



## 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:** *enVisionmath2.0 Grade 5*, Savvas Learning Company, 2016.

#### 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. 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.

#### 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	Each digit within a decimal number has place value that 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



**HARFORD COUNTY PUBLIC SCHOOLS  
GRADE 5 MATHEMATICS CURRICULUM**

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
Math Practices and Problem Solving: Look for and Use Structure	Good math thinkers look for relationships in math to help solve problems.	MP.7



**HARFORD COUNTY PUBLIC SCHOOLS  
GRADE 5 MATHEMATICS CURRICULUM**

**Topic 2: Add and Subtract Decimals to Hundredths**

**Primary Resource:** *enVisionmath2.0 Grade 5*, Savvas Learning Company, 2016.

**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. A digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left. These attributes of our numeration system can be used to compare and round numbers.
- **Estimate sums and differences** - Estimating sums and differences 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 sums and differences. Students have been estimating with whole numbers since grade 3.
- **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.
- **Practices, Processes, and Proficiencies** - Mathematics content and processes are applied to solve problems.

**Essential Questions**

- How are whole numbers and decimals written, compared, and ordered?
- 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
Estimate Sums and Differences	A sum or difference can be estimated by replacing numbers that are easier to add or subtract mentally.	5.NBT.B.7 5.NBT.A.4
Use Models to Add and Subtract Decimals	Models and algorithms for adding and subtracting decimals are just an extension of models and algorithms for adding and subtracting whole numbers.	5.NBT.B.7
Add Decimals	Adding multi-digit decimals is similar to adding multi-digit whole numbers.	5.NBT.B.7
Subtract Decimals	Subtracting multi-digit decimals is similar to subtracting multi-digit whole numbers.	5.NBT.B.7



**HARFORD COUNTY PUBLIC SCHOOLS  
GRADE 5 MATHEMATICS CURRICULUM**

Add and Subtract Decimals	Adding and subtracting decimals is similar to adding and subtracting multi-digit whole numbers. Algorithms and models can be used to complete the calculations.	5.NBT.B.7
Math Practices and 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



## HARFORD COUNTY PUBLIC SCHOOLS GRADE 5 MATHEMATICS CURRICULUM

### Topic 3: Fluently Multiply Multi-Digit Whole Numbers

**Primary Resource:** *enVisionmath2.0 Grade 5*, Savvas Learning Company, 2016.

#### Enduring Understandings

- **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. Students have been estimating whole numbers since grade 3.
- **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. 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.
- **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 Ten	Place-value patterns and mental math can be used to write the product of a whole number and a power of 10 by simply annexing the correct number of zeros to the whole number factor.	5.NBT.A.2
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 3-Digit by 2-Digit Numbers	Multiply 3-digit by 2-digit numbers by combining equal groups. Rounding to the nearest 10 or using compatible numbers helps estimate with greater accuracy when multiplying with greater numbers.	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



**HARFORD COUNTY PUBLIC SCHOOLS  
GRADE 5 MATHEMATICS CURRICULUM**

Multiply Multi-Digit Numbers	No matter the size of the numbers, the standard algorithm for multiplying whole numbers is always 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.	5.NBT.B.5
Math Practices and 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



## HARFORD COUNTY PUBLIC SCHOOLS GRADE 5 MATHEMATICS CURRICULUM

### Topic 4: Use Models and Strategies to Multiply Decimals

**Primary Resource:** *enVisionmath2.0 Grade 5*, Savvas Learning Company, 2016.

#### Enduring Understandings

- **Estimate sums, differences, and products** - Estimating sums, differences, and 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 sums, differences, and products. Students have been estimating whole numbers since grade 3. Students multiply a decimal by a whole number or by another decimal. Accurately placing the decimal point in the product requires estimation and reasoning about the magnitude of the product.
- **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.
- **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 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
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.	5.NBT.B.7
Use Models to Multiply a Decimal and a Whole Number	The standard multiplication algorithm used with decimals is an extension of the standard algorithm used when multiplying whole numbers. You can use models to represent multiplication problems and communicate ideas to others.	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



