develop multiple solutions to a problem and evaluate short- and long-term effects to determine the most plausible option (e.g., MS-ETS1-4, 6.1.8.CivicsDP.1).
TECH.9.4.8.TL.3	Select appropriate tools to organize and present information digitally.
TECH.9.4.8.GCA.1	Model how to navigate cultural differences with sensitivity and respect (e.g., 1.5.8.C1a).
TECH.9.4.8.IML.5	Analyze and interpret local or public data sets to summarize and effectively communicate the data.

NEW JERSEY STUDENT LEARNING STANDARDS: COMPUTER SCIENCE AND DESIGN THINKING

CS.6-8.8.1.8.AP.2	Create clearly named variables that represent different data types and perform operations on their values.
CS.6-8.8.2.8.ED.3	Develop a proposal for a solution to a real-world problem that includes a model (e.g., physical prototype, graphical/technical sketch).

PRE-ASSESSMENTS

Module 1: Rational Number Concepts "Are You Ready?" pg 4

Module 2: Fraction Division "Are You Ready?" pg 44

Module 3: Fluency with Multi-Digit Decimal Operations "Are You Ready?" pg 78

Module 4: Understand Addition and Subtraction of Rational Numbers "Are You Ready?" pg 112

Module 5: Fluency with Rational Number Operations "Are You Ready?" pg 140

INSTRUCTIONAL PLAN

MODULE 1

MODULE 1: Rational Number Concepts

LESSON 1.1

Student Learning Intentions (SLI) WALT: (We are learning to...)	1.1 Identify and interpret rational numbers using a number line.
Student Learning Strategies	Use Diagrams to Show Gains and Losses
Success Criteria	I can graph rational numbers and find their opposites.
Formative Assessment (drives instructional decisions)	Turn and Talk Questions (p. 5 & 7) Check for Understanding (p. 8)
Activities and Resources	Warm-up: Activate Prior Knowledge (TM p. 5B) & Spark Your Learning (p. 5) Mini-lesson: Build Understanding (p. 6-8) Guided Practice: Check Understanding (p. 8) Independent Practice: On Your Own (p. 9-10) & Exit Ticket (TM p. 10) Teacher Resources: Into Math Teacher Edition Module 1 & Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM p. 5C)

MA.6.NS.B.3	Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.
MA.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.
MA.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.
MA.6.NS.C.6a	Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g., $-(-3) = 3$, and that 0 is its own opposite.
MA.6.NS.C.6c	Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.

MA.6.NS.C.7

Understand ordering and absolute value of rational numbers.

MA.6.NS.C.7c

Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation.

LESSON 1.2

Student Learning Intentions (SLI) WALT: (We are learning to...)	1.2 Use number lines to compare and order rational numbers.
Student Learning Strategies	Use the Thermometer as a Number Line Model with the Thermometer
Success Criteria	I can compare positive and negative rational numbers with and without a number line.
Formative Assessment (drives instructional decisions)	Turn and Talk Questions (p. 13, 14, 15, 16) Check for Understanding (p. 16)
Activities and Resources	Warm-up: Activate Prior Knowledge (TM p. 13B) & Spark Your Learning (p. 13) Mini-lesson: Build Understanding (p. 14-16) Guided Practice: Check Understanding (p. 16) Independent Practice: On Your Own (p. 17, 18) & Exit Ticket (TM p. 18) Teacher Resources: Into Math Teacher Edition Module 1 & Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM p. 13C)

MA.6.NS.C.6c

Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.

MA.6.NS.C.7a

Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram.

MA.6.NS.C.7b

Write, interpret, and explain statements of order for rational numbers in real-world contexts.

LESSON 1.3

Student Learning Intentions (SLI) WALT: (We are learning to...)	1.3 Find and use absolute value in real-world situations.
Student Learning Strategies	Use a Number Line Scale Use a Number Line without Scale
Success Criteria	I can find and use absolute value and magnitude to describe real-world situations.
Formative Assessment (drives instructional decisions)	Turn and Talk Questions (p. 21, 22) Check for Understanding (p. 23)
Activities and Resources	Warm-up: Activate Prior Knowledge (TM p. 21B) & Spark Your Learning (p. 21) Mini-lesson: Build Understanding (p. 22, 23) Guided Practice: Check Understanding (p. 23) Independent Practice: On Your Own (p. 24) & Exit Ticket (TM p. 24) Teacher Resources: Into Math Teacher Edition Module 1 & Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM p. 21C)

MA.7.RP.A.2b	Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.
MA.6.NS.C.7b	Write, interpret, and explain statements of order for rational numbers in real-world contexts.
MA.6.NS.C.7c	Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation.
MA.6.NS.C.7d	Distinguish comparisons of absolute value from statements about order.
MA.7.G.A.2	Draw (with technology, with ruler and protractor, as well as freehand) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.
MA.7.SP.B.3	Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability.

LESSON 1.4

Student Learning Intentions (SLI) WALT: (We	1.4 Compare rational numbers using the GCF and LCM.
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are learning to...)	
Student Learning Strategies	Prime Factorization
Success Criteria	I can find and use the GCF or LCM to rewrite and compare fractions.
Formative Assessment (drives instructional decisions)	Turn and Talk Question (p. 27) Check for Understanding (p. 29)
Activities and Resources	Warm-up: Activate Prior Knowledge (TM p. 27B) Mini-lesson: Step it Out (p. 28, 29) Guided Practice: Check Understanding (p. 29) Independent Practice: On Your Own (p. 30,31) & Exit Ticket (TM p. 32) Teacher Resources: Into Math Teacher Edition Module 1 & Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM p. 27C)

MA.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.
MA.6.NS.B.4	Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor.
MA.6.NS.C.7a	Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram.
MA.6.NS.C.7b	Write, interpret, and explain statements of order for rational numbers in real-world contexts.
MA.6.NS.C.7c	Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation.

LESSON 1.5

Student Learning Intentions (SLI) WALT: (We are learning to...)	1.5 Use strategies to order rational numbers.
Student Learning Strategies	Use a number line. Find common denominators.
Success Criteria	Use strategies to order rational numbers.

Formative Assessment (drives instructional decisions)	Turn and Talk Question (p. 35, 36) Check for Understanding (p. 36)
Activities and Resources	Warm-up: Activate Prior Knowledge (TM p. 35B) & Mini-lesson: Step it Out (p. 35-36) Guided Practice: Check Understanding (p. 36) Independent Practice: On Your Own (p. 37-38) & Exit Ticket (TM p. 38) Teacher Resources: Into Math Teacher Edition Module 1 & Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM p. 35C)

MA.6.NS.B.4	Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor.
MA.6.NS.C.6a	Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g., $-(-3) = 3$, and that 0 is its own opposite.
MA.6.NS.C.6b	Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.
MA.6.NS.C.6c	Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.

MODULE 2

MODULE 2: UNDERSTAND DIVISION AND WHOLE NUMBERS

LESSON 2.1

Student Learning Intentions (SLI) WALT: (We are learning to...)	2.1 Divide fractions with like and unlike denominators.
Student Learning Strategies	Use Fraction Addition Use a Bar Model

Success Criteria	I can divide two fractions using at least two methods.
Formative Assessment (drives instructional decisions)	Turn and Talk Questions (p. 45, 46 & 48) Check for Understanding (p. 48)
Activities and Resources	Warm-up: Activate Prior Knowledge (TM p. 45B) & Spark Your Learning (p. 45) Mini-lesson: Build Understanding (p. 46-48) Guided Practice: Check Understanding (p. 48) Independent Practice: On Your Own (p. 49-50) & Exit Ticket (TM p. 50) Teacher Resources: Into Math Teacher Edition Modules 2 & Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM p. 45C)

MA.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.
MA.6.NS.C.7a	Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram.
MA.6.NS.C.7d	Distinguish comparisons of absolute value from statements about order.

LESSON 2.2

Student Learning Intentions (SLI) WALT: (We are learning to...)	2.2 Divide mixed numbers.
Student Learning Strategies	Divide Mixed Numbers Using Fractions Use Models to Divide a Mixed Number by a Whole Number
Success Criteria	Divide a mixed number by a whole, number, fraction or mixed number.
Formative Assessment (drives instructional decisions)	Turn and Talk Questions (p. 54 & 55) Check for Understanding (p. 56)
Activities and Resources	Warm-up: Activate Prior Knowledge (TM p. 53B) & Spark Your Learning (p. 53) Mini-lesson: Build Understanding (p. 54-55) Guided Practice: Check Understanding (p. 56) Independent Practice: On Your Own (p. 57-58) & Exit Ticket

	(TM p. 58) Teacher Resources: Into Math Teacher Edition Modules 2-3 & Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM p. 53c)

MA.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.

LESSON 2.3

Student Learning Intentions (SLI) WALT: (We are learning to...)	2.3 Divide fractions and mixed numbers.
Student Learning Strategies	Convert Mixed Numbers to Fractions Divide by the Reciprocal
Success Criteria	I can solve real-world problems that require dividing with mixed numbers or fractions.
Formative Assessment (drives instructional decisions)	Turn and Talk Questions (p. 61 & 62) Check for Understanding (p. 62)
Activities and Resources	Warm-up: Activate Prior Knowledge (TM p. 61B) Mini-lesson: Build Understanding (p. 61-62) Guided Practice: Check Understanding (p. 62) Independent Practice: On Your Own (p. 63) & Exit Ticket (TM p. 64) Teacher Resources: Into Math Teacher Edition Module 2 & Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM p. 61)

MA.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.

MA.6.NS.B.2

Fluently divide multi-digit numbers using the standard algorithm.

MA.6.NS.C.7a

Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram.

LESSON 2.4

Student Learning Intentions (SLI) WALT: (We are learning to...)	2.4 Use LCM and GCF to add, subtract, multiply, and divide fractions.
Student Learning Strategies	Writing equivalent fractions.
Success Criteria	I can use the LCM and GCF to solve fraction problems with all four operations.
Formative Assessment (drives instructional decisions)	Turn and Talk Questions (p. 67 & 68) Check for Understanding (p. 69)
Activities and Resources	Warm-up: Activate Prior Knowledge (TM p. 67B) Mini-lesson: Build Understanding (p. 67-69) and Step it Out (p. 49) Guided Practice: Check Understanding (p. 69) Independent Practice: On Your Own (p. 70-71) & Exit Ticket (TM p. 72) Teacher Resources: Into Math Teacher Edition Module 2 & Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM p. 67C)

MA.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.
MA.6.NS.B.3	Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.
MA.6.NS.B.4	Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor.
MA.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.
MA.6.NS.C.7c	Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation.

MODULE 3

MODULE 3: FLUENCY WITH MULTI-DIGIT DECIMAL OPERATIONS

LESSON 3.1

Student Learning Intentions (SLI) WALT: (We are learning to...)	3.1 Add and subtract multi-digit decimals
Student Learning Strategies	Use a hundredths grid. Line up decimals.
Success Criteria	I can add and subtract decimals to thousandths.
Formative Assessment (drives instructional decisions)	Turn and Talk Questions (pg 79, 80) Check Your Understanding (pg 80) Exit Ticket (TM pg 82)
Activities and Resources	Warm up: Activate Prior Knowledge (TM pg 79B) Mini Lesson: Step it Out (pg 79 & 80) Guided Practice: Check Understanding (pg 80) Independent Practice: On Your Own (pg 81 & 82) & Exit Ticket (TM pg 82) Teacher Resources Into Math Teacher Edition Module 3 & Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM pg 79C)

MATH.6.RP.A.1	Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.
MA.6.NS.B.3	Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.
MA.6.NS.C.7b	Write, interpret, and explain statements of order for rational numbers in real-world contexts.
MA.6.NS.C.7c	Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation.

LESSON 3.2

Student Learning Intentions (SLI) WALT: (We are learning to...)	3.2 Multiply multi-digit decimals.
Student Learning Strategies	Count decimal places in problem and product.

Success Criteria	I can multiply multi-digit decimals to thousandths.
Formative Assessment (drives instructional decisions)	Turn and Talk Questions (pg 85) Check Your Understanding (pg 86) Exit Ticket (TM pg 88)
Activities and Resources	Warm up: Activate Prior Knowledge (TM pg 85B) Mini Lesson: Step it Out (pg 85& 86) Guided Practice: Check Understanding (pg 86) Independent Practice: On Your Own (pg 87 & 88) & Exit Ticket (TM pg 88) Teacher Resources Into Math Teacher Edition Module 3 & Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM pg 85C)

MA.6.NS.B.2	Fluently divide multi-digit numbers using the standard algorithm.
MA.6.NS.B.3	Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.
MA.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.
MA.6.NS.C.7c	Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation.

LESSON 3.3

Student Learning Intentions (SLI) WALT: (We are learning to...)	3.3 Divide multi-digit whole numbers using the standard algorithm.
Student Learning Strategies	Estimation Division
Success Criteria	I can divide multi-digit whole numbers and use a problem's context to interpret the remainder.
Formative Assessment (drives instructional decisions)	Turn and Talk Questions (pg 91, 92) Check Your Understanding (pg 92) Exit Ticket (TM pg 94)

Activities and Resources	Warm up: Activate Prior Knowledge (TM pg 91B) Mini Lesson: Step it Out (pg 91-92) Guided Practice: Check Understanding (pg 92) Independent Practice: On Your Own (pg 93 & 94) & Exit Ticket (TM pg 94) Teacher Resources Into Math Teacher Edition Module 3 & Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM pg 91C)

MA.6.NS.B.2	Fluently divide multi-digit numbers using the standard algorithm.
MA.6.NS.B.3	Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.
MA.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.
MA.6.NS.C.7c	Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation.

