Unit 1: Number Systems and Operations

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

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?

Pre-Assessments

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

Module 2: Fraction Division "Are You Ready?" pg 30

Module 3: Fluency with Multi-Digit Decimal Operations "Are You Ready?" pg 60

Module 4: Understand Addition and Subtraction of Rational Numbers "Are You Ready?" pg 102

Instructional Plan

Module 1 Integer Concepts

Lesson 1.1

| **Student Learning Intentions (SLI) WALT: (We** | 1.1 Identify and interpret integers using a number line. |

are learning to…)	
Student Learning Strategies	Use Diagrams to Show Gains and Losses
Success Criteria	I can graph integers 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 integers.

Student Learning Strategies	Use the Thermometer as a Number Line Model with the Thermometer
Success Criteria	I can compare positive and negative 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	Turn and Talk Questions (p. 21, 22)

decisions)	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.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.

Module 2 Rational Number Concepts

Lesson 2.1

Student Learning Intentions (SLI) WALT: (We are learning to…)	2.1 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 on vertical and horizontal number lines.
Formative Assessment (drives instructional decisions)	Turn and Talk Questions (p. 31 & 32) Check for Understanding (p. 33)
Activities and Resources	**Warm-up:** Activate Prior Knowledge (TM p. 31B) & Spark Your Learning (p. 31) **Mini-lesson:** Build Understanding (p. 32-33) **Guided Practice:** Check Understanding (p. 33)

	Independent Practice: On Your Own (p.32) & Exit Ticket (TM p. 34)
	Teacher Resources: Into Math Teacher Edition Module 1 & Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM p. 31C)

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.
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.

Lesson 2.2

Student Learning Intentions (SLI) WALT: (We are learning to…)	2.2 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. 37, 38) Check for Understanding (p. 38)
Activities and Resources	**Warm-up:** Activate Prior Knowledge (TM p. 37B)

	Mini-lesson: Build Understanding (p. 37, 38) **Guided Practice:** Check Understanding (p. 38) **Independent Practice**: On Your Own (p. 39, 40) & Exit Ticket (TM p. 40) **Teacher Resources**: Into Math Teacher Edition Module 1 & Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM p. 37C)

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.

Lesson 2.3

Student Learning Intentions (SLI) WALT: (We are learning to…)	2.3 Compare rational numbers using the GCF and LCM.
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. 43) Check for Understanding (p. 45)
Activities and Resources	**Warm-up:** Activate Prior Knowledge (TM p. 43B) **Mini-lesson**: Step it Out (p. 43-45) **Guided Practice:** Check Understanding (p. 45) **Independent Practice**: On Your Own (p. 45, 46) & Exit Ticket (TM p. 48) **Teacher Resources**: Into Math Teacher Edition Module 1 & Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM p. 43C)

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.7	Understand ordering and absolute value of rational numbers.

Lesson 2.4

Student Learning Intentions (SLI) WALT: (We are learning to…)	2.4 Order positive and negative rational numbers of different forms.
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. 51, 52) Check for Understanding (p. 53)
Activities and Resources	**Warm-up:** Activate Prior Knowledge (TM p. 51B) & **Mini-lesson**: Step it Out (p. 51-53) **Guided Practice:** Check Understanding (p. 54) **Independent Practice**: On Your Own (p. 55-56) & Exit Ticke (TM p. 54) Teacher Resources: Into Math Teacher Edition Module 1 & Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM p. 51C)

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 Understand Fraction Divisions

Lesson 3.1

Student Learning Intentions (SLI) WALT: (We are learning to…)	3.1 Divide fractions with like 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 Ticke (TM p. 50) Teacher Resources: Into Math Teacher Edition Modules 2 & Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM p. 45C)

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.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	3.2 Divide fractions with unlike denominators.

are learning to…)	
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. 61, 63) Check for Understanding (p. 64)
Activities and Resources	**Warm-up:** Activate Prior Knowledge (TM p. 61B) & Spark Your Learning (p. 61) **Mini-lesson:** Build Understanding (p. 62-64) **Guided Practice:** Check Understanding (p. 65-66) **Independent Practice**: On Your Own (p. 67-68) & Exit Ticke (TM p. 66) Teacher Resources: Into Math Teacher Edition Modules 2 & Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM p. 61C)

Lesson 3.3

Student Learning Intentions (SLI) WALT: (We are learning to…)	3.3 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. 77, 78, 79) Check for Understanding (p. 80)
Activities and Resources	**Warm-up:** Activate Prior Knowledge (TM p. 77B) & Spark Your

