# Wayne Township Public Schools Grade 2 Math Curriculum 

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Grade 2 Math Curriculum

| Grade Level \& Content: | Grade 2 Mathematics |
| :---: | :---: |
| Unit Plan Title: | Unit 1: Adding Numbers to 100 |
| Time Frame: | 9 Weeks (please see pacing calendar) |
| Anchor Standards/Domain* *i.e: ELA: reading, writing i.e.: Math: Number and Operations in Base 10 |  |
| Math: <br> - Operations and Algebraic Thinking <br> - Numbers and Operations in Base-Ten |  |
| Unit Summary |  |
| In this unit, students will focus on addition and subtraction strategies. They will determine whether a number is even or odd, and find the total number of objects in situations involving equal groups of objects. |  |
| Standard Number(s) |  |
| 2.OA.A.1: Rep subtraction with taking from, pu using drawing <br> - 2.OA.B.2: Add By end of Gra <br> - 2.OA.C.3: Wor whether a group objects or cou addends. <br> - 2.OA.C.4: Wor find the total n columns; write <br> - 2.NBT.B.5: Us add and subtra the relationshi <br> - 2.NBT.B.6: Us to four two-dig <br> - 2.NBT.B.9: Us why addition a <br> - Mathematical | sent and solve problems involving addition and subtraction. Use addition and in 100 to solve one- and two-step word problems involving situations of adding to, ing together, taking apart, and comparing, with unknowns in all positions, e.g., by and equations with a symbol for the unknown number to represent the problem. and subtract within 20 . Fluently add and subtract within 20 using mental strategies. <br> 2 , know from memory all sums of two one-digit numbers. <br> with equal groups of objects to gain foundations for multiplication. Determine of objects (up to 20) has an odd or even number of members, e.g., by pairing ing them by 2 s ; write an equation to express an even number as a sum of two equal <br> with equal groups of objects to gain foundations for multiplication. Use addition to mber of objects arranged in rectangular arrays with up to 5 rows and up to 5 n equation to express the total as a sum of equal addends. <br> place-value understanding and properties of operations to add and subtract. Fluently thithin 100, using strategies based on place-value, properties of operations, and/or between addition and subtraction. <br> place-value understanding and properties of operations to add and subtract. Add up numbers using strategies based on place-value and properties of operations. <br> place-value understanding and properties of operations to add and subtract. Explain d subtraction strategies work, using place value and the properties of operations. ractices 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 9.4.2.CI.1: Demonstrate openness to new ideas and perspectives.
o 9.4.2.CT.2: Identify possible approaches and resources to execute a plan.
o 9.4.2.CT.3: Use a variety of types of thinking to solve problems (e.g., inductive, deductive).
o 9.4.2.IML.2: Represent data in a visual format to tell a story about the data.
- 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 8.1.2.DA.1: Collect and present data, including climate change data, in various visual formats.
o 8.1.2.DA.3: Identify and describe patterns in data visualizations.
o 8.2.2.ED.2: Collaborate to solve a simple problem, or to illustrate how to build a product using the design process.


## Essential Question(s)

- Topic 1: What are strategies for finding addition and subtraction facts?
- Topic 2: How can you show even and odd numbers? How do arrays relate to repeated addition?
- Topic 3: What are strategies for adding numbers to 100 ?
- Topic 4: What are strategies for adding numbers to 100 ?


## Enduring Understandings

Topic 1:

- 'Counting on' is a strategy that can be used to find sums. The order of the addends does not change the sum.
- Basic addition facts that are near doubles can be found using a related doubles fact.
- Some addition facts can be found by changing to an equivalent fact with 10.
- Patterns in zero -10 addition facts table, are useful for adding numbers and for developing mental math strategies and number sense.
- A number line is a tool you can use to help you count on or count back to subtract.
- Addition and subtraction have an inverse relationship. The inverse relationship between addition and subtraction can be used to find subtraction facts; every subtraction fact has a related addition fact.
- Some subtraction facts can be simplified by making use of the numbers' relationships to 10.
- The addends determine efficient strategies, such as making 10 or using doubles facts, for finding addition facts.
- Objects, diagrams, and equations can help you solve different types of word problems.
- Good math thinkers use math to explain why they are right. They can talk about the math that others do, too.


## Topic 2

- Numbers can be classified as even or odd by showing numbers as two equal parts.
- A group of objects can also be classified as even or odd by analyzing skip-counting patterns. An even number can be written as a sum of equal addends.
- An array shows equal groups, so you can write equations using repeated addition to find the total number of objects in an array.
- You can make arrays and write equations using repeated addition to help solve problems.
- Good math thinkers use math they know to show and solve problems.