LESSON 3.4

Student Learning Intentions (SLI) WALT: (We are learning to...)	3.4 Divide multi-digit decimals using the standard algorithm.
Student Learning Strategies	Estimation Division
Success Criteria	I can find the quotient of multi-digit decimals.
Formative Assessment (drives instructional decisions)	Turn and Talk Questions (pg 98) Check Your Understanding (pg 98) Exit Ticket (TM pg 100)
Activities and Resources	Warm up: Activate Prior Knowledge (TM pg 97B) Mini Lesson: Step it Out (pg 97-98) Guided Practice: Check Understanding (pg 98) Independent Practice: On Your Own (pg 99 & 100) & Exit Ticket (TM pg 100) Teacher Resources Into Math Teacher Edition Module 3 & Online Resources

Suggested Modifications	Plan for Differentiated Instruction (TM pg 97C)
MA.6.NS.B.2	Fluently divide multi-digit numbers using the standard algorithm.
MA.6.NS.B.3	Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.
MA.6.NS.C.7b	Write, interpret, and explain statements of order for rational numbers in real-world contexts.
LESSON 3.5	
Student Learning Intentions (SLI) WALT: (We are learning to...)	3.5 Solve real-world problems involving operations with multi-digit decimals.
Student Learning Strategies	Estimation
Success Criteria	I can determine which operation is needed to solve a decimal word problem.
Formative Assessment (drives instructional decisions)	Turn and Talk Questions (pg 103, 104) Check Your Understanding (pg 104) Exit Ticket (TM pg 106)
Activities and Resources	Warm up: Activate Prior Knowledge (TM pg 103B) Mini Lesson: Step it Out (pg 104-104) Guided Practice: Check Understanding (pg 104) Independent Practice: On Your Own (pg 105-106) & Exit Ticket (TM pg 58) Teacher Resources Into Math Teacher Edition Module 3 & Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM pg 103C)
MA.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.
MA.6.NS.B.3	Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.
MA.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.
MA.6.NS.C.7b	Write, interpret, and explain statements of order for rational numbers in real-world

contexts.

MODULE 4

MODULE 4: UNDERSTAND ADDITION AND SUBTRACTION OF RATIONAL NUMBERS

LESSON 4.1

Student Learning Intentions (SLI) WALT: (We are learning to...)	4.1 Use a number line to add and subtract positive integers.
Student Learning Strategies	Use a Number Line Use Bar Models
Success Criteria	I can use a number line to add and subtract positive integers.
Formative Assessment (drives instructional decisions)	Turn & Talk (pg 113, 114, 115) Check Understanding (pg 116) Exit Ticket (TM pg 118)
Activities and Resources	Warm Up: Activate Prior Knowledge (TM pg 113B) Mini Lesson: Build Understanding (114-116) Guided Practice: Check Understanding (pg 116) Independent Practice: On Your Own (pg 117-118) and Exit Ticket (TM pg 118) Teacher Resources Into Math Teacher Edition Module 4 & Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM pg 113C)

MA.7.NS.A.1

Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.

MA.7.NS.A.1b

Understand $p + q$ as the number located a distance $|q|$ from p , in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts.

MA.6.NS.B.3

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

LESSON 4.2

Student Learning Intentions (SLI) WALT: (We are learning to...)	4.2 Use a number line to add and subtract a negative integer and then assess the results for reasonableness.
Student Learning Strategies	Use Addition or Subtraction of Positive Integers Use a Visual Model
Success Criteria	I can use a number line to add and subtract negative integers.
Formative Assessment (drives instructional decisions)	Turn & Talk (pg 121-123) Check Understanding (pg 124) Exit Ticket (TM pg 126)
Activities and Resources	Warm Up: Activate Prior Knowledge (TM pg 121B) Mini Lesson: Spark Your Learning (Pg 121) and Build Understanding (pg 122-124) Guided Practice: Check Understanding (pg 124) Independent Practice: On Your Own (pg 125-126) and Exit Ticket (TM pg 126) Teacher Resources Into Math Teacher Edition Module 4 & Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM pg 121C)

MA.7.NS.A.1	Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.
MA.7.NS.A.1a	Describe situations in which opposite quantities combine to make 0.
MA.7.NS.A.1b	Understand $p + q$ as the number located a distance $ q $ from p , in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts.
MA.7.NS.A.1c	Understand subtraction of rational numbers as adding the additive inverse, $p - q = p + (-q)$. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.

LESSON 4.3

Student Learning Intentions (SLI) WALT: (We are learning to...)	4.3 Use a number line to add and subtract rational numbers.
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Student Learning Strategies	Use a Number Line Use Equations
Success Criteria	I can use a number line to add and subtract rational numbers.
Formative Assessment (drives instructional decisions)	Turn & Talk (pg 129-131) Check Understanding (pg 132) Exit Ticket (TM pg 134)
Activities and Resources	Warm Up: Activate Prior Knowledge (TM pg 129B) Mini Lesson: Spark Your Learning (Pg 129) and Build Understanding (pg 129-131) Guided Practice: Check Understanding (pg 132) Independent Practice: On Your Own (pg 133-134) and Exit Ticket (TM pg 134) Teacher Resources Into Math Teacher Edition Module 4 & Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM pg 129C)

MA.7.RP.A.3	Use proportional relationships to solve multistep ratio and percent problems.
MA.7.NS.A.1	Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.
MA.7.NS.A.1a	Describe situations in which opposite quantities combine to make 0.
MA.7.NS.A.1b	Understand $p + q$ as the number located a distance $ q $ from p , in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts.
MA.7.G.A.1	Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.

MODULE 5

MODULE 5: FLUENCY WITH RATIONAL NUMBER OPERATIONS

LESSON 5.4

Student Learning Intentions (SLI) WALT: (We are learning to...)	5.4 Express rational numbers as decimals.
Student Learning Strategies	Use Long Division Use a Model to Relate Fractions and Decimals
Success Criteria	I can show that a number is rational by writing it as a ratio of integers, and I can convert a rational number to a decimal. I can show that $-(p/q) = (-p)/q = p/(-q)$ for specific values of p and q .
Formative Assessment (drives instructional decisions)	Turn and Talk Questions (p. 165, 166 & 167) Check for Understanding (p. 168)
Activities and Resources	Warm-up: Activate Prior Knowledge (TM p. 165B) & Spark Your Learning (p. 165) Mini-lesson: Build Understanding (p. 166-168) Guided Practice: Check Understanding (p. 168) Independent Practice: On Your Own (p. 169) & Exit Ticket (TM p. 170) Teacher Resources: Into Math Teacher Edition Module 5 & Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM p. 165C)

MA.7.NS.A.1b	Understand $p + q$ as the number located a distance $ q $ from p , in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts.
MA.7.NS.A.1d	Apply properties of operations as strategies to add and subtract rational numbers.
MA.7.NS.A.2a	Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as $(-1)(-1) = 1$ and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.
MA.7.NS.A.2b	Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then $-(p/q) = (-p)/q = p/(-q)$. Interpret quotients of rational numbers by describing real-world contexts.
MA.7.NS.A.2c	Apply properties of operations as strategies to multiply and divide rational numbers.
MA.7.NS.A.2d	Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.
MA.7.NS.A.3	Solve real-world and mathematical problems involving the four operations with rational numbers.

LESSON 5.3

Student Learning Intentions (SLI) WALT: (We are learning to...)	5.3 Develop rules to find products and quotients of rational numbers.
Student Learning Strategies	Use a Number Line Use a Table
Success Criteria	I can apply the rules for multiplying and dividing rational numbers.
Formative Assessment (drives instructional decisions)	Turn and Talk Questions (p. 157 & 159) Check for Understanding (p. 160)
Activities and Resources	Warm-up: Activate Prior Knowledge (TM p. 157B) & Spark Your Learning (p. 157) Mini-lesson: Build Understanding (p. 158-160) Guided Practice: Check Understanding (p. 160) Independent Practice: On Your Own (p. 161) & Exit Ticket (TM p. 162) Teacher Resources: Into Math Teacher Edition Module 5 & Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM p. 157C)

MA.7.NS.A.1	Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.
MA.7.NS.A.1d	Apply properties of operations as strategies to add and subtract rational numbers.
MA.7.NS.A.2a	Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as $(-1)(-1) = 1$ and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.
MA.7.NS.A.2b	Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then $-(p/q) = (-p)/q = p/(-q)$. Interpret quotients of rational numbers by describing real-world contexts.
MA.7.NS.A.2c	Apply properties of operations as strategies to multiply and divide rational numbers.
MA.7.NS.A.3	Solve real-world and mathematical problems involving the four operations with rational numbers.
MA.7.EE.B.3	Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies.
MA.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.

LESSON 5.2

Student Learning Intentions (SLI) WALT: (We are learning to...)	5.2 Compute Differences of Rational Numbers
Student Learning Strategies	Use Reasoning to Find the Difference Between Integers Use a Number Line to Model an Integer Subtraction
Success Criteria	I can compute differences of rational numbers with the same or different signs, and for real-world problems, I can interpret the results.
Formative Assessment (drives instructional decisions)	Turn and Talk Questions (p. 149, 150, & 151) Check for Understanding (p. 152)
Activities and Resources	Warm-up: Activate Prior Knowledge (TM p. 149B) & Spark Your Learning (p. 149) Mini-lesson: Build Understanding (p. 150-151) Guided Practice: Check Understanding (p. 152) Independent Practice: On Your Own (p.154) & Exit Ticket (TM p. 154) Teacher Resources: Into Math Teacher Edition Module 5 & Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM p. 149C)

MA.7.NS.A.1	Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.
MA.7.NS.A.1b	Understand $p + q$ as the number located a distance $ q $ from p , in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts.
MA.7.NS.A.1c	Understand subtraction of rational numbers as adding the additive inverse, $p - q = p + (-q)$. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.
MA.7.NS.A.1d	Apply properties of operations as strategies to add and subtract rational numbers.
MA.6.NS.B.3	Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.
MA.7.NS.A.3	Solve real-world and mathematical problems involving the four operations with rational numbers.
MA.6.NS.C.7c	Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation.
MA.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.

MODULE 5.1

Student Learning Intentions (SLI) WALT: (We are learning to...)	5.1 Compute Sums of Rational Numbers
Student Learning Strategies	Use Integer Addition to Find a Sum Use Number Line to Model Integer Addition
Success Criteria	I can compute sums of rational numbers with the same or different signs, and for real-world problems, I can interpret the results
Formative Assessment (drives instructional decisions)	Turn and Talk Questions (p.141 & 142) Check for Understanding (p. 144)
Activities and Resources	Warm-up: Activate Prior Knowledge (TM p. 141B) & Spark Your Learning (p. 141) Mini-lesson: Build Understanding (p. 142-143) Guided Practice: Check Understanding (p. 144) Independent Practice: On Your Own (p. 145) & Exit Ticket (TM p. 146) Teacher Resources: Into Math Teacher Edition Module 5 & Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM p. 141C)

MA.7.NS.A.1	Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.
MA.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.
MA.7.NS.A.1b	Understand $p + q$ as the number located a distance $ q $ from p , in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts.
MA.7.NS.A.1c	Understand subtraction of rational numbers as adding the additive inverse, $p - q = p + (-q)$. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.
MA.6.NS.B.3	Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.
MA.7.NS.A.1d	Apply properties of operations as strategies to add and subtract rational numbers.
MA.7.NS.A.3	Solve real-world and mathematical problems involving the four operations with rational numbers.

LESSON 5.5

Student Learning Intentions (SLI) WALT: (We are learning to...)	5.5 Use products and quotients of rational numbers to solve problems.
Student Learning Strategies	Use long division Use estimation
Success Criteria	I can solve word problems that require multiplying and dividing rational numbers.
Formative Assessment (drives instructional decisions)	Turn and Talk Questions (p. 173 & 174) Check for Understanding (p. 174)
Activities and Resources	Warm-up: Activate Prior Knowledge (TM p. 173B) & Spark Your Learning (p.173) Mini-lesson: Build Understanding (p. 173-174) Guided Practice: Check Understanding (p. 175) Independent Practice: On Your Own (p. 176) & Exit Ticket (TM p. 176) Teacher Resources: Into Math Teacher Edition Module 5 & Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM p. 173C)

MA.7.NS.A.1b	Understand $p + q$ as the number located a distance $ q $ from p , in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts.
MA.7.NS.A.1c	Understand subtraction of rational numbers as adding the additive inverse, $p - q = p + (-q)$. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.
MA.7.NS.A.2a	Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as $(-1)(-1) = 1$ and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.
MA.7.NS.A.2b	Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then $-(p/q) = (-p)/q = p/(-q)$. Interpret quotients of rational numbers by describing real-world contexts.
MA.7.NS.A.2c	Apply properties of operations as strategies to multiply and divide rational numbers.
MA.7.NS.A.3	Solve real-world and mathematical problems involving the four operations with rational numbers.

LESSON 5.6

Student Learning Intentions (SLI) WALT: (We are learning to...)	5.6 Use properties to solve multi-step problems involving positive and negative rational numbers.
Student Learning Strategies	Estimation Number Lines
Success Criteria	I can apply properties of operations to evaluate multi-step expressions with positive and negative rational numbers.
Formative Assessment (drives instructional decisions)	Turn and Talk Questions (p. 179, 180) Check for Understanding (p. 181)
Activities and Resources	Warm-up: Activate Prior Knowledge (TM p. 179B) & Spark Your Learning (p. 179) Mini-lesson: Build Understanding (p. 180-181) Guided Practice: Check Understanding (p. 181) Independent Practice: On Your Own (p. 182) & Exit Ticket (TM p. 182) Teacher Resources: Into Math Teacher Edition Module 5 & Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM p. 179C)

MA.7.NS.A.1a	Describe situations in which opposite quantities combine to make 0.
MA.7.NS.A.1d	Apply properties of operations as strategies to add and subtract rational numbers.
MA.7.NS.A.2c	Apply properties of operations as strategies to multiply and divide rational numbers.
MA.7.NS.A.3	Solve real-world and mathematical problems involving the four operations with rational numbers.
MA.7.EE.B.3	Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies.

