HARFORD COUNTY PUBLIC SCHOOLS
GRADE 5 MATHEMATICS CURRICULUM

CLICK HERE for the Maryland College and Career Ready Standards for Grade 5 Mathematics.

Topic 1: Understand Place Value

Primary Resource: *enVision Mathematics Grade 5,* Savvas Learning Company, 2024.

Enduring Understandings

- **Number Uses, Classification, and Representation** Numbers can be used for different purposes, and numbers can be classified and represented in different ways.
- **Numbers** – The set of real numbers is infinite and ordered. Whole numbers, integers, and fractions are real numbers. Each real number can be associated with a unique point on the number line.
- **Base-Ten Numeration System -** The base-ten numeration system is a scheme for recording numbers using the digits 0-9, groups of 10, and place value. A digit in one place represents 10 times as much as it represents in the place to its right and one-tenth of what it represents in the place to its left. These attributes of our numeration system can be used to compare and round numbers.
- **Equivalence –** Any number, measure, numerical expression, algebraic expression, or equation can be represented in an infinite number of ways that have the same value.
- **Comparison and Relationships** – Numbers, expressions, measures, and objects can be compared and related to other numbers, expressions, measures, and objects in different ways.
- **Estimation –** Numbers can be approximated by replacing numbers with other numbers that are close and easy to compute mentally.
- **Practices, Processes, and Proficiencies -** Mathematics content and processes are applied to solve problems.

Essential Question

- How are whole numbers and decimals written, compared, and ordered?

Lesson Title	Lesson Overview	Standards
Patterns with Exponents and Powers of 10	Basic facts and place-value patterns can be used to find products when one factor is a multiple of 10, 100, or 1,000; an exponent with 10 as the base can be used to represent powers of 10.	5.NBT.A.2

Understand Whole-Number Place Value	Understanding each digit's place value in a number provides a way to understand the number's value.	5.NBT.A.1
Decimals to Thousandths	Our number system is based on powers of 10. Whenever we get 10 in one place value, we move to the next greater place value.	5.NBT.A.1 5.NBT.A.3a
Understand Decimal Place Value	Our number system is based on powers of 10. Digits within decimal numbers have place value. Understanding a digit's decimal place value in a number helps determine the value of the number.	5.NBT.A.3a
Compare Decimals	Place value can be used to compare and order whole numbers and decimals.	5.NBT.A.3b
Round Decimals	Rounding is a process for finding the multiple of 10, 100, and so on, or of 0.1, 0.01, and so on, closest to a given number.	5.NBT.A.4
Problem Solving: Look for and Use Structure	Good math thinkers look for relationships in math to help solve problems.	MP.7

Topic 2: Use Models and Strategies to Add and Subtract Decimals

Primary Resource: *enVision Mathematics Grade 5,* Savvas Learning Company, 2024.

Enduring Understandings

- **Base-Ten Numeration System -** The base-ten numeration system is a scheme for recording numbers using the digits 0-9, groups of 10, and place value.
- **Equivalence –** Any number, measure, numerical expression, algebraic expression, or equation can be represented in an infinite number of ways that have the same value.
- **Operation Meanings and Relationships –** There are multiple interpretations of addition, subtraction, multiplication, and division of rational numbers, and each operation is related to other operations. The meanings of addition and subtraction are the same for decimals and whole numbers.
- **Estimation –** Numbers can be approximated by replacing numbers with other numbers that are close and easy to compute mentally. There is more than one way to estimate sums and differences. Students have been estimating with whole numbers since grade 3.
- **Properties -** For a given set of numbers there are relationships that are always true, called properties, and these are the rules that govern arithmetic and algebra.
- **Algorithms -** There are algorithms for performing each of the operations with rational numbers. Strategies and algorithms use equivalence, place value, and properties of operations to transform calculations into simpler ones.
- **Variables, Expressions, and Equations –** Letters and symbols, called variables, can be used to stand for a number or any number from a particular set of numbers. Some mathematical and real-world situations can be represented using variables, operations, and numbers in expressions and equations.
- **Solving Equations –** Rules of arithmetic and algebra can be used together with notions of equivalence to transform equations and inequalities so solutions can be found.
- **Practices, Processes, and Proficiencies -** Mathematics content and processes are applied to solve problems.

Essential Questions

- How can sums and differences of decimals be estimated?
- What are some common procedures for adding and subtracting decimals?
- How can sums and differences be found mentally?

Lesson Title	Lesson Overview	Standards
Mental Math	There's more than one way to do a mental calculation. Mental addition and subtraction involve changing one or more numbers so that the calculations are easy to do.	5.NBT.B.7 5.NBT.A.4

Estimate Sums and Differences	There is more than one way to estimate a sum or difference. To estimate sums and differences, numbers are replaced with other numbers that are easier to add and subtract.	5.NBT.B.7 5.NBT.A.4
Use Models to Add and Subtract Decimals	Place-value blocks can be used to add and subtract decimals. Models and strategies for adding and subtracting multi-digit decimals are just an extension of models and strategies for adding and subtracting whole numbers.	5.NBT.B.7
Use Strategies to Add Decimals	Adding multi-digit decimals is similar to adding multi-digit whole numbers.	5.NBT.B.7
Use Strategies to Subtract Decimals	Subtracting multi-digit decimals is similar to subtracting multi-digit whole numbers.	5.NBT.B.7
Problem Solving: Model with Mathematics	Good math thinkers choose and apply the math they know to show and solve problems for everyday life.	MP.4

Topic 3: Fluently Multiply Multi-Digit Whole Numbers

Primary Resource: *enVision Mathematics Grade 5,* Savvas Learning Company, 2024.

