

# **Wayne Township Public Schools**

## **Grade 4 Math Curriculum**

Curriculum Writers:

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**Wayne Township Public Schools**  
**Grade 4 Math Curriculum**

<b>Grade Level &amp; Content:</b>	Grade 4 Mathematics
<b>Unit Plan Title:</b>	<b>Unit 1:</b> Place Value, Addition, Subtraction, and Multiplication of Whole Numbers
<b>Time Frame:</b>	8 Weeks (please see pacing calendar)
<b>Anchor Standards/Domain*</b>	<b>*i.e: ELA: reading, writing i.e.: Math: Number and Operations in Base 10</b>
Math: <ul style="list-style-type: none"> <li>- Numbers and Operations in Base Ten</li> <li>- Operations and Algebraic Thinking</li> </ul>	
<b>Unit Summary</b>	
In this unit, students will extend their understanding of place-value from 1,000 to 1,000,000. Students will also learn about the relationships between the values of the digits in different places to compare and round numbers. Students will also focus on a deep understanding of whole number algorithms including a fluency with the standard algorithms for addition and subtraction and development of the algorithm for multiplication.	
<b>Standard Number(s)</b>	
<ul style="list-style-type: none"> <li>● 4.NBT.A.1: Generalize place value understanding for multi-digit numbers. Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. <i>For example, recognize that <math>700 \div 70 = 10</math> by applying concepts of place value and division.</i></li> <li>● 4.NBT.A.2: Generalize place value understanding for multi-digit numbers. Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using <math>&gt;</math>, <math>=</math>, and <math>&lt;</math> symbols to record the results of comparisons.</li> <li>● 4.NBT.A.3: Generalize place value understanding for multi-digit numbers. Use place value understanding to round multi-digit whole numbers to any place.</li> <li>● 4.NBT.B.4: Use place value understanding and properties of operations to perform multi-digit arithmetic. Fluently add and subtract multi-digit whole numbers using the standard algorithm.</li> <li>● 4.NBT.B.5: Use place value understanding and properties of operations to perform multi-digit arithmetic. Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.</li> <li>● 4.OA.A.3: Use the four operations with whole numbers to solve problems. Solve multi-step word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.</li> <li>● Mathematical Practices 1-8               <ol style="list-style-type: none"> <li>1. Make sense of problems and persevere in solving them.</li> <li>2. Reason abstractly and quantitatively.</li> <li>3. Construct viable arguments and critique the reasoning of others.</li> <li>4. Model with mathematics.</li> <li>5. Use appropriate tools strategically.</li> <li>6. Attend to precision.</li> <li>7. Look for and make use of structure.</li> <li>8. Look for and express regularity in repeated reasoning.</li> </ol> </li> </ul>	

- Career Readiness, Life Literacies, and Key Skills Practices
  - CRP4. Demonstrate creativity and innovation.
  - CRP5. Utilize critical thinking to make sense of problems and persevere in solving them.
  - CRP9. Work productively in teams while using cultural/global competence.
- Career Readiness, Life Literacies, and Key Skills
  - 9.4.5.CT.4: Apply critical thinking and problem-solving strategies to different types of problems such as personal, academic, community and global.
  - 9.4.5.IML.2: Create a visual representation to organize information about a problem or issue.
- WIDA
  - ELD Standard 1: The Language of Social and Instructional Language
  - ELD Standard 3: The Language of Mathematics
- Computer Science and Design Thinking
  - 8.1.5.AP.1: Compare and refine multiple algorithms for the same task and determine which is the most appropriate.
  - 8.2.5.ED.2: Collaborate with peers to collect information, brainstorm to solve a problem, and evaluate all possible solutions to provide the best results with supporting sketches or models.

### Essential Question(s)

- Topic 1: How are greater numbers written? How can whole numbers be compared? How are place values related?
- Topic 2: How can sums and differences of whole numbers be estimated? What are standard procedures for adding and subtracting whole numbers?
- Topic 3: How can you multiply by multiples of 10, 100, and 1,000? How can you estimate when you multiply?
- Topic 4: How can you use a model to multiply? How can you use the Distributive Property to multiply? How can you use multiplication to solve problems?

### Enduring Understandings

#### Topic 1

- Our number system is based on groups of ten. Whenever we get 10 in one place value, we move to the next greater place value.
- In a multi-digit whole number, a digit in one place represents ten times what it would represent in the place immediately to its right.
- Place value can be used to compare numbers.
- Rounding whole numbers is a process for finding the multiple of 10, 100, and so on closest to a given number.
- Good math thinkers use math to explain why they are right. They can talk about the math that others do too.

#### Topic 2:

- Representing numbers and numerical expressions in equivalent forms can make some calculations easy to do mentally. There is more than one way to do a mental calculation.
- There is more than one way to estimate a sum or difference. Estimation gives a way to replace numbers with other numbers that are close and easier to compute with mentally.
- The standard addition and subtraction algorithms for multi-digit numbers break the calculation into simpler calculations using place value starting with the ones, then the tens, and so on.

- Good math thinkers know how to think about words and numbers to solve problems.

#### Topic 3:

- Basic facts and place-value patterns can be used to find products when one factor is 10, 100, or 1,000.
- Rounding is one way to estimate products.
- The properties of multiplication can be used to simplify computation and to verify mental math and paper and pencil algorithms.
- Properties of multiplication and place-value understanding can be used to multiply without paper and pencil.
- The expanded algorithm for multiplication can be represented with arrays. In the algorithm, numbers are broken apart using place value, and the parts are used to find partial products.
- The expanded algorithm for multiplication breaks numbers apart using place value, and the parts are used to find partial products. The partial products are then added together to find the product.
- The standard algorithm for multiplication is a short cut for the expanded algorithm. Regrouping is used rather than showing all the partial products.
- The standard algorithm for multiplication involves breaking apart numbers using place value, finding partial products, and then adding partial products to get the final product. The process is the same regardless of the size of the factors.
- Good math thinkers choose and apply math they know to show and solve problems from everyday life.

#### Topic 4:

- Basic facts and place-value patterns can be used to mentally multiply a 2-digit number by a multiple of ten.
- Place-value blocks, area models, and arrays provide ways to visualize and find products.
- Products of 2-digit by 2-digit multiplication problems can be estimated by replacing each factor with the closest multiple of ten.
- Products can be estimated by replacing factors with other numbers that are close and easy to multiply mentally.
- The expanded algorithm for multiplying with 2-digit numbers is an extension of the expanded algorithm for multiplying with 1-digit numbers.
- The Distributive Property can be used to multiply two 2-digit numbers by breaking the computation down into 4 simpler products and adding the partial products together.
- The expanded algorithm for multiplication can be represented with arrays. In the algorithm, numbers are broken apart using place value, and the parts are used to find the partial products.
- The standard algorithm for multiplying a 2-digit number by a multiple of 10 is an extension of the algorithm for multiplying multi-digit numbers by a 1-digit number.
- 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.
- Good math thinkers make sense of problems and think of ways to solve them. If they get stuck, they don't give up.