LESSON 5.7

Student Learning Intentions (SLI) WALT: (We are learning to...)	5.7 Solve multi-step problems involving a combination of rational number operations.
Student Learning Strategies	Distributive Property

Success Criteria	I can solve multi-step problems that involve rational numbers in different forms and multiple operations
Formative Assessment (drives instructional decisions)	Turn and Talk Questions (p. 187 & 188) Check for Understanding (p. 189)
Activities and Resources	Warm-up: Activate Prior Knowledge (TM p. 187B) & Spark Your Learning (p. 187) Mini-lesson: Build Understanding (p. 187-188) Guided Practice: Check Understanding (p. 189) Independent Practice: On Your Own (p. 190-191) & Exit Ticket (TM p. 192) Teacher Resources: Into Math Teacher Edition Module 5 & Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM p. 187C)

MA.7.RP.A.2c	Represent proportional relationships by equations.
MA.7.NS.A.1	Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.
MA.7.NS.A.2d	Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.
MA.7.NS.A.3	Solve real-world and mathematical problems involving the four operations with rational numbers.
MA.7.EE.B.3	Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies.

REFLECTIONS

Unit 2: Expressions, Equations and Inequalities

Content Area: **Template**
Course(s):
Time Period: **Full Year**
Length: **7 Weeks**
Status: **Published**

UNIT RATIONALE

This unit is designed to support student's understanding of expressions, equations and inequalities. Students begin to recognize that situations involving repeated multiplication can be represented by writing the factor as a base and the number of repeated factors as the exponent. Students will write and evaluate numerical expressions involving whole-number exponents. Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity. Evaluate expressions at specific values of their variables. Apply properties of operations to generate equivalent expressions. Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients. Students construct one-variable equations to represent equalities presented in a real-world context, including additive and multiplicative relationships. Students will apply their experience with equations and expressions to understand the definition of an inequality. Students will identify which variable is the dependent variable and which is the independent variable in a given situation. Students will use variables to represent two quantities in a real-world problem that change in relationship to one another. Finally students will 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.

ESSENTIAL QUESTIONS

- How do mathematicians write and find the value of expressions involving exponents?
- How do mathematicians write and evaluate numerical expressions?
- How do mathematicians write an algebraic expression to represent a situation?
- How do mathematicians interpret and evaluate an algebraic expression?
- How do mathematicians identify and generate equivalent expressions?
- How do mathematicians add, subtract, and factor linear expressions with rational coefficients?
- How do mathematicians write an equation to represent a situation?
- How do mathematicians solve equations that contain addition and subtraction?
- How do mathematicians solve equations that contain multiplication and division?
- How do mathematicians write and use one-step equations to represent situations and solve problems?
- How do mathematicians write and graph inequalities to represent real-world situations?
- How do mathematicians solve one-step equations that involve negative integers, fractions, and decimals?
- How do mathematicians represent an equation in a table or graph?
- How do mathematicians write an equation given a verbal description of a relationship?
- How do mathematicians write an equation using a table or graph?

STANDARDS

INTERDISCIPLINARY CONNECTIONS: NEW JERSEY STUDENT LEARNING STANDARDS FOR ELA, SOCIAL STUDIES, SCIENCE AND/OR MATHEMATICS New Section

Analyzing data in 6–8 builds on K–5 and progresses to extending quantitative analysis to investigations, distinguishing between correlation and causation, and basic statistical techniques of data and error analysis.

SOC.5-8.1.1

Chronological Thinking

NEW JERSEY STUDENT LEARNING STANDARDS: CONTENT AREA

MA.6.RP.A.2	Understand the concept of a unit rate a/b associated with a ratio $a:b$ with $b \neq 0$, and use rate language in the context of a ratio relationship.
MA.6.RP.A.3b	Solve unit rate problems including those involving unit pricing and constant speed.
MA.6.RP.A.3d	Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.
MA.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.
MA.6.NS.B.2	Fluently divide multi-digit numbers using the standard algorithm.
MA.6.NS.B.3	Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.
MA.6.NS.B.4	Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor.
MA.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.
MA.7.NS.A.3	Solve real-world and mathematical problems involving the four operations with rational numbers.
MA.6.NS.C.6b	Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.
MA.7.EE.A.1	Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.
MA.7.EE.A.2	Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related.
MA.7.EE.B.3	Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using

	mental computation and estimation strategies.
MA.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.
MA.6.EE.A.1	Write and evaluate numerical expressions involving whole-number exponents.
MA.6.EE.A.2a	Write expressions that record operations with numbers and with letters standing for numbers.
MA.6.EE.A.2b	Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity.
MA.1.G.A.3	Partition circles and rectangles into two and four equal shares, describe the shares using the words halves, fourths, and quarters, and use the phrases half of, fourth of, and quarter of. Describe the whole as two of, or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares.
MA.6.EE.A.2c	Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations).
MA.6.EE.A.3	Apply the properties of operations to generate equivalent expressions.
MA.6.EE.B.5	Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.
MA.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.
MA.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.
MA.6.EE.B.8	Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form $x > c$ or $x < c$ have infinitely many solutions; represent solutions of such inequalities on number line diagrams.
MA.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.

NEW JERSEY STUDENT LEARNING STANDARDS: CAREER READINESS, LIFE LITERACIES AND KEY SKILLS

PFL.9.1.8.CR.2	Compare various ways to give back through strengths, passions, goals, and other personal factors.
WRK.9.2.8.CAP.2	Develop a plan that includes information about career areas of interest.
TECH.9.4.8.CT	Critical Thinking and Problem-solving

NEW JERSEY STUDENT LEARNING STANDARDS: COMPUTER SCIENCE AND DESIGN THINKING

PRE-ASSESSMENTS

Module 6: Numerical and Algebraic Expressions "Are You Ready?" pg 200

Module 7: Solve Problems Using Equations and Inequalities "Are You Ready?" pg 254

Module 8: Real-World Relationships Between Variables "Are You Ready?" pg 294

INSTRUCTIONAL PLAN

MODULE 6

MODULE 6: UNDERSTAND ADDITION AND SUBTRACTION OF FRACTIONS WITH UNLIKE DENOMINATORS

LESSON 6.1

Student Learning Intentions (SLI) WALT: (We are learning to...)	6.1 We are learning to write and find the value of expressions involving exponents.
Student Learning Strategies	Use a Table to Represent Repeated Multiplication Use a Tree Diagram to Represent Repeated Multiplication
Success Criteria	I can write exponential expressions to represent repeated-multiplication situations, and I can find the value of an exponential expression.
Formative Assessment (drives instructional decisions)	Turn and Talk Questions (p. 201, 202) Check for Understanding (p. 203)
Activities and Resources	Warm-up: Activate Prior Knowledge (TM p. 201B) & Spark Your Learning (p. 201) Mini-lesson: Build Understanding (p. 202-203)

	Guided Practice: Check Understanding (p. 203) Independent Practice: On Your Own (p. 204) & Exit Ticket (TM p. 204) Teacher Resources: Into Math Teacher Edition Module 6-7 Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM p. 201C)

MA.6.NS.B.3	Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.
MA.6.EE.A.1	Write and evaluate numerical expressions involving whole-number exponents.

LESSON 6.2

Student Learning Intentions (SLI) WALT: (We are learning to...)	6.2 We are learning to Write and evaluate numerical expressions.
Student Learning Strategies	Use Numerical Expressions to Find the Cost Per Adult Use Guess-and-Check
Success Criteria	I can write numerical expressions to represent situations, identify terms in expressions, and use the order of operations to evaluate expressions.
Formative Assessment (drives instructional decisions)	Turn and Talk Questions (p. 207-209) Check for Understanding (p. 210)
Activities and Resources	Warm-up: Activate Prior Knowledge (TM p. 207B) & Spark Your Learning (p. 207) Mini-lesson: Build Understanding (p. 208-210) Guided Practice: Check Understanding (p. 210) Independent Practice: On Your Own (p. 211) & Exit Ticket (TM p. 211) Teacher Resources: Into Math Teacher Edition Module 6-7 Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM p. 207C)

MA.6.RP.A.3b	Solve unit rate problems including those involving unit pricing and constant speed.
MA.6.NS.B.3	Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.
MA.6.NS.C.7b	Write, interpret, and explain statements of order for rational numbers in real-world contexts.

MA.6.EE.A.1

Write and evaluate numerical expressions involving whole-number exponents.

MA.6.EE.A.2b

Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity.

LESSON 6.3

Student Learning Intentions (SLI) WALT: (We are learning to...)	6.3 We are learning to write an algebraic expression to represent a situation.
Student Learning Strategies	Use Numerical Expressions to Solve Use an Area Model to Solve
Success Criteria	I can write algebraic expressions to represent situations and I can identify variables, coefficients, and constants.
Formative Assessment (drives instructional decisions)	Turn and Talk Questions (p. 215, 216) Check for Understanding (p. 217)
Activities and Resources	Warm-up: Activate Prior Knowledge (TM p. 215B) & Spark Your Learning (p. 215) Mini-lesson: Build Understanding (p. 216-217) Guided Practice: Check Understanding (p. 217) Independent Practice: On Your Own (p. 218) & Exit Ticket (TM p.218) Teacher Resources: Into Math Teacher Edition Module 6-7 Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM p. 215C)

MA.6.EE.A.1

Write and evaluate numerical expressions involving whole-number exponents.

MA.6.EE.A.2

Write, read, and evaluate expressions in which letters stand for numbers.

MA.6.EE.A.2c

Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations).

MA.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.

LESSON 6.4

Student Learning Intentions (SLI) WALT: (We are learning to...)	6.4 We are learning to interpret and evaluate an algebraic expression.
Student Learning Strategies	Estimation
Success Criteria	I can evaluate an algebraic expression for given values of the variables.
Formative Assessment (drives instructional decisions)	Turn and Talk Questions (p. 221, 222) Check for Understanding (p. 223)
Activities and Resources	Warm-up: Activate Prior Knowledge (TM p. 221B) & Spark Your Learning (p. 221) Mini-lesson: Build Understanding (p. 221-222) Guided Practice: Check Understanding (p. 223) Independent Practice: On Your Own (p. 225) & Exit Ticket (TM p. 226) Teacher Resources: Into Math Teacher Edition Module 6-7 Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM p. 221C)

MA.6.RP.A.3b	Solve unit rate problems including those involving unit pricing and constant speed.
MA.6.RP.A.3d	Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.
MA.6.EE.A.2a	Write expressions that record operations with numbers and with letters standing for numbers.
MA.6.EE.A.2c	Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations).

LESSON 6.5

Student Learning Intentions (SLI) WALT: (We are learning to...)	6.5 We are learning to identify and generate equivalent expressions.
Student Learning Strategies	Estimation

Success Criteria	I can use properties of operations to generate and identify equivalent algebraic expressions.
Formative Assessment (drives instructional decisions)	Turn and Talk Questions (p. 229 & 231) Check for Understanding (p. 231)
Activities and Resources	Warm-up: Activate Prior Knowledge (TM p. 229B) & Spark Your Learning (p. 229) Mini-lesson: Build Understanding (p. 229-231) Guided Practice: Check Understanding (p. 231) Independent Practice: On Your Own (p. 232) & Exit Ticket (TM p. 234) Teacher Resources: Into Math Teacher Edition Module 6-7 Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM p. 229C)

MA.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.
MA.6.EE.A.1	Write and evaluate numerical expressions involving whole-number exponents.
MA.6.EE.A.3	Apply the properties of operations to generate equivalent expressions.
MA.6.EE.A.4	Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them).

LESSON 6.6

Student Learning Intentions (SLI) WALT: (We are learning to...)	6.6 We are learning to add, subtract, and factor linear expressions with rational coefficients.
Student Learning Strategies	Estimation
Success Criteria	I can add, subtract, factor, and expand algebraic expressions with rational coefficients, and apply these skills to real-world problems.
Formative Assessment (drives instructional decisions)	Turn and Talk Questions (p. 129, 130, & 131) Check for Understanding (p. 131)

Activities and Resources	Warm-up: Activate Prior Knowledge (TM p. 273B) & Spark Your Learning (p. 237) Mini-lesson: Build Understanding (p.237-238) Guided Practice: Check Understanding (p. 238) Independent Practice: On Your Own (p. 239) & Exit Ticket (TM p. 242) Teacher Resources: Into Math Teacher Edition Module 6-7 Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM p. 237C)

MA.7.EE.A.1	Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.
MA.7.EE.A.2	Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related.
MA.7.EE.B.3	Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies.
MA.6.EE.A.1	Write and evaluate numerical expressions involving whole-number exponents.
MA.6.EE.A.3	Apply the properties of operations to generate equivalent expressions.

MODULE 7

MODULE 7: SOLVE PROBLEMS USING EQUATIONS AND INEQUALITIES

MA.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.
MA.6.NS.B.4	Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor.
MA.6.EE.B.5	Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.
MA.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.
MA.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.