Enduring Understandings

- **Base-Ten Numeration System -** The base-ten numeration system is a scheme for recording numbers using the digits 0-9, groups of 10, and place value.
- **Equivalence –** Any number, measure, numerical expression, algebraic expression, or equation can be represented in an infinite number of ways that have the same value.
- **Operation Meanings and Relationships –** There are multiple interpretations of addition, subtraction, multiplication, and division of rational numbers, and each operation is related to other operations.
- **Estimation –** Numbers can be approximated by replacing numbers with other numbers that are close and easy to compute mentally. There is more than one way to estimate products. Students have been estimating with whole numbers since grade 3.
- **Algorithms –** There is more than one algorithm for each of the operations with rational numbers. Some strategies for basic facts and most algorithms for operations with rational numbers, both mental math and paper and pencil, use equivalence to transform calculations into simpler ones. Instruction extends students' understanding of the area model and partial products method learned in grade 4 to using the traditional algorithm for the multiplication of multi-digit whole numbers.
- **Variables, Expressions, and Equations –** Letters and symbols, called variables, can be used to stand for a number or any number from a particular set of numbers. Some mathematical and real-world situations can be represented using variables, operations, and numbers in expressions and equations.
- **Solving Equations –** Rules of arithmetic and algebra can be used together with notions of equivalence to transform equations and inequalities so solutions can be found.
- **Practices, Processes, and Proficiencies -** Mathematics content and processes are applied to solve problems.

Essential Question

- What are the standard procedures for estimating and finding products of multi-digit numbers?

Lesson Title	Lesson Overview	Standards
Multiply Greater Numbers by Powers of 10	Place-value patterns and mental math can be used to write the product of a whole number and a power of 10.	5.NBT.A.2 5.NBT.A.1
Estimate Products	Estimating products is a useful technique to quickly solve mathematical problems and understand the value of numbers used in real-world situations. There is more than one way to estimate a product.	5.NBT.B.5

Multiply by 1-Digit Numbers	The standard multiplication algorithm is a shortcut for the expanded algorithm. Regrouping is used rather than showing all the partial products.	5.NBT.B.5
Multiply 2-Digit by 2-Digit Numbers	The standard multiplication algorithm involves breaking the calculation into simpler ones using place value and properties of operations. Regrouping is used rather than showing all partial products.	5.NBT.B.5
Multiply 3-Digit by 2-Digit Numbers	The meaning of multiplication is the same, no matter the size of the number. Both the partial products method and the stand algorithm for multiplying whole numbers are based on properties of operations.	5.NBT.B.5
Multiply Whole Numbers with Zeros	The process for multiplying factors with zero is always the same regardless of the size of the numbers with zeros. Estimation is a strategy that can be used to check the final product for reasonableness.	5.NBT.B.5
Practice Multiply Multi-Digit Numbers	The meaning of multiplication is the same, no matter the size of the numbers. The standard algorithm for multiplying whole numbers is based on properties of operations and can be used to solve problems.	5.NBT.B.5
Solve Word Problems Using Multiplication	Using a bar diagram and writing an equation are two strategies that can be used to solve multi-step problems. Once the problem has been solved, you can represent the problem again using a different strategy to check for your answer(s) for reasonableness.	5.NBT.B.5
Problem Solving: Critique Reasoning	Good math thinkers use math to explain why they are right. They can talk about the math that others do, too.	MP.3

Topic 4: Use Models and Strategies to Multiply Decimals

Primary Resource: *enVision Mathematics Grade 5,* Savvas Learning Company, 2024.

Enduring Understandings

- **Base-Ten Numeration System -** The base-ten numeration system is a scheme for recording numbers using the digits 0-9, groups of 10, and place value.
- **Equivalence –** Any number, measure, numerical expression, algebraic expression, or equation can be represented in an infinite number of ways that have the same value.
- **Operation Meanings and Relationships –** There are multiple interpretations of addition, subtraction, multiplication, and division of rational numbers, and each operation is related to other operations. The meanings of multiplication are the same for decimals and whole numbers.
- **Estimation –** Numbers can be approximated by replacing numbers with other numbers that are close and easy to compute mentally. There is more than one way to estimate products. Accurately placing the decimal point in the product requires estimation and reasoning about the magnitude of the product.
- **Properties -** For a given set of numbers there are relationships that are always true, called properties, and these are the rules that govern arithmetic and algebra.
- **Algorithms –** There is more than one algorithm for each of the operations with rational numbers. Some strategies for basic facts and most algorithms for operations with rational numbers, both mental math and paper and pencil, use equivalence to transform calculations into simpler ones.
- **Variables, Expressions, and Equations –** Letters and symbols, called variables, can be used to stand for a number or any number from a particular set of numbers. Some mathematical and real-world situations can be represented using variables, operations, and numbers in expressions and equations.
- **Solving Equations –** Rules of arithmetic and algebra can be used together with notions of equivalence to transform equations and inequalities so solutions can be found.
- **Practices, Processes, and Proficiencies -** Mathematics content and processes are applied to solve problems.