Topic 3:

- Patterns on a hundreds chart can be used to add numbers and to develop mental math strategies and number sense.
- Two-digit numbers can be broken apart and added in different ways using tens and ones. You can represent how you break apart and add numbers by counting spaces on an open number line.
- Two-digit numbers can be broken apart using tens and ones and added in different ways. You can represent how you break apart and add numbers by counting spaces on an open number line.
- Two-digit numbers can be broken apart, using tens and ones, and added in different ways.
- When adding two-digit numbers, you can add an amount to one addend and subtract the same amount from another addend to make addition easier.
- There are different ways to add two-digit numbers. Certain strategies may be better to use for a problem than others.
- Some problems can be solved in one step. Other problems can be solved in two-steps-first, by solving a sub-problem or by answering a hidden question, and then by using that answer to solve the original problem.
- Good math thinkers know how to pick the right tools to solve math problems.

Topic 4:

- When adding two-digit numbers, you can add the ones and tens separately and then add these partial sums to find the total sum. Partial sums addition provides a bridge between mental addition and the standard algorithm.
- The standard addition algorithm for two-digit numbers breaks the calculation into simpler calculations using place value, starting with ones and then tens. Answers to the simpler calculations are used to find the final sum.
- Addition algorithms and addition strategies can be used to add more than two two-digit numbers; and numbers can be added in any order.
- Some problems can be solved in one step. Other problems can be solved in two steps - first, by solving a sub-problem or by answering a hidden question, and then, by using that answer to solve the original problem.
- Good math thinkers use math they know to show and solve problems.


## Interdisciplinary Connections

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

- Language Arts (RF.2.3, RI.2.1, RI.2.4, W.2.2)
- Problem solving reading mats and activities (Source: Problem-Solving Reading Activity Guide)
- Interactive math stories (Source: Teacher's Resource Masters)
- Topic journal activities (Source: Teacher Manual)
- Science (2-PS1-1, 2-PS1-2, 2-LS4-1, 2-ESS1-1, 2-ESS2-2)
- Math and science project (Source: Teacher Manual)
- Math and science activities (Source: Teacher's Resource Masters)

In this unit plan, the following $21^{\text {st }}$ Century themes and skills are addressed.


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

- Topic 1
- Use "counting on" to add numbers and add numbers in any order.
- Use doubles and near doubles to add quickly and accurately.
- Use the strategy of making a ten to add quickly and accurately.
- Use number patterns on an addition facts table to complete related addition equations that show basic facts.
- Count on and count back, on a number line to subtract.
- Think addition to subtract quickly and accurately.
- Make a 10, to subtract quickly and accurately.
- Add and subtract quickly and accurately using mental math strategies.
- Use addition and subtraction to solve word problems.
- Use words, pictures, numbers, and symbols to construct viable math arguments.
- Topic 2
- Tell if a group of objects is even or odd.
- Use different ways to tell if a group of objects shows an even or odd number.
- Find the total number of objects in a set of rows and columns.
- Make arrays with equal rows or equal columns to solve addition problems.
- Model problems using equations, drawings, arrays, and bar diagrams.
- Topic 3
- Add within 100 using place-value strategies and a hundreds chart.
- Add tens to two-digit numbers using an open number line.
- Use an open number line to add tens and ones within 100.
- Add within 100 using place-value strategies.
- Break apart numbers into tens and ones to find their sum.
- Break apart addends and combine them in different ways to make numbers that are easy to add mentally.
- Choose and use any strategy to add two-digit numbers.
- Use drawings and equations to solve one-step and two-step problems.
- Choose an appropriate tool and use it to solve a math problem.
- Topic 4
- Add using place value and partial sums.
- Use models to add two-digit numbers and then explain the work.
- Add three or four two-digit numbers.
- Use mental math strategies and models to add more than two numbers.
- Use drawings, models, and equations to solve one- and two-step problems.
- Make models to help solve math 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 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 1.1-1.10
enVision 2.0 lessons 2.1-2.5
enVision 2.0 lessons 3.1-3.9
enVision 2.0 lessons 4.1-4.8

- 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)
Differentiation Strategies
- 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
- Exam View
- 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)

| Grade Level \& Content: | Grade 2 Mathematics |
| :--- | :--- |
| Unit Plan Title: | Unit 2: Subtracting Within 100, Addition and Subtraction Problem Solving, Time <br> and Money |
| Time Frame: | 12 weeks (please see pacing calendar) |
| Anchor Standards/Domain* $\quad$ *i.e: ELA: reading, writing i.e.: Math: Number and Operations in Base 10 |  |
| Math: |  |
| - Operations and Algebraic Thinking |  |
| - $\quad$ Numbers and Operations in Base-Ten |  |
| - Measurement and Data |  |