LESSON 7.1

Student Learning Intentions (SLI) WALT: (We are learning to...)	7.1 We are learning to write an equation to represent a situation.
Student Learning Strategies	Use a Variable and an Expression to Show Equality Use Examples to Show Equality
Success Criteria	I can write an equation to model a situation and determine whether a given value is a solution of an equation.
Formative Assessment (drives instructional decisions)	Turn and Talk Questions (p. 249, 250) Check for Understanding (p. 251)
Activities and Resources	Warm-up: Activate Prior Knowledge (TM p. 249B) & Spark Your Learning (p. 249) Mini-lesson: Build Understanding (p. 249-251) Guided Practice: Check Understanding (p.251) Independent Practice: On Your Own (p. 252) & Exit Ticket (TM p. 252) Teacher Resources: Into Math Teacher Edition Module 6-7 Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM p. 249C)

LESSON 7.2

Student Learning	7.2 We are learning to solve equations that contain addition and subtraction.
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Intentions (SLI) WALT: (We are learning to...)	
Student Learning Strategies	Write Equations to Construct a Solution Use a Model to Construct a Solution
Success Criteria	I can solve one-step addition and subtraction equations by applying the same operation to both sides.
Formative Assessment (drives instructional decisions)	Turn and Talk Questions (p. 255, 256, 257) Check for Understanding (p. 258)
Activities and Resources	Warm-up: Activate Prior Knowledge (TM p. 255B) & Spark Your Learning (p. 255) Mini-lesson: Build Understanding (p. 255-257) Guided Practice: Check Understanding (p. 258) Independent Practice: On Your Own (p. 259) & Exit Ticket (TM p. 260) Teacher Resources: Into Math Teacher Edition Module 6-7 Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM p. 255C)

MA.6.EE.A.1

Write and evaluate numerical expressions involving whole-number exponents.

MA.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.

MA.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.

LESSON 7.3

Student Learning Intentions (SLI) WALT: (We are learning to...)	7.3 We are learning to solve equations that contain multiplication and division.
Student Learning Strategies	Evaluate Expressions to Construct a Solution Use a Model to Construct a Solution
Success Criteria	I can solve one-step multiplication and division equations by applying the same operation to both sides.
Formative Assessment (drives instructional decisions)	Turn and Talk Questions (p. 263, 264, 265, 266) Check for Understanding (p. 266)
Activities and Resources	Warm-up: Activate Prior Knowledge (TM p. 263B) & Spark Your Learning (p. 263) Mini-lesson: Build Understanding (p. 264-266) Guided Practice: Check Understanding (p. 266) Independent Practice: On Your Own (p. 267-268) & Exit Ticket (TM p. 268) Teacher Resources: Into Math Teacher Edition Module 6-7 Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM p. 263C)

MA.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.
MA.6.NS.B.2	Fluently divide multi-digit numbers using the standard algorithm.
MA.6.EE.A.2a	Write expressions that record operations with numbers and with letters standing for numbers.
MA.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.

LESSON 7.4

Student Learning Intentions (SLI) WALT: (We are learning to...)	7.4 We are learning to write and use one-step equations to represent situations and so
Student Learning Strategies	Use a model to construct a solution. Estimation.
Success Criteria	I can solve problems by writing and solving one-step equations.
Formative Assessment (drives instructional decisions)	Turn and Talk Questions (p. 271) Check for Understanding (p. 272)
Activities and Resources	Warm-up: Activate Prior Knowledge (TM p. 271B) & Spark Your Learning (p. 271) Mini-lesson: Build Understanding (p.271-272) Guided Practice: Check Understanding (p. 272) Independent Practice: On Your Own (p. 273-274) & Exit Ticket (TM p. 274) Teacher Resources: Into Math Teacher Edition Module 6-7 Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM p. 271C)

MA.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.

MA.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.

LESSON 7.5

Student Learning Intentions (SLI) WALT: (We are learning to...)	7.5 We are learning to write, graph and solve inequalities to represent real-world situations
Student Learning Strategies	Estimation Use models to construct inequalities.
Success Criteria	I can solve a one-step equation with negative integers, fractions, and decimals.
Formative Assessment (drives instructional decisions)	Turn and Talk Questions (p.277, 278) Check for Understanding (p. 279)
Activities and Resources	Warm-up: Activate Prior Knowledge (TM p. 277B) & Spark Your Learning (p. 129) Mini-lesson: Build Understanding (p. 278-279) Guided Practice: Check Understanding (p. 279) Independent Practice: On Your Own (p. 280-281) & Exit Ticket (TM p. 281) Teacher Resources: Into Math Teacher Edition Module 6-7 Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM p. 277C)

MA.6.NS.B.3	Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.
MA.7.NS.A.3	Solve real-world and mathematical problems involving the four operations with rational numbers.
MA.6.EE.B.5	Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.
MA.6.EE.B.8	Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form $x > c$ or $x < c$

have infinitely many solutions; represent solutions of such inequalities on number line diagrams.

LESSON 7.6

Student Learning Intentions (SLI) WALT: (We are learning to...)	7.6 We are learning to solve one-step equations that involve negative integers, fraction
Student Learning Strategies	Use models to construct equations. Estimation.
Success Criteria	I can solve a one-step equation with negative integers, fractions, or decimals
Formative Assessment (drives instructional decisions)	Turn and Talk Questions (p. 285, 286) Check for Understanding (p. 286)
Activities and Resources	Warm-up: Activate Prior Knowledge (TM p. 285B) & Spark Your Learning (p. 129) Mini-lesson: Build Understanding (p. 285-286) Guided Practice: Check Understanding (p. 286) Independent Practice: On Your Own (p. 287) & Exit Ticket (TM p.287) Teacher Resources: Into Math Teacher Edition Module 6-7 Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM p. 285C)

MA.6.NS.B.2

Fluently divide multi-digit numbers using the standard algorithm.

MA.7.NS.A.3

Solve real-world and mathematical problems involving the four operations with rational numbers.

MA.6.NS.C.6b

Understand signs of numbers in ordered pairs as indicating locations in quadrants of the

coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.

MA.6.EE.A.3

Apply the properties of operations to generate equivalent expressions.

MA.6.EE.B.5

Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.

MA.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.

MA.6.EE.B.8

Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form $x > c$ or $x < c$ have infinitely many solutions; represent solutions of such inequalities on number line diagrams.

MA.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.

MODULE 8

MODULE 8: REAL-WORLD RELATIONSHIPS BETWEEN VARIABLES

LESSON 8.1

Student Learning Intentions (SLI) WALT: (We are learning to...)	8.1 We are learning to represent an equation in a table or graph.
Student Learning Strategies	Use Subtraction and Division to Calculate Averages Use a Table to Relate Sizes of Parts
Success Criteria	I can make a table to represent the equation for a real-world relationship, and I can graph the ordered pairs from the table.
Formative Assessment (drives instructional decisions)	Turn and Talk Questions (p. 295 & 297, 298) Check for Understanding (p. 298)
Activities and Resources	Warm-up: Activate Prior Knowledge (TM p. 297B) & Spark Your Learning (p. 295) Mini-lesson: Build Understanding (p. 295-297) Guided Practice: (p. 297) Independent Practice: On Your Own (p. 299) & Exit Ticket

	(TM p. 298) Teacher Resources: Into Math Teacher Edition Module 8 Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM p. 295C)

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

LESSON 8.2

Student Learning Intentions (SLI) WALT: (We are learning to...)	8.2 We are learning to write an equation given a verbal description of a relationship.
Student Learning Strategies	Use Subtraction and Division to Calculate Averages Use a Table to Relate Sizes of Part
Success Criteria	I can make a table to represent the equation for a real-world relationship, and I can graph the ordered pairs from the table.
Formative Assessment (drives instructional decisions)	Turn and Talk Questions (p. 303, 304) Check for Understanding (p. 304)
Activities and Resources	Warm-up: Activate Prior Knowledge (TM p. 303B) & Spark Your Learning (p. 303) Mini-lesson: Build Understanding (p. 303) and Step it Out (p. 304) Guided Practice: Check Understanding (p. 304) Independent Practice: On Your Own (p. 305) & Exit Ticket (TM p. 306) Teacher Resources: Into Math Teacher Edition Module 8 Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM p. 303C)

MA.6.RP.A.2	Understand the concept of a unit rate a/b associated with a ratio $a:b$ with $b \neq 0$, and use rate language in the context of a ratio relationship.
MA.6.NS.B.3	Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.

MA.1.G.A.3	Partition circles and rectangles into two and four equal shares, describe the shares using the words halves, fourths, and quarters, and use the phrases half of, fourth of, and quarter of. Describe the whole as two of, or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares.
MA.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.

LESSON 8.3

Student Learning Intentions (SLI) WALT: (We are learning to...)	8.3 We are learning to write an equation using a table or graph.
Student Learning Strategies	Use Subtraction and Division to Calculate Averages Use a Table to Relate Sizes of Part
Success Criteria	I can use a table or graph to write an equation for a linear relationship.
Formative Assessment (drives instructional decisions)	Turn and Talk Questions (p. 309, 310, 311) Check for Understanding (p. 311)
Activities and Resources	Warm-up: Activate Prior Knowledge (TM p. 309B) & Spark Your Learning (p. 309) Mini-lesson: Build Understanding (p. 309) and Step it Out (p.310-311) Guided Practice: Check Understanding (p. 311) Independent Practice: On Your Own (p.312) & Exit Ticket (TM p. 312) Teacher Resources: Into Math Teacher Edition Module 8 Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM p. 309C)

MA.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.
MA.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.
MA.6.EE.A.2	Write, read, and evaluate expressions in which letters stand for numbers.
MA.6.EE.A.2c	Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including

those involving whole number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations).

MA.6.EE.A.3

Apply the properties of operations to generate equivalent expressions.

MA.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.

Unit 3: Ratios and Proportional Reasoning

Content Area: **Template**
Course(s):
Time Period: **Full Year**
Length: **Full Year**
Status: **Published**

UNIT RATIONALE

This unit is designed to support students in ratios and proportional reasoning. Students will understand the concepts of a ratio and use ratio language to describe a ratio relationship between two quantities. Students will use tables to record ratios and to find missing quantities in ratios by comparing them to equivalent ratios. Students learn to find and use unit rates to solve problems. Students will solve real-world and mathematical problems involving ratios not given as unit rates and proportions that do not include unit rates. Students apply their understanding of ratios to interpret and construct circle graphs. Students will use ratio reasoning to convert measurement units. Students will examine relationships between two quantities described in words, with a table, or with a diagram. Students will examine tables of data to see if they show a proportional relationship. Students examine tables of data and graph them to see if all the points lie on a straight line and whether that line passes through the origin. Students will use proportions to convert between different unit rates, such as miles per hour or feet per second. Students will recognize that ratios, fractions, and percents are equivalent representations of the same mathematical relationship. Finally students will use proportional relationships to solve multi-step ratio and percent problems.

ESSENTIAL QUESTIONS

- How do mathematicians understand and write ratios?
- How do mathematicians use tables and graphs to represent ratios and rates?
- How do mathematicians use a table to compare ratios and rates?
- How do mathematicians find and use unit rates to solve problems?
- How do mathematicians identify and generate equivalent expressions?
- How do mathematicians use equivalent ratios to solve real-world problems?
- How do mathematicians apply ratio reasoning to make and interpret circle graphs?
- How do mathematicians convert units within a measurement system?
- How do mathematicians use equivalent ratios to convert measurements between measurement systems?
- How do mathematicians use patterns and unit rates to analyze and describe relationships?
- How do mathematicians determine if a relationship represented in a table is proportional, identify the constant of proportionality, and write an equation in the form of $y = kx$?
- How do mathematicians identify the characteristics of a proportional relationship when graphed?
- How do mathematicians use a proportional relationship to solve multi-step problems?
- How do mathematicians write a ratio as a percent?
- How do mathematicians find a percent of a quantity?
- How do mathematicians use percents to solve real-world problems?
- How do mathematicians use proportional reasoning to calculate percent increase or decrease?
- How do mathematicians calculate markups, markdowns, retail prices, and discount prices, and represent them

using equations of the form $y = kx$?

How do mathematicians represent taxes, gratuities, and total cost using equations in the form $y = kx$ by applying proportional reasoning. Use the equations to solve problems and assess reasonableness of answers?

How do mathematicians use proportional reasoning to find total earnings for someone earning a base salary plus a commission? Use proportional reasoning to find fees (including fees as percent and as a constant) and assess the reasonableness of answers?

How do mathematicians use proportional reasoning to calculate simple interest and the total value of an account earning simple interest, and assess the reasonableness of answers?

STANDARDS

NEW JERSEY STUDENT LEARNING STANDARDS: CONTENT AREA

MA.7.RP.A.1	Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units.
MA.6.RP.A.1	Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.
MA.7.RP.A.2	Recognize and represent proportional relationships between quantities.
MA.6.RP.A.2	Understand the concept of a unit rate a/b associated with a ratio $a:b$ with $b \neq 0$, and use rate language in the context of a ratio relationship.
MA.7.RP.A.2a	Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.
MA.7.RP.A.2b	Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.
MA.7.RP.A.2c	Represent proportional relationships by equations.
MA.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.
MA.6.RP.A.3a	Make tables of equivalent ratios relating quantities with whole number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.
MA.6.RP.A.3b	Solve unit rate problems including those involving unit pricing and constant speed.
MA.7.RP.A.2d	Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points $(0, 0)$ and $(1, r)$ where r is the unit rate.
MA.7.RP.A.3	Use proportional relationships to solve multistep ratio and percent problems.
MA.6.RP.A.3d	Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.
MA.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.

MA.6.NS.B.2	Fluently divide multi-digit numbers using the standard algorithm.
MA.6.NS.B.3	Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.
MA.6.NS.B.4	Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor.
MA.7.NS.A.2a	Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as $(-1)(-1) = 1$ and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.
MA.7.NS.A.2b	Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then $-(p/q) = (-p)/q = p/(-q)$. Interpret quotients of rational numbers by describing real-world contexts.
MA.7.NS.A.2c	Apply properties of operations as strategies to multiply and divide rational numbers.
MA.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.
MA.6.NS.C.6c	Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.
MA.6.NS.C.7b	Write, interpret, and explain statements of order for rational numbers in real-world contexts.
MA.6.NS.C.7c	Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation.
MA.7.EE.B.3	Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies.
MA.6.NS.C.7d	Distinguish comparisons of absolute value from statements about order.
MATH.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.
MATH.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 the prism. Apply the formulas $V = lwh$ and $V = bh$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.

