

**Randolph Township Schools
Elementary Education
Grade 2 Math Curriculum**

“Mathematics is not about numbers, equations, computations, or algorithms: it is about understanding.” -William Paul Thurston

Elementary Education

Katherine Thorn, Elementary Supervisor

Curriculum Committee

Stephanie Florio

Christina Grott

Curriculum Developed:

September 3, 2019

Date of Board Approval:

September 3, 2019

**Randolph Township Schools
Elementary Education
Grade 2 Math Curriculum**

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**Randolph Township Schools
Elementary Education
Grade 2 Math Curriculum**

Mission Statement

We commit to inspiring and empowering all students in Randolph schools to reach their full potential as unique, responsible and educated members of a global society.

**Affirmative Action Statement
Equality and Equity in Curriculum**

The Randolph Township School district ensures that the district's curriculum and instruction are aligned to the state's standards. The curriculum provides equity in instruction, educational programs and provides all students the opportunity to interact positively with others regardless of race, creed, color, national origin, ancestry, age, marital status, affectional or sexual orientation, gender, religion, disability or socioeconomic status.

N.J.A.C. 6A:7-1.7(b): Section 504, Rehabilitation Act of 1973; N.J.S.A. 10:5; Title IX, Education Amendments of 1972

**Randolph Township Schools
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**EDUCATIONAL GOALS
VALUES IN EDUCATION**

The statements represent the beliefs and values regarding our educational system. Education is the key to self-actualization, which is realized through achievement and self-respect. We believe our entire system must not only represent these values, but also demonstrate them in all that we do as a school system.

We believe:

- The needs of the child come first
- Mutual respect and trust are the cornerstones of a learning community
- The learning community consists of students, educators, parents, administrators, educational support personnel, the community and Board of Education members
- A successful learning community communicates honestly and openly in a non-threatening environment
- Members of our learning community have different needs at different times. There is openness to the challenge of meeting those needs in professional and supportive ways
- Assessment of professionals (i.e., educators, administrators and educational support personnel) is a dynamic process that requires review and revision based on evolving research, practices and experiences
- Development of desired capabilities comes in stages and is achieved through hard work, reflection and ongoing growth

Randolph Township Schools

Elementary Education

Grade 2 Math Curriculum

Introduction

The second grade mathematics curriculum has been closely aligned to the New Jersey Student Learning Standards to provide teachers with a clear and consistent framework to ensure student readiness for college and the workforce. The second- grade mathematics curriculum has been closely aligned to the New Jersey Student Learning Standards to provide teachers with a clear and consistent framework to ensure student readiness for college and the workforce. To this end, instructional time in second grade will focus on four critical areas: (1) extending understanding of base-ten notation, (2) building fluency with addition and subtraction, (3) using standard units of measure, and (4) describing and analyzing shapes. In addition, it encompasses the Mathematical Practice Standards to ensure an authentic understanding of the skills being taught. Students will gain a deeper knowledge of topics in comprehensive units. They will explore and learn content at a more rigorous level of practice and dive deeper into the why of mathematics. Each unit provides opportunities to collaborate, discuss, and reflect while problem solving and taking risks. Students will apply skills to reason and solve real world problems.

All students in Randolph Township Schools will be empowered to acquire knowledge and develop communication and problem solving skills that will serve as tools to promote their lifelong learning as confident, flexible, and resourceful thinkers. All students in Randolph Township Schools will be empowered to acquire knowledge and develop communication and problem- solving skills that will serve as tools to promote their lifelong learning as confident, flexible, and resourceful thinkers. This curriculum has been designed to foster students' natural curiosity by encouraging all students, regardless of gender, economic status, or cultural heritage, to develop the ability, confidence, and motivation to succeed academically. Students will solve problems through integration of mathematics, science, and technology. In addition, they will communicate and reason thereby increasing their mathematical literacy. The goal of this curriculum is to engage students' interest and intellect through rich mathematical exploration, fostering a diverse and equitable environment that is challenging, caring, and technologically equipped for the 21st Century.

**Randolph Township Schools
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Curriculum Pacing Chart**

SUGGESTED TIME ALLOTMENT	UNIT NUMBER	CONTENT - UNIT OF STUDY
3 weeks	I	Understanding How Numbers Work
5 weeks	II	Place Value
5 weeks	III	Time/Money
6 weeks	IV	Multi-Digit Addition Strategies
6 weeks	V	Subtraction Strategies & Word Problems
5 weeks	VI	Length & Data
6 weeks	VII	Geometry & Arrays

**Randolph Township Schools
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Unit I: Understanding How Numbers Work

TRANSFER: Investigate and appropriately utilize mathematical strategies to efficiently and accurately solve problems.		
STANDARDS / GOALS:	ENDURING UNDERSTANDINGS	ESSENTIAL QUESTIONS
<p><u>NJSLS</u></p> <p><u>MATH</u></p> <p>2.OA.2 Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.</p> <p>2.NBT.2 Count within 1,000; skip-count by 5s, 10s, and 100s.</p> <p>2.NBT.9 Explain why addition and subtraction strategies work, using place value and the properties of operations.</p> <p><u>Standards of Mathematical Practice</u></p> <p>MP.1 Make sense of problems and persevere in solving them.</p> <p>MP.2 Reason abstractly and quantitatively.</p> <p>MP.3 Construct viable arguments and critique the reasoning of others</p>	Computation involves taking apart and combining numbers.	<ul style="list-style-type: none"> How does addition fluency help with subtraction strategies?
	Different strategies can be utilized to solve a problem, but some are more effective and efficient than others.	<ul style="list-style-type: none"> How do you solve a problem?
	Proficiency with basic facts aids in computation of larger and smaller numbers.	<ul style="list-style-type: none"> Why is it important to know math facts? How can you practice mathematical fluency? How do you know if you are fluent within a mathematical operation?
	<u>KNOWLEDGE</u> Students will know:	<u>SKILLS</u> Students will be able to:
	Different tools can be used to solve addition and subtraction problems.	Use appropriate tools strategically (i.e.- number grid, ten frame, number line, manipulatives, etc.) to solve problems.