- Career Readiness, Life Literacies, and Key Skills
o 9.4.2.CI.1: Demonstrate openness to new ideas and perspectives.
o 9.4.2.CT.2: Identify possible approaches and resources to execute a plan.
o 9.4.2.CT.3: Use a variety of types of thinking to solve problems (e.g., inductive, deductive).
o 9.4.2.IML.2: Represent data in a visual format to tell a story about the data.
- WIDA
o ELD Standard 1: The Language of Social and Instructional Language
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- Computer Science and Design Thinking
o 8.1.2.DA.1: Collect and present data, including climate change data, in various visual formats.
o 8.1.2.DA.3: Identify and describe patterns in data visualizations.
o 8.2.2.ED.2: Collaborate to solve a simple problem, or to illustrate how to build a product using the design process.


## Essential Question(s)

- Topic 5: What are strategies for subtracting numbers 100?
- Topic 6: What are strategies for subtracting numbers 100 ?
- Topic 7: How can you solve word problems that use adding or subtracting?
- Topic 8: How can you solve problems about counting money or telling time to the nearest 5 minutes?


## Enduring Understandings

Topic 5

- Patterns on a hundreds chart can be used to subtract numbers and to develop mental math strategies and number sense.
- You can represent how to subtract tens from a two-digit number by counting the spaces on an open number line.
- Two-digit numbers can be broken apart using tens and ones to subtract in different ways. You can represent how you break apart and subtract numbers, by counting the spaces on an open number line. You can count back or add up to subtract.
- One-digit numbers can be broken apart to make it easier to subtract them mentally.
- When subtracting two-digit numbers, you can add the same amount to both numbers in the problem, or you can subtract the same amount from both numbers in the problem, to make subtraction easier.
- You can use bar diagrams, equations, and the relationship between addition and subtraction to help you solve one- and two-step word problems. In the case of two-step word problems, you need to find the answer to the first step, and then use it to solve the second step.
- Good math thinkers use math to explain why they are right. They can talk about the math that others do, too.
Topic 6:
- To subtract, sometimes it is necessary to regroup one ten as 10 ones.
- You can use pencil and paper to subtract and to record the regrouping in the 10s and ones places.
- The standard subtraction algorithm can be used to break the calculation into simpler steps, starting with the ones and then moving to the tens.
- The standard algorithm for subtracting a two-digit number from a two-digit number is just an extension of the algorithm for subtracting a one-digit number from a two-digit number.
- You can use pencil and paper to subtract a two-digit number from a two-digit number.
- The inverse relationship between addition and subtraction can be used to solve and check subtraction.
- Subtraction problems, involving two-digit numbers, can be solved using subtraction strategies or the standard subtraction algorithm. When using the algorithm, if there are not enough ones to subtract, then regroup one 10 as 10 ones, before subtracting the ones and then the 10s.
- You can use bar diagrams, equations, and objects to help you solve one- and two-step word problems. In the case of two-step problems, the answer to the first step must be found before solving the second step.
- Good math thinkers know how to think about words and numbers to solve problems.

Topic 7:

- You can write equations to model and solve word problems using a symbol, such as a question mark to represent the unknown.
- You can use drawings and equations to make sense of the words in word-problems; and you can use strategies and algorithms to solve the problems and to check your work.
- Sometimes a problem has an unstated, or hidden, question that you need to answer before you can find the final answer.
- Sometimes the answer to one problem is needed to find the answer to another problem.
- Good math thinkers know how to think about words and numbers to solve problems.

Topic 8:

- Each kind of coin has a specific value, unrelated to its physical size.
- Money is measurable, and the value of coins can be quantified using cent amounts. Each kind of bill has a specific value. You can count to find the total value of a group of dollar bills.
- Each kind of bill has a specific value, and the value of the bills can be used to solve problems about money. Word-problems about money can be solved by adding and subtracting.
- Good math thinkers know how to think about words and numbers to solve problems.
- Time can be told to the nearest five minutes. Time can be expressed using different units that are related to each other.
- Time can be described before and after the hour in different ways.
- Certain time periods can be described using the abbreviations a.m. or p.m.


## Interdisciplinary Connections

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

- Language Arts (RF.2.3, RI.2.1, RI.2.4, W.2.2)
- Problem solving reading mats and activities (Source: Problem-Solving Reading Activity Guide)
- Interactive math stories (Source: Teacher's Resource Masters)
- Topic journal activities (Source: Teacher Manual)
- Science (2-PS1-1, 2-PS1-4, 2-ESS2-1, 2-ESS2-2, 2-ESS2-3)
- Math and science project (Source: Teacher Manual)
- Math and science activities (Source: Teacher's Resource Masters)

In this unit plan, the following $21^{\text {st }}$ Century themes and skills are addressed.