NEW JERSEY STUDENT LEARNING STANDARDS: CAREER READINESS, LIFE LITERACIES AND KEY SKILLS

PFL.9.1.8.CR.2

Compare various ways to give back through strengths, passions, goals, and other personal

PFL.9.1.8.CP.1

factors.

TECH.9.4.8.CI.1

Compare prices for the same goods or services.

Assess data gathered on varying perspectives on causes of climate change (e.g., cross-cultural, gender-specific, generational), and determine how the data can best be used to design multiple potential solutions (e.g., RI.7.9, 6.SP.B.5, 7.1.NH.IPERS.6, 8.2.8.ETW.4).

An individual's strengths, lifestyle goals, choices, and interests affect employment and income.

NEW JERSEY STUDENT LEARNING STANDARDS: COMPUTER SCIENCE AND DESIGN THINKING

CS.6-8.2-AP-10

Use flowcharts and/or pseudocode to address complex problems as algorithms.

INTERDISCIPLINARY CONNECTIONS: NEW JERSEY STUDENT LEARNING STANDARDS FOR ELA, SOCIAL STUDIES, SCIENCE AND/OR MATHEMATICS

SOC.5-8.1.1.1

Analyzing and Interpreting Data

Construct timelines of the events occurring during major eras including comparative events in world history for the different civilizations.

PRE-ASSESSMENTS

Module 9: Ratios and Proportional Reasoning "Are You Ready?" pg 322

Module 10: Apply Ratio and Rates to Measurement "Are You Ready?" pg 362

Module 11: Identify and Represent Proportional Relationships "Are You Ready?" pg 388

Module 12: Understand and Apply Percent "Are You Ready?" pg 422

Module 13: Proportional Reasoning with Percents "Are You Ready?" pg 446

INSTRUCTIONAL PLAN

MODULE 9

Module 9: Ratios and Proportional Reasoning

LESSON 9.1

Student Learning Intentions (SLI) WALT: (We are learning to...)	9.1 We are learning to understand and write ratios.
Student Learning Strategies	Calculate Birds per Birdhouse Use a Model
Success Criteria	I can find and express ratios.
Formative Assessment (drives instructional decisions)	Turn and Talk Questions (p. 323, 324) Check for Understanding (p. 325)
Activities and Resources	Warm-up: Activate Prior Knowledge (TM p. 323B) & Spark Your Learning (p. 323) Mini-lesson: Build Understanding (p. 323-325) Guided Practice: Check Understanding (p. 325) Independent Practice: On Your Own (p. 326) & Exit Ticket (TM p. 326) Teacher Resources: Into Math Teacher Edition Module 9 Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM p. 323C)

MA.6.RP.A.1	Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.
MA.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.
MA.6.NS.B.2	Fluently divide multi-digit numbers using the standard algorithm.
MA.6.NS.B.3	Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.
MA.6.NS.B.4	Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor.

LESSON 9.2

Student Learning Intentions (SLI) WALT: (We are learning to...)	9.2 We are learning to learn to use tables and graphs to represent ratios and rates.
Student Learning Strategies	Use Multiplication to Complete a Table Use Additive Reasoning to Complete a Table

Success Criteria	I can use tables and graphs to represent ratios and rates, and I can find equivalent ratios and unit rates.
Formative Assessment (drives instructional decisions)	Turn and Talk Questions (p. 329, 331, 332) Check for Understanding (p. 332)
Activities and Resources	Warm-up: Activate Prior Knowledge (TM p. 329B) & Spark Your Learning (p. 329) Mini-lesson: Build Understanding (p. 329-331) Guided Practice: Check Understanding (p. 331) Independent Practice: On Your Own (p. 333-334) & Exit Ticket (TM p. 334) Teacher Resources: Into Math Teacher Edition Module 9 Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM p. 329C)

MA.6.RP.A.2	Understand the concept of a unit rate a/b associated with a ratio $a:b$ with $b \neq 0$, and use rate language in the context of a ratio relationship.
MA.6.RP.A.3a	Make tables of equivalent ratios relating quantities with whole number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.
MA.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.
MA.6.NS.B.3	Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.

LESSON 9.3

Student Learning Intentions (SLI) WALT: (We are learning to...)	9.3 We are learning to use a table to compare ratios and rates.
Student Learning Strategies	Use fractions. Estimate.
Success Criteria	I can analyze tables to compare ratios and rates.
Formative Assessment (drives instructional decisions)	Turn and Talk Questions (p. 337) Check for Understanding (p. 338)
Activities and Resources	Warm-up: Activate Prior Knowledge (TM p. 337B) & Spark Your Learning (p. 337)

	Mini-lesson: Build Understanding (p. 337-338) Guided Practice: Check Understanding (p. 339) Independent Practice: On Your Own (p. 339) & Exit Ticket (TM p. 340) Teacher Resources: Into Math Teacher Edition Module 9 Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM p. 337C)

MA.6.RP.A.3a	Make tables of equivalent ratios relating quantities with whole number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.
MA.6.RP.A.3b	Solve unit rate problems including those involving unit pricing and constant speed.
MA.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.
MA.6.NS.B.3	Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.
MA.6.NS.C.7c	Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation.
MA.6.NS.C.7d	Distinguish comparisons of absolute value from statements about order.

LESSON 9.4

Student Learning Intentions (SLI) WALT: (We are learning to...)	9.4 We are learning to find and use unit rates to solve problems.
Student Learning Strategies	Use Fractions Use Estimation
Success Criteria	I can find and use unit rates.
Formative Assessment (drives instructional decisions)	Turn and Talk Questions (p. 343, 344) Check for Understanding (p. 345)
Activities and Resources	Warm-up: Activate Prior Knowledge (TM p. 343B) & Spark Your Learning (p. 343) Mini-lesson: Build Understanding (p. 343-344) Guided Practice: Check Understanding (p. 219) Independent Practice: On Your Own (p. 346-348) & Exit Ticket (TM p. 348) Teacher Resources: Into Math Teacher Edition Module 9 Online Resources

Suggested Modifications	Plan for Differentiated Instruction (TM p. 343C)
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MA.7.RP.A.1	Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units.
MA.6.RP.A.1	Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.
MA.6.RP.A.2	Understand the concept of a unit rate a/b associated with a ratio $a:b$ with $b \neq 0$, and use rate language in the context of a ratio relationship.
MA.7.RP.A.2a	Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.
MA.7.RP.A.2b	Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.
MA.6.RP.A.3b	Solve unit rate problems including those involving unit pricing and constant speed.
MA.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.
MA.6.NS.C.7c	Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation.

LESSON 9.5

Student Learning Intentions (SLI) WALT: (We are learning to...)	9.5 We are learning to use equivalent ratios to solve real-world problems.
Student Learning Strategies	Use Estimation. Use Fractions.
Success Criteria	I can use ratio reasoning to solve problems.
Formative Assessment (drives instructional decisions)	Turn and Talk Questions (p.351 & 352) Check for Understanding (p. 352)
Activities and Resources	Warm-up: Activate Prior Knowledge (TM p. 351B) & Spark Your Learning (p. 351) Mini-lesson: Build Understanding (p. 351-352) Guided Practice: Check Understanding (p. 352) Independent Practice: On Your Own (p. 354-356) & Exit Ticket (TM p. 356) Teacher Resources: Into Math Teacher Edition Module 9 Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM p. 351C)

MA.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.
MA.6.RP.A.3a	Make tables of equivalent ratios relating quantities with whole number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.
MA.6.RP.A.3b	Solve unit rate problems including those involving unit pricing and constant speed.
MA.6.NS.B.3	Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.
MA.6.NS.B.4	Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor.
MA.6.NS.C.6c	Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.

MODULE 10

Module 10: APPLY RATIOS AND RATES TO MEASUREMENT

LESSON 10.1

Student Learning Intentions (SLI) WALT: (We are learning to...)	10.1 We are learning to apply ratio reasoning to make and interpret circle graphs.
Student Learning Strategies	Use Fraction Operations to Solve Problems Use Equivalent Fractions
Success Criteria	I can use reasoning about equivalent ratios to make and interpret a circle graph.
Formative Assessment (drives instructional decisions)	Turn and Talk (pg 363, pg 365) Check Understanding (pg 365) Exit Ticket (TM pg 366)
Activities and Resources	Warm-Up: Activate Prior Knowledge (TM pg 363B) Mini-Lesson: Spark Your Learning (pg 363), Build Your Understanding (pg 364-365) Guided Practice: Check Understanding (pg 365)

	Independent Practice: On Your Own (pg 366) and Exit Ticket (TM pg 366) Teacher Resources Into Math Teacher Edition Module 10 & Online Resources
Suggested Modifications	Plan For Differentiated Instruction (TM pg 363C)

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

LESSON 10.2

Student Learning Intentions (SLI) WALT: (We are learning to...)	10.2 We are learning to convert units within a measurement system.
Student Learning Strategies	Change Mixed Numbers to Fractions and Multiply Use a Visual Model
Success Criteria	I can convert measurements within a measurement system by using equivalent ratios or conversion factors.
Formative Assessment (drives instructional decisions)	Turn and Talk (pg 369, pg 370) Check Understanding (pg 372) Exit Ticket (TM pg 374)
Activities and Resources	Warm-Up: Activate Prior Knowledge (TM pg 369B) Mini-Lesson: Spark Your Learning (pg 369), Build Your Understanding (pg 370-372) Guided Practice: Check Understanding (pg 372) Independent Practice: On Your Own (pg 373) and Exit Ticket (TM pg 374) Teacher Resources Into Math Teacher Edition Module 10 & Online Resources

Suggested Modifications	Plan For Differentiated Instruction (TM pg 369C)
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MA.6.RP.A.1	Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.
MA.6.RP.A.3b	Solve unit rate problems including those involving unit pricing and constant speed.
MA.6.RP.A.3d	Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.
MA.6.NS.B.3	Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.

LESSON 10.3

Student Learning Intentions (SLI) WALT: (We are learning to...)	10.3 We are learning to use equivalent ratios to convert measurements between measurement systems.
Student Learning Strategies	Convert the Mixed Number to a Fraction and Divide Use a Model
Success Criteria	I can convert measurements between measurement systems by using equivalent rates or conversion factors.
Formative Assessment (drives instructional decisions)	Turn and Talk (pg377, 378, 379, 380) Check Understanding (pg 380) Exit Ticket (TM pg 382)
Activities and Resources	Warm-Up: Activate Prior Knowledge (TM pg 377B) Mini-Lesson: Spark Your Learning (pg 377), Build Your Understanding (pg 378-380) Guided Practice: Check Understanding (pg 380) Independent Practice: On Your Own (pg 381) and Exit Ticket (TM pg 382) Teacher Resources Into Math Teacher Edition Module 10 & Online Resources
Suggested Modifications	Plan For Differentiated Instruction (TM pg 377C)

MA.6.RP.A.3b	Solve unit rate problems including those involving unit pricing and constant speed.
MA.6.RP.A.3d	Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.
MA.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.

MA.6.NS.B.3

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

MODULE 11

Module 11 IDENTIFY AND REPRESENT PROPORTIONAL RELATIONSHIPS

LESSON 11.1

Student Learning Intentions (SLI) WALT: (We are learning to...)	11.1 We will learn to use patterns and unit rates to analyze and describe relationships.
Student Learning Strategies	Use Models to Relate Size of Parts Use Equivalent Ratios to Relate Size of Parts
Success Criteria	I can recognize when a relationship presented in a table, diagram, or verbal description can be represented by a constant unit rate.
Formative Assessment (drives instructional decisions)	Turn and Talk (pg 389. 390) Check Understanding (pg 391) Exit Ticket (TM pg 392)
Activities and Resources	Warm-Up: Activate Prior Knowledge (TM pg 389) Mini-Lesson: Spark Your Learning (pg 389), Build Understanding (pg 390), Step it Out (pg 391) Guided Practice: Check Understanding (pg 269) Independent Practice: On Your Own (pg 391) and Exit Ticket (TM pg 392) Teacher Resources Into Math Teacher Edition Module 11 & Online Resources
Suggested Modifications	Plan for Differentiation (TM pg 389C)

MA.6.RP.A.1

Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.

MA.6.RP.A.2	Understand the concept of a unit rate a/b associated with a ratio $a:b$ with $b \neq 0$, and use rate language in the context of a ratio relationship.
MA.7.RP.A.2	Recognize and represent proportional relationships between quantities.
MA.7.RP.A.2a	Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.
MA.7.RP.A.2b	Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.
MA.7.RP.A.3	Use proportional relationships to solve multistep ratio and percent problems.
MA.6.NS.B.3	Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.
MA.6.NS.C.7c	Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation.