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Unit I: Understanding How Numbers Work

<p>MP.4 Model with mathematics.</p> <p>MP.5 Use appropriate tools strategically.</p> <p>MP.6 Attend to precision.</p> <p>MP.7 Look for and make use of structure.</p> <p>MP.8 Look for and express regularity in repeated reasoning.</p> <p><u>ELA</u></p> <p>NJSLSA.SL1. Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively.</p> <p>NJSLSA.SL2. Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally.</p> <p>NJSLSA.SL3. Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric.</p> <p>NJSLSA.SL.2.1. Participate in collaborative conversations with diverse partners about grade 2 topics and texts with peers and adults in small and larger groups.</p> <p>NJSLSA.W4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience</p> <p><u>TECHNOLOGY</u></p>	<p>Various strategies exist for efficiency solving addition and subtraction problems.</p> <p>Addition facts are related to subtraction facts.</p> <p>An unknown fact can be derived from a known fact.</p>	<p>Identify which counting strategy is more appropriate for a given fact (i.e. counting up or counting back).</p> <p>Construct viable arguments and critique the reasoning of others for solving problems to gain a different perspective.</p> <p>Utilize addition facts to help solve subtraction facts (i.e. counting up or counting back).</p> <p>Self-monitor by sorting and expressing "known" and "unknown" facts to enhance fact fluency.</p> <p>Attend to precision through fluently adding and subtracting by zero.</p> <p>Look for and make use of patterns to explore and deepen understanding of addition and subtraction.</p> <p>Apply rules of combinations of ten, and doubles to help solve near double facts.</p>
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Unit I: Understanding How Numbers Work

<p>8.1.2.A.4 Demonstrate developmentally appropriate navigation skills in virtual environments (i.e. games, museums).</p> <p>8.1.2.E.1 Use digital tools and online resources to explore a problem or issue.</p> <p>8.2.2.B.1 Identify how technology impacts or improves life.</p> <p>8.2.2.D.1 Collaborate and apply a design process to solve a simple problem from everyday experiences.</p>	<p>When adding any two numbers such as a and b, $a + b = b + a$ (turn around facts).</p> <p>Equivalent names for numbers helps in gaining an understanding for addition and subtraction.</p> <p>There are different patterns that can be used to help when counting.</p> <p>A mathematician demonstrates fluency of addition and subtraction through understanding, flexibility, and efficiency in use of strategies.</p>	<p>Look for and express regularity in repeated reasoning to determine the rule of related pairs of addition facts.</p> <p>Investigate equivalent names for numbers.</p> <p>Extend a given pattern by skip counting (i.e. by 5s, 10s, and 100s).</p> <p>Determine efficient strategies to flexibly utilize in varied situation.</p> <p>Make sense of addition and subtraction problems and persevere in solving them.</p>
	<p>KEY TERMS: sum, difference, equal, total, pattern, skip counting, strategies, equivalent, turn around facts, doubles facts, near double/helper facts, combinations of 10, counting up, counting back.</p>	
<p>ASSESSMENT EVIDENCE: Students will show their learning by:</p> <ul style="list-style-type: none"> Understanding the relationship between addition and subtraction to build fact fluency Utilizing different strategies efficiently when solving addition and subtraction problems and explain their reasoning Writing number stories and number models with turn-around facts (i.e. Open Response 2.7) Using a double ten frame to make 10 (i.e. Open Response 3.1) Applying prior knowledge on addition and subtracting strategies (i.e. Performance Task) 		

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Unit I: Understanding How Numbers Work

KEY LEARNING EVENTS AND INSTRUCTION:	
<ul style="list-style-type: none"> • Use mathematical tools to build fact fluency (i.e. number line, number grid, manipulatives, ten frame) • Explain multiple ways to represent a single number • Visualize a ten frame to build fluency when solving combinations of 10 • Understand the using-ten strategy for addition • Understand the using-ten strategy for subtraction • Review fluency with making ten • Review fluency with doubles and near doubles • Understand the using-doubles strategy for addition • Explain the relationship between addition turn around facts (i.e. $a + b = c$ and $b + a = c$) • Investigate the patterns between numbers • Explain the reasoning of the strategy selected when adding or subtracting two numbers 	
SUGGESTED TIME ALLOTMENT	3 weeks
SUPPLEMENTAL UNIT RESOURCES	Everyday Math Manual: <ul style="list-style-type: none"> • 1.1 Numbers All Around • 1.2 Number Lines and Partnership Principles • 1.4 Class Number Scrolls • 1.5 Number-Grid Puzzles • 1.6 Equivalent Names for Numbers • 1.7 Playing <i>Fishing for Ten</i> • 1.10 Skip-Counting Patterns • 2.2 Addition Number Stories • 2.3 Doubles and Combinations of 10 • 2.4 The Making-10 Strategy

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Unit I: Understanding How Numbers Work

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| | <ul style="list-style-type: none">• 2.5 The Near- Doubles Strategy• 2.6 The Turn-Around Rule for Addition• 2.7 Subtraction and the Turn-Around Rule• 2.10 Name-Collection Boxes• 2.12 Frames and Arrows• 3.1 Using Addition Strategies• 3.2 Subtraction from Addition: Think Addition• 3.3 Fact Families• 3.5 Subtraction Strategies: Counting Up & Back• 3.6 -0 and -1 Fact Strategies & Subtraction Top It• 3.7 “What’s My Rule”• 3.8 Using Doubles to Subtract |
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Math in Practice- 2nd Grade:

- **Module 2:** Building Understanding and Fluency of Basic Math Facts.