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

- Topic 5
- Use a hundreds chart to subtract tens and ones.
- Use an open-number-line to subtract tens and ones.
- Add up, to subtract using an open number line.
- Break apart one-digit numbers to make it easier to subtract mentally.
- Break apart two-digit numbers to make it easier to subtract.
- Make numbers that are easier to subtract, and use mental math to find the difference.
- Solve one- and two-step problems using addition or subtraction.
- Critique the thinking of others by using what is known about addition and subtraction.
- Topic 6
- Exchange one 10 for 10 ones.
- Use place value and models, to subtract 2-digit and 1-digit numbers.
- Use place value and regrouping to subtract.
- Use place value and models, to subtract 2-digit numbers.
- Add to check subtraction.
- Subtract two-digit numbers and decide when to regroup and when not to regroup.
- Use models and equations to solve word problems.
- Reason about word-problems and use bar diagrams and equations to solve them.
- Topic 7
- Model problems using equations with unknowns in any position.
- Use drawings and equations to make sense of the words in problems.
- Model and solve two-step problems using equations.
- Use different ways to solve two-step problems.
- Use reasoning to write and solve number stories.
- Topic 8
- Solve problems with coins.
- Solve problems with dollar bills and coins that model 100 cents.
- Solve problems with dollar bills.
- Reason about values of coins and dollar bills, and find different ways to make the same total value.
- Tell time to the nearest five minutes.
- Say the time in different ways.
- Tell time and use reasoning to state if the event is happening in the a.m. or p.m.
- 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 5 Assessment (Source: WTPS Assessment Pack in Google Folder) - Summative Assessment
- *Topic 6 Assessment (Source: WTPS Assessment Pack in Google Folder) - Summative Assessment
- *Topic 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
- *Topics 1-8 Cumulative Benchmark Assessment (Source: WTPS Assessment Pack in Google Folder) Summative Assessment
- Topics 1-8 Cumulative Benchmark Assessment (Source: 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 5.1-5.9 <br> enVision 2.0 lessons 6.1-6.9 <br> enVision 2.0 lessons 7.1-7.6 <br> enVision 2.0 lessons 8.1-8.8 <br> Money Packet (Located in the Google Drive Folder) |
| Differentiation Strategies | - Reteaching Activities in Student Book <br> - Leveled Center Games <br> - Online Resources (today's challenge, accessible student edition of the text, games, another look activities and videos, reteaching activities) <br> - Short Challenge Activities <br> - Long Challenge Activities <br> - Math Diagnosis and Intervention System <br> - ELL Toolkit \& ELL Activities within the Teacher Manual <br> - Problem-Solving Reading Mats and Teacher Guide <br> - Differentiation Strategies for Special Education Students <br> - Differentiation Strategies for Gifted and Talented Students <br> - Differentiation Strategies for ELL Students <br> - Differentiation Strategies for At Risk Students <br> - Differentiation Strategies for Students with a 504 |

Resources

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| Grade Level \& Content: | Grade 2 Mathematics |
| :---: | :---: |
| Unit Plan Title: | Unit 3: Place Value to 1,000, Adding and Subtracting Numbers Within 1,000, and Measuring Length |
| Time Frame: | 9 weeks (please see pacing calendar) |
| Anchor Standards/Domain* *i.e: ELA: reading, writing i.e.: Math: Number and Operations in Base 10 |  |
| Math: <br> - Numbers and Operations in Base-Ten <br> - Measurement and Data |  |
| Unit Summary |  |
| In this unit, students' understanding of place value is extended to 1,000 . They will also expand their understanding of addition and subtraction to 3 -digit numbers using models and strategies. Additionally, students will use appropriate tools to estimate and measure length. |  |
| Standard Number(s) |  |
| - 2.NBT.A.1: Und amounts of hun Understand the <br> - 2.NBT.A.1a: Un represent amou Understand the a "hundred." <br> - 2.NBT.A.1b: Un represent amou Understand the 900 refer to one 2.NBT.A.2: Und 2.NBT.A.3: Und number names, 2.NBT.A.4: Und hundreds, tens, 2.NBT.B.7: Use and subtract wi properties of op strategy to a wr adds or subtrac necessary to co <br> - 2.NBT.B.8: Use Mentally add 10 number 100-90 <br> - 2.NBT.B.9: Use Explain why ad operations. <br> - 2.MD.A.1: Measur selecting and us tapes. | stand place value. Understand that the three digits of a 3 -digit number represent reds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. <br> llowing as special cases: <br> rstand place value. Understand that the three digits of a three-digit number ts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. llowing as special cases: 100 can be thought of as a bundle of ten tens - called <br> erstand place value. Understand that the three digits of a three-digit number ts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. ollowing as special cases: The numbers 100, 200, 300, 400, 500, 600, 700, 800, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones). stand place value. Count within 1,000; skip-count by 5 s, 10 s, and 100 s. rstand place value. Read and write numbers to 1,000 using base-ten numerals, and expanded form. <br> stand place-value. Compare two three-digit numbers based on meanings of the and ones digits, using >, =, and < symbols to record the results of comparisons. lace value understanding and properties of operations to add and subtract. Add in 1000, using concrete models or drawings and strategies based on place value, rations, and/or the relationship between addition and subtraction; relate the en method. Understand that in adding or subtracting three-digit numbers, one hundreds and hundreds, tens and tens, ones and ones; and sometimes it is pose or decompose tens or hundreds. place value understanding and properties of operations to add and subtract. or 100 to a given number 100-900, and mentally subtract 10 or 100 from a given <br> lace value understanding and properties of operations to add and subtract. tion and subtraction strategies work, using place value and the properties of <br> re and estimate lengths in standard units. Measure the length of an object by ing appropriate tools such as rulers, yardsticks, meter sticks, and measuring |