**HARFORD COUNTY PUBLIC SCHOOLS  
GRADE 5 MATHEMATICS CURRICULUM**

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
Multiply Decimals	Steps for multiplying decimals are similar to the steps for multiplying whole numbers. Place value determines the placement of the decimal point in the product.	5.NBT.B.7
Math Practices and Problem-Solving: Model with Math	Good math thinkers choose and apply math they know to show and solve problems from everyday life.	MP.4





**HARFORD COUNTY PUBLIC SCHOOLS  
GRADE 5 MATHEMATICS CURRICULUM**

**Topic 5: Use Models and Strategies to Divide Whole Numbers**

**Primary Resource:** *enVisionmath2.0 Grade 5*, Savvas Learning Company, 2016.

**Enduring Understandings**

- **Estimate quotients** - Estimating quotients is a useful technique to quickly solve mathematical problems and understand the value of numbers used in real-world situations. Using compatible numbers is one of many strategies that can be used. Students began estimating for division in grade 4.  
**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. Area models and arrays are two ways to represent division with multi-digit whole numbers.
- **Practices, Processes, and Proficiencies** - Mathematics content and processes are applied to solve problems.

**Essential Question**

- What is the standard procedure for division, and why does it 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 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



**HARFORD COUNTY PUBLIC SCHOOLS  
GRADE 5 MATHEMATICS CURRICULUM**

Divide by Multiples of 10	Compatible numbers can be used to simplify division problems involving dividing 3-digit dividends by 2-digit multiples of ten. Estimation and number sense can be used to check whether quotients are reasonable.	5.NBT.B.6
Use Estimation to Place the First Digit of the Quotient	Estimation and place-value understandings can be used to determine where to place the first digit in a quotient.	5.NBT.B.6
Divide by 2-Digit Divisors	Dividing by 2-digit divisors is just an extension of the standard algorithm for dividing with 1-digit divisors. Estimation can help determine the placement of digits and be used to check whether quotients are reasonable.	5.NBT.B.6
Math Practices and 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



**HARFORD COUNTY PUBLIC SCHOOLS  
GRADE 5 MATHEMATICS CURRICULUM**

**Topic 6: Use Models and Strategies to Divide Decimals**

**Primary Resource:** *enVisionmath2.0 Grade 5*, Savvas Learning Company, 2016.

**Enduring Understandings**

- **Estimate products and quotients** - Estimating products and quotients is a useful technique to quickly solve mathematical problems and understand the value of numbers used in real-world situations. Using compatible numbers is one of many strategies that can be used to estimate quotients.
- **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. The algorithm for dividing with decimals is similar to the algorithm for dividing with whole numbers with the additional issue of where to place the decimal point in the quotient.
- **Practices, Processes, and Proficiencies** - Mathematics content and processes are applied to solve problems.

**Essential Question**

- What are the standard 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
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	The standard algorithm used for dividing decimals is an extension of the standard algorithm for dividing whole numbers. Place-value blocks can be used as a tool to show this connection.	5.NBT.B.7
Divide by a 1-Digit Whole Number	The standard algorithm used for dividing decimals is an extension of the standard algorithm for dividing whole numbers. When dividing by a whole number, place the decimal point in the quotient directly above the decimal point in the dividend.	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



**HARFORD COUNTY PUBLIC SCHOOLS  
GRADE 5 MATHEMATICS CURRICULUM**

Use Number Sense to Divide Decimals	Number sense and reasoning can be used to place the decimal point in the quotient when dividing a decimal by a decimal.	5.NBT.B.7
Divide by a Decimal	The standard algorithm used for dividing a decimal by a decimal is an extension of the standard algorithm for dividing a decimal by a whole number.	5.NBT.B.7
Continue to Divide with Decimals	When dividing with decimals, it is sometimes necessary to annex zeros to the dividend so you can keep dividing until there is no remainder.	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



**HARFORD COUNTY PUBLIC SCHOOLS  
GRADE 5 MATHEMATICS CURRICULUM**

**Topic 7: Use Equivalent Fractions to Add and Subtract Fractions**

**Primary Resource:** *enVisionmath2.0 Grade 5*, Savvas Learning Company, 2016.

**Enduring Understandings**

- **Estimate fractions** - Estimation using benchmark fractions and number sense is a valuable technique that helps determine the reasonableness of sums and differences.
- **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.
- **Algorithms** - Complex calculations involving fractions and mixed numbers can be broken into simpler equivalent calculations. 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.
- **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 standard 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