Technology:

- See Appendix A

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Unit II: Place Value

TRANSFER: Identify patterns to construct viable arguments and critique the reasoning of others.		
STANDARDS / GOALS:	ENDURING UNDERSTANDINGS	ESSENTIAL QUESTIONS
<p><u>NJSLS</u></p> <p><u>MATH</u></p> <p>2.NBT.1 Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones.</p> <p>2.NBT.1a 100 can be thought of as a bundle of ten tens—called a “hundred.”</p> <p>2.NBT.1b The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones)</p> <p>2.NBT.3 Read and write numbers to 1,000 using base-ten numerals, number names, and expanded form.</p> <p>2.NBT.4 Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using $>$, $=$, $<$ symbols to record the results of comparisons.</p>	The place of a digit in a number tells us its value.	<ul style="list-style-type: none"> Why is place value important?
	Numbers have values that can be compared.	<ul style="list-style-type: none"> How do we compare numbers?
	Sharing varied solutions to mathematical problems can develop and deepen mathematical proficiency.	<ul style="list-style-type: none"> How can solutions to a mathematical problem vary?
	<p style="text-align: center;"><u>KNOWLEDGE</u> Students will know:</p>	<p style="text-align: center;"><u>SKILLS</u> Students will be able to:</p>
	<p>The value of a digit depends on its place value position.</p> <p>In three-digit numbers there is a hundreds place, tens place, and ones place.</p> <p>Ten groups of ten make up a bundle called a “hundred.”</p>	<p>Read, write, and relate base ten numbers in all forms.</p> <p>Write numbers as the sums of the values of their digits (Expanded Form).</p> <p>Compose two and three-digit numbers using base ten blocks.</p> <p>Regroup tens in the hundreds place when quantity exceeds 99.</p>

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Unit II: Place Value

<p>2.NBT.8 Mentally add 10 or 100 to a given number 100-900, and mentally subtract 10 or 100 from a given number 100-900.</p> <p><u>Standards of Mathematical Practice</u> MP.1 Make sense of problems and persevere in solving them. MP.2 Reason abstractly and quantitatively. MP.3 Construct viable arguments and critique the reasoning of others MP.4 Model with mathematics. MP.5 Use appropriate tools strategically. MP.6 Attend to precision. MP.7 Look for and make use of structure. MP.8 Look for and express regularity in repeated reasoning.</p> <p><u>ELA</u> NJSLSA.SL1. Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively. NJSLSA.SL2. Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally.</p>	<p>Three-digit numbers can be compared based on the value of the digits in the hundreds, tens and ones place.</p> <p>Comparison symbols are used to compare numbers.</p> <p>Place value can be a strategy when mentally adding and subtracting numbers.</p> <p>A mathematician demonstrates fluency of addition and subtraction through understanding, flexibility, and efficiency in use of strategies.</p>	<p>Understand the value of each digit to make comparisons.</p> <p>Attend to precision by using the $<$, $>$ and $=$ symbols.</p> <p>Use clear expectations in discussions with others when comparing numbers.</p> <p>Look for and make use of structure to mentally add or subtract 10 or 100 to a number.</p> <p>Make sense of varied problems and preserve in solving them in terms of place value.</p> <p>Make sense of addition and subtraction problems and explain solution utilizing place value.</p> <p>Critique and understand the reasoning of others in use of place value strategies to solve varied addition and subtraction problems.</p>
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Unit II: Place Value

<p>NJSLSA.SL3. Evaluate a speaker’s point of view, reasoning, and use of evidence and rhetoric.</p> <p>NJSLSA.SL.2.1. Participate in collaborative conversations with diverse partners about grade 2 topics and texts with peers and adults in small and larger groups.</p> <p>NJSLSA.W4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience</p> <p><u>TECHNOLOGY</u></p> <p>8.1.2.A.4 Demonstrate developmentally appropriate navigation skills in virtual environments (i.e. games, museums).</p> <p>8.1.2.E.1 Use digital tools and online resources to explore a problem or issue.</p> <p>8.2.2.B.1 Identify how technology impacts or improves life.</p> <p>8.2.2.D.1 Collaborate and apply a design process to solve a simple problem from everyday experiences.</p>	<p>KEY TERMS: digit, comparison, greater than, less than equal to, place value, hundreds place, tens place</p>	
<p>ASSESSMENT EVIDENCE: Students will show their learning by:</p> <ul style="list-style-type: none"> • Making exchanges between place values when representing amounts of hundreds, tens and ones • Comparing two three-digit numbers using comparison symbols • Adding/subtracting 10 or 100 to given three-digit numbers mentally • Representing and explaining the values of three-digit numbers using base-10 blocks, words or pictures • Using number grid patterns to add/subtract 10 and 100 (i.e. Open Response 1.5) • Making exchanges to create three-digit numbers represented with the least number of base-10 blocks (i.e. Open Response 4.6) 		

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Unit II: Place Value

- Applying prior knowledge of place value to solve real-world problems (i.e. Performance Task)

KEY LEARNING EVENTS AND INSTRUCTION:

- Build numbers using base-10 blocks
- Bundle tens and hundreds
- Utilize place value mats to break apart numbers
- Count to 1,000 using tens and hundreds
- Represent amounts of hundreds, tens, and ones using exchanges when appropriate
- Compare numbers using comparison symbols
- Compare 3-digit numbers using a number line
- Understand the value of digits in larger number (three-digit numbers)
- Represent numbers in different ways
- Explore expanded form
- Add and subtract 10 and 100
- Count up by hundreds, tens, and ones
- Participate in number talks and math discussions (i.e.- teacher facilitated, small group discussions, student led, etc.)