Essential Question

- What are some common procedures for estimating and finding products involving decimals?

Lesson Title	Lesson Overview	Standards
Multiply Decimals by Powers of 10	Patterns can be identified and used to multiply decimals by 10, 100, and 1,000. Representations such as symbols, diagrams, and words can help you multiply and communicate mathematical ideas.	5.NBT.A.2 5.NBT.B.7

Estimate the Product of a Decimal and a Whole Number	You can estimate the product of a decimal and a whole number by using compatible numbers and rounding. Comparing two strategies can help you decide which strategy provides an estimate that is closer to the exact answer, or if an underestimate or an overestimate.	5.NBT.B.7
Use Models to Multiply a Decimal and a Whole Number	Place-value models can be used to represent multiplying a whole number and a decimal. Products can be found using the models.	5.NBT.B.7
Multiply a Decimal by a Whole Number	The steps involved in multiplying a decimal by a whole number are similar to the steps used in multiplying two whole numbers. Place value in the factors determines the placement of the decimal point in the product.	5.NBT.B.7
Use Models to Multiply a Decimal and a Decimal	Steps for multiplying decimals are similar to the steps used in multiplying whole numbers. Place value determines the placement of the decimal point in the product.	5.NBT.B.7
Multiply Decimals Using Partial Products	The partial products process for multiplying whole numbers can be used for multiplying with decimals. You can use models and other strategies to find the answer and determine if it is reasonable.	5.NBT.B.7
Use Properties to Multiply Decimals	The Associative and Commutative Properties can be used to break apart and multiply two decimals.	5.NBT.B.7
Use Number Sense to Multiply Decimals	Thinking about the relative size of the decimals being multiplied can help you determine the relative size of the product, and the location of the decimal point in the product.	5.NBT.B.7
Problem-Solving: Model with Math	Good math thinkers choose and apply math they know to show and solve problems from everyday life.	MP.4

Topic 5: Use Models and Strategies to Divide Whole Numbers

Primary Resource: *enVision Mathematics Grade 5,* Savvas Learning Company, 2024.

Enduring Understandings

- **Base-Ten Numeration System -** The base-ten numeration system is a scheme for recording numbers using the digits 0-9, groups of 10, and place value.
- **Equivalence –** Any number, measure, numerical expression, algebraic expression, or equation can be represented in an infinite number of ways that have the same value.
- **Operation Meanings and Relationships –** There are multiple interpretations of addition, subtraction, multiplication, and division of rational numbers, and each operation is related to other operations.
- **Estimation –** Numbers can be approximated by replacing numbers with other numbers that are close and easy to compute mentally. There is more than one way to estimate quotients. Using compatible numbers is one strategy that can be used. Students began estimating for division in grade 4.
- **Properties -** For a given set of numbers there are relationships that are always true, called properties, and these are the rules that govern arithmetic and algebra.
- **Algorithms –** There is more than one algorithm for each of the operations with rational numbers. Some strategies for basic facts and most algorithms for operations with rational numbers, both mental math and paper and pencil, use equivalence to transform calculations into simpler ones.
- **Variables, Expressions, and Equations –** Letters and symbols, called variables, can be used to stand for a number or any number from a particular set of numbers. Some mathematical and real-world situations can be represented using variables, operations, and numbers in expressions and equations.
- **Solving Equations –** Rules of arithmetic and algebra can be used together with notions of equivalence to transform equations and inequalities so solutions can be found.
- **Patterns, Relationships, Functions -** Relationships can be described and generalizations made for mathematical situations that have numbers or objects that repeat in predictable ways.
- **Practices, Processes, and Proficiencies -** Mathematics content and processes are applied to solve problems.

Essential Question

- What are some common procedures for division and why do they work?

Lesson Title	Lesson Overview	Standards
Use Patterns and Mental Math to Divide	Division problems with dividends and divisors that are multiples of 10 can be solved using basic facts and patterns. Multiplication can be used to check whether quotients are reasonable.	5.NBT.B.6