### Interdisciplinary Connections

Activities to connect math with other disciplines from the enVision 2.0 resources:

- Language Arts (RI.4.4, W.4.2)
  - Problem solving reading mats and activities (Source: Problem-Solving Reading Activity Guide)
  - Topic journal activities (Source: Teacher Manual)
- Science (4-ESS1-1, 4-ESS2-1, 4-ESS2-2, 4-PS3-1, 4-PS3-4)
  - Math and science projects (Source: Teacher Manual)
  - Math and science activities (Source: Teacher's Resource Masters)

In this unit plan, the following 21<sup>st</sup> Century themes and skills are addressed.

Check all that apply. 21 <sup>st</sup> Century Themes		Check all that apply. 21 <sup>st</sup> Century Skills	
<input type="checkbox"/>	Global Awareness	<input type="checkbox"/>	Creativity and Innovation
<input type="checkbox"/>	Environmental Literacy	<input checked="" type="checkbox"/>	Critical Thinking and Problem Solving
<input type="checkbox"/>	Health Literacy	<input checked="" type="checkbox"/>	Communication
<input type="checkbox"/>	Civic Literacy	<input checked="" type="checkbox"/>	Collaboration
<input type="checkbox"/>	Financial, Economic, Business, and Entrepreneurial Literacy		

**Student Learning Targets/Objectives (Students will know/Students will understand)**

- Topic 1
  - Read and write numbers in expanded form, with numerals, and using number names.
  - Recognize the relationship between adjacent digits in a multi-digit number.
  - Use place value to compare and round multi-digit numbers.
  - Use previously learned concepts and skills to construct arguments about place value.
- Topic 2
  - Add and subtract whole numbers mentally using a variety of methods.
  - Round greater whole numbers to estimate sums and differences.
  - Add numbers to one million with and without regrouping using the standard algorithm.
  - Use place value and an algorithm to subtract whole numbers.
  - Use numbers sense and regrouping to subtract across zeros.
  - Use previously learned concepts and skills to reason abstractly and make sense of quantities and their relationships in problem situations.
- Topic 3
  - Multiply by multiples of 10, 100, and 1,000 using mental math and place-value strategies.
  - Use rounding to estimate products and check if answers are reasonable.
  - Use the Distributive Property to multiply larger numbers.
  - Use place value and properties of operations to multiply mentally.
  - Use arrays and partial products to multiply 3- and 4-digit numbers by 1-digit numbers.
  - Use place value to multiply 2- and 3-digit numbers by 1-digit numbers.
  - Use the standard algorithm to multiply 2-, 3-, and 4-digit numbers by 1-digit numbers.
  - Estimate to check if the answers to multiplication problems are reasonable.
  - Use previously learned concepts and skills to represent and solve problems.
- Topic 4
  - Use mental-math strategies to multiply 2-digit by 2-digit multiples of ten.
  - Use models and properties of operations to multiply 2-digit numbers by multiples of ten.
  - Estimate products for 2-digit by 2-digit multiplication problems by rounding the factors to multiples of ten.
  - Use compatible numbers to estimate products of 2-digit by 2-digit multiplication problems.
  - Use arrays, place value, partial products, and properties of operations to multiply two 2-digit numbers.
  - Use the Distributive property and an area model to multiply two 2-digit numbers.
  - Use place value and partial products to calculate products of 2-digit by 2-digit multiplication problems.

- o Use area models and place-value strategies to multiply 2-digit numbers by multiples of 10.
- o Use the expanded and the standard algorithms to multiply 2-digit by 2-digit numbers.
- o Estimate to check if products are reasonable.
- o Use models and algorithms to solve 2-digit by 2-digit multiplication problems.
- o Make sense of problems and persevere in solving them.

#### Assessments (Pre, Formative, Summative, Other)

*Denote required common assessments with an \**

- Placement Test (Source: Assessment Book or online resources) - Pre-Assessment
- Review, "What You Know" (Source: Student Book at the beginning of each topic) - Pre-Assessment
- \*Topic 1 Assessment (Source: WTPS Assessment Pack in Google Folder) - Summative Assessment
- \*Topic 2 Assessment (Source: WTPS Assessment Pack in Google Folder) - Summative Assessment
- \*Topic 3 Assessment (Source: WTPS Assessment Pack in Google Folder) - Summative Assessment
- \*Topic 4 Assessment (Source: WTPS Assessment Pack in Google Folder) - Summative Assessment
- Lesson Quick Checks (Source: Online resources) - Formative Assessment
- Quizzes (Source: ExamView, Standards Practice Workbook) - Formative Assessment
- Topics 1-4 Cumulative Benchmark Assessment (Source: Assessment Book or online resources) - Summative Assessment
- Student Self-Assessment Tool (Source: Teacher's Resource Masters, Vol. 2) - Alternative Assessment
- Evaluate student work using the Cognitive Rigor Matrix for Mathematics (Source: Assessment Book) - Alternative Assessment
- Portfolio Assessment of student work - Alternative Assessment

#### Teaching and Learning Activities

##### Activities

enVision 2.0 lessons 1.1-1.5  
 enVision 2.0 lessons 2.1-2.6  
 enVision 2.0 lessons 3.1-3.10  
 enVision 2.0 lessons 4.1-4.11

**[Lesson 1.4 - Supplement Activity \(Located in the Google Drive Folder\)](#)**

##### Differentiation Strategies

- Reteaching Activities in Student Book
- Leveled Center Games
- Online Resources (today's challenge, accessible student edition of the text, games, another look activities and videos, reteaching activities)
- Short Challenge Activities
- Long Challenge Activities
- Math Diagnosis and Intervention System
- ELL Toolkit & ELL Activities within the Teacher Manual
- Problem-Solving Reading Mats and Teacher Guide
- [Differentiation Strategies for Special Education Students](#)
- [Differentiation Strategies for Gifted and Talented Students](#)
- [Differentiation Strategies for ELL Students](#)
- [Differentiation Strategies for At Risk Students](#)
- [Differentiation Strategies for Students with a 504](#)