- 2.MD.A.2: Measure and estimate lengths in standard units. Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen.
- 2.MD.A.3: Measure and estimate lengths in standard units. Estimate lengths using units of inches, feet, centimeters, and meters.
- 2.MD.A.4: Measure and estimate lengths in standard units. Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.
- 2.MD.B.5: Relate addition and subtraction to length. Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.
- 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 9.4.2.CI.1: Demonstrate openness to new ideas and perspectives.
o 9.4.2.CT.2: Identify possible approaches and resources to execute a plan.
o 9.4.2.CT.3: Use a variety of types of thinking to solve problems (e.g., inductive, deductive).
o 9.4.2.IML.2: Represent data in a visual format to tell a story about the data.
- 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 8.1.2.DA.1: Collect and present data, including climate change data, in various visual formats.
o 8.1.2.DA.3: Identify and describe patterns in data visualizations.
o 8.2.2.ED.2: Collaborate to solve a simple problem, or to illustrate how to build a product using the design process.


## Essential Question(s)

- Topic 9: How can you count, read, and show numbers to 1,000 ?
- Topic 10: What are strategies for adding numbers to 1,000 ?
- Topic 11: What are strategies for subtracting numbers to 1,000 ?
- Topic 12: What are ways to measure length?


## Enduring Understandings

Topic 9:

- Numbers can be used to tell how many. The number system is based on groups of ten. Whenever there are ten in one place-value, you move to the next greater place-value. Place-value blocks and drawings can be used to model and write three-digit numbers.
- The position of a digit in a number tells you its value. It takes ten of a number in one place value to make a number in the next greater place-value.
- There are three common ways to write numbers- standard form, word form, and expanded form. Each way involves using place value to tell the value of each digit.
- Numbers can be named in many ways. Recalling and using facts about equal amounts can help you name numbers in different ways.
- Place-value patterns can help you mentally count by 1s and 10s from a given number.
- Place-value patterns and number lines can be used to help you skip count by $5 \mathrm{~s}, 10 \mathrm{~s}$, and 100 s .
- Place-value strategies can be used to compare numbers. The symbols >, =, and < can be used to show how the numbers are related.
- Number lines go on forever in both directions. For every number, there is another number that is 'greater than' it, and another number that is 'less than' it. A number line can be used to help you find numbers that are 'greater than' or 'less than' a given number.
- Good math thinkers look for patterns in math to help solve problems.

Topic 10:

- Place-value patterns and basic facts can be used to help you mentally add ten or 100 to any given three-digit number.
- Three-digit numbers can be broken apart using hundreds, tens, and ones and added in different ways. You can represent how you break apart and add numbers by counting the spaces on an open-number-line.
- You can change numbers to make it easier to add mentally, without changing the sum.
- When adding three-digit numbers, you can add the hundreds, the tens, and the ones separately, and then add the partial sums to find the total sum. Partial-sums addition, provides a bridge between mental-addition and the standard algorithm.
- The standard addition algorithm for three-digit numbers breaks the calculation into simpler calculations using place-value, starting with the ones, then the tens and then the 100s. Answers to the simpler calculations are used to find the final sum.
- Addition algorithms and addition strategies can be used to add two (or more) three-digit numbers; the sum is the same no matter which strategy you use. You can use place-value and properties of operations to explain why the strategies work.
- Good math thinkers look for things that repeat in a problem. They use what they learn from one problem to help them solve other problems.
Topic 11:
- Place-value patterns and basic facts can be used to help you mentally subtract ten or 100 from any given three-digit number.
- Three-digit numbers can be broken apart using hundreds, tens, and ones to subtract in different ways. You can represent how you break apart and subtract numbers by counting the spaces on an open-number-line. You can count back or add up to subtract. You can change the numbers to make it easier to subtract mentally, without changing the difference.
- The standard subtraction algorithm for three-digit numbers breaks the calculation into simpler calculations using place value, starting with the ones, then the tens, and then the hundreds. Answers to the simpler calculations are used to find the final difference.
- The standard subtraction algorithm and subtraction strategies can be used to subtract with 3-digit numbers; the difference is the same no matter which strategy you use. You can use place-value, and properties of operations, to explain why the strategies work.
- Good math thinkers know what the problem is about. They have a plan to solve it. They keep trying if they get stuck.