Estimate Quotients with 2-Digit Divisors	Using compatible numbers is one of many estimation strategies that can be used to estimate a quotient. Multiplication can be used to check whether quotients are reasonable.	5.NBT.B.6
Use Models and Properties to Divide with 2-Digit Divisors	Area models and arrays are two ways to represent division with multi-digit whole numbers.	5.NBT.B.6
Use Partial Quotients to Divide	Dividing with 2-digit divisors is just an extension of the steps for dividing with 1-digit divisors. Estimation and place value can help determine the placement of digits in the quotient.	5.NBT.B.6
Use Sharing to Divide: 2-Digit Divisors	Use place value and area models to solve division problems involving 3-digit dividends and 2-digit divisors.	5.NBT.B.6
Use Sharing to Divide: Greater Dividends	Dividing with 2-digit divisors is just an extension of dividing with 1-digit divisors. Real-world situations involving equal shares can be solved using division.	5.NBT.B.6
Choose a Strategy to Divide	Different strategies can be used to divide with 2-digit divisors. Estimating quotients and the relationship between multiplication and division are used with most strategies.	5.NBT.B.6
Problem Solving: Make Sense and Persevere	Good math thinkers make sense of problems and think of ways to solve them. If they get stuck, they don't give up.	MP.1

Topic 6: Use Models and Strategies to Divide Decimals

Primary Resource: *enVision Mathematics Grade 5,* Savvas Learning Company, 2024.

Enduring Understandings

- **Base-Ten Numeration System -** The base-ten numeration system is a scheme for recording numbers using the digits 0-9, groups of 10, and place value.
- **Equivalence –** Any number, measure, numerical expression, algebraic expression, or equation can be represented in an infinite number of ways that have the same value.
- **Operation Meanings and Relationships –** There are multiple interpretations of addition, subtraction, multiplication, and division of rational numbers, and each operation is related to other operations.
- **Estimation –** Numbers can be approximated by replacing numbers with other numbers that are close and easy to compute mentally. There is more than one way to estimate quotients. Using compatible numbers is one strategy that can be used. Students began estimating for division in grade 4.
- **Properties -** For a given set of numbers there are relationships that are always true, called properties, and these are the rules that govern arithmetic and algebra.
- **Algorithms –** There is more than one algorithm for each of the operations with rational numbers. Some strategies for basic facts and most algorithms for operations with rational numbers, both mental math and paper and pencil, use equivalence to transform calculations into simpler ones.
- **Variables, Expressions, and Equations –** Letters and symbols, called variables, can be used to stand for a number or any number from a particular set of numbers. Some mathematical and real-world situations can be represented using variables, operations, and numbers in expressions and equations.
- **Solving Equations –** Rules of arithmetic and algebra can be used together with notions of equivalence to transform equations and inequalities so solutions can be found.
- **Patterns, Relationships, Functions -** Relationships can be described and generalizations made for mathematical situations that have numbers or objects that repeat in predictable ways.
- **Practices, Processes, and Proficiencies -** Mathematics content and processes are applied to solve problems.

Essential Question

- What are some common procedures for estimating and finding quotients involving decimals?

Lesson Title	Lesson Overview	Standards
Patterns for Dividing with Decimals	Place-value patterns can be used to divide decimals by powers of 10.	5.NBT.A.2 5.NBT.B.7
Estimate Decimal Quotients	Rounding and compatible numbers can be used to estimate quotients with decimals.	5.NBT.B.7

Use Models to Divide by a 1-Digit Whole Number	Strategies for dividing decimals are an extension of strategies for dividing whole numbers. Place-value blocks can be used as a tool for dividing decimals.	5.NBT.B.7
Divide by a 2-Digit Whole Number	An area model uses the inverse relationship between multiplication and division to show dividing a decimal by a 2-digit whole number.	5.NBT.B.7
Divide by a Decimal	Models and the relationship between multiplication and division can be used to divide a decimal by a decimal.	5.NBT.B.7
Math Practices and Problem Solving: Reasoning	Good math thinkers know how to think about words and numbers to solve problems.	MP.2

Topic 7: Use Equivalent Fractions to Add and Subtract Fractions

Primary Resource: *enVision Mathematics Grade 5,* Savvas Learning Company, 2024.

Enduring Understandings

- **Numbers -** The set of real numbers is infinite and ordered. Whole numbers, integers, and fractions are real numbers. Each real number can be associated with a unique point on the number line.
- **Equivalence –** Any number, measure, numerical expression, algebraic expression, or equation can be represented in an infinite number of ways that have the same value.
- **Operation Meanings and Relationships -** There are multiple interpretations of addition, subtraction, multiplication, and division of rational numbers, and each operation is related to other operations. The meanings of addition and subtraction are the same for fractions and whole numbers, even though algorithms for calculating sums and differences can be different.
- **Estimation -** Numbers can be approximated by replacing numbers with other numbers that are close and easy to compute mentally. Estimation using benchmark fractions and number sense is a valuable technique that helps determine the reasonableness of sums and differences.
- **Properties -** For a given set of numbers there are relationships that are always true, called properties, and these are the rules that govern arithmetic and algebra.
- **Algorithms -** There are algorithms for performing each of the operations with rational numbers. Strategies and algorithms use equivalence, place value, and properties of operations to transform calculations into simpler ones. In an addition or subtraction expression with fractions, an adaptation of the problem takes place before calculation. Fractions with unlike denominators must be represented using equivalent fractions with like denominators.
- **Variables, Expressions, and Equations –** Letters and symbols, called variables, can be used to stand for a number or any number from a particular set of numbers. Some mathematical and real-world situations can be represented using variables, operations, and numbers in expressions and equations.
- **Solving Equations –** Rules of arithmetic and algebra can be used together with notions of equivalence to transform equations and inequalities so solutions can be found.
- **Practices, Processes, and Proficiencies -** Mathematics content and processes are applied to solve problems.