## Resources

- enVision 2.0 Resources
  - Student Book
  - Teacher Manual
  - Teacher Resource Guide
  - Assessment Book
  - Pearsonrealize.com (online platform)
    - Math Games
    - Digital Text
    - Math Videos
    - Virtual Manipulatives
    - Math Diagnosis and Intervention System
  - Problem-Solving Reading Mats & Teacher Guide
  - Center Games
  - ELL Toolkit & ELL Activities within the Teacher Manual
  - Standards Practice Workbook and Teacher Manual
  - ExamView
- Math Manipulatives
- WTPS Assessment Pack (Located in Google Drive Folder)
- Short Challenge Activities (Located in Google Drive Folder)
- Long Challenge Activities (Located in Google Drive Folder)

<b>Grade Level &amp; Content:</b>	Grade 4 Mathematics
<b>Unit Plan Title:</b>	<b>Unit 2:</b> Division Concepts, Using Four Operations to Solve Problems, Factors & Multiples, and Fraction Equivalence & Ordering
<b>Time Frame:</b>	9 weeks (please see pacing calendar)
<b>Anchor Standards/Domain*</b>	<b>*i.e: ELA: reading, writing i.e.: Math: Number and Operations in Base 10</b>
<b>Math:</b> <ul style="list-style-type: none"> <li>- Numbers and Operations in Base Ten</li> <li>- Operations and Algebraic Thinking</li> <li>- Numbers and Operations - Fractions</li> </ul>	
<b>Unit Summary</b>	
<p>In this unit, students will develop a deep understanding of the algorithm for division. Students will apply their skills developed involving multi-digit whole-number addition, subtraction, multiplication, and division to solve word problems. Through these word problems, they will also learn about multiplication as a comparison. Students will understand the meaning of factors and multiples by building on their understanding of multiplication. As they learn about factors, students will learn about prime and composite numbers. Finally, students will learn how to recognize and generate equivalent fractions and compare fractions with different numerators and different denominators.</p>	
<b>Standard Number(s)</b>	
<ul style="list-style-type: none"> <li>• 4.NBT.B.5: Use place value understanding and properties of operations to perform multi-digit arithmetic. Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.</li> <li>• 4.NBT.B.6: Use place value understanding and properties of operations to perform multi-digit arithmetic. Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.</li> <li>• 4.OA.A.1: Use the four operations with whole numbers to solve problems. Interpret a multiplication equation as a comparison, e.g., interpret <math>35 = 5 \times 7</math> as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations.</li> <li>• 4.OA.A.2: Use the four operations with whole numbers to solve problems. Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.</li> <li>• 4.OA.A.3: Use the four operations with whole numbers to solve problems. Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.</li> <li>• 4.OA.B.4: Gain familiarity with factors and multiples. Find all factor pairs for a whole number in the range 1-100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1-100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1-100 is prime or composite.</li> <li>• 4.NF.A.1: Extend understanding of fraction equivalence and ordering. Explain why a fraction <math>a/b</math> is equivalent to a fraction <math>(n \times a)/(n \times b)</math> by using visual fraction models, with attention to how the</li> </ul>	



number and size of the parts differ even though the two fractions themselves are the same size.

Use this principle to recognize and generate equivalent fractions.

- 4.NF.A.2: Extend understanding of fraction equivalence and ordering. Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as  $\frac{1}{2}$ . Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols  $>$ ,  $=$ , or  $<$ , and justify the conclusions, e.g., by using a visual fraction model.
- Mathematical Practices 1-8
  1. Make sense of problems and persevere in solving them.
  2. Reason abstractly and quantitatively.
  3. Construct viable arguments and critique the reasoning of others.
  4. Model with mathematics.
  5. Use appropriate tools strategically.
  6. Attend to precision.
  7. Look for and make use of structure.
  8. Look for and express regularity in repeated reasoning.
- Career Readiness, Life Literacies, and Key Skills Practices
  - CRP4. Demonstrate creativity and innovation.
  - CRP5. Utilize critical thinking to make sense of problems and persevere in solving them.
  - CRP9. Work productively in teams while using cultural/global competence.
- Career Readiness, Life Literacies, and Key Skills
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  - ELD Standard 3: The Language of Mathematics
- Computer Science and Design Thinking
  - 8.1.5.AP.1: Compare and refine multiple algorithms for the same task and determine which is the most appropriate.
  - 8.2.5.ED.2: Collaborate with peers to collect information, brainstorm to solve a problem, and evaluate all possible solutions to provide the best results with supporting sketches or models.

#### Essential Question(s)

- Topic 5: How can mental math be used to divide? How can quotients be estimated? How can the steps for dividing be explained?
- Topic 6: How is comparing with multiplication different from comparing with addition? How can you use equations to solve multi-step problems?
- Topic 7: How can you use arrays or multiplication to find the factors of a number? How can you identify prime and composite numbers? How can you find multiples of a number?
- Topic 8: What are some ways to name the same part of a whole? How can you compare fractions with unlike denominators?

## Enduring Understandings

### Topic 5

- Basic facts and place-value patterns can be used to divide multiples of 10 and 100 by 1-digit numbers.
- There is more than one way to estimate a quotient. Using place-value patterns and compatible numbers are efficient techniques for estimating quotients.
- When dividing, the remainder must be less than the divisor. When solving a real-world problem, the kind of questions asked determines how to interpret the remainder.
- Sharing is one easy way to think about division.
- Division with partial quotients involves breaking apart the dividend, dividing the parts, and adding the partial quotients.
- The standard division algorithm breaks the calculation into simpler calculations using basic facts, place value, the relationship between multiplication and division, and estimation.
- Good math thinkers choose and apply math they know to show and solve problems from everyday life.

### Topic 6:

- Both addition and multiplication can be used to make comparisons. Bar diagrams and equations can be used to show both situations and to distinguish between them.
- Bar diagrams and equations can be used to solve problems involving multiplicative comparisons.
- Sometimes there are hidden questions that must be answered before solving a problem. Bar diagrams and equations can represent problems and are helpful in answering both parts of a problem.
- Good math thinkers make sense of problems and think of ways to solve them. If they get stuck, they don't give up.

### Topic 7:

- Factors of a number  $n$  can be shown by arranging  $n$  counters into rows with the same number of counters in each row. The number of rows and the number of counters in each row are factors of  $n$ .
- Factors of a number can be found in pairs by thinking about multiplication.
- Good math thinkers look for things that repeat, and they make generalizations.
- Prime numbers have exactly 2 factors and composite numbers have more than 2.
- The product of any nonzero whole number and a given nonzero whole number is a multiple of both. Factors and multiples are closely related.