LESSON 11.2

Student Learning Intentions (SLI) WALT: (We are learning to...)	11.2 We will learn to determine if a relationship represented in a table is proportional, identify the constant of proportionality, and write an equation in the form of $y = kx$
Student Learning Strategies	Use Equivalent Ratios Look for Patterns
Success Criteria	I can identify a proportional relationship, find its constant of proportionality, and write an equation to represent it.
Formative Assessment (drives instructional decisions)	Turn and Talk (pg 395, 396, 398) Check Understanding (pg 398) Exit Ticket (TM pg 400)
Activities and Resources	Warm-Up: Activate Prior Knowledge (TM pg 395) Mini-Lesson: Spark Your Learning (pg 395), Build Understanding (pg 396), Step it Out (pg 397) Guided Practice: Check Understanding (pg 398) Independent Practice: On Your Own (pg 399) and Exit Ticket (TM pg 400) Teacher Resources Into Math Teacher Edition Module 11 & Online Resources
Suggested Modifications	Plan for Differentiation (TM pg 395C)

MA.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.
MA.6.NS.B.2	Fluently divide multi-digit numbers using the standard algorithm.
MA.7.NS.A.2a	Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as $(-1)(-1) = 1$ and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.
MA.7.NS.A.2b	Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then $-(p/q) = (-p)/q = p/(-q)$. Interpret quotients of rational numbers by describing real-world contexts.
MA.7.NS.A.2c	Apply properties of operations as strategies to multiply and divide rational numbers.

LESSON 11.3

Student Learning Intentions (SLI) WALT: (We are learning to...)	11.3 We will learn to identify the characteristics of a proportional relationship when graphed.
Student Learning Strategies	Analyze a Proportional Relationship Graph the Proportional Relationship
Success Criteria	I can identify a proportional relationship from a graph and use the graph to find the constant of proportionality and equation.
Formative Assessment (drives instructional decisions)	Turn and Talk (pg 403, 404) Check Understanding (pg 406) Exit Ticket (TM pg 408)
Activities and Resources	Warm-Up: Activate Prior Knowledge (TM pg 403) Mini-Lesson: Spark Your Learning (pg 267), Build Understanding (pg 404), Step it Out (pg 405) Guided Practice: Check Understanding (pg 406) Independent Practice: On Your Own (pg 407) and Exit Ticket (TM pg 408) Teacher Resources Into Math Teacher Edition Module 11 & Online Resources
Suggested Modifications	Plan for Differentiation (TM pg 403C)

MA.6.RP.A.1	Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.
MA.7.RP.A.1	Compute unit rates associated with ratios of fractions, including ratios of lengths, areas

	and other quantities measured in like or different units.
MA.7.RP.A.2a	Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.
MA.7.RP.A.2b	Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.
MA.7.RP.A.2c	Represent proportional relationships by equations.
MA.7.RP.A.2d	Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points $(0, 0)$ and $(1, r)$ where r is the unit rate.
MA.7.RP.A.3	Use proportional relationships to solve multistep ratio and percent problems.
MA.6.NS.B.3	Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.

LESSON 11.4

Student Learning Intentions (SLI) WALT: (We are learning to...)	11.4 We will learn to Use a proportional relationship to solve multi-step problems.
Student Learning Strategies	Visual Model
Success Criteria	I can identify the constant of proportionality and write an equation for a proportional relationship presented in various forms and use them to solve multi-step ratio problems.
Formative Assessment (drives instructional decisions)	Turn and Talk (pg 411, 412, 413) Check Understanding (pg 414) Exit Ticket (TM pg 416)
Activities and Resources	Warm-Up: Activate Prior Knowledge (TM pg 411) Mini-Lesson: Spark Your Learning (pg 267), Build Understanding (pg 268), Step it Out (pg 269) Guided Practice: Check Understanding (pg 414) Independent Practice: On Your Own (pg 415) and Exit Ticket (TM pg 416) Teacher Resources Into Math Teacher Edition Module 11 & Online Resources
Suggested Modifications	Plan for Differentiation (TM pg 411C)

MA.7.RP.A.1	Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units.
MA.7.RP.A.2b	Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams,

and verbal descriptions of proportional relationships.

MA.7.RP.A.3

Use proportional relationships to solve multistep ratio and percent problems.

MODULE 12

Module 12: UNDERSTAND AND APPLY PERCENT

LESSON 12.1

Student Learning Intentions (SLI) WALT: (We are learning to...)	12.1 We are learning to write a ratio as a percent.
Student Learning Strategies	Use 10x10 grid
Success Criteria	I can convert ratios to percents by applying one strategy and I can explain my method to others.
Formative Assessment (drives instructional decisions)	Turn and Talk (pg 295, 296, 297) Check Understanding (pg 298) Exit Ticket (TM pg 300)
Activities and Resources	Warm-Up: Activate Prior Knowledge (TM pg 295B) Mini-Lesson: Spark Your Learning (pg 295) Build Understanding (pg 296) Step It Out (pg 297-298) Guided Practice: Check Understanding (pg 298) Independent Practice: On Your Own (pg 299 - 300) and Exit Ticket (TM pg 300)
Suggested Modifications	Plan For Differentiated Instruction (TM pg 295C)

MA.6.RP.A.1

Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.

MA.6.RP.A.3c

Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent.

MA.6.NS.B.3

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

MA.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.

LESSON 12.2

Student Learning Intentions (SLI) WALT: (We are learning to...)	12.2 We are learning to find a percent of a quantity.
Student Learning Strategies	Use an Equation with Equivalent Ratios Use Models to Find Equivalent Ratios
Success Criteria	I can use three different methods to write a ratio as a percent.
Formative Assessment (drives instructional decisions)	Turn and Talk (pg 423, 424, 425, 426) Check Understanding (pg 426) Exit Ticket (TM pg 428)
Activities and Resources	Warm-Up: Activate Prior Knowledge (TM pg 423B) Mini-Lesson: Spark Your Learning (pg 423) Build Understanding (pg 424) Step It Out (pg 424-425) Guided Practice: Check Understanding (pg 426) Independent Practice: On Your Own (pg 427) and Exit Ticket (TM pg 428)
Suggested Modifications	Plan For Differentiated Instruction (TM pg 423)

MA.6.RP.A.3c	Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent.
MA.6.NS.B.2	Fluently divide multi-digit numbers using the standard algorithm.
MA.6.NS.C.7b	Write, interpret, and explain statements of order for rational numbers in real-world contexts.

LESSON 12.3

Student Learning Intentions (SLI) WALT: (We are learning to...)	12.3 We are learning to use percents to solve real-world problems.
Student Learning Strategies	Use an Equation with Equivalent Ratios Use Models to Find Equivalent Ratios
Success Criteria	I can solve real-world percent problems that require me to find the part, the percent, or the whole.

Formative Assessment (drives instructional decisions)	Turn and Talk (pg 439, 440) Check Understanding (pg 440) Exit Ticket (TM pg 442)
Activities and Resources	Warm-Up: Activate Prior Knowledge (TM pg 439B) Mini-Lesson: Spark Your Learning (pg 439) Build Understanding (pg 440) Step It Out (pg 441-442) Guided Practice: Check Understanding (pg 441) Independent Practice: On Your Own (pg 442) and Exit Ticket (TM pg 442)
Suggested Modifications	Plan For Differentiated Instruction (TM pg 439C)

MA.6.RP.A.3b	Solve unit rate problems including those involving unit pricing and constant speed.
MA.6.RP.A.3c	Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent.
MA.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.
MA.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 the prism. Apply the formulas $V = lwh$ and $V = Bh$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.

MODULE 13

Module 13 Decimal Place Value

LESSON 13.3

Student Learning Intentions (SLI) WALT: (We are learning to...)	13.3 We are learning to represent taxes, gratuities, and total cost using equations in the form $y = kx$ by applying proportional reasoning. Use the equations to solve problems and assess reasonableness of answers.
Student Learning Strategies	Estimation Visual Model
Success Criteria	I can find taxes, gratuities, and total costs by writing and using equations of the form $y = kx$, and assess

	the reasonableness of results.
Formative Assessment (drives instructional decisions)	Turn and Talk (pg 461, 462) Check Understanding (pg 463) Exit Ticket (TM pg 464)
Activities and Resources	Warm-up: Activate Prior Knowledge (TM pg 461B) Mini-Lesson: Build Your Understanding (pg 462 & 463) Guided Practice: Check Understanding (pg 463) Independent Practice: On Your Own (pg 464)
Suggested Modifications	Plan for Differentiated Instruction (TM pg 461)

MA.7.RP.A.2b	Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.
MA.7.RP.A.3	Use proportional relationships to solve multistep ratio and percent problems.

LESSON 13.2

Student Learning Intentions (SLI) WALT: (We are learning to...)	13.2 We are learning to calculate markups, markdowns, retail prices, and discount prices, and represent them using equations of the form $y = kx$
Student Learning Strategies	Estimation Visual Model
Success Criteria	I can calculate markups, markdowns, and retail prices and write equations for markup and markdown situations.
Formative Assessment (drives instructional decisions)	Turn and Talk (pg 455, 456) Check Understanding (pg 457) Exit Ticket (TM pg 458)
Activities and Resources	Warm-up: Activate Prior Knowledge (TM pg 455B) Mini-Lesson: Build Your Understanding (pg 456 & 457) Guided Practice: Check Understanding (pg 457) Independent Practice: On Your Own (pg 458)
Suggested Modifications	Plan for Differentiated Instruction (TM pg 455)

MA.7.RP.A.2a	Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the
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	graph is a straight line through the origin.
MA.7.RP.A.3	Use proportional relationships to solve multistep ratio and percent problems.
MA.7.EE.A.2	Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related.
MA.7.EE.B.3	Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies.

LESSON 13.1

Student Learning Intentions (SLI) WALT: (We are learning to...)	13.1 We are learning to use proportional reasoning to calculate percent increase or decrease
Student Learning Strategies	Estimation Visual Model
Success Criteria	I can solve multi-step problems involving percent change.
Formative Assessment (drives instructional decisions)	Turn and Talk (pg 449, 450) Check Understanding (pg 450) Exit Ticket (TM pg 452)
Activities and Resources	Warm-up: Activate Prior Knowledge (TM pg 449B) Mini-Lesson: Spark Your Learning (pg 450), Build Your Understanding (pg 451) Guided Practice: Check Understanding (pg451) Independent Practice: On Your Own (pg 452)
Suggested Modifications	Plan for Differentiated Instruction (TM pg 449)

MA.7.RP.A.2a	Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.
MA.7.RP.A.3	Use proportional relationships to solve multistep ratio and percent problems.

LESSON 13.4

Student Learning Intentions (SLI) WALT: (We are learning to...)	13.4 We are learning to use proportional reasoning to find total earnings for someone earning a base salary plus a commission. Use proportional reasoning to find fees
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	(including fees as percent and as a constant) and assess the reasonableness of answers.
Student Learning Strategies	Estimation Visual Model
Success Criteria	I can calculate commissions, fees, and total earnings and assess the reasonableness of my results.
Formative Assessment (drives instructional decisions)	Turn and Talk (pg 467, 468) Check Understanding (pg 468) Exit Ticket (TM pg 470)
Activities and Resources	Warm-up: Activate Prior Knowledge (TM pg 467B) Mini-Lesson: Build Your Understanding (pg 468) Guided Practice: Check Understanding (pg 469) Independent Practice: On Your Own (pg 469)
Suggested Modifications	Plan for Differentiated Instruction (TM pg 467)

MA.7.NS.A.2c

Apply properties of operations as strategies to multiply and divide rational numbers.

MA.7.NS.A.3

Solve real-world and mathematical problems involving the four operations with rational numbers.

LESSON 13.5

Student Learning Intentions (SLI) WALT: (We are learning to...)	13.5 We are learning to use proportional reasoning to calculate simple interest and the total value of an account earning simple interest, and assess the reasonableness of answers.
Student Learning Strategies	Estimation Visual Model
Success Criteria	I can calculate simple interest and the total value of an account after any period of time. I understand and can apply the equation $I = Prt$.
Formative Assessment (drives instructional decisions)	Turn and Talk (pg 473, 474) Check Understanding (pg 474) Exit Ticket (TM pg 476)

Activities and Resources	Warm-up: Activate Prior Knowledge (TM pg 473B) Mini-Lesson: Build Your Understanding (pg 473) Guided Practice: Check Understanding (pg 474) Independent Practice: On Your Own (pg 476)
Suggested Modifications	Plan for Differentiated Instruction (TM pg 473)

MA.7.RP.A.3

Use proportional relationships to solve multistep ratio and percent problems.

Unit 4: Relationships In Geometry

Content Area: **Template**
Course(s):
Time Period: **Full Year**
Length: **7 weeks**
Status: **Published**

UNIT RATIONALE

This unit is designed to support students in relationships in geometry. Students will understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane. They will recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes. Students will draw polygons in the coordinate plane given coordinates for the vertices and apply these techniques in the context of solving real-world and mathematical problems. Students will compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. Students will find the area of right triangles and other triangle by composing them into rectangles. Students will represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Finally, students will 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 the prism.

ESSENTIAL QUESTIONS

- How do mathematicians locate rational ordered pairs on the coordinate plane?
- How do mathematicians solve problems by graphing and identifying polygons in the coordinate plane
- How do mathematicians find the perimeter and area of polygons on the coordinate plane?
- How do mathematicians find the areas of parallelograms, trapezoids, triangles, and composite figures?
- How do mathematicians locate rational ordered pairs on the coordinate plane.
- How do mathematicians use nets to find surface area?
- How do mathematicians find the volume of a rectangular prism?
- How do mathematicians write equations to solve problems involving volume of rectangular prisms?

STANDARDS

New Jersey Student Learning Standards: Content Area

MA.6.RP.A.3b	Solve unit rate problems including those involving unit pricing and constant speed.
MA.6.NS.B.2	Fluently divide multi-digit numbers using the standard algorithm.
MA.6.NS.B.3	Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.

MA.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.
MA.6.NS.C.6b	Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.
MA.6.NS.C.6c	Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.
MA.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.
MA.6.EE.A.1	Write and evaluate numerical expressions involving whole-number exponents.
MA.6.EE.A.2c	Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations).
MATH.6.EE.A.2.c	Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations).
MA.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.
MA.6.EE.B.8	Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form $x > c$ or $x < c$ have infinitely many solutions; represent solutions of such inequalities on number line diagrams.
MA.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.
MA.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.
MA.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 the prism. Apply the formulas $V = lwh$ and $V = Bh$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.
MA.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.
MA.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.