Essential Questions

- How can sums and differences of fractions and mixed numbers be estimated?
- What are common procedures for adding and subtracting fractions and mixed numbers?

Lesson Title	Lesson Overview	Standards
Estimate Sums and Differences of Fractions	A number line can be used to determine if estimates are reasonable	5.NF.A.1 5.NF.A.2

Find Common Denominators	Fractions with unlike denominators can be represented using equivalent fractions with like denominators.	5.NF.A.1 5.NF.A.2
Add Fractions with Unlike Denominators	Fractions with unlike denominators can be added by replacing them with equivalent fractions that have common denominators.	5.NF.A.1 5.NF.A.2
Subtract Fractions with Unlike Denominators	Fractions with unlike denominators can be subtracted by replacing them with equivalent fractions that have common denominators.	5.NF.A.1 5.NF.A.2
Add and Subtract Fractions	Addition and subtraction of fractions may both be needed to solve a problem.	5.NF.A.1 5.NF.A.2
Estimate Sums and Differences of Mixed Numbers	Sums and differences of mixed numbers can be estimated by rounding to the nearest whole number or by using benchmark fractions.	5.NF.A.1 5.NF.A.2
Use Models to Add Mixed Numbers	Models can be used to show different ways of adding mixed numbers.	5.NF.A.1 5.NF.A.2
Add Mixed Numbers	Adding mixed numbers is an extension of adding fractions.	5.NF.A.1 5.NF.A.2
Use Models to Subtract Mixed Numbers	Models can be used to show different ways of subtracting mixed numbers. Subtracting mixed numbers can be thought about as taking away just as subtracting whole numbers and subtracting fractions can be thought about as taking away.	5.NF.A.1 5.NF.A.2
Subtract Mixed Numbers	Subtract mixed numbers is an extension of subtracting fractions.	5.NF.A.1 5.NF.A.2
Add and Subtract Mixed Numbers	Addition and subtraction of mixed numbers may both be needed to solve a problem.	5.NF.A.1 5.NF.A.2
Problem Solving: Model with Math	Good math thinkers choose and apply math they know to show and solve problems from everyday life.	MP.4

Topic 8: Apply Understanding of Multiplication to Multiply Fractions

Primary Resource: *enVision Mathematics Grade 5,* Savvas Learning Company, 2024.

Enduring Understandings

- **Equivalence –** Any number, measure, numerical expression, algebraic expression, or equation can be represented in an infinite number of ways that have the same value.
- **Operation Meanings and Relationships -** There are multiple interpretations of addition, subtraction, multiplication, and division of rational numbers, and each operation is related to other operations. The meanings of multiplication are the same for fractions and whole numbers, even though algorithms for calculating products can be different.
- **Properties -** For a given set of numbers there are relationships that are always true, called properties, and these are the rules that govern arithmetic and algebra.
- **Algorithms -** There are algorithms for performing each of the operations with rational numbers. Strategies and algorithms use equivalence, place value, and properties of operations to transform calculations into simpler ones.
- **Variables, Expressions, and Equations –** Letters and symbols, called variables, can be used to stand for a number or any number from a particular set of numbers. Some mathematical and real-world situations can be represented using variables, operations, and numbers in expressions and equations.
- **Solving Equations –** Rules of arithmetic and algebra can be used together with notions of equivalence to transform equations and inequalities so solutions can be found.
- **Practices, Processes, and Proficiencies** - Mathematics content and processes are applied to solve problems.

Essential Questions

- What does it mean to multiply whole numbers and fractions?
- How can multiplication with whole numbers and fractions be shown using models and symbols?

Lesson Title	Lesson Overview	Standards
Multiply a Fraction by a Whole Number	Models can be used to show that the product of a whole number and a fraction can be interpreted as repeated addition.	5.NF.B.4a 5.NF.B.6
Multiply a Whole Number by a Fraction	Multiplying a whole number by a fraction involves both multiplication and division. Models can be used to represent multiplying a fraction by a whole number.	5.NF.B.4a 5.NF.B.6

Multiply Fractions and Whole Numbers	To multiply a whole number and a fraction, write a fraction $\frac{a}{b}$ as the product $a \times \frac{1}{b}$, multiply the whole numbers, and write the product as a fraction or mixed number.	5.NF.B.4a
Use Models to Multiply Two Fractions	The meaning of multiplying a whole number by a fraction can be extended to multiplying a fraction by a fraction. Different models can be used to show this connection.	5.NF.B.4a
Multiply Two Fractions	To find the product of two fractions, multiply the numerators and then multiply the denominators. Recognize when a product is less than or greater than 1.	5.NF.B.4a
Area of a Rectangle	An area model can be used to represent the product of two fractions.	5.NF.B.4b
Multiply Mixed Numbers	Multiplying mixed numbers is an extension of multiplying fractions.	5.NF.B.6
Multiplication as Scaling	The relative size of the factors can be used to determine the relative size of the product.	5.NF.B.5a 5.NF.B.5b
Problem Solving: Make Sense and Persevere	Good math thinkers make sense of problems and think of ways to solve them. If they get stuck, they don't give up.	MP.1

Topic 9: Apply Understanding of Division to Divide Fractions

Primary Resource: *enVision Mathematics Grade 5,* Savvas Learning Company, 2024.

