Marietta City Schools

District Unit Planner

Everything on the unit planner must be included on the unit curriculum approval statement.

Grade 7 Mathematics

Unit title	*Unit 1- Operations with Rational Numbers*	**MYP year**	*2*	**Unit duration (hrs)**	*25 Hours*

Mastering Content and Skills through INQUIRY (Establishing the purpose of the Unit): ***What will students learn?***

GSE Standards

Standards

MGSE7.NS.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.
MGSE7.NS.1a Show that a number and its opposite have a sum of 0 (are additive inverses). Describe situations in which opposite quantities combine to make 0. For example, your bank account balance is -$25.00. You deposit $25.00 into your account. The net balance is $0.00.
MGSE7.NS.1b Understand p + q as the number located a distance from p, in the positive or negative direction depending on whether q is positive or negative. Interpret sums of rational numbers by describing real world contexts.
MGSE7.NS.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.
MGSE7.NS.1d Apply properties of operations as strategies to add and subtract rational numbers.
MGSE7.NS.2 Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.
MGSE7.NS.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
MGSE7.NS.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.
MGSE7.NS.2c Apply properties of operations as strategies to multiply and divide rational numbers.
MGSE7.NS.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.
MGSE7.NS.3 Solve real-world and mathematical problems involving the four operations with rational numbers.

Concepts/Skills to be Mastered by Students

- Computation with positive and negative numbers is often necessary to determine relationships between quantities.
- Models, diagrams, manipulatives and patterns are useful in developing and remembering algorithms for computing with positive and negative numbers.

- Properties of real numbers hold for all rational numbers.
- Positive and negative numbers are often used to solve problems in everyday life.

Vocabulary

- Additive Inverse- Two numbers that have a sum of 0.
- Multiplicative Inverse- The multiplicative inverse of any number is another number that when multiplied by the original number gives the product as one.
- Absolute Value- The absolute value of a number *a* is the distance between *a* and zero on a number line. The absolute value of *a* is written as $|a|$.
- Integers- The set of positive whole numbers, their opposites, and 0.
- Long Division- A method for dividing numbers which breaks the division problem into multiple steps following a sequence.
- Natural Numbers- The counting numbers.
- Negative Numbers- Numbers less than zero.
- Opposite Numbers-Two numbers that are the same distance from 0 on a number line, but in opposite directions.
- Positive Numbers- Numbers greater than zero.
- Rational Numbers- A number that can be written in the form $\frac{a}{b}$ or $-\frac{a}{b}$, where *a* is a whole number and b is a positive whole number. The rational numbers include the integers.
- Repeating Decimal- A repeating decimal has a decimal expansion that repeats the same digit, or block of digits, without end.
- Terminating Decimal- A terminating decimal has a decimal expansion that terminates in 0.
- Zero Pair- A pair of numbers whose sum is zero.

Key concept	Related concept(s)	Global context
Relationships	Model, Representation	Scientific and technical innovation

Statement of inquiry

Mathematical models can help people represent real world relationships using operations with rational numbers.

Inquiry questions

Factual—What is a rational number? What is the difference between positive and negative numbers? What is absolute value? What is the additive inverse of a given number?

Conceptual—How can something be less than nothing? How can operations with positive and negative numbers be represented using models, such as number lines and counters?

Debatable—Is there one best method for solving operations with rational numbers?

MYP Objectives	Assessment Tasks

*What specific MYP **objectives** will be addressed during this unit?*	***Relationship** between summative assessment task(s) and statement of inquiry:*	*List of common formative and summative assessments.*
Criterion A: Knowing and Understanding Criterion D: Investigating Patterns		**Formative Assessment(s):** Unit 1 CFA **Summative Assessment(s):** Unit 1: Operations with Rational Numbers MYP: Performance Assessment Form A

Approaches to learning (ATL)

Category: Social
Cluster: Collaboration Skills
Skill Indicator: Give and receive meaningful feedback.

Category: Thinking
Cluster: CriticalThinking, Creative Thinking & Transfer
Skill Indicator: Apply skills and knowledge in unfamiliar situations.

Learning Experiences

Add additional rows below as needed.

Objective or Content	Learning Experiences	Personalized Learning and Differentiation
MGSE7.NS.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.	Hands on Math: Adding Integers Students will be able to demonstrate the ability to find the sum of integers in a variety of ways.	This activity can be implemented in groups with provided scaffolds throughout along with intentional questioning.

MGSE7.NS.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.	Debits and Credits Task pg. 44 GaDOE Framework Task	Teachers can assign groups different situations based on prior assessment data, or all students can complete SItuation #1 and #2. The task can be extended to Situation #3 for a challenge.
MGSE7.NS.2 Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.	Desmos Multiplying and Dividing Integers Using Positive and Negative numbers in Context- Math Shell	This activity can be completed individually or in a group. Students can be provided with manipulatives, number lines, and grid paper. Teachers can start the activity together and gradually release students.
Content Resources		
GaDOE Framework Tasks Desmos Savvas		