SUGGESTED TIME ALLOTMENT	5 weeks
SUPPLEMENTAL UNIT RESOURCES	Everyday Math Manual: <ul style="list-style-type: none"> • 1.11 Comparing Numbers and Home Links • 4.4 Numeration and Place Value • 4.5 Using Place Value to Compare Numbers • 4.6 Using Base-10 Blocks to Show a Number • 4.7 Playing Target • 5.1 Playing Beat the Calculator

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Unit II: Place Value

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| | <ul style="list-style-type: none">• 5.6 Mentally Adding and Subtracting 10 and 100• 9.5 Reviewing Place Value |
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Math in Practice- 2nd Grade:

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| | <ul style="list-style-type: none">• Module 4: Understanding Place Value• Module 5: Comparing Two 3-Digit Numbers |
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Technology:

See Appendix A

**Randolph Township Schools
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Unit III: Time & Money

TRANSFER: Make sense of authentic problems and persevere in solving them.		
STANDARDS / GOALS:	ENDURING UNDERSTANDINGS	ESSENTIAL QUESTIONS
<p><u>NJSLS</u></p> <p><u>MATH</u> 2.MD.7 Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.</p> <p>2.MD.8 Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using \$ and ¢ symbols appropriately.</p> <p><u>Standards of Mathematical Practice</u> MP.1 Make sense of problems and persevere in solving them. MP.2 Reason abstractly and quantitatively. MP.3 Construct viable arguments and critique the reasoning of others MP.4 Model with mathematics. MP.5 Use appropriate tools strategically. MP.6 Attend to precision. MP.7 Look for and make use of structure. MP.8 Look for and express regularity in repeated reasoning.</p>	Money is represented in various combinations.	<ul style="list-style-type: none"> • How do you count money? • How can dollars and cents be broken down?
	Money can be spent and received.	<ul style="list-style-type: none"> • How does addition and subtraction help with using money?
	Time is used to measure and sequence daily events.	<ul style="list-style-type: none"> • Why does time matter?
	<u>KNOWLEDGE</u> Students will know:	<u>SKILLS</u> Students will be able to:
	<p>The value of a digit in a given position is 10 times as great as the value of the same digit in the position to its right.</p> <p>Analog clocks are clocks with hands. Digital clocks display time by showing the number of hours and minutes separated by a colon.</p> <p>Skip counting by 5s can be used when telling time.</p>	<p>Count and exchange among bills.</p> <p>Identify the difference between a digital and analog clock.</p> <p>Read and write time to the nearest five minutes.</p>

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Unit III: Time & Money

<p><u>ELA</u></p> <p>NJSLSA.SL1. Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively.</p> <p>NJSLSA.SL2. Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally.</p> <p>NJSLSA.SL3. Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric.</p> <p>NJSLSA.SL.2.1. Participate in collaborative conversations with diverse partners about grade 2 topics and texts with peers and adults in small and larger groups.</p> <p>NJSLSA.W4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience</p> <p><u>TECHNOLOGY</u></p> <p>8.1.2.A.4 Demonstrate developmentally appropriate navigation skills in virtual environments (i.e. games, museums).</p> <p>8.1.2.E.1 Use digital tools and online resources to explore a problem or issue.</p> <p>8.2.2.B.1 Identify how technology impacts or improves life.</p> <p>8.2.2.D.1 Collaborate and apply a design process to solve a simple problem from everyday experiences.</p>	<p>There are 24 hours in the day broken up into 12 hours for the morning (a.m.) and 12 hours for afternoon/night (p.m.).</p> <p>Coins and bills have a specific value.</p> <p>Money has a direct connection to place value.</p> <p>Different bill and coin combinations can be equivalent.</p> <p>Purchasing an item requires an exact amount of money.</p>	<p>Attend to precision to determine when to use a.m. versus p.m.</p> <p>Calculate the value of a collection of various coins and bills.</p> <p>Collaborate with others to calculate exact change (i.e. play cashier & customer)</p> <p>Make exchanges between different coins and bills (i.e. exchanging 4 quarters for 1 dollar)</p> <p>Organize money using place value tools.</p> <p>Create examples of two sets of bill/coin combinations that are equal.</p> <p>Solve word problems given specific quantities of coins using coins or drawings (i.e. If you have 2 dimes and 3 pennies, how many cents do you have?).</p>
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Unit III: Time & Money

	A mathematician demonstrates fluency of addition and subtraction through understanding, flexibility, and efficiency in use of strategies.	Utilize addition and subtraction efficiently and flexibly in solving problems involving dollars bills, quarters, nickels, and pennies. Make sense of monetary values and explain solution utilizing place value. Critique and understand the reasoning of others in use of varied strategies to construct monetary values.
	KEY TERMS: analog clock, digital clock, a.m., p.m., hour, minute, colon, exact, equivalent, quarter, nickel, dime, quarter, dollar, bill, combination, value	
<p>ASSESSMENT EVIDENCE: Students will show their learning by:</p> <ul style="list-style-type: none"> • Telling time to the nearest 5 minutes • Identifying if an event's time occurs in a.m. or p.m. • Counting combinations of bills and coins • Showing equivalent coin combinations (i.e. Open Response 5.12) • Solving word problems with specific quantities of coins • Applying prior knowledge of time and money to solve real-world problems (i.e. Performance Task) <p>KEY LEARNING EVENTS AND INSTRUCTION:</p> <ul style="list-style-type: none"> • Identify characteristics of an analog clock 		

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Unit III: Time & Money

- Make a human clock
- Tell time to the quarter and half hour
- Explore time based on partitioning the clock
- Practice the use of A.M. and P.M.
- Use ten frames for value
- Count the value of unlike coins
- Explore monetary symbols
- Explore coin combinations with number lines
- Use number bonds to explore coin combinations
- Demonstrate knowledge of making trades

SUGGESTED TIME ALLOTMENT

5 weeks

SUPPLEMENTAL UNIT RESOURCES

Everyday Math Manual:

- 1.3 Math Tools
- 1.8 *My Reference Book*, Quarters, and Math Boxes
- 2.1 Grouping by 10s
- 4.1 Clocks & Telling Time
- 4.2 Telling Time to the Nearest 5 Minutes
- 4.3 A.M. & P.M.
- 5.2 Using Coins to Buy Things
- 5.3 Counting Up with Money
- 5.4 Coin Calculations
- 9.8 Equivalent Money Amounts
- 9.9 Estimating Costs

Math in Practice- 2nd Grade:

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Unit III: Time & Money

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| | <ul style="list-style-type: none">• Module 11: Exploring Time• Module 12: Exploring Money |
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Technology:
See Appendix A

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Unit IV: Multi-Digit Addition Strategies

TRANSFER: Solve higher level mathematical problems in everyday life.		
STANDARDS / GOALS:	ENDURING UNDERSTANDINGS	ESSENTIAL QUESTIONS
<p><u>NJSLS</u></p> <p><u>MATH</u></p> <p>2.NBT.5 Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.</p> <p>2.NBT.6 Add up to four two-digit numbers using strategies based on place value and properties of operations.</p> <p>2.NBT.7 Add and subtract within 1,000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.</p> <p>2.OA.1 Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and</p>	Strategies are used purposefully to add double- and triple-digit numbers.	<ul style="list-style-type: none"> How can you add larger numbers? Why is it important to solve problems in different ways?
	Mathematicians look for and make use of structures to help solve problems.	<ul style="list-style-type: none"> What is the relationship between place value and addition?
	<u>KNOWLEDGE</u> Students will know:	<u>SKILLS</u> Students will be able to:
	Manipulatives, pictures or diagrams can be used to organize information and then solve the problem.	Attend to precision to place quantities within a diagram to solve a number story.
	Number grids follow patterns in terms of place value to aid in the solving of addition problems.	Use appropriate tools strategically such as objects, drawings, and diagrams to construct viable arguments and critique the reasoning of others. Utilize a number grid to count on (i.e.- start at the larger number, move down the column to add tens then right to add ones.)

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Unit IV: Multi-Digit Addition Strategies

<p>comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.</p> <p><u>Standards of Mathematical Practice</u></p> <p>MP.1 Make sense of problems and persevere in solving them.</p> <p>MP.2 Reason abstractly and quantitatively.</p> <p>MP.3 Construct viable arguments and critique the reasoning of others</p> <p>MP.4 Model with mathematics.</p> <p>MP.5 Use appropriate tools strategically.</p> <p>MP.6 Attend to precision.</p> <p>MP.7 Look for and make use of structure.</p> <p>MP.8 Look for and express regularity in repeated reasoning.</p> <p><u>ELA</u></p> <p>NJSLSA.SL1. Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively.</p> <p>NJSLSA.SL2. Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally.</p>	<p>An open number line can be used as a flexible problem-solving tool.</p> <p>Base-ten blocks can be used to add multi digit numbers by representing the number's value.</p> <p>Partial Sums is a strategy that uses expanded notation to add multidigit numbers.</p> <p>Regrouping and exchanging can be used when adding two or three-digit numbers.</p> <p>Combination of tens will help solve multiple addend problems.</p>	<p>Construct an open number line, which includes only necessary numbers, and skip count to solve the problem.</p> <p>Draw base-ten blocks to show addends and count each place value to solve the problem.</p> <p>Write a number in expanded form to add by place value.</p> <p>Line up addends by place value and add, making exchanges/regrouping when applicable.</p> <p>Identify "friendly numbers" (combination of ten) to efficiently add up to four two-digit numbers.</p> <p>Interpret a word problem and break the problem into steps to solve for the unknown.</p>
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<p>NJSLSA.SL3. Evaluate a speaker’s point of view, reasoning, and use of evidence and rhetoric.</p> <p>NJSLSA.SL.2.1. Participate in collaborative conversations with diverse partners about grade 2 topics and texts with peers and adults in small and larger groups.</p> <p>NJSLSA.W4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience</p> <p><u>TECHNOLOGY</u></p> <p>8.1.2.A.4 Demonstrate developmentally appropriate navigation skills in virtual environments (i.e. games, museums).</p> <p>8.1.2.E.1 Use digital tools and online resources to explore a problem or issue.</p> <p>8.2.2.B.1 Identify how technology impacts or improves life.</p> <p>8.2.2.D.1 Collaborate and apply a design process to solve a simple problem from everyday experiences.</p>	<p>Word problems should be analyzed to determine how to solve for the unknown.</p> <p>Mathematical proficient students construct viable arguments and critique the reasoning of others.</p> <p>A mathematician demonstrates fluency of addition and subtraction through understanding, flexibility, and efficiency in use of strategies.</p>	<p>Solve and explain a multi-step real world word problem using a strategy.</p> <p>Collaborate with peers to discuss and reason a selected strategy when adding.</p> <p>Explain the process of arriving at a solution to a two-digit or three-digit addition problem.</p> <p>Utilize addition and subtraction efficiently and flexibly in solving multi-digit addition problems.</p> <p>Make sense of multi-digit addition problems and persevere in solving them utilizing place value.</p> <p>Critique and understand the reasoning of others in use of varied strategies to solve multi-digit addition problems.</p>
	<p>KEY TERMS: digit, word problem (number story), partial sums, expanded form, regrouping (exchanging), addend, multidigit, open number line, diagram</p>	

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Unit IV: Multi-Digit Addition Strategies

ASSESSMENT EVIDENCE: Students will show their learning by:

- Calculating addition problems involving two- and three-digit numbers
- Drawing sticks and dots to demonstrate place value (MiP pgs. 141-143)
- Using a mathematical strategy to solve a two- or three-digit equation and explain reasoning
- Modeling with number disks (MiP pgs. 143-150)
- Adding 2-digit numbers on a number line (MiP pgs. 151-153 or EDM lesson 5.7)
- Using compensation to add 2-digit numbers (MiP pgs. 153-154)
- Solving multi-step word problems and explaining the steps
- Adding up to 4 two-digit numbers using strategies based on place value (EDM lesson 5.11)
- Modeling 2-digit plus 1-digit addition with base-ten blocks (MiP pgs. 139-140)
- Modeling 2-digit plus 2-digit addition with base-ten blocks (MiP pgs. 140-141)
- Solving a multi-digit addition problem using two different strategies (i.e. Open Response 5.11) (EDM lesson 5.11)
- Solving a multi-digit addition word problem with three addends (i.e. Open Response 7.2)
- Applying prior knowledge of multi-digit addition to real-world problems (i.e. Performance Task)