Enduring Understandings

- **Numbers -** The set of real numbers is infinite and ordered. Whole numbers, integers, and fractions are real numbers. Each real number can be associated with a unique point on the number line.
- **Equivalence –** Any number, measure, numerical expression, algebraic expression, or equation can be represented in an infinite number of ways that have the same value.
- **Operation Meanings and Relationships -** There are multiple interpretations of addition, subtraction, multiplication, and division of rational numbers, and each operation is related to other operations. The meanings of division are the same for fractions and whole numbers, even though algorithms for calculating products can be different.
- **Properties -** For a given set of numbers there are relationships that are always true, called properties, and these are the rules that govern arithmetic and algebra.
- **Algorithms -** There are algorithms for performing each of the operations with rational numbers. Strategies and algorithms use equivalence, place value, and properties of operations to transform calculations into simpler ones.
- **Variables, Expressions, and Equations –** Letters and symbols, called variables, can be used to stand for a number or any number from a particular set of numbers. Some mathematical and real-world situations can be represented using variables, operations, and numbers in expressions and equations.
- **Solving Equations –** Rules of arithmetic and algebra can be used together with notions of equivalence to transform equations and inequalities so solutions can be found.
- **Practices, Processes, and Proficiencies** - Mathematics content and processes are applied to solve problems.

Essential Questions

- How are fractions related to division?
- How can you divide with whole numbers and unit fractions?

Lesson Title	Lesson Overview	Standards
Fractions and Division	A fraction can be interpreted as division of the numerator by the denominator.	5.NF.B.3
Fractions and Mixed Numbers as Quotients	A fraction or mixed number can represent the quotient of two whole numbers.	5.NF.B.3

Use Multiplication to Divide	Models can be used to show how dividing a whole number by a fraction relates to multiplication.	5.NF.8.7b 5.NF.B.7c
Divide Whole Numbers by Unit Fractions	Visual fraction models can be used to represent and solve problems involving whole numbers divided by unit fractions.	5.NF.8.7b 5.NF.B.7c
Divide Unit Fractions by Non-Zero Whole Numbers	Dividing a unit fraction by a non-zero whole number can be modeled by showing part of a whole divided into equal parts.	5.NF.8.7a 5.NF.B.7c
Divide Whole Numbers and Unit Fractions	Area models and number lines can be used to represent and solve division problems involving whole numbers and unit fractions.	5.NF.B.7a 5.NF.B.7b 5.NF.B.7c
Solve Problems Using Division	Some problems can be solved by first finding and solving one or more sub-problems and then using the answer(s) to solve the original problem.	5.NF.B.7c 5.NF.B.7b
Problem Solving: Repeated Reasoning	Good math thinkers look for things that repeat, and they make generalizations.	MP.8

Topic 10: Represent and Interpret Data

Primary Resource: *enVision Mathematics Grade 5,* Savvas Learning Company, 2024.

Enduring Understandings

- **Numbers -** The set of real numbers is infinite and ordered. Whole numbers, integers, and fractions are real numbers. Each real number can be associated with a unique point on the number line. The horizontal axis on a line plot is a number line.
- **Measurement -** Some attributes of objects are measurable and can be quantified using unit amounts.
- **Data Collection and Representation -** Some questions can be answered by collecting and analyzing data, and the question to be answered determines the data that need to be collected and how best to collect the data. Data can be represented visually using tables, charts, and graphs. The type of data determines the best choice of visual representation.
- **Practices, Processes, and Proficiencies -** Mathematics content and processes are applied to solve problems.

Essential Question

- How can line plots be used to represent data and answer questions?

Lesson Title	Lesson Overview	Standards
Analyze Line Plots	Line plots are one way to organize and represent numerical data collected in a survey.	5.MD.B.2 5.NF.A.2
Make Line Plots	Line plots are one way to organize and represent numerical data. You can use a line plot to see how data are distributed.	5.MD.B.2 5.NF.A.2
Solve Word Problems Using Measurement Data	You can use line plots to solve problems that involve data.	5.MD.B.2 5.NF.A.2 5.NF.B.6
Problem Solving: Critique Reasoning	Good math thinkers use math to explain why they are right. They can talk about the math that others do, too.	MP.3

Topic 11: Understand Volume Concepts

Primary Resource: *enVision Mathematics Grade 5,* Savvas Learning Company, 2024.