### Topic 8:

- Two fractions that represent the same part of the same whole are equivalent. The two fractions are different names for the same number.
- The same fractional amount can be represented by an infinite set of different but equivalent fractions.
- When the numerator and denominator of a fraction are multiplied by the same whole number greater than 1, it is the same as multiplying the fraction by 1. This gives an equivalent fraction because multiplying by 1 does not change the value of the number.
- When the numerator and denominator of a fraction are divided by a common factor, the result is an equivalent fraction.
- One way to compare two fractions that are parts of the same whole is by comparing each to a benchmark fraction such as  $\frac{1}{2}$ .
- When two fractions have the same denominator, the fraction with the greater numerator is greater. When two fractions have the same numerator, the fraction with the lesser denominator is greater.
- Good math thinkers use math to explain why they are right. They can talk about the math that others do, too.

## Interdisciplinary Connections

Activities to connect math with other disciplines from the enVision 2.0 resources:

- Language Arts (RI.4.4, W.4.2)
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  - Topic journal activities (Source: Teacher Manual)
- Science (4-PS3-1, 4-PS3-3, 4-PS3-4, 4-PS4-2, 4-LS1-1, 4-LS1-2)
  - Math and science projects (Source: Teacher Manual)
  - Math and science activities (Source: Teacher's Resource Masters)

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<input type="checkbox"/>	Environmental Literacy	<input checked="" type="checkbox"/>	Critical Thinking and Problem Solving
<input type="checkbox"/>	Health Literacy	<input checked="" type="checkbox"/>	Communication
<input type="checkbox"/>	Civic Literacy	<input checked="" type="checkbox"/>	Collaboration
<input type="checkbox"/>	Financial, Economic, Business, and Entrepreneurial Literacy		

## Student Learning Targets/Objectives (Students will know/Students will understand)

- Topic 5
  - Use mental-math and place-value strategies to divide multiples of 10 and 100 by 1-digit divisors.
  - Use compatible numbers to estimate quotients.
  - Use place-value patterns and division facts to estimate quotients for 4-digit dividends.
  - Solve division problems and interpret remainders.
  - Use place value and drawings to divide 2-, 3-, and 4-digit numbers by 1-digit numbers.
  - Use partial quotients and place-value understanding to divide .
  - Divide 2-, 3-, and 4-digit numbers using the standard division algorithm.
  - Use previously learned concepts and skills to model and solve problems.
- Topic 6
  - Interpret comparisons as multiplication or addition equations.
  - Use multiplication and division to compare two quantities.
  - Solve two-step problems by finding and solving the hidden question first.
  - Solve multi-step problems by finding and solving the hidden questions first.
  - Make sense of a multi-step problem and keep working until it is solved.
- Topic 7
  - Use arrays to find the factors of a given whole number.
  - Use multiplication to find all the factor pairs for a whole number.
  - Use repeated reasoning to generalize how to solve problems that are similar.
  - Use factors to determine whether a whole number greater than 1 is prime or composite.
  - Use multiplication to find multiples of a given number.

- Topic 8
  - Use area models to recognize and generate equivalent fractions.
  - Use a number line to locate and identify equivalent fractions.
  - Use multiplication and division to find equivalent fractions.
  - Use benchmarks, area models, and number lines to compare fractions.
  - Use models or rename fractions to compare.
  - Construct arguments about fractions.

#### **Assessments (Pre, Formative, Summative, Other)**

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- \*Topics 6 & 7 Assessment (Source: WTPS Assessment Pack in Google Folder) - Summative Assessment
- \*Topic 8 Assessment (Source: WTPS Assessment Pack in Google Folder) - Summative Assessment
- Lesson Quick Checks (Source: Online resources) - Formative Assessment
- Quizzes (Source: ExamView, Standards Practice Workbook) - Formative Assessment
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- \*Topics 1-8 Cumulative Benchmark Assessment (Source: LinkIt) - Summative Assessment
- Student Self-Assessment Tool (Source: Teacher's Resource Masters, Vol. 2) - Alternative Assessment
- Evaluate student work using the Cognitive Rigor Matrix for Mathematics (Source: Assessment Book) - Alternative Assessment
- Portfolio Assessment of student work - Alternative Assessment

#### *Teaching and Learning Activities*

<i>Activities</i>	enVision 2.0 lessons 5.1-5.10 enVision 2.0 lessons 6.1-6.5 enVision 2.0 lessons 7.1-7.5 enVision 2.0 lessons 8.1-8.7
<i>Differentiation Strategies</i>	<ul style="list-style-type: none"> <li>- Reteaching Activities in Student Book</li> <li>- Leveled Center Games</li> <li>- Online Resources (today's challenge, accessible student edition of the text, games, another look activities and videos, reteaching activities)</li> <li>- Short Challenge Activities</li> <li>- Long Challenge Activities</li> <li>- Math Diagnosis and Intervention System</li> <li>- ELL Toolkit &amp; ELL Activities within the Teacher Manual</li> <li>- Problem-Solving Reading Mats and Teacher Guide</li> <li>- <a href="#">Differentiation Strategies for Special Education Students</a></li> <li>- <a href="#">Differentiation Strategies for Gifted and Talented Students</a></li> <li>- <a href="#">Differentiation Strategies for ELL Students</a></li> <li>- <a href="#">Differentiation Strategies for At Risk Students</a></li> <li>- <a href="#">Differentiation Strategies for Students with a 504</a></li> </ul>