KEY LEARNING EVENTS AND INSTRUCTION:

- Strategies:
 - Introduce and revisit bar models to show addition situations
 - Use number lines to solve problems
 - Add within 1,000 Using Base-Ten Blocks or Number Disks
 - Add using partial sums
 - Add using partial sums with regrouping
 - Use open number lines to add 3-digit numbers
 - Use compensation to add 3-digit numbers
- Relate strategies to a written method
- Represent two-step problems

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Unit IV: Multi-Digit Addition Strategies

<ul style="list-style-type: none"> • Apply double- and triple-digit math strategies (i.e. school store etc.) (EDM lesson 5.11) • Explain the reasoning behind a given strategy • Construct the reasoning behind the strategies of others • Participate in number talks and math discussions 	
SUGGESTED TIME ALLOTMENT	6 weeks
SUPPLEMENTAL UNIT RESOURCES	<p>Everyday Math Manual:</p> <ul style="list-style-type: none"> • 5.7 Open Number Lines • 5.8 Change to More • 5.9 Parts and Total Number Stories • 5.10 Change Number Stories • 5.11 Adding Multidigit Numbers • 6.6 Recording Addition Strategies • 6.7 Partial Sums Part 1 • 7.3 Playing Basketball Addition <p>Math in Practice- 2nd Grade:</p> <ul style="list-style-type: none"> • Module 1: Exploring Problem Solving • Module 5: Comparing Two 3-Digit Numbers <ul style="list-style-type: none"> ○ Expanded Form (pg. 123) • Module 6: Understanding Multidigit Addition • Module 8: Extending Understanding of Multidigit Addition <p>Technology: See Appendix A</p>

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Unit V: Subtraction Strategies & Word Problems

TRANSFER: Flexibly solve complex mathematical problems in everyday life experiences.		
STANDARDS / GOALS:	ENDURING UNDERSTANDINGS Students will know:	ESSENTIAL QUESTIONS
<p><u>NJSLS</u></p> <p><u>MATH</u></p> <p>2.NBT.5 Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.</p> <p>2.NBT.6 Add up to four two-digit numbers using strategies based on place value and properties of operations.</p> <p>2.NBT.7 Add and subtract within 1,000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.</p> <p>2.OA.1 Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and</p>	Strategies are used purposefully to subtract double and triple-digit numbers.	<ul style="list-style-type: none"> How can you subtract larger numbers? Why is it important to solve problems in different ways?
	Word choice helps us understand math situations to determine when to add and subtract.	<ul style="list-style-type: none"> What strategies can be used to solve a number story?
	<u>KNOWLEDGE</u> Students will know:	<u>SKILLS</u> Students will be able to:
	<p>Manipulatives, pictures or diagrams can be used to organize information and then solve the problem.</p> <p>Number grids follow patterns in terms of place value to aid in the solving of subtraction problems.</p>	<p>Use appropriate tools strategically such as objects, drawings, and diagrams to construct viable arguments and critique the reasoning of others.</p> <p>Accurately place quantities within a diagram to solve a number story.</p> <p>Utilize a number grid to count back (i.e.- start at the larger number, move up the column to subtract tens then left to subtract ones.)</p>

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Unit V: Subtraction Strategies & Word Problems

<p>comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.</p> <p><u>Standards of Mathematical Practice</u></p> <p>MP.1 Make sense of problems and persevere in solving them.</p> <p>MP.2 Reason abstractly and quantitatively.</p> <p>MP.3 Construct viable arguments and critique the reasoning of others</p> <p>MP.4 Model with mathematics.</p> <p>MP.5 Use appropriate tools strategically.</p> <p>MP.6 Attend to precision.</p> <p>MP.7 Look for and make use of structure.</p> <p>MP.8 Look for and express regularity in repeated reasoning.</p> <p><u>ELA</u></p> <p>NJSLSA.SL1. Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively.</p> <p>NJSLSA.SL2. Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally.</p> <p>NJSLSA.SL3. Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric.</p> <p>NJSLSA.SL.2.1. Participate in collaborative conversations with diverse partners about grade 2 topics</p>	<p>Base-ten blocks can be used to subtract multidigit numbers by representing the number's value.</p> <p>Subtraction with multidigit numbers is aligned with an understanding of place value.</p> <p>In subtracting three-digit numbers, one subtracts hundreds and hundreds, tens and tens, and ones and ones (Expand-Trade Subtraction).</p> <p>When subtracting, sometimes it is necessary to decompose tens or hundreds.</p>	<p>Model with mathematics on a number grid to show thinking.</p> <p>Construct an open number line, which includes only necessary numbers, and skip count to solve the problem.</p> <p>Draw base-ten blocks to show the numbers being subtracted and cross off the amount being taken away to solve the problem.</p> <p>Write a number in expanded form to subtract by place value.</p> <p>Apply concept of place value as a strategy to subtract multi-digit numbers.</p> <p>Recognize when a greater number is being subtracted, decomposition needs to occur between place values.</p> <p>Apply concept of decomposition to regroup and subtract.</p> <p>Utilize concrete models or drawings to solve subtraction problems within 1,000.</p>
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Unit V: Subtraction Strategies & Word Problems