**HARFORD COUNTY PUBLIC SCHOOLS  
GRADE 5 MATHEMATICS CURRICULUM**

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.	5.NF.A.1 5.NF.A.2
Subtract Mixed Numbers	Subtract mixed numbers using equivalent fractions and a common denominator.	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
Math Practices and Problem Solving: Model with Math	Good math thinkers choose and apply math they know to show and solve problems from everyday life.	MP.4



**HARFORD COUNTY PUBLIC SCHOOLS  
GRADE 5 MATHEMATICS CURRICULUM**

**Topic 8: Apply Understanding of Multiplication to Multiply Fractions**

**Primary Resource:** *enVisionmath2.0 Grade 5*, Savvas Learning Company, 2016.

**Enduring Understandings**

- **Operations Meanings and Relationships** - There are multiple interpretations of addition, subtraction, multiplication, and division of rational numbers, and each operation is related to other operations. Multiplication of fractions and mixed numbers can be represented as the area of a rectangle.
- **Algorithms** - Complex calculations involving fractions and mixed numbers can be broken into simpler equivalent calculations.
- **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
Use Models to Multiply Whole Numbers by a Fraction	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
Use Models to Multiply a Fraction by a Whole Number	Multiplying a fraction and a whole number 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	Different methods can be used to multiply fractions and whole numbers. In one method, the whole number is renamed as a fraction, the numerators are multiplied, and then the denominators are multiplied.	5.NF.B.4a
Use Models to Multiply Two Fractions	Visual models, such as fractions strips, number lines, area models and bar diagrams can be used to represent multiplication of fraction by a fraction.	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



**HARFORD COUNTY PUBLIC SCHOOLS  
GRADE 5 MATHEMATICS CURRICULUM**

Area of a Rectangle	An area model can be used to represent the product of two fractions.	5.NF.B.4a
Multiply Mixed Numbers	Multiplying mixed numbers is an extension of multiplying fractions.	5.NF.B.4a
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
Math Practices and 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





**HARFORD COUNTY PUBLIC SCHOOLS  
GRADE 5 MATHEMATICS CURRICULUM**

**Topic 9: Apply Understanding of Division to Divide Fractions**

**Primary Resource:** *enVisionmath2.0 Grade 5*, Savvas Learning Company, 2016.

**Enduring Understandings**

- **Operations Meanings and Relationships -Division** - The meanings of division with fractions are the same as the meanings of division with whole numbers. Division with fractions should begin by applying these same meanings to fractional parts. For division by a fraction, there are two ways of thinking about the operation - partition and measurement.

<u>Measurement Division</u>	<u>Partitive Division</u>
<ul style="list-style-type: none"> <li>• An equal group is repeatedly subtracted from the total.</li> <li>• In grade 5, students work with a whole number divided by a unit fraction.</li> </ul>	<ul style="list-style-type: none"> <li>• Partition or find fair shares of the whole.</li> <li>• In grade 5, students work with a unit fraction divided by a whole number.</li> </ul>

- **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



**HARFORD COUNTY PUBLIC SCHOOLS  
GRADE 5 MATHEMATICS CURRICULUM**

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.8.7b 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
Math Practices & Problem Solving: Repeated Reasoning	Good math thinkers look for things that repeat, and they make generalizations.	MP.8



**HARFORD COUNTY PUBLIC SCHOOLS  
GRADE 5 MATHEMATICS CURRICULUM**

**Topic 10: Understand Volume Concepts**

**Primary Resource:** *enVisionmath2.0 Grade 5*, Savvas Learning Company, 2016.

**Enduring Understandings**

- **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
Volume of Prisms	Formulas can be used to find the volume of rectangular prisms and cubes.	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
Math Practices and Problem Solving: Use Appropriate Tools	Good math thinkers know how to pick the right tools to solve math problems.	MP.5