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<b>Grade Level &amp; Content:</b>	Grade 4 Mathematics
<b>Unit Plan Title:</b>	<b>Unit 3:</b> Addition, Subtraction, and Multiplication of Fractions, Line Plots, and Decimals
<b>Time Frame:</b>	6 weeks (please see pacing calendar)
<b>Anchor Standards/Domain*</b>	<b>*i.e: ELA: reading, writing i.e.: Math: Number and Operations in Base 10</b>
<b>Math:</b> <ul style="list-style-type: none"> <li>- Numbers and Operations - Fractions</li> <li>- Measurement &amp; Data</li> </ul>	
<b>Unit Summary</b>	
<p>In this unit, students will focus on the deep understanding of adding and subtracting fractions with like denominators and multiplying fractions by whole numbers. Students will also gain a deeper understanding of how to read and make line plots that serve as a context for solving real-world problems involving fractions and mixed numbers. Finally, students will develop an understanding of decimals and decimal notation through hundredths by connecting fractions and decimals. They will also use their understanding of equivalent fractions to rewrite a fraction written in tenths as a fraction written in hundredths, and add a fraction with a denominator of 10 and a fraction with a denominator of 100.</p>	
<b>Standard Number(s)</b>	
<ul style="list-style-type: none"> <li>• 4.NF.A.1: Extend understanding of fraction equivalence and ordering. Explain why a fraction <math>a/b</math> is equivalent to a fraction <math>(n \times a)/(n \times b)</math> by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.</li> <li>• 4.NF.B.3a: Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers. Understand a fraction <math>a/b</math> with <math>a &gt; 1</math> as a sum of fractions <math>1/b</math>. Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.</li> <li>• 4.NF.B.3b: Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers. Understand a fraction <math>a/b</math> with <math>a &gt; 1</math> as a sum of fractions <math>1/b</math>. Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model. <i>Examples:</i> <math>3/8 = 1/8 + 1/8 + 1/8</math> ; <math>3/8 = 1/8 + 2/8</math> ; <math>2 \frac{1}{8} = 1 + 1 + 1/8 = 8/8 + 8/8 + 1/8</math>.</li> <li>• 4.NF.B.3c: Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers. Understand a fraction <math>a/b</math> with <math>a &gt; 1</math> as a sum of fractions <math>1/b</math>. Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction.</li> <li>• 4.NF.B.3d: Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers. Understand a fraction <math>a/b</math> with <math>a &gt; 1</math> as a sum of fractions <math>1/b</math>. Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.</li> <li>• 4.NF.B.4a: Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers. Apply and extend previous understandings of multiplication to multiply a fraction by a whole number. Understand a fraction <math>a/b</math> as a multiple of <math>1/b</math>. <i>For example, use a visual fraction model to represent <math>5/4</math> as the product <math>5 \times (1/4)</math>, recording the conclusion by the equation <math>5/4 = 5 \times (1/4)</math>.</i></li> </ul>	

- 4.NF.B.4b: Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers. Apply and extend previous understandings of multiplication to multiply a fraction by a whole number. Understand a multiple of  $a/b$  as a multiple of  $1/b$ , and use this understanding to multiply a fraction by a whole number. *For example, use a visual fraction model to express  $3 \times (2/5)$  as  $6 \times (1/5)$ , recognizing this product as  $6/5$ . (In general,  $n \times (a/b) = (n \times a)/b$ .)*
- 4.NF.B.4c: Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers. Apply and extend previous understandings of multiplication to multiply a fraction by a whole number. Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem. *For example, if each person at a party will eat  $3/8$  of a pound of roast beef, and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie?*
- 4.NF.C.5: Understand decimal notation for fractions, and compare decimal fractions. Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100. *For example, express  $3/10$  as  $30/100$ , and add  $3/10 + 4/100 = 34/100$ .*
- 4.NF.C.6: Understand decimal notation for fractions, and compare decimal fractions. Use decimal notation for fractions with denominators 10 or 100. *For example, rewrite  $0.62$  as  $62/100$ ; describe a length as  $0.62$  meters; locate  $0.62$  on a number line diagram.*
- 4.NF.C.7: Understand decimal notation for fractions, and compare decimal fractions. Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols  $>$ ,  $=$ , or  $<$ , and justify the conclusions, e.g., by using a visual model.
- 4.MD.A.2: Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit. Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.
- 4.MD.B.4: Represent and interpret data. Make a line plot to display a data set of measurements in fractions of a unit ( $1/2$ ,  $1/4$ ,  $1/8$ ). Solve problems involving addition and subtraction of fractions by using information presented in line plots. *For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.*
- Mathematical Practices 1-8
  1. Make sense of problems and persevere in solving them.
  2. Reason abstractly and quantitatively.
  3. Construct viable arguments and critique the reasoning of others.
  4. Model with mathematics.
  5. Use appropriate tools strategically.
  6. Attend to precision.
  7. Look for and make use of structure.
  8. Look for and express regularity in repeated reasoning.
- Career Readiness, Life Literacies, and Key Skills Practices
  - CRP4. Demonstrate creativity and innovation.
  - CRP5. Utilize critical thinking to make sense of problems and persevere in solving them.
  - CRP9. Work productively in teams while using cultural/global competence.



- Career Readiness, Life Literacies, and Key Skills
  - 9.4.5.CT.4: Apply critical thinking and problem-solving strategies to different types of problems such as personal, academic, community and global.
  - 9.4.5.IML.2: Create a visual representation to organize information about a problem or issue.
- WIDA
  - ELD Standard 1: The Language of Social and Instructional Language
  - ELD Standard 3: The Language of Mathematics
- Computer Science and Design Thinking
  - 8.1.5.AP.1: Compare and refine multiple algorithms for the same task and determine which is the most appropriate.
  - 8.2.5.ED.2: Collaborate with peers to collect information, brainstorm to solve a problem, and evaluate all possible solutions to provide the best results with supporting sketches or models.

### Essential Question(s)

- Topic 9: How do you add and subtract fractions and mixed numbers with like denominators? How can fractions be added and subtracted on a number line?
- Topic 10: How can you describe a fraction using a unit fraction? How can you multiply a whole number by a mixed number?
- Topic 11: How can you read data on a line plot? How can you make a line plot?
- Topic 12: How can you write a fraction as a decimal? How can you locate points on a number line? How do you compare decimals?

### Enduring Understandings

#### Topic 9:

- Models can be used to show addition of fractions as joining parts of the same whole.
- A fraction  $a/b$  where  $a > 1$ , can be decomposed into the sum of two or more unit or non-unit fractions in one or more ways where the sum of the fractions is equal to the original fraction.
- Two fractions can be joined or added to find the total. There is a general method for adding fractions with like denominators.
- Models can be used to show subtraction of fractions as separating a part from the same whole.
- The difference between two fractions with like denominators can be found by separating one fractional amount from the other. There is a general method for subtracting fractions with like denominators.
- Fraction addition and subtraction can be thought about as joining and separating segments on the number line. They can also be thought about as counting forward or counting backward on the number line.
- Fraction sums and differences can be estimated by thinking about how each fraction relates to other fractions that are easy to add and subtract mentally.
- Adding and subtracting mixed numbers is an extension of the ideas and procedures for adding and subtracting fractions.
- Two procedures for adding and subtracting mixed numbers both involve changing the calculation to a simpler equivalent calculation.
- Good math thinkers choose and apply math they know to show and solve problems from everyday life.



Topic 10:

- Any fraction  $a/b$  can be written as  $a$  times the unit fraction  $1/b$ .
- Models and equations can be used to represent problems and compute products of whole numbers and fractions.
- Models and equations can be used to represent problems and compute products of whole numbers and mixed numbers.
- The standard algorithms for adding, subtracting, multiplying, and dividing can be used to solve time problems.
- Good math thinkers choose and apply math they know to show and solve problems from everyday life.

Topic 11:

- A line plot organizes data on a number line and is useful for showing the distribution of data.
- Data from line plots can be used to solve problems.
- Good math thinkers use math to explain why they are right. They can talk about the math that others do, too.