<p>and texts with peers and adults in small and larger groups.</p> <p>NJSLSA.W4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience</p> <p><u>TECHNOLOGY</u></p> <p>8.1.2.A.4 Demonstrate developmentally appropriate navigation skills in virtual environments (i.e. games, museums).</p> <p>8.1.2.E.1 Use digital tools and online resources to explore a problem or issue.</p> <p>8.2.2.B.1 Identify how technology impacts or improves life.</p> <p>8.2.2.D.1 Collaborate and apply a design process to solve a simple problem from everyday experiences.</p>	<p>Word problems should be analyzed to determine how to solve for the unknown.</p> <p>A mathematician demonstrates fluency of subtraction through understanding, flexibility, and efficiency in use of strategies.</p> <p>Mathematical proficient students construct viable arguments and critique the reasoning of others.</p>	<p>Explain decomposition as it relates to subtraction through the use of place value.</p> <p>Interpret a word problem and break the problem into steps to solve for the unknown.</p> <p>Solve and explain a multi-step, real world word problems using a strategy.</p> <p>Explain subtraction strategies utilizing place value, properties of operations, and/or the relationship between addition and subtraction.</p> <p>Collaborate with peers to discuss and reason a selected strategy when subtracting.</p> <p>Explain the process of arriving at a solution to a two-digit or three-digit subtraction problem.</p> <p>Critique and understand the reasoning of others in use of varied strategies to solve multi-digit subtraction problems.</p>
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Unit V: Subtraction Strategies & Word Problems

	Diagrams can be used to organize information in a word problem.	<p>Select the appropriate diagram to represent the numbers in a word problem.</p> <p>Perform the appropriate operation to solve the number story.</p> <p>Interact with peers to read and interpret diagrams.</p> <p>Express a written understanding of data displayed in the diagram.</p>
	KEY TERMS: difference, digit, word problem (number story), exchange and trade, expanded form, multidigit, open number line,	
<p>ASSESSMENT EVIDENCE: Students will show their learning by:</p> <ul style="list-style-type: none"> • Calculating subtraction problems involving two- and three-digit numbers • Using a mathematical strategy to solve a two- or three-digit equation and explain reasoning • Solving multistep word problems and explaining the steps • Interpreting a word problem to determine the correct computation • Solving a multi-digit subtraction problem using base-10 blocks (i.e. Open response 6.9) • Applying prior knowledge of multi-digit real-world problems (i.e. performance task) <p>KEY LEARNING EVENTS AND INSTRUCTION:</p> <ul style="list-style-type: none"> • Strategies: <ul style="list-style-type: none"> ○ Revising Bar Models to Show Subtraction Situations ○ Decompose numbers 		

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Unit V: Subtraction Strategies & Word Problems

- Subtract within 100 using base-ten models
- Subtract within 100 using number discs
- Subtract using expanded form
- Decompose to subtract
- Decompose using number discs
- Subtract using an open number line
- Subtract using compensation
- Use place value models to subtract 3-digit numbers
- Subtract across zeroes
- Subtract 3-digit numbers using compensation
- Subtract 3-digit numbers using open number lines
- Analyze a word problem and identify the correct operation and diagram in order to take the appropriate steps to solve
- Solve two-step number stories
- Relate strategies to a written method
- Incorporate authentic learning tasks or problems to apply double- and triple-digit math strategies (i.e. school store etc.)
- Explain the reasoning behind a given strategy
- Critique the reasoning behind the strategies of others
- Participate in number talks and math discussions

SUGGESTED TIME ALLOTMENT	6 weeks
SUPPLEMENTAL UNIT RESOURCES	Everyday Math Manual: <ul style="list-style-type: none"> ● 6.2 Comparison Number Stories ● 6.3 Interpreting Number Stories ● 6.5 Two-Step Number Stories ● 6.9 Subtracting with Base-10 Blocks ● 9.6 Expand and Trade Subtraction Part 1

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Unit V: Subtraction Strategies & Word Problems

	<ul style="list-style-type: none">• 9.7 Expand and Trade Subtraction Part 2 <p>Math in Practice- 2nd Grade:</p> <ul style="list-style-type: none">• Module 1: Exploring Problem Solving<ul style="list-style-type: none">○ Revising Bar Models to Show Subtraction Situations (pgs. 21-24)• Module 7: Understanding Multidigit Subtraction• Module 9: Extending Understanding of Multidigit Subtraction <p>Technology: See Appendix A</p>
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**Randolph Township Schools
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Unit VI: Length and Data

TRANSFER: Utilize tools strategically in real world measurement scenarios.		
STANDARDS / GOALS:	ENDURING UNDERSTANDINGS	ESSENTIAL QUESTIONS
<p><u>NJSLS</u></p> <p><u>MATH</u></p> <p>2.MD.1 Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.</p> <p>2.MD.2. 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.</p> <p>2.MD.3. Estimate lengths using units of inches, feet, centimeters, and meters.</p> <p>2.MD.4. Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.</p> <p>2.MD.5. Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same</p>	Measurement is used to describe objects.	<ul style="list-style-type: none"> • Why do we measure? • How do we select a measurement tool?
	Data can be organized in various ways to communicate information.	<ul style="list-style-type: none"> • Why do we collect data? • How can data be organized?
	<u>KNOWLEDGE</u> Students will know:	<u>SKILLS</u> Students will be able to:
	All standard units have a corresponding measurement tool. (i.e. yards = yardstick, inches = ruler).	Compare and contrast values of standard units of measurement.
	Estimating a length of an object will help evaluate the accuracy it's actual length.	Assess the length of an object to create a reasonable estimate.
	When choosing a standard unit of measure, one must first consider the size of an object or the distance to be measured.	Evaluate the object to be measured or distance, to select the appropriate measurement tool.
		Reason abstractly and quantitatively to determine the unit of measurement.