**HARFORD COUNTY PUBLIC SCHOOLS  
GRADE 5 MATHEMATICS CURRICULUM**

**Topic 11: Convert Measurements**

**Primary Resource:** *enVisionmath2.0 Grade 5*, Savvas Learning Company, 2016.

**Enduring Understandings**

- **Measurement** - Some attributes of objects are measurable and can be quantified using unit amounts.
- **Measurement equivalence** - A given measure can be represented in an infinite number of ways that all name the same amount. In grade 5, students convert measurements of length, capacity, weight, and mass within the customary and metric measurement systems.
- **Ratio and Proportionality** - When mathematical or real-world quantities have a relationship that can be stated as “for every  $x$  unit in the first quantity there are  $y$  units of the second quantity” this relationship can be described using a 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



**HARFORD COUNTY PUBLIC SCHOOLS  
GRADE 5 MATHEMATICS CURRICULUM**

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
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
Math Practices & Problem Solving: Precision	Good math thinkers are careful about what they write and say, so their ideas about math are clear.	MP.6



**HARFORD COUNTY PUBLIC SCHOOLS  
GRADE 5 MATHEMATICS CURRICULUM**

**Topic 12: Represent and Interpret Data**

**Primary Resource:** *enVisionmath2.0 Grade 5*, Savvas Learning Company, 2016.

**Enduring Understandings**

- **Numbers and the Number Line** - 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 scale on a line plot is a number line.
- **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. You can use line plots to answer questions about a data set.	5.MD.B.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
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
Math Practices & 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



**HARFORD COUNTY PUBLIC SCHOOLS  
GRADE 5 MATHEMATICS CURRICULUM**

**Topic 13: Algebra: Write and Interpret Numerical Expressions**

**Primary Resource:** *enVisionmath2.0 Grade 5*, Savvas Learning Company, 2016.

**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
Order of Operations	There is an agreed upon order in which operations are carried out in a numerical expression.	5.OA.A.1
Evaluate Expressions	The value of a numerical expression can be found by using the order of operations.	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
Math Practices & Problem Solving: Reasoning	Good math thinkers know how to think about words and numbers to solve problems.	MP.2



**HARFORD COUNTY PUBLIC SCHOOLS  
GRADE 5 MATHEMATICS CURRICULUM**

**Topic 14: Graph Points on the Coordinate Plane**

**Primary Resource:** *enVisionmath2.0 Grade 5*, Savvas Learning Company, 2016.

**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 values of the quantities change. In a proportional relationship, there are an infinite number of ratios equal to the lowest terms or constant ratio.
- **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.
- **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
Solve Problems Using Ordered Pairs	Points that lie on a line can be connected and extended to solve problems.	5.G.A.1 5.G.A.2
Math Practices & Problem Solving: Reasoning	Good math thinkers know how to think about words and numbers to solve problems.	MP.2





**HARFORD COUNTY PUBLIC SCHOOLS  
GRADE 5 MATHEMATICS CURRICULUM**

**Topic 15: Algebra: Analyze Patterns and Relationships**

**Primary Resource:** *enVisionmath2.0 Grade 5*, Savvas Learning Company, 2016.

**Enduring Understandings**

- **Patterns, Relationships, 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. Students can use words and graphs to describe these relationships.
- **Practices, Processes, AND Proficiencies** - Mathematics content and processes can be applied to solve problems.

**Essential Questions**

- How can number problems 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
Math Practices & 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



**HARFORD COUNTY PUBLIC SCHOOLS  
GRADE 5 MATHEMATICS CURRICULUM**

**Topic 16: Geometric Measurement: Classify Two-Dimensional Figures**

**Primary Resource:** *enVisionmath2.0 Grade 5*, Savvas Learning Company, 2016.

**Enduring Understandings**

- **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.

**Essential Question**

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

Lesson Title	Lesson Overview	Standards
Classify Triangles	Triangles can be classified by the lengths of their sides and the measures of their angles. Some triangles can be classified in more than one way.	5.G.B.3 5.G.B.4
Classify Quadrilaterals	Two-dimensional shapes, such as quadrilaterals, can be classified into categories.	5.G.B.3 5.G.B.4
Continue to Classify Quadrilaterals	Special quadrilaterals can be classified by their properties and sorted into sets and subsets of the quadrilateral “family tree,” which can be represented in a diagram.	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