Topic 12:

- A decimal is another way to represent a fraction.
- Points on a number-line can represent fractions and decimals. A fraction and a decimal tell the distance a point is from 0 on the number line.
- Place value can be used to compare decimals.
- Fractions with denominators of 10 can be written as equivalent fractions with denominators of 100. Fractions with like denominators can be added.
- Fractions with decimals can be used to represent amounts of money. Pictorial models and equations can represent problems involving money.
- Good math thinkers look for relationships in math to help solve problems.

### Interdisciplinary Connections

Activities to connect math with other disciplines from the enVision 2.0 resources:

- Language Arts (RI.4.4, W.4.2)
  - Problem solving reading mats and activities (Source: Problem-Solving Reading Activity Guide)
  - Topic journal activities (Source: Teacher Manual)
- Science (4-PS3-1, 4-PS4-2, 4-PS4-3, 4-ESS3-2)
  - Math and science projects (Source: Teacher Manual)
  - Math and science activities (Source: Teacher's Resource Masters)

In this unit plan, the following 21<sup>st</sup> Century themes and skills are addressed.

Check all that apply. 21 <sup>st</sup> Century Themes			Check all that apply. 21 <sup>st</sup> Century Skills		
	<input type="checkbox"/>	Global Awareness		<input type="checkbox"/>	Creativity and Innovation
	<input type="checkbox"/>	Environmental Literacy		<input checked="" type="checkbox"/>	Critical Thinking and Problem Solving
	<input type="checkbox"/>	Health Literacy		<input checked="" type="checkbox"/>	Communication
	<input type="checkbox"/>	Civic Literacy		<input checked="" type="checkbox"/>	Collaboration
	<input type="checkbox"/>	Financial, Economic, Business, and Entrepreneurial Literacy			

**Student Learning Targets/Objectives (Students will know/Students will understand)**

- Topic 9
  - Use fractions strips and number lines to add fractions.
  - Decompose a fraction or mixed number into a sum of fractions in more than one way.
  - Solve problems involving joining parts of the same whole by adding fractions.
  - Use tools such as fraction strips, area models, and number lines to subtract fractions.
  - Solve problems involving separating parts of the same whole by subtracting fractions.
  - Count forward or backward on a number line to add or subtract.
  - Use number lines and benchmark fractions to estimate fraction sums and differences.
  - Use models and equivalent fractions to add and subtract mixed numbers.
  - Use equivalent fractions and properties of operations to add mixed numbers with like denominators.
  - Use equivalent fractions, properties of operations, and the relationship between addition and subtraction to subtract mixed numbers with like denominators.
  - Use previously learned concepts and skills to represent and solve problems.
- Topic 10
  - Use a model to understand a fraction as a multiple of a unit fraction.
  - Use models to multiply fractions by whole numbers.
  - Use symbols and equations to multiply a fraction by a whole number.
  - Use drawings and equations to represent and solve problems involving multiplying a whole number and a mixed number.
  - Use the four operations to solve problems involving time.
  - Use previously-learned concepts and skills to represent and solve problems.
- Topic 11
  - Read and interpret data using line plots.
  - Represent data using line plots and interpret data in line plots to solve problems.
  - Solve problem involving line plots and fractions.
  - Critique the reasoning of others using an understanding of line plots.
- Topic 12
  - Relate fractions and decimals with denominators of 10 and 100.
  - Locate and describe fractions and decimals on number lines.
  - Compare decimals by reasoning about their size.
  - Add fractions with denominators of 10 and 100 by using equivalent fractions.
  - Use fractions or decimals to solve word problems involving money.
  - Use the structure of the place-value system for decimals to solve problems.

**Assessments (Pre, Formative, Summative, Other)*****Denote required common assessments with an \****

- Placement Test (Source: Assessment Book or online resources) - Pre-Assessment
- Review, "What You Know" (Source: Student Book at the beginning of each topic) - Pre-Assessment
- \*Topic 9 Assessment (Source: WTPS Assessment Pack in Google Folder) - Summative Assessment
- \*Topic 10 Assessment (Source: WTPS Assessment Pack in Google Folder) - Summative Assessment
- \*Topic 11 Assessment (Source: WTPS Assessment Pack in Google Folder) - Summative Assessment
- \*Topic 12 Assessment (Source: WTPS Assessment Pack in Google Folder) - Summative Assessment
- Lesson Quick Checks (Source: Online resources) - Formative Assessment
- Quizzes (Source: ExamView, Standards Practice Workbook) - Formative Assessment
- Topics 1-12 Cumulative Benchmark Assessment (Source: Assessment Book or online resources) - Summative Assessment
- Student Self-Assessment Tool (Source: Teacher's Resource Masters, Vol. 2) - Alternative Assessment
- Evaluate student work using the Cognitive Rigor Matrix for Mathematics (Source: Assessment Book) - Alternative Assessment
- Portfolio Assessment of student work - Alternative Assessment

## *Teaching and Learning Activities*

<i>Activities</i>	<p>enVision 2.0 lessons 9.1-9.11</p> <p>enVision 2.0 lessons 10.1-10.6</p> <p>enVision 2.0 lessons 11.1-11.4</p> <p>enVision 2.0 lessons 12.1-12.6</p>
<i>Differentiation Strategies</i>	<ul style="list-style-type: none"> <li>- Reteaching Activities in Student Book</li> <li>- Leveled Center Games</li> <li>- Online Resources (today's challenge, accessible student edition of the text, games, another look activities and videos, reteaching activities)</li> <li>- Short Challenge Activities</li> <li>- Long Challenge Activities</li> <li>- Math Diagnosis and Intervention System</li> <li>- ELL Toolkit &amp; ELL Activities within the Teacher Manual</li> <li>- Problem-Solving Reading Mats and Teacher Guide</li> <li>- <a href="#">Differentiation Strategies for Special Education Students</a></li> <li>- <a href="#">Differentiation Strategies for Gifted and Talented Students</a></li> <li>- <a href="#">Differentiation Strategies for ELL Students</a></li> <li>- <a href="#">Differentiation Strategies for At Risk Students</a></li> <li>- <a href="#">Differentiation Strategies for Students with a 504</a></li> </ul>

## Resources

- enVision 2.0 Resources
  - Student Book
  - Teacher Manual
  - Teacher Resource Guide
  - Assessment Book
  - Pearsonrealize.com (online platform)
    - Math Games
    - Digital Text
    - Math Videos
    - Virtual Manipulatives
    - Math Diagnosis and Intervention System
  - Problem-Solving Reading Mats & Teacher Guide
  - Center Games
  - ELL Toolkit & ELL Activities within the Teacher Manual
  - Standards Practice Workbook and Teacher Manual
  - ExamView
- Math Manipulatives
- WTPS Assessment Pack (Located in Google Drive Folder)
- Short Challenge Activities (Located in Google Drive Folder)
- Long Challenge Activities (Located in Google Drive Folder)
- Geometry Vocabulary Workbook