PFL.9.1.8.CR.2

Compare various ways to give back through strengths, passions, goals, and other personal factors.

NEW JERSEY STUDENT LEARNING STANDARDS: COMPUTER SCIENCE AND DESIGN THINKING

CS.6-8.8.1.8.DA.1

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

INTERDISCIPLINARY CONNECTIONS: NEW JERSEY STUDENT LEARNING STANDARDS FOR ELA, SOCIAL STUDIES, SCIENCE AND/OR MATHEMATICS

SCI.MS-PS1-2

Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.

SOC.5-8.1.1.1

Construct timelines of the events occurring during major eras including comparative events in world history for the different civilizations.

PRE-ASSESSMENTS

Module 14: Polygons on the Coordinate Plane "Are You Ready?" pg 484

Module 15: Area of Triangles and Special Quadrilaterals "Are You Ready?" pg 510

Module 16: Surface Area and Volume "Are You Ready?" pg 536

INSTRUCTIONAL PLAN

MODULE 14

Module 14: POLYGONS ON THE COORDINATE PLANE

LESSON 14.1

Student Learning Intentions (SLI) WALT: (We

14.1 We are learning to locate rational ordered pairs on the coordinate plane.

are learning to...)	
Student Learning Strategies	Identify Ordered Pairs on a Coordinate Plane Use Directions to Find Points on a Coordinate Plane
Success Criteria	I can plot a point with rational number coordinates and locate its reflection over the x- or y-axis, and I can use absolute value to find the distance between points with same x- or y-coordinate.
Formative Assessment (drives instructional decisions)	Turn and Talk (pg 485, 487, 488) Check Understanding (pg 488) Exit Ticket (pg TM 490)
Activities and Resources	Warm-Up: Activate Prior Knowledge (TM 485B) Mini-Lesson: Spark Your Learning (pg 485) Build Your Understanding (pg 486-487) Guided Practice: Check Understanding (pg 488) Independent Practice: On Your Own (pg 490)
Suggested Modifications	Plan for Differentiated Instruction (TM pg 485C)

MA.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.
MA.6.NS.C.6b	Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.
MA.6.NS.C.6c	Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.
MA.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.
MA.6.EE.B.8	Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form $x > c$ or $x < c$ have infinitely many solutions; represent solutions of such inequalities on number line diagrams.
MA.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.
MA.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.

LESSON 14.2

Student Learning Intentions (SLI) WALT: (We are learning to...)	14.2 We are learning to solve problems by graphing and identifying polygons in the coordinate plane.
Student Learning Strategies	Draw a Polygon to Represent the Garden Draw a Rectangle of Given Perimeter
Success Criteria	I can graph polygons on a coordinate plane, classify them, and identify a vertex that completes a specified polygon.
Formative Assessment (drives instructional decisions)	Turn and Talk (pg 93. 494, 495) Check Understanding (pg 496) Exit Ticket (pg TM 498)
Activities and Resources	Warm-Up: Activate Prior Knowledge (TM 493B) Mini-Lesson: Spark Your Learning (pg 494) Build Your Understanding (pg 495-496) Guided Practice: Check Understanding (pg496) Independent Practice: On Your Own (pg 497)
Suggested Modifications	Plan for Differentiated Instruction (TM pg 493C)

MA.6.NS.C.6c	Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.
MA.6.EE.A.1	Write and evaluate numerical expressions involving whole-number exponents.
MA.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.
MA.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.
MA.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.

LESSON 14.3

Student Learning Intentions (SLI) WALT: (We are learning to...)	14.3 We are learning to find the perimeter and area of polygons on the coordinate plane.
Student Learning Strategies	Estimation Visual Model
Success Criteria	I can find the perimeter and area of polygons in the coordinate plane.
Formative Assessment (drives instructional decisions)	Turn and Talk (pg 501) Check Understanding (pg 502) Exit Ticket (pg TM 504)
Activities and Resources	Warm-Up: Activate Prior Knowledge (TM 501B) Mini-Lesson: Spark Your Learning (pg 501) Build Your Understanding (pg 501-502) Guided Practice: Check Understanding (pg 502) Independent Practice: On Your Own (pg 503)
Suggested Modifications	Plan for Differentiated Instruction (TM pg 501C)

MA.6.RP.A.3b	Solve unit rate problems including those involving unit pricing and constant speed.
MA.6.NS.C.6c	Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.
MA.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.
MA.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.
MA.6.EE.B.8	Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form $x > c$ or $x < c$ have infinitely many solutions; represent solutions of such inequalities on number line diagrams.
MA.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.
MA.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.

MODULE 15

Module 15: AREA OF TRIANGLES AND SPECIAL QUADRILATERALS

LESSON 15.1

Student Learning Intentions (SLI) WALT: (We are learning to...)	15.1 We are learning to find the areas of parallelograms and trapezoids.
Student Learning Strategies	Draw a Model to Find the Area Use a Grid to Find the Area
Success Criteria	I can use formulas to find areas of parallelograms and trapezoids
Formative Assessment (drives instructional decisions)	Turn and Talk (pgs. 511, 513) Check Understanding (pg. 514) Exit Ticket (TM pg. 516)
Activities and Resources	Warm Up: Activate Prior Knowledge (TM pg.511) Mini-Lesson: Spark Your Learning (TM pg. 511) Build Understanding (p. 512-514) Guided Practice: Check Understanding (pg. 514) Independent Practice: On Your Own (pg. 515) Exit Ticket (TM pg. 516) Teacher Resources Into Math Teacher Edition Module 15 & Online Resources
Suggested Modifications	Plan For Differentiated Instruction (TM pg 511C)

MA.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.
MA.6.NS.C.6b	Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.
MA.6.NS.C.6c	Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.
MA.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.
MA.6.EE.B.8	Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real- world or mathematical problem. Recognize that inequalities of the form $x > c$ or $x < c$ have infinitely many solutions; represent solutions of such inequalities on number line

diagrams.

MA.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.

MA.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.

LESSON 15.2

Student Learning Intentions (SLI) WALT: (We are learning to...)	15.2 We are learning to find the area of triangles.
Student Learning Strategies	Apply Area Formulas and Estimation Apply Area Formulas and Guess and Check
Success Criteria	I can use a formula to find the area of a triangle.
Formative Assessment (drives instructional decisions)	Turn and Talk (pgs. 519, 520) Check Understanding (pg. 521) Exit Ticket (TM pg. 522)
Activities and Resources	Warm Up: Activate Prior Knowledge (TM pg. 519A) Mini-Lesson: Spark Your Learning (TM pg. 369) Build Understanding (p. 520-521) Guided Practice: Check Understanding (pg. 521) Independent Practice: On Your Own (pg. 522) Exit Ticket (TM pg. 522) Teacher Resources Into Math Teacher Edition Module 15 & Online Resources
Suggested Modifications	Plan For Differentiated Instruction (TM pg 519C)

MA.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.

MA.6.NS.C.6c

Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.

MA.6.EE.A.1

Write and evaluate numerical expressions involving whole-number exponents.

MA.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.

MA.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.

MA.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.

LESSON 15.3

Student Learning Intentions (SLI) WALT: (We are learning to...)	15.3 We are learning to find the area of composite figures.
Student Learning Strategies	Estimation Guess and Check
Success Criteria	I can find the area of a composite figure by breaking it into familiar figures.
Formative Assessment (drives instructional decisions)	Turn and Talk (pgs. 525, 526) Check Understanding (pg. 527) Exit Ticket (TM pg. 530)
Activities and Resources	Warm Up: Activate Prior Knowledge (TM pg. 525) Mini-Lesson: Spark Your Learning (TM pg. 525) Build Understanding (p. 525-526) Guided Practice: Check Understanding (pg. 526) Independent Practice: On Your Own (pg. 527-530) Exit Ticket (TM pg. 530) Teacher Resources Into Math Teacher Edition Module 15 & Online Resources
Suggested Modifications	Plan For Differentiated Instruction (TM pg 525C)

MA.6.RP.A.3c

Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent.

MA.6.NS.B.2

Fluently divide multi-digit numbers using the standard algorithm.

MA.6.NS.B.3

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

MA.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.

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 the prism. Apply the formulas $V = lwh$ and $V = Bh$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.

MODULE 16

Module 16: SURFACE AREA AND VOLUME

LESSON 16.1

Student Learning Intentions (SLI) WALT: (We are learning to...)	16.1 We are learning to use nets to find surface area.
Student Learning Strategies	Write Expressions for Pairs of Identical Faces Write an Expression for All Six Faces
Success Criteria	I can use nets to find the surface area of prisms and pyramids.
Formative Assessment (drives instructional decisions)	Turn and Talk (pg.537, 538, 539) Check Understanding (pg.540) Exit Ticket (TM pg 542)
Activities and Resources	Warm Up: Activate Prior Knowledge (TM pg. 537B) Mini-Lesson: Spark Your Learning (TM pg. 537D) Build Your Understanding (pg.537-538) Guided Practice: Check Understanding (pg.539) Independent Practice: On Your Own (pg.540) Exit Ticket (TM pg.542) Teacher Resources Into Math Teacher Edition Module 16 & Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM pg. 537C)

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.

MA.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.

MA.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.

MA.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.

LESSON 16.2

Student Learning Intentions (SLI) WALT: (We are learning to...)	16.2 We are learning to find the volume of a rectangular prism.
Student Learning Strategies	Use a Formula to Find Volume and Convert Units Use a Model to Find Volume and Convert Units
Success Criteria	I can use the formulas $V = \ell wh$ or $V = Bh$ to find the volumes of rectangular prisms with fractional edge lengths.
Formative Assessment (drives instructional decisions)	Turn and Talk (pg.545, 546, 547) Check Understanding (pg.547) Exit Ticket (TM pg 548)
Activities and Resources	Warm Up: Activate Prior Knowledge (TM pg. 545B) Mini-Lesson: Spark Your Learning (TM pg. 545D) Build Your Understanding (pg.545-547) Guided Practice: Check Understanding (pg.547) Independent Practice: On Your Own (pg.548) Exit Ticket (TM pg.548) Teacher Resources Into Math Teacher Edition Module 16 & Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM pg. 545C)

MA.6.RP.A.3c

Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent.

MA.6.EE.A.1	Write and evaluate numerical expressions involving whole-number exponents.
MA.6.EE.A.2c	Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations).
MA.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.
MA.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 the prism. Apply the formulas $V = lwh$ and $V = Bh$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.

LESSON 16.3

Student Learning Intentions (SLI) WALT: (We are learning to...)	16.3 We are learning to write equations to solve problems involving volume of rectangular prisms.
Student Learning Strategies	Use a Formula to Find Volume and Convert Units Use a Model to Find Volume and Convert Units
Success Criteria	I can use equations to solve volume problems in which the volume or an edge length of a rectangular prism is unknown.
Formative Assessment (drives instructional decisions)	Turn and Talk (pg.551, 552) Check Understanding (pg.553) Exit Ticket (TM pg 404)
Activities and Resources	Warm Up: Activate Prior Knowledge (TM pg. 551B) Mini-Lesson: Spark Your Learning (TM pg. 551D) Build Your Understanding (pg551-552) Guided Practice: Check Understanding (pg.553) Independent Practice: On Your Own (pg.554) Exit Ticket (TM pg.554) Teacher Resources Into Math Teacher Edition Module 16 & Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM pg. 551C)

MA.6.EE.A.1	Write and evaluate numerical expressions involving whole-number exponents.
MATH.6.EE.A.2.c	Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including

those involving whole number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations).

MA.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.

MA.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 the prism. Apply the formulas $V = lwh$ and $V = Bh$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.

Unit 5: Data Collection And Analysis

Content Area: **Template**
Course(s):
Time Period: **Full Year**
Length: **7 weeks**
Status: **Published**

UNIT RATIONALE

This unit is designed to support students in data collection and analysis. Students will recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. In turn, they will describe the nature of the attribute under investigation, including how it was measured and its units of measurement. Students will display numerical data in plots on a number line, including dot plots, number lines, histograms and summarize numerical data sets in relation to their context. Students will learn to relate visual aspects of a data display to mathematical properties of the data. Students will analyze dot plots and histograms to cull as much information as possible from them. Students will display numerical data in plots on a number line, including box plots. Students will learn to compute the mean absolute deviation (MAD). Students learn to use measures of variability to describe a data set. Finally, students will understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.

ESSENTIAL QUESTIONS

How do mathematicians identify a statistical question and describe data?

How do mathematicians Use dot plots to display data?

How do mathematicians Make histograms and frequency tables to display data?

How do mathematicians describe a set of data using mean, median, and mode?

How do mathematicians choose an appropriate measure of center to describe a data set?

How do mathematicians describe overall patterns in a data set?

How do mathematicians use box plots to display data?

How do mathematicians determine and use the mean absolute deviation of a set of data points?

How do mathematicians summarize a set of data by using range, interquartile range, and mean absolute deviation?

How do mathematicians describe the distribution of a data set collected to answer a statistical question?

STANDARDS

NEW JERSEY STUDENT LEARNING STANDARDS: CONTENT AREA

MA.6.RP.A.3b

Solve unit rate problems including those involving unit pricing and constant speed.