Topic 12:

- The length of a known object can be used to estimate the length of another object to the nearest inch, foot, or yard.
- Length and height are measurable in inches, feet, yards, centimeters, and meters.
- When measuring length, the longer the chosen unit, the fewer units are needed; the shorter the unit, the more units are needed.
- The lengths of two objects can be compared by subtracting to find the difference.
- Good math thinkers are careful about what they write and say, so, their ideas about math are clear.


## Interdisciplinary Connections

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

- Language Arts (RF.2.3, RI.2.1, RI.2.4, W.2.2)
- Problem solving reading mats and activities (Source: Problem-Solving Reading Activity Guide)
- Interactive math stories (Source: Teacher's Resource Masters)
- Topic journal activities (Source: Teacher Manual)
- Science (K-2-ETS1-1, K-2-ETS1-2, 2-LS2-1, 2-LS2-2, 2-PS1-3)
- Math and science project (Source: Teacher Manual)
- Math and science activities (Source: Teacher's Resource Masters)

In this unit plan, the following $21^{\text {st }}$ Century themes and skills are addressed.


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

- Topic 9
- Understand place value and count by hundreds to 1,000.
- Use place-value blocks and drawings to model and write three-digit numbers.
- Tell the value of a digit by where it is placed in a number.
- Read and write three-digit numbers in expanded form, standard form, and word form.
- Make and name a number in different ways to show the same value.
- Use place-value patterns to mentally count by 1 s and 10 s from a given number.
- Skip count by $5 \mathrm{~s}, 10 \mathrm{~s}$, and 100 s using a number line.
- Compare numbers using place value.
- Compare and write a three-digit number that is 'greater than' or 'less than' another three-digit number.
- Look for patterns, to help, when solving problems.
- Topic 10
- Add ten or 100 mentally, using place value.
- Use an open-number-line to add three-digit numbers.
- Add three-digit numbers using mental math strategies.
- Add three-digit numbers using partial sums.
- Use models to add three-digit numbers.
- Use different addition strategies and explain why they work.
- Think about and check "my work," as I solve a problem.
- Topic 11
- Subtract ten or 100 mentally using place-value strategies.
- Use an open number line to count back to subtract three-digit numbers.
- Use an open-number-line to add up to subtract three-digit numbers.
- Use mental-math to subtract.
- Use models to subtract three-digit numbers.
- Explain why subtraction strategies work using models, place value, and mental math.
- Solve problems that take more than one step.
- Topic 12
- Estimate the length of an object, by relating the length of the object to a measurement "I" know.
- Estimate measures and use tools to measure the length and height of objects to the nearest inch, foot, yard, centimeter, and meter.
- Measure the length and height of objects using different metric units.
- Tell how much longer one object is than another.
- Choose tools, units, and methods that help "me" be precise when I measure.


## 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

Activities
enVision 2.0 lessons 9.1-9.10
enVision 2.0 lessons 10.1-10.7
enVision 2.0 lessons 11.1-11.7
enVision 2.0 lessons 12.1-12.9
Lesson 11.6 - Supplement Activity (Located in the Google Drive Folder)

| Differentiation Strategies | - Reteaching Activities in Student Book <br> - Leveled Center Games <br> - Online Resources (today's challenge, accessible student edition of the text, games, another look activities and videos, reteaching activities) <br> - Short Challenge Activities <br> - Long Challenge Activities <br> - Math Diagnosis and Intervention System <br> - ELL Toolkit \& ELL Activities within the Teacher Manual <br> - Problem-Solving Reading Mats and Teacher Guide <br> - Differentiation Strategies for Special Education Students <br> - Differentiation Strategies for Gifted and Talented Students <br> - Differentiation Strategies for ELL Students <br> - Differentiation Strategies for At Risk Students <br> - Differentiation Strategies for Students with a 504 |
| :---: | :---: |
| Resources |  |
| - enVision 2.0 Resour Student B Teacher M Teacher R Assessme <br> - Pearsonre <br> - Ma <br> - Dig <br> - Ma <br> - Problem-S <br> - Center Ga <br> - ELL Toolki <br> - Standards <br> - ExamView <br> - Math Manipulative <br> - WTPS Assessme <br> - Short Challenge <br> - Long Challenge A | urces <br> ok <br> nual <br> source Guide <br> t Book <br> lize.com (online platform) <br> Games <br> tal Text <br> Videos <br> ual Manipulatives <br> Diagnosis and Intervention System olving Reading Mats \& Teacher Guide nes <br> \& ELL Activities within the Teacher Manual Practice Workbook and Teacher Manual <br> Pack (Located in Google Drive Folder) ctivities (Located in Google Drive Folder) Activities (Located in Google Drive Folder) |