<b>Grade Level &amp; Content:</b>	Grade 4 Mathematics
<b>Unit Plan Title:</b>	<b>Unit 4:</b> Measurement, Patterns, and Geometry
<b>Time Frame:</b>	12 weeks (please see pacing calendar)
<b>Anchor Standards/Domain*</b>	<b>*i.e: ELA: reading, writing i.e.: Math: Number and Operations in Base 10</b>
<b>Math:</b> <ul style="list-style-type: none"> <li>- Operations and Algebraic Thinking</li> <li>- Numbers and Operations in Base Ten</li> <li>- Numbers and Operations - Fractions</li> <li>- Measurement &amp; Data</li> <li>- Geometry</li> </ul>	
<b>Unit Summary</b>	
<p>In this unit, students will learn about converting measurements from larger to smaller units within one system of measurement, including customary units of length, capacity, weight and time, as well as metric units. Students will apply area and perimeter formulas as they solve real-world problems. Students will use addition, subtraction, multiplication, and division rules to generate number patterns. Additionally, students will examine the terms of the patterns and describe the features they observe. Finally, students will focus on developing a deep understanding of angle concepts and angle measurement. Students will also understand how shapes can be analyzed, described, and classified with particular attention to properties of sides, angles, and lines of symmetry.</p>	
<b>Standard Number(s)</b>	
<ul style="list-style-type: none"> <li>• 4.OA.C.5: Generate and analyze patterns. Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. <i>For example, given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way.</i></li> <li>• 4.NBT.B.4: Use place value understanding and properties of operations to perform multi-digit arithmetic. Fluently add and subtract multi-digit whole numbers using the standard algorithm.</li> <li>• 4.NBT.B.5: Use place value understanding and properties of operations to perform multi-digit arithmetic. Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.</li> <li>• 4.NF.B.3d: Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers. Understand a fraction <math>a/b</math> with <math>a &gt; 1</math> as a sum of fractions <math>1/b</math>. Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.</li> <li>• 4.NF.B.4c: Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers. Apply and extend previous understandings of multiplication to multiply a fraction by a whole number. Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem. <i>For example, if each person at a party will eat <math>3/8</math> of a pound of roast beef, and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie?</i></li> <li>• 4.MD.A.1: Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit. Know relative sizes of measurement units within one system of units including km, m, cm, mm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement</li> </ul>	

equivalents in a two-column table. *For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36), ...*

- 4.MD.A.2: Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit. Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.
- 4.MD.A.3: Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit. Apply the area and perimeter formulas for rectangles in real world and mathematical problems. *For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.*
- 4.MD.C.5: Geometric measurement: understand concepts of angle and measure angles. Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement.
- 4.MD.C.5a: Geometric measurement: understand concepts of angle and measure angles. Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement: An angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through  $\frac{1}{360}$  of a circle is called a "one-degree angle," and can be used to measure angles.
- 4.MD.C.5b: Geometric measurement: understand concepts of angle and measure angles. Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement: An angle that turns through  $n$  one-degree angles is said to have an angle measure of  $n$  degrees.
- 4.MD.C.6: Geometric measurement: understand concepts of angle and measure angles. Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.
- 4.MD.C.7: Geometric measurement: understand concepts of angle and measure angles. Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure.
- 4.G.A.1: Draw and identify lines and angles, and classify shapes by properties of their lines and angles. Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.
- 4.G.A.2: Draw and identify lines and angles, and classify shapes by properties of their lines and angles. Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles.
- 4.G.A.3: Draw and identify lines and angles, and classify shapes by properties of their lines and angles. Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.
- Mathematical Practices 1-8
  1. Make sense of problems and persevere in solving them.
  2. Reason abstractly and quantitatively.
  3. Construct viable arguments and critique the reasoning of others.

4. Model with mathematics.
  5. Use appropriate tools strategically.
  6. Attend to precision.
  7. Look for and make use of structure.
  8. Look for and express regularity in repeated reasoning.
- Career Readiness, Life Literacies, and Key Skills Practices
    - o CRP4. Demonstrate creativity and innovation.
    - o CRP5. Utilize critical thinking to make sense of problems and persevere in solving them.
    - o CRP9. Work productively in teams while using cultural/global competence.
  - Career Readiness, Life Literacies, and Key Skills
    - o 9.4.5.CT.4: Apply critical thinking and problem-solving strategies to different types of problems such as personal, academic, community and global.
    - o 9.4.5.IML.2: Create a visual representation to organize information about a problem or issue.
  - WIDA
    - o ELD Standard 1: The Language of Social and Instructional Language
    - o ELD Standard 3: The Language of Mathematics
  - Computer Science and Design Thinking
    - o 8.1.5.AP.1: Compare and refine multiple algorithms for the same task and determine which is the most appropriate.
    - o 8.2.5.ED.2: Collaborate with peers to collect information, brainstorm to solve a problem, and evaluate all possible solutions to provide the best results with supporting sketches or models.

#### Essential Question(s)

- Topic 13: How can you convert from one unit to another? How can you be precise when solving math problems?
- Topic 14: How can you use a rule to continue a pattern? How can you use a table to extend a pattern? How can you use a repeating pattern to predict a shape?
- Topic 15: What are some common geometric terms? How can you measure angles?
- Topic 16: How can you classify triangles and quadrilaterals? What is line symmetry?

#### Enduring Understandings

##### Topic 13:

- To convert from a larger unit of length to a smaller unit of length, capacity, mass, or weight multiply the number of larger units by the conversion factor, that is, the number of smaller units in each larger unit.
- Some problems can be solved by applying the formula for the perimeter of a rectangle or the formula for the area of a rectangle.
- Good math thinkers are careful about what they write and say, so their ideas about math are clear.

##### Topic 14:

- Rules can be used to create or extend number sequences that form a pattern. Those patterns sometimes have features not described by the rule.
- Rules can be used to create or extend patterns in tables. Patterns sometimes have features not described by the rule.
- It is possible to predict a shape in a repeating pattern of shapes.
- Good math thinkers look for relationships in math to help solve problems.

**Topic 15:**

- Line segments and rays are sets of points that describe parts of lines and angles. Angles are classified by their measure.
- The measure of an angle depends on the fraction of a circle that the angle turns through.
- The unit for measuring angles is  $1^\circ$ , the unit angle. A protractor can be used to measure angles.
- Angle measures can be added and subtracted.
- Good math thinkers know how to pick the right tools to solve math problems.