MA.6.NS.B.3	Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.
MA.6.NS.C.6a	Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g., $-(-3) = 3$, and that 0 is its own opposite.
MA.6.NS.C.6c	Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.
MA.6.EE.A.2c	Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations).
MA.6.EE.A.3	Apply the properties of operations to generate equivalent expressions.
MA.6.EE.B.5	Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.
MA.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.
MA.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.
MA.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.
MA.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 the prism. Apply the formulas $V = lwh$ and $V = Bh$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.
MA.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.
MA.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.
MA.6.SP.A.1	Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers.
MA.6.SP.A.2	Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.
MA.6.SP.A.3	Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.
MA.6.SP.B.4	Display numerical data in plots on a number line, including dot plots, histograms, and box plots.
MA.6.SP.B.5a	Reporting the number of observations.

MA.6.SP.B.5b	Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.
MATH.6.SP.B.5.c	Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.
MA.6.SP.B.5c	Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.
MA.6.SP.B.5d	Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.
MATH.6.SP.B.5.d	Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.

NEW JERSEY STUDENT LEARNING STANDARDS: CAREER READINESS, LIFE LITERACIES AND KEY SKILLS

TECH.9.4.8.CI.2	Repurpose an existing resource in an innovative way (e.g., 8.2.8.NT.3).
TECH.9.4.8.CT.2	Develop multiple solutions to a problem and evaluate short- and long-term effects to determine the most plausible option (e.g., MS-ETS1-4, 6.1.8.CivicsDP.1).
TECH.9.4.8.TL.3	Select appropriate tools to organize and present information digitally.
TECH.9.4.8.IML.4	Ask insightful questions to organize different types of data and create meaningful visualizations.

NEW JERSEY STUDENT LEARNING STANDARDS: COMPUTER SCIENCE AND DESIGN THINKING

CS.6-8.2-AP-10	Use flowcharts and/or pseudocode to address complex problems as algorithms.
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PRE-ASSESSMENTS

Module 17: Data Collection and Displays "Are You Ready?" pg 562

Module 18: Variability and Data Distribution "Are You Ready?" pg 600

INSTRUCTIONAL PLAN

MODULE 17

Module 17: Data Collection and Displays

LESSON 17.1

Student Learning Intentions (SLI) WALT: (We are learning to...)	17.1 We are learning to identify a statistical question and describe data.
Student Learning Strategies	Construct a Line Plot to Organize Data Construct a Table to Organize Data
Success Criteria	I can identify a statistical question, and I can describe the attributes of a data set.
Formative Assessment (drives instructional decisions)	Turn and Talk (pgs. 563, 564) Check Understanding (pg. 565) Exit Ticket (TM pg. 566)
Activities and Resources	Warm Up: Activate Prior Knowledge (TM pg. 563B) Mini-Lesson: Spark Your Learning (TM pg. 563D) Build Understanding (p. 563-564) Guided Practice: Check Understanding (pg. 565) Independent Practice: On Your Own (pg.566) Exit Ticket (TM pg. 566) Teacher Resources Into Math Teacher Edition Module 17 & Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM pg. 563C)

MATH.6.RP.A.1	Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.
MATH.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.
MA.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.
MA.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 the prism. Apply the formulas $V = lwh$ and $V = Bh$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.
MA.6.SP.B.5a	Reporting the number of observations.

LESSON 17.2

Student Learning Intentions (SLI) WALT: (We are learning to...)	17.2 We are learning to use dot plots to display data.
Student Learning Strategies	Construct a Line Plot to Organize Data Construct a Table to Organize Data
Success Criteria	I can make a dot plot to display data, and use a dot plot to answer questions about data.
Formative Assessment (drives instructional decisions)	Turn and Talk (pgs. 569, 570) Check Understanding (pg. 571-573) Exit Ticket (TM pg. 574)
Activities and Resources	Warm Up: Activate Prior Knowledge (TM pg.569B) Mini-Lesson: Spark Your Learning (TM pg. 569D) Build Understanding (p. 569-570) Guided Practice: Check Understanding (pg. 570) Independent Practice: On Your Own (pg. 571-574) Exit Ticket (TM pg. 574) Teacher Resources Into Math Teacher Edition Module 17 & Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM pg. 569C)

MA.6.EE.A.2c

Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations).

MA.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.

MA.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 the prism. Apply the formulas $V = lwh$ and $V = Bh$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.

MA.6.SP.B.4

Display numerical data in plots on a number line, including dot plots, histograms, and box plots.

LESSON 17.3

Student Learning Intentions (SLI) WALT: (We are learning to...)	17.3 We are learning to make histograms and frequency tables to display data.
Student Learning Strategies	Construct a Bar Graph Organize Data Construct a Table to Organize Data
Success Criteria	I can make a histogram and frequency table, and I can answer questions about data displayed in these ways
Formative Assessment (drives instructional decisions)	Turn and Talk (pgs. 577, 578) Check Understanding (pg. 579) Exit Ticket (TM pg. 582)
Activities and Resources	Warm Up: Activate Prior Knowledge (TM pg. 577B) Mini-Lesson: Spark Your Learning (TM pg. 577D) Build Understanding (p. 577-578) Guided Practice: Check Understanding (pg. 579) Independent Practice: On Your Own (pg. 580-582) Exit Ticket (TM pg. 582) Teacher Resources Into Math Teacher Edition Module 17 & Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM pg. 577C)

MA.6.RP.A.3b	Solve unit rate problems including those involving unit pricing and constant speed.
MA.6.NS.B.3	Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.
MA.6.SP.A.2	Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.
MA.6.SP.B.4	Display numerical data in plots on a number line, including dot plots, histograms, and box plots.
MA.6.SP.B.5d	Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.

LESSON 17.4

Student Learning Intentions (SLI) WALT: (We are learning to...)	17.4 We are learning to describe a set of data using mean, median, and mode.
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Student Learning Strategies	Estimation
Success Criteria	I can find the mean, median, and mode of a set of data.
Formative Assessment (drives instructional decisions)	Turn and Talk (pgs. 585, 586) Check Understanding (pg. 586) Exit Ticket (TM pg. 588)
Activities and Resources	Warm Up: Activate Prior Knowledge (TM pg. 585B) Mini-Lesson: Spark Your Learning (TM pg.585D) Build Understanding (p. 585-586) Guided Practice: Check Understanding (pg. 586) Independent Practice: On Your Own (pg. 587) Exit Ticket (TM pg. 588) Teacher Resources Into Math Teacher Edition Module 17 & Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM pg.585C)

MA.6.NS.C.6c	Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.
MA.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.
MA.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.
MA.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.
MA.6.SP.A.3	Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.
MA.6.SP.B.4	Display numerical data in plots on a number line, including dot plots, histograms, and box plots.
MA.6.SP.B.5a	Reporting the number of observations.
MA.6.SP.B.5c	Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.
MA.6.SP.B.5d	Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.

LESSON 17.5

Student Learning Intentions (SLI) WALT: (We are learning to...)	17.5 We are learning to choose an appropriate measure of center to describe a data set
Student Learning Strategies	Estimation
Success Criteria	I can choose an appropriate measure of center to describe a data set.
Formative Assessment (drives instructional decisions)	Turn and Talk (pgs. 591) Check Understanding (pg. 592) Exit Ticket (TM pg. 594)
Activities and Resources	Warm Up: Activate Prior Knowledge (TM pg. 591B) Mini-Lesson: Spark Your Learning (TM pg. 591D) Build Understanding (p. 591-592) Guided Practice: Check Understanding (pg. 592) Independent Practice: On Your Own (pg. 593) Exit Ticket (TM pg. 594) Teacher Resources Into Math Teacher Edition Module 17 & Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM pg. 591C)

MA.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.
MA.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.
MA.6.SP.B.4	Display numerical data in plots on a number line, including dot plots, histograms, and box plots.
MA.6.SP.B.5d	Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.

MODULE 18

Module 18: VARIABILITY AND DATA DISTRIBUTION

LESSON 18.1

Student Learning Intentions (SLI) WALT: (We are learning to...)	18.1 We are learning to describe overall patterns in a data set.
Student Learning Strategies	Use a Dot Plot to Display Data Use Tables to Display Data
Success Criteria	I can use a dot plot or histogram to describe the overall patterns in a data set, including clusters, gaps, peaks, and symmetry.
Formative Assessment (drives instructional decisions)	Turn and Talk (pgs. 601, 602) Check Understanding (pg. 603) Exit Ticket (TM pg. 604)
Activities and Resources	Warm Up: Activate Prior Knowledge (TM pg. 601B) Mini-Lesson: Spark Your Learning (TM pg. 601D) Build Understanding (p. 601-602) Guided Practice: Check Understanding (pg. 427)Independent Practice: On Your Own (pg. 603) Exit Ticket (TM pg. 604) Teacher Resources Into Math Teacher Edition Module 18 & Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM pg. 601C)

	those involving whole number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations).
MA.6.EE.A.3	Apply the properties of operations to generate equivalent expressions.
MA.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.
MA.6.SP.B.4	Display numerical data in plots on a number line, including dot plots, histograms, and box plots.
MA.6.SP.B.5c	Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.

LESSON 18.2

Student Learning Intentions (SLI) WALT: (We are learning to...)	18.2 We are learning to use box plots to display data.
Student Learning Strategies	Use the Mean or Median Use Mental Math
Success Criteria	I can make a box plot for a set of numerical data.
Formative Assessment (drives instructional decisions)	Turn and Talk (pgs. 607, 608) Check Understanding (pg. 610) Exit Ticket (TM pg. 612)
Activities and	Warm Up: Activate Prior Knowledge (TM pg. 607B) Mini-Lesson: Spark Your Learning (TM pg. 607D)

Resources	Build Understanding (p. 608-610) Guided Practice: Check Understanding (pg. 610)Independent Practice: On Your Own (pg. 611) Exit Ticket (TM pg. 612) Teacher Resources Into Math Teacher Edition Module 18 & Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM pg. 607C)

MA.6.EE.B.5	Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.
MA.6.SP.A.1	Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers.
MA.6.SP.B.4	Display numerical data in plots on a number line, including dot plots, histograms, and box plots.
MA.6.SP.B.5c	Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.
MA.6.SP.B.5d	Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.

LESSON 18.3

Student Learning Intentions (SLI) WALT: (We are learning to...)	18.3 We are learning to determine and use the mean absolute deviation of a set of data points.
Student Learning Strategies	Use a Dot Plot to Display Data Use Tables to Display Data
Success Criteria	I can compute the MAD of a data set and use the MAD to describe data.

Formative Assessment (drives instructional decisions)	Turn and Talk (pgs. 615) Check Understanding (pg. 616) Exit Ticket (TM pg. 618)
Activities and Resources	Warm Up: Activate Prior Knowledge (TM pg. 615B) Mini-Lesson: Spark Your Learning (TM pg. 615D) Build Understanding (p. 615-616) Guided Practice: Check Understanding (pg. 616)Independent Practice: On Your Own (pg. 617) Exit Ticket (TM pg. 618) Teacher Resources Into Math Teacher Edition Module 18 & Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM pg. 615C)

MA.6.EE.B.5	Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.
MA.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 the prism. Apply the formulas $V = lwh$ and $V = Bh$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.
MA.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.
MA.6.SP.A.3	Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.
MA.6.SP.B.5c	Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.
MA.6.SP.B.5d	Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.

LESSON 18.4

Student Learning Intentions (SLI) WALT: (We are learning to...)	18.4 We are learning to summarize a set of data by using range, interquartile range, and mean absolute deviation.
Student Learning Strategies	Use a Dot Plot to Display Data Use Tables to Display Data
Success Criteria	I can interpret the range, IQR, and MAD of a data set
Formative Assessment (drives instructional decisions)	Turn and Talk (pgs. 621) Check Understanding (pg. 622) Exit Ticket (TM pg. 624)
Activities and Resources	Warm Up: Activate Prior Knowledge (TM pg. 621B) Mini-Lesson: Spark Your Learning (TM pg. 621D) Build Understanding (p. 621-622) Guided Practice: Check Understanding (pg. 622) Independent Practice: On Your Own (pg. 623) Exit Ticket (TM pg. 624) Teacher Resources Into Math Teacher Edition Module 18 & Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM pg. 621C)

MA.6.SP.A.2

Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.

MA.6.SP.A.3

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

MA.6.SP.B.4	Display numerical data in plots on a number line, including dot plots, histograms, and box plots.
MATH.6.SP.B.5.c	Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.
MATH.6.SP.B.5.d	Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.

LESSON 18.5

Student Learning Intentions (SLI) WALT: (We are learning to...)	18.5 We are learning to describe the distribution of a data set collected to answer a statistical question.
Student Learning Strategies	Use a Dot Plot to Display Data Use Tables to Display Data
Success Criteria	I can choose an appropriate display for a data set and compute the measures of center and variability.
Formative Assessment (drives instructional decisions)	Turn and Talk (pgs. 627) Check Understanding (pg. 628) Exit Ticket (TM pg. 630)
Activities and Resources	Warm Up: Activate Prior Knowledge (TM pg. 627B) Mini-Lesson: Spark Your Learning (TM pg. 627D) Build Understanding (p. 627-628) Guided Practice: Check Understanding (pg. 628) Independent Practice: On Your Own (pg. 629) Exit Ticket (TM pg. 630) Teacher Resources Into Math Teacher Edition Module 18 & Online Resources

**Suggested
Modifications**

Plan for Differentiated Instruction (TM pg. 627C)

MA.6.NS.C.6a	Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g., $-(-3) = 3$, and that 0 is its own opposite.
MA.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.
MA.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.
MA.6.SP.A.1	Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers.
MA.6.SP.A.2	Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.
MA.6.SP.B.5c	Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.
MA.6.SP.B.5d	Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.

REFLECTIONS

INTERDISCIPLINARY CONNECTIONS: NEW JERSEY STUDENT LEARNING STANDARDS FOR ELA, SOCIAL STUDIES, SCIENCE AND/OR MATHEMATICS