Enduring Understandings

- **Equivalence –** Any number, measure, numerical expression, algebraic expression, or equation can be represented in an infinite number of ways that have the same value.
- **Variables, Expressions, and Equations –** Letters and symbols, called variables, can be used to stand for a number or any number from a particular set of numbers. Some mathematical and real-world situations can be represented using variables, operations, and numbers in expressions and equations.
- **Solving Equations –** Rules of arithmetic and algebra can be used together with notions of equivalence to transform equations and inequalities so solutions can be found.
- **Measurement -** Some attributes of objects are measurable and can be quantified using unit amounts. Volume can be measured by counting the number of cubic units needed to fill a three-dimensional figure. Formulas can be used to find the volume of rectangular prisms and cubes.
- **Practices, Processes, and Proficiencies** - Mathematics content and processes are applied to solve problems.

Essential Questions

- What is the meaning of the volume of a solid?
- How can the volume of a rectangular prism be found?

Lesson Title	Lesson Overview	Standards
Model Volume	Volume can be measured by counting the number of cubic units needed to fill a three-dimensional figure.	5.MD.C.3a 5.MD.C.3b 5.MD.C.4
Develop a Volume Formula	Formulas can be used to find the volume of rectangular prisms and cubes.	5.MD.C.4 5.MD.C.5a 5.MD.C.5b
Combine Volumes of Prisms	The volume of a solid figure composed of rectangular prisms can be found by adding the volumes of each rectangular prism.	5.MD.C.5c

Solve Word Problems Using Volume	Some problems can be solved by first finding and solving one or more sub-problems and then using the answer(s) to solve the original problem.	5.MD.C.5c
Problem Solving: Use Appropriate Tools	Good math thinkers know how to pick the right tools to solve math problems.	MP.5

Topic 12: Convert Measurements

Primary Resource: *enVision Mathematics Grade 5,* Savvas Learning Company, 2024.

Enduring Understandings

- **Equivalence –** Any number, measure, numerical expression, algebraic expression, or equation can be represented in an infinite number of ways that have the same value.
- **Measurement -** Some attributes of objects are measurable and can be quantified using unit amounts.
- **Comparison and Relationships** – Numbers, expressions, measures, and objects can be compared and related to other numbers, expressions, measures, and objects in different ways.
- **Ratios and Proportionality** – When mathematical or real-world quantities have a relationship that can be stated as "for every x units of the first quantity there are y units of the second quantity," this relationship can be described as a ratio. Proportionality involves a relationship in which the ratio of two quantities remains constant as the corresponding values of the quantities change. In a proportional relationship there are an infinite number of ratios equal to the lowest terms or constant ratio.
- **Practices, Processes, and Proficiencies** - Mathematics content and processes are applied to solve problems.

Essential Questions

- What are the customary measurement units and how are they related?
- What are metric measurement units and how are they related?

Lesson Title	Lesson Overview	Standards
Convert Customary Units of Length	Multiplication and division are used to convert among different units of length.	5.MD.A.1 5.NBT.B.5 5.NBT.B.6
Convert Customary Units of Capacity	Multiplication and division are used to convert among different units of capacity.	5.MD.A.1 5.NBT.B.5 5.NBT.B.6
Convert Customary Units of Weight	Multiplication and division are used to convert among different units of weight.	5.MD.A.1 5.NBT.B.5 5.NBT.B.6

Convert Metric Units of Length	Multiplication and division are used to convert among different units of length.	5.MD.A.1 5.NBT.A.2
Convert Metric Units of Capacity	Multiplication and division are used to convert among different units of capacity.	5.MD.A.1 5.NBT.A.2
Convert Metric Units of Mass	Multiplication and division are used to convert among different units of mass.	5.MD.A.1 5.NBT.A.2
Convert Units of Time	Multiplication and division are used to convert between units of time.	5.MD.A.1 5.NBT.B.5 5.NBT.B.6
Solve Word Problems Using Measurement Conversions	Some problems can be solved by first finding and solving one or more sub-problems and then using the answer(s) to solve the original problem.	5.MD.A.1 5.NBT.B.5
Problem Solving: Precision	Good math thinkers are careful about what they write and say, so their ideas about math are clear.	MP.6

Topic 13: Write and Interpret Numerical Expressions

Primary Resource: *enVision Mathematics Grade 5,* Savvas Learning Company, 2024.

Enduring Understandings

- **Equivalence** -Any number, measure, numerical expression, algebraic expression, or equation can be represented in an infinite number of ways that have the same value.
- **Variables, Expressions, and Equations** -Letters and symbols, called variables, can be used to stand for a number or any number from a particular set of numbers. Some mathematical and real-world situations can be represented using variables, expressions, and equations.
- **Practices, Processes, and Proficiencies:** Mathematics content and processes can be applied to solve problems.

Essential Question

- How is the value of a numerical expression found?

Lesson Title	Lesson Overview	Standards
Evaluate Expressions	There is an agreed-upon order in which operations are carried out in a numerical expression.	5.OA.A.1
Write Numerical Expressions	Numerical expressions can represent the calculations needed to solve a problem.	5.OA.A.1 5.OA.A.2
Interpret Numerical Expressions	Numerical expressions show relationships among the quantities involved which you can interpret without evaluating the expressions.	5.OA.A.2
Problem Solving: Reasoning	Good math thinkers know how to think about words and numbers to solve problems.	MP.2

Topic 14: Graph Points on the Coordinate Plane

Primary Resource: *enVision Mathematics Grade 5,* Savvas Learning Company, 2024.