**Topic 16:**

- Lines can be classified as parallel, intersecting, or perpendicular.
- Triangles, quadrilaterals, and polygons are classified by their sides and by their angles.
- A shape that can fold along a line into matching parts is symmetric.
- Good math thinkers use math to explain why they are right. They can talk about the math that others do, too.

**Interdisciplinary Connections**

Activities to connect math with other disciplines from the enVision 2.0 resources:

- Language Arts (RI.4.4, W.4.2)
  - Problem solving reading mats and activities (Source: Problem-Solving Reading Activity Guide)
  - Topic journal activities (Source: Teacher Manual)
- Science (4-ESS2-1, 4-ESS2-2, 4-PS3-3, 4-PS3-4, 4-PS4-1, 4-LS1-1, 4-LS1-2)
  - Math and science projects (Source: Teacher Manual)
  - Math and science activities (Source: Teacher's Resource Masters)

In this unit plan, the following 21<sup>st</sup> Century themes and skills are addressed.

Check all that apply. 21 <sup>st</sup> Century Themes			Check all that apply. 21 <sup>st</sup> Century Skills		
	<input type="checkbox"/>	Global Awareness		<input type="checkbox"/>	Creativity and Innovation
	<input type="checkbox"/>	Environmental Literacy		<input checked="" type="checkbox"/>	Critical Thinking and Problem Solving
	<input type="checkbox"/>	Health Literacy		<input checked="" type="checkbox"/>	Communication
	<input type="checkbox"/>	Civic Literacy		<input checked="" type="checkbox"/>	Collaboration
	<input type="checkbox"/>	Financial, Economic, Business, and Entrepreneurial Literacy			

**Student Learning Targets/Objectives (Students will know/Students will understand)**

- Topic 13
  - Recognize the relative size of customary units of capacity, length, and weight and convert from a larger unit to a smaller unit.
  - Recognize the relative size of metric units of capacity, length, and mass and convert from a larger unit to a smaller unit.
  - Find the unknown length of width of a rectangle using the known area or perimeter.
  - Be precise when solving measurement problems.



- Topic 14
  - Create or extend a number sequence based on a rule.
  - Identify features of the pattern in the sequence that are not described by the rule.
  - Use a rule to extend a number pattern and solve a problem.
  - Identify features of the pattern.
  - Generate a shape pattern that follows a given rule and predict a shape in the pattern.
  - Solve problems by using patterns.
- Topic 15
  - Recognize and draw lines, rays, and angles with different measures.
  - Find the measure of an angle that turns through a fraction of a circle.
  - Use known angle measures to measure unknown angles.
  - Use a protractor to measure and draw angles.
  - Use addition and subtraction to solve problems with unknown angle measures.
  - Use appropriate tools, such as a protractor and ruler, to solve problems.
- Topic 16
  - Draw and identify perpendicular, parallel, and intersecting lines.
  - Classify triangles, quadrilaterals, and polygons by line segments and angles.
  - Recognize and draw lines of symmetry.
  - Identify line symmetric figures.
  - Draw figures that have line symmetry.
  - Use understanding of two-dimensional shapes to critique the reasoning of others.

#### **Assessments (Pre, Formative, Summative, Other)**

***Denote required common assessments with an \****

- Placement Test (Source: Assessment Book or online resources) - Pre-Assessment
- Review, "What You Know" (Source: Student Book at the beginning of each topic) - Pre-Assessment
- \*Topic 13 Assessment (Source: WTPS Assessment Pack in Google Folder) - Summative Assessment
- \*Topic 14 Assessment (Source: WTPS Assessment Pack in Google Folder) - Summative Assessment
- \*Topic 15 Assessment (Source: WTPS Assessment Pack in Google Folder) - Summative Assessment
- \*Topic 16 Assessment (Source: WTPS Assessment Pack in Google Folder) - Summative Assessment
- Lesson Quick Checks (Source: Online resources) - Formative Assessment
- Topics 1-16 Cumulative Benchmark Assessment (Source: Assessment Book or online resources) - Summative Assessment
- Quizzes (Source: ExamView, Standards Practice Workbook) - Formative Assessment
- End of Year Test (Source: Assessment Book) - Summative Assessment
- \*End of Year Test (Source: LinkIt) - Summative Assessment
- Student Self-Assessment Tool (Source: Teacher's Resource Masters, Vol. 2) - Alternative Assessment
- Evaluate student work using the Cognitive Rigor Matrix for Mathematics (Source: Assessment Book) - Alternative Assessment
- Portfolio Assessment of student work - Alternative Assessment

#### ***Teaching and Learning Activities***

##### *Activities*

enVision 2.0 lessons 13.1-13.7  
 enVision 2.0 lessons 14.1-14.4  
 enVision 2.0 lessons 15.1-15.6  
 enVision 2.0 lessons 16.1-16.6

**[Lesson 16.1 - Supplement Activity \(Located in the Google Drive Folder\)](#)**  
**[Lesson 16.3 - Supplement Activity \(Located in the Google Drive Folder\)](#)**



### *Differentiation Strategies*

- Reteaching Activities in Student Book
- Leveled Center Games
- Online Resources (today's challenge, accessible student edition of the text, games, another look activities and videos, reteaching activities)
- Short Challenge Activities
- Long Challenge Activities
- Math Diagnosis and Intervention System
- ELL Toolkit & ELL Activities within the Teacher Manual
- Problem-Solving Reading Mats and Teacher Guide
- [Differentiation Strategies for Special Education Students](#)
- [Differentiation Strategies for Gifted and Talented Students](#)
- [Differentiation Strategies for ELL Students](#)
- [Differentiation Strategies for At Risk Students](#)
- [Differentiation Strategies for Students with a 504](#)

### Resources

- enVision 2.0 Resources
  - Student Book
  - Teacher Manual
  - Teacher Resource Guide
  - Assessment Book
  - Pearsonrealize.com (online platform)
    - Math Games
    - Digital Text
    - Math Videos
    - Virtual Manipulatives
    - Math Diagnosis and Intervention System
  - Problem-Solving Reading Mats & Teacher Guide
  - Center Games
  - ELL Toolkit & ELL Activities within the Teacher Manual
  - Standards Practice Workbook and Teacher Manual
  - ExamView
- Math Manipulatives
- WTPS Assessment Pack (Located in Google Drive Folder)
- Short Challenge Activities (Located in Google Drive Folder)
- Long Challenge Activities (Located in Google Drive Folder)
- Geometry Vocabulary Workbook