| Grade Level \& Content: | Grade 2 Mathematics |
| :---: | :---: |
| Unit Plan Title: | Unit 4: Working with Length, Graphs and Data, Shapes and Their Attributes |
| Time Frame: | 5 weeks (please see pacing calendar) |
| Anchor Standards/Domain* *i.e: ELA: reading, writing i.e.: Math: Number and Operations in Base 10 |  |
| Math: <br> - Operations and Algebraic Thinking <br> - Measurement and Data <br> - Geometry |  |
| Unit Summary |  |
| In this unit, students length. This will inclu collecting, representin use them to identify terminology to describe | ply their understanding of addition and subtraction to word-problems involving ing equations using symbols for unknown values. Students will also be interpreting data. Additionally, they will investigate attributes of shapes and w polygons. They will partition plane figures into equal shares and use fraction shares. |
| Standard Number(s) |  |
| 2.OA.A.1: Repr <br> subtraction with taking from, put using drawings <br> - 2.OA.C.4: Work find the total nu columns; write 2.MD.A.1: Meas selecting and us tapes. <br> - 2.MD.B.5: Rela solve word prob (such as drawin problem. <br> - 2.MD.B.6: Rela on a number lin represent whole <br> - 2.MD.D.9: Repr several objects object. Show th whole-number <br> 2.MD.D.10: Rep scale) to repres compare proble <br> - 2.G.A.1: Reaso attributes, such quadrilaterals, p <br> - 2.G.A.2: Reaso same-size squa 2.G.A.3: Reaso or four equal sh | ent and solve problems involving addition and subtraction. Use addition and 100 to solve one- and two-step word problems involving situations of adding to, g together, taking apart, and comparing, with unknowns in all positions, e.g., by d equations with a symbol for the unknown number to represent the problem. with equal groups of objects to gain foundations for multiplication. Use addition to er of objects arranged in rectangular arrays with up to five rows and up to 5 equation to express the total as a sum of equal addends. <br> e and estimate lengths in standard units. Measure the length of an object by g appropriate tools such as rulers, yardsticks, meter sticks, and measuring <br> addition and subtraction to length. Use addition and subtraction within 100 to ms involving lengths that are given in the same units, e.g., by using drawings of rulers) and equations with a symbol for the unknown number to represent the <br> addition and subtraction to length. Represent whole numbers as lengths from 0 diagram with equally spaced points corresponding to the numbers $0,1,2, \ldots$, and umber sums and differences within 100 on a number line diagram. ent and interpret data. Generate measurement data by measuring lengths of the nearest whole unit, or by making repeated measurements of the same measurements by making a line plot, where the horizontal scale is marked off in ts. <br> sent and interpret data. Draw a picture graph and a bar graph (with single-unit t a data set with up to four categories. Solve simple put-together, take-apart, and using information presented in a bar graph. <br> with shapes and their attributes. Recognize and draw shapes having specified a given number of angles or a given number of equal faces. Identify triangles, tagons, hexagons, and cubes. <br> with shapes and their attributes. Partition a rectangle into rows and columns of s and count to find the total number of them. <br> with shapes and their attributes. Partition circles and rectangles into two, three, es, describe the shares using the words halves, thirds, half of, a third of, etc., |

and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape.

- 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 9.4.2.CI.1: Demonstrate openness to new ideas and perspectives.
o 9.4.2.CT.2: Identify possible approaches and resources to execute a plan.
o 9.4.2.CT.3: Use a variety of types of thinking to solve problems (e.g., inductive, deductive).
o 9.4.2.IML.2: Represent data in a visual format to tell a story about the data.
- WIDA
o ELD Standard 1: The Language of Social and Instructional Language
o ELD Standard 3: The Language of Mathematics
- Technology
o 8.1.2.DA.1: Collect and present data, including climate change data, in various visual formats.
o 8.1.2.DA.3: Identify and describe patterns in data visualizations.
o 8.2.2.ED.2: Collaborate to solve a simple problem, or to illustrate how to build a product using the design process.