	Learning (p. 77) **Mini-lesson:** Build Understanding (p. 78-80) **Guided Practice:** Check Understanding (p. 81-82) **Independent Practice:** On Your Own (p. 83-84) & Exit Ticket (TM p. 82) Teacher Resources: Into Math Teacher Edition Modules 2-3 & Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM p. 77c)

Lesson 3.4

Student Learning Intentions (SLI) WALT: (We are learning to…)	3.4 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. 85, 86) Check for Understanding (p. 86)
Activities and Resources	**Warm-up:** Activate Prior Knowledge (TM p. 85B) **Mini-lesson:** Build Understanding (p. 85, 86) **Guided Practice:** Check Understanding (p. 88) **Independent Practice:** On Your Own (p. 87-88) & Exit Ticket (TM p. 88) Teacher Resources: Into Math Teacher Edition Module 2 & Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM p. 85)

Lesson 3.5

Student Learning Intentions (SLI) WALT: (We	3.5 Use LCM and GCF to add, subtract, multiply, and divide fractions.

are learning to…)	
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. 91, 92) Check for Understanding (p. 93)
Activities and Resources	**Warm-up:** Activate Prior Knowledge (TM p. 91B) **Mini-lesson:** Build Understanding (p. 92, 93) **Guided Practice:** Check Understanding (p. 93) **Independent Practice:** On Your Own (p. 94-95) & Exit Ticke (TM p. 93) Teacher Resources: Into Math Teacher Edition Module 2 & Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM p. 91C)

Module 4 Fluency With Multi-Digit Decimal Operations

Lesson 4.5

Student Learning Intentions (SLI) WALT: (We are learning to…)	4.5 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 127, 128) Check Your Understanding (pg 128) Exit Ticket (TM pg 130)

Activities and Resources	**Warm up**: Activate Prior Knowledge (TM pg 127B) **Mini Lesson**: Step it Out (pg 128-129) **Guided Practice**: Check Understanding (pg 128) **Independent Practice**: On Your Own (pg 129-130) & Exit Ticket (TM pg 130) Teacher Resources Into Math Teacher Edition Module 4 & Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM pg 127C)

Lesson 4.3

Student Learning Intentions (SLI) WALT: (We are learning to…)	4.3 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 115, 116) Check Your Understanding (pg 116) Exit Ticket (TM pg 118)
Activities and Resources	**Warm up**: Activate Prior Knowledge (TM pg 114B) **Mini Lesson**: Step it Out (pg 115, 116) **Guided Practice**: Check Understanding (pg 117) **Independent Practice**: On Your Own (pg 118, 118) & Exit Ticket (TM pg 114) Teacher Resources Into Math Teacher Edition Module 4 & Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM pg 114C)

Lesson 4.2

Student Learning Intentions (SLI) WALT: (We are learning to…)	4.2 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 109) Check Your Understanding (pg 110) Exit Ticket (TM pg 112)
Activities and Resources	**Warm up**: Activate Prior Knowledge (TM pg 109B) **Mini Lesson**: Step it Out (pg 109, 110) **Guided Practice**: Check Understanding (pg 111, 112) **Independent Practice**: On Your Own (pg 113 & 114) & Exit Ticket (TM pg 112) Teacher Resources Into Math Teacher Edition Module 4 & Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM pg109C)

Lesson 4.1

Student Learning Intentions (SLI) WALT: (We are learning to…)	4.1 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 103B) **Mini Lesson**: Step it Out (pg 103 & 104) **Guided Practice**: Check Understanding (pg 104) **Independent Practice**: On Your Own (pg 105 & 106) &

	Exit Ticket (TM pg 104) Teacher Resources Into Math Teacher Edition Module 4 & Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM pg 103C)

Lesson 4.4

Student Learning Intentions (SLI) WALT: (We are learning to…)	4.4 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 121) Check Your Understanding (pg 122) Exit Ticket (TM pg 123)
Activities and Resources	**Warm up**: Activate Prior Knowledge (TM pg 121B) **Mini Lesson**: Step it Out (pg 121-122) **Guided Practice**: Check Understanding (pg 122) **Independent Practice**: On Your Own (pg 123-124) & Exit Ticket (TM pg 124) Teacher Resources Into Math Teacher Edition Module 4 & Online Resources
Suggested Modifications	Plan for Differentiated Instruction (TM pg 121C)

Reflections

Standards

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.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.
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.

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

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.
	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: 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.DA	Data & Analysis

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.

Benchmark Assessment

Module 1: Module 1 Test Form A and Form B (TM p. 28A)
Module 2: Module 2 Test Form A and Form B (TM p. 58A)
Module 3: Module 3 Test Form A and Form B (TM p. 100A)
Module 4: Module 4 Test Form A and Form B (TM p. 134A)