Enduring Understandings

- **Numbers -** The set of real numbers is infinite and ordered. Whole numbers, integers, and fractions are real numbers. Each real number can be associated with a unique point on the number line.
- **Ratio and Proportionality -** When mathematical or real-world quantities have a relationship that can be stated as "for every x units of the quantity there are y units of the second quantity," this relationship can be described using a ratio. Proportionality involves a relationship in which the ratio of two quantities remains constant as the corresponding value s of the quantities change. In a proportional relationship, there are an infinite number of ratios equal to the lowest terms or constant ration.
- **Patterns, Relations, and Functions -** Relationships can be described and generalizations made for mathematical situations that have numbers or objects that repeat in predictable ways. For some relationships, mathematical expressions and equations can be used to describe how members of one set are related to members of a second set.
- **Data Collection and Representation -** Some questions can be answered by collecting and analyzing data, and the question to be answered determines the data that need to be collected and how best to collect the data. Data can be represented visually using tables, charts, and graphs. The type of data determines the best choice of visual representation.
- **Practices, Processes, and Proficiencies -** Mathematics content and processes can be applied to solve problems.

Essential Questions

- How are points plotted?
- How are relationships shown on a graph?

Lesson Title	Lesson Overview	Standards
The Coordinate System	The coordinate system uses two perpendicular number lines intersecting at 0 to name the location of points in the plane.	5.G.A.1
Graph Data Using Ordered Pairs	A coordinate grid has an *x*-axis and a *y*-axis that can be used to locate points in two dimensions.	5.G.A.1 5.G.A.2
Solve Problems Using Ordered Pairs	Points that lie on a line can be connected and extended to solve problems.	5.G.A.2
Problem Solving: Reasoning	Good math thinkers know how to think about words and numbers to solve problems.	MP.2

Topic 15: Algebra: Analyze Patterns and Relationships

Primary Resource: *enVision Mathematics Grade 5,* Savvas Learning Company, 2024.

Enduring Understandings

- **Comparison and Relationships** – Numbers, expressions, measures, and objects can be compared and related to other numbers, expressions, measures, and objects in different ways.
- **Ratio and Proportionality -** When mathematical or real-world quantities have a relationship that can be stated as "for every x units of the quantity there are y units of the second quantity," this relationship can be described using a ratio. Proportionality involves a relationship in which the ratio of two quantities remains constant as the corresponding value s of the quantities change. In a proportional relationship, there are an infinite number of ratios equal to the lowest terms or constant ration.
- **Patterns, Relations, and Functions -** Relationships can be described and generalizations made for mathematical situations that have numbers or objects that repeat in predictable ways. For some relationships, mathematical expressions and equations can be used to describe how members of one set are related to members of a second set.
- **Data Collection and Representation -** Some questions can be answered by collecting and analyzing data, and the question to be answered determines the data that need to be collected and how best to collect the data. Data can be represented visually using tables, charts, and graphs. The type of data determines the best choice of visual representation.
- **Practices, Processes, and Proficiencies** - Mathematics content and processes can be applied to solve problems.

Essential Questions

- How can number patterns be analyzed and graphed?
- How can number patterns and graphs be used to solve problems?

Lesson Title	Lesson Overview	Standards
Numerical Patterns	Two patterns can be extended using the same rule and there will be a relationship between the patterns.	5.OA.B.3
More Numerical Patterns	Two patterns can be extended using rules and there will be a relationship between the patterns.	5.OA.B.3
Analyze and Graph Relationships	A graph can show the relationship between two number sequences.	5.OA.B.3 5.G.A.2
Problem Solving: Make Sense & Persevere	Good math thinkers make sense of problems and think of ways to solve them. If they get stuck, they don't give up.	MP.1

Topic 16: Geometric Measurement: Classify Two-Dimensional Figures

Primary Resource: *enVision Mathematics Grade 5,* Savvas Learning Company, 2024.

Enduring Understandings

- **Comparison and Relationships** – Numbers, expressions, measures, and objects can be compared and related to other numbers, expressions, measures, and objects in different ways.
- **Geometric Figures -** Two- and three-dimensional objects with or without curved surfaces can be described, classified, and analyzed by their attributes. An object's location in space can be described quantitatively.
- **Practices, Processes, and Proficiencies** - Mathematics content and processes can be applied to solve problems.

Essential Question

- How can triangles and quadrilaterals be described, classified, and named?

Lesson Title	Lesson Overview	Standards
Classify Triangles	Triangles can be classified by their sides and the measures of their angles.	5.G.B.3 5.G.B.4
Classify Quadrilaterals	Quadrilaterals are classified by their sides and by their angles.	5.G.B.3 5.G.B.4
Continue to Classify Quadrilaterals	Quadrilaterals are classified by their sides and by their angles..	5.G.B.3 5.G.B.4
Math Practices & Problem Solving: Construct Arguments	Good math thinkers use math to explain why they are right. They can talk about the math that others do, too.	MP.3