HPISD Fifth Grade TAG Math

UNIT NAME	ESTIMATED DURATION	9 WEEKS			
UNIT 2: NUMBER OPERATIONS	**45 DAYS**	**1**	**2**	3	4

Unit Overview

The student applies mathematical process standards to develop and use strategies and methods for positive rational number computations in order to solve problems with efficiency and accuracy.

The student applies mathematical process standards to represent addition, subtraction, multiplication, and division with fractions, decimals, and integers while solving problems and justifying solutions.

Enduring Understandings

The student will understand that:	• Multiplication is repeated addition. • Division is repeated subtraction. • Multiplication and division are inverse operations. • A fraction notation can represent division. • Dividing by a rational number and multiplying by its reciprocal is an equivalent result. • You can examine how numbers change when you multiply by fractions and predict whether the quantity increases or decreases. • Visual representations are used to gain understanding of operations with integers. • You can represent real-world quantities as decimals, and then solve problems by finding the products or quotients of the decimals. • Rational numbers and their operations can be used to solve problems in mathematics and the real world.

Concepts

Rational Numbers	A number that can be written in the form of *a/b*, where *a* and *b* are integers and b does not equal zero.
Number Line	A visual representation of the values of the rational numbers in order from least to greatest from left to right.
Absolute Value	The distance of a number from zero on a number line.
Integer	A member of the set of whole numbers and their opposites.
Zero Pair	A number and its opposite, which add to zero.
Reciprocal	One of two numbers whose product is one.
Algorithm	Basic algorithms with rational numbers use equivalence to transform calculations into simpler ones.

Guiding/Essential Questions

- How can you use inverse operations to check your work?
- What is the relationship between multiplication and addition?
- What is the relationship between division and subtraction?
- How can you use products and quotients of fractions, decimals, and integers to solve real-world problems?
- How do you multiply and divide rational numbers?
- How do you solve multi-step problems involving all integer operations?

Learning Targets & Progressions

- **Students develop a fluency of adding, subtracting, multiplying, and dividing integers.**
  - Represent integer operations with concrete models
  - Determine zero pairs
  - Use standardized algorithms to determine solutions and check for reasonableness
- **Students develop an understanding of operations involving products and quotients of fractions.**
  - Make statements about the relationships between a number and its reciprocal
  - Predict if the quantity is increased or decreased when multiplied by a fraction
- **Students develop an understanding of operations involving products and quotients of decimals.**
  - Use concrete models to represent decimal operations
  - Extend understanding of place value beyond thousandths place
  - Understand the difference between terminating decimals and repeating decimals
- **Students extend their understanding of integers and rational numbers to solve both mathematical and real-world problems.**

Formative Assessments	Summative Assessments

TEKS: Readiness Standards	TEKS: Supporting Standards
5.2B compare and order two decimals to thousandths and represent comparisons using the symbols >, <, or = **5.3E** solve for products of decimals to the hundredths, including situations involving money, using strategies based on place-value understandings, properties of operations, and the relationship to the multiplication of whole numbers **5.3G** solve for quotients of decimals to the hundredths, up to four-digit dividends and two-digit whole number divisors, using strategies and algorithms, including the standard algorithm **5.3K** add and subtract positive rational numbers fluently **5.3L** divide whole numbers by unit fractions and unit fractions by whole numbers **6.3D** add, subtract, multiply and divide integers fluently **6.3E** multiply and divide positive rational numbers fluently	**5.2C** round decimals to tenths or hundredths **5.3A** estimate to determine solutions to mathematical and real-world problems involving addition, subtraction, multiplication, or division **5.3B** multiply with fluency a three-digit number by a two-digit number using the standard algorithm **5.3C** solve with proficiency for quotients of up to a four-digit dividend by a two-digit divisor using strategies and the standard algorithm **5.3D** represent multiplication of decimals with products to the hundredths using objects and pictorial models, including area models **5.3E** solve for products of decimals to the hundredths, including situations involving money, using strategies based on place-value understandings, properties of operations, and the relationship to the multiplication of whole numbers **5.3F** represent quotients of decimals to the hundredths, up to four-digit dividends and two-digit whole number divisors, using objects, and pictorial models, including area models

	5.3H represent and solve addition and subtraction of fractions with unequal denominators referring to the same whole using objects and pictorial models and properties of operations
	5.3I represent and solve multiplication of a whole number and a fraction that refers to the same whole using objects and pictorial models, including area models
	5.3J represent division of a unit fraction by a whole number and the division of a whole number by a unit fraction such as 1/3 ÷ 7 and 7 ÷ 1/3 using objects and pictorial models, including area models
	5.10B explain the difference between gross income and net income;
	5.10F balance a simple budget.
	6.3A recognize that dividing by a rational number and multiplying by its reciprocal result in equivalent values
	6.3B determine, with and without computation, whether a quantity is increased or decreased when multiplied by a fraction, including values greater than or less than one
	6.3C represent integer operations with concrete models and connect the actions with the models to standardized algorithms

TEKS Process Standards

5.1A/6.1A apply mathematics to problems arising in everyday life, society, and the workplace
5.1B/6.1Buse a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution
5.1C/6.1C select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems
5.1D/6.1D communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate
5.1E/6.1E create and use representations to organize, record and communicate mathematical ideas
5.1F/6.1F analyze mathematical relationships to connect and communicate mathematical ideas
5.1G/6.1G display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication

Processes and Skills: **What students should be able to DO**	**Facts:** **What students should KNOW**
• Round decimals • Estimate decimal operations • Solve decimal problems using multiple methods • Multiply and divide fractions • Multiply and divide decimals • Add, subtract, multiply, and divide integers • Solve real-world problems involving adding, subtracting, multiplying, and dividing with fractions, decimals, and integers. • Check for reasonableness. • Represent integer operations with concrete models.	• A reciprocal is one of two numbers whose product is one. • Estimation is used to determine if a solution is reasonable. • Multiplication is repeated addition • Division is repeated subtraction

Financial Literacy Concepts:	
• Balance a simple budget.	

Topics

Adding Integers	Inverse Operations
Applying Integer Operations	Multiplying Decimals
Applying Multiplication and Division of Rational Numbers	Multiplying Fractions
Dividing Decimals	Multiplying Integers
Dividing Fractions	Multiplying Mixed Numbers
Dividing Integers	Rounding Decimals
Dividing Mixed Numbers	Subtracting Integers
Estimating	

Language of Instruction

absolute value	opposite
denominator	order
difference	positive
dividend	product
integers	quotient
inverse	rational number
mixed number	reciprocal
negative	sum
numerator	

State Assessment Connections / National Assessment Connections

State Assessment Connections	National Assessment Connections

Resources

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