## Essential Question(s)

- Topic 13: How can you add and subtract lengths?
- Topic 14: How can line plots, bar graphs, and picture graphs be used to show data and answer questions?
- Topic 15: How can shapes be described, compared, and broken into parts?


## Enduring Understandings

Topic 13:

- Measurements in the same unit can be added or subtracted in the same way as adding and subtracting whole numbers. The measurement unit needs to be written with the sum or difference.
- Pictures and equations can be used to solve-word problems involving measurements. Measurements can be added and subtracted in the same way as other whole numbers.
- A sum can be represented as the total length of two line-segments on a number line. A subtraction problem can be represented as the difference of two line-segments on a number line.
- Good math thinkers know how to pick the right tools to solve math problems.

Topic 14:

- The lengths of objects can be organized in different ways. A line-plot can be used as a visual representation of the relative lengths of objects.
- Different types of data can be displayed on a line-plot. Line-plots are useful for organizing large sets of data.
- Bar graphs can be used to organize and display data. The height, or length of bars in a bar graph make it easy to compare data.
- Picture graphs use a single symbol to show data. This makes it easy to compare two or more categories.
- Picture graphs and bar graphs are useful tools for comparing data and drawing conclusions.
- Good math thinkers know how to think about words and numbers to solve problems.

Topic 15:

- Two-dimensional shapes can be classified and sorted based on their attributes.
- Polygons can be described by their number of sides and angles.
- Two-dimensional shapes can be defined and differentiated based on attributes. These attributes can be used to draw a specific two-dimensional shape.
- You can describe a cube by talking about its faces, edges, and vertices. Knowing these attributes helps you draw a cube.
- A rectangle can be divided into rows and columns of squares that are all the same size; you can count or add in different ways to find the total number of squares.
- A whole can have equal shares called halves, thirds, and fourths. You can show halves, thirds, and fourths of the same whole in different ways.
- You can divide a whole into equal shares in different ways. Equal shares of the same whole do not have to have the same shape.
- Good math thinkers look for things that repeat in a problem. They use what they learn from one problem to help them solve other problems.


## Interdisciplinary Connections

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

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- Topic journal activities (Source: Teacher Manual)
- Science (K-2-ESS1-1, 2-ESS1-1, 2-ESS2-1, 2-ESS2-2, 2-PS1-2)
- Math and science project (Source: Teacher Manual)
- Math and science activities (Source: Teacher's Resource Masters)

In this unit plan, the following $21^{\text {st }}$ Century themes and skills are addressed.


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

- Topic 13
- Solve problems by adding or subtracting length measurements.
- Add or subtract to solve problems about measurements.
- Add or subtract to solve measurement problems by using drawings and equations.
- Add and subtract on a number line.
- Choose the best tool to use to solve problems.
- Topic 14
- Measure the lengths of objects and make a line plot to organize the data.
- Draw bar graphs and picture graphs, then use them to solve problems.
- Draw conclusions from graphs.
- Reason about data in bar graphs and picture graphs to write and solve problems.
- Topic 15
- Recognize shapes by how they look.
- Describe plane shapes by how they look.
- Draw polygon shapes.
- Draw cubes and describe how they look.
- Divide rectangles into equal squares.
- Divide circles and rectangles into halves, thirds, and fourths.
- Make equal shares that do not have the same shape.
- Use repeated reasoning to divide rectangles into rows and columns and to create designs with equal shares.
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: Assessment Book or online resources) - Summative Assessment
- Lesson Quick Checks (Source: Online resources) - Formative Assessment
- Topics 1-15 Cumulative Benchmark Assessment (Source: Assessment Book or online resources) Summative Assessment
- Quizzes (Source: ExamView, Standards Practice Workbook) - Formative Assessment
- *End of Year Test (Source: WTPS Assessment Pack in Google Folder) - Summative Assessment
- End of Year Test (Source: 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 13.1-13.5 enVision 2.0 lessons 14.1-14.6 enVision 2.0 lessons 15.1-15.8 |
| Differentiation Strategies | - Reteaching Activities in Student Book <br> - Leveled Center Games <br> - Online Resources (today's challenge, accessible student edition of the text, games, another look activities and videos, reteaching activities) <br> - Short Challenge Activities <br> - Long Challenge Activities <br> - Math Diagnosis and Intervention System <br> - ELL Toolkit \& ELL Activities within the Teacher Manual <br> - Problem-Solving Reading Mats and Teacher Guide <br> - Differentiation Strategies for Special Education Students <br> - Differentiation Strategies for Gifted and Talented Students <br> - Differentiation Strategies for ELL Students <br> - Differentiation Strategies for At Risk Students <br> - Differentiation Strategies for Students with a 504 |
| Resources |  |
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