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Unit VI: Length and Data

<p>units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.</p> <p>2.MD.6. Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, ..., and represent whole-number sums and differences within 100 on a number line diagram.</p> <p>2.MD.9. Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units.</p> <p>2.MD.10. Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put together, take-apart, and compare problems⁴ using information presented in a bar graph.</p>	<p>Addition and subtraction strategies can be used to solve word problems involving length.</p> <p>Measurements can be represented visually.</p> <p>Graphs are used to illustrate data.</p> <p>A graph can be interpreted by asking and answering questions.</p>	<p>Analyze the similarities and differences (i.e. when measuring an eraser, it is 2 inches or 5 centimeters because of the spacing).</p> <p>Attend to precision to compare the lengths of objects by adding and subtracting.</p> <p>Critique and understand the reasoning of others in use of varied strategies to solve real-world measurement problems.</p> <p>Generate measurement data and organize it efficiently and effectively (i.e. line plot).</p> <p>Collect data and organize information.</p> <p>Express and clarify data on a graph.</p>
<p><u>Standards of Mathematical Practice</u></p> <p>MP.1 Make sense of problems and persevere in solving them.</p> <p>MP.2 Reason abstractly and quantitatively.</p> <p>MP.3 Construct viable arguments and critique the reasoning of others</p> <p>MP.4 Model with mathematics.</p> <p>MP.5 Use appropriate tools strategically.</p> <p>MP.6 Attend to precision.</p>	<p>KEY TERMS: Length, measure, inch, feet, centimeter, meter, yard, estimate, compare, data, difference, line plot, bar graph, picture graph</p>	

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<p>MP.7 Look for and make use of structure.</p> <p>MP.8 Look for and express regularity in repeated reasoning.</p> <p><u>ELA</u></p> <p>NJSLSA.SL1. Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively.</p> <p>NJSLSA.SL2. Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally.</p> <p>NJSLSA.SL3. Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric.</p> <p>NJSLSA.SL.2.1. Participate in collaborative conversations with diverse partners about grade 2 topics and texts with peers and adults in small and larger groups.</p> <p>NJSLSA.W4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience</p> <p><u>TECHNOLOGY</u></p> <p>8.1.2.A.4 Demonstrate developmentally appropriate navigation skills in virtual environments (i.e. games, museums).</p> <p>8.1.2.E.1 Use digital tools and online resources to explore a problem or issue.</p> <p>8.2.2.B.1 Identify how technology impacts or improves life.</p>		
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Unit VI: Length and Data

8.2.2.D.1 Collaborate and apply a design process to solve a simple problem from everyday experiences.

ASSESSMENT EVIDENCE: Students will show their learning by:

- Developing real-world questions, collecting data, analyzing and representing information graphs (i.e. picture, bar, line plot)
- Selecting appropriate measuring tools based on their estimation of an object
- Explaining the similarities and differences when measuring the same object with two different units
- Solving word problems pertaining to comparing length
- Applying prior knowledge of measuring and collecting data (i.e. performance task)

KEY LEARNING EVENTS AND INSTRUCTION:

- Interpret picture graphs
- Create picture graphs
- Compare picture graphs
- Interpret bar graphs
- Create and use a bar graph to analyze data
- Create bar graphs
- Use customary measurement units and measure to the nearest inch
- Make an estimate of a length and measure to find an exact length
- Make a centimeter ruler
- Interpret the relationship between centimeters and meters
- Measure with two standard units
- Use addition and subtraction to solve measurement problems
- Display data on a line plots
- Make line plots from measured data

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Unit VI: Length and Data

SUGGESTED TIME ALLOTMENT	5 weeks
SUPPLEMENTAL UNIT RESOURCES	<p>Everyday Math Manual:</p> <ul style="list-style-type: none"> • 4.8 How Big is a Foot? • 4.9 The Inch • 4.10 The Centimeter • 6.1 Representing Data: Pockets • 6.4 Animal Number Stories • 7.4 Measuring with Yards • 7.5 Measuring with Meters • 7.6 Generating Data- Standing Jumps & Arm Spans • 7.7 Representing Data- Standing Jumps • 7.8 Representing Data- Arm Spans • 9.4 Fractional Units of Length <p>Math in Practice- 2nd Grade:</p> <ul style="list-style-type: none"> • Module 10: Understanding Length Measurement • Module 13: Representing and Interpreting Data <p>Technology: See Appendix A</p>

**Randolph Township Schools
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Unit VII: Geometry & Arrays

TRANSFER: Look for and express regularity in repeated reasoning.

STANDARDS / GOALS:	ENDURING UNDERSTANDINGS	ESSENTIAL QUESTIONS
<p><u>NJSLS</u></p> <p><u>MATH</u></p> <p>2.G.1 Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces.5 Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.</p> <p>2.G.2 Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.</p> <p>2.G.3 Partition circles and rectangles into two, three, or four equal shares, 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.</p> <p>2.OA.2</p>	Analyzing the attributes and the relationships of geometric shapes helps to develop reasoning.	<ul style="list-style-type: none"> What is an attribute?
	Understanding the importance of numbers in groups will assist in many areas of computation.	<ul style="list-style-type: none"> Why do we make groups?
	<p><u>KNOWLEDGE</u></p> <p>Students will know:</p>	<p><u>SKILLS</u></p> <p>Students will be able to:</p>
	<p>Shapes have related attributes.</p> <p>The attributes of a 2-dimensional shape include the number of sides and angles and the presence or absence of parallel lines.</p> <p>Attributes of a 3-dimensional shape include the number, shape, and size of the faces.</p>	<p>Compare similarities and differences in shapes.</p> <p>Define shapes according to their attributes and support their ideas with details through speaking and/or writing.</p> <p>Construct viable arguments and critique the reasoning of others to discuss shapes' groupings.</p> <p>Categorize shapes base on their attributes and explain their thinking.</p>

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Unit VII: Geometry & Arrays

<p>Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.</p> <p>2.OA.3 Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends.</p> <p>2.OA.4 Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends.</p> <p>2.NBT.2 Count within 1,000; skip-count by 5s, 10s, and 100s.</p> <p><u>Standards of Mathematical Practice</u> MP.1 Make sense of problems and persevere in solving them. MP.2 Reason abstractly and quantitatively. MP.3 Construct viable arguments and critique the reasoning of others MP.4 Model with mathematics. MP.5 Use appropriate tools strategically.</p>	<p>Objects are often partitioned into two, three or four same-size pieces or equal shares.</p> <p>Whole shapes can be described as halves, third and fourths.</p> <p>Quadrilaterals can be divided into rows and columns to determine its area.</p> <p>Arrays can represent number stories containing equal groups of objects.</p> <p>Numbers have even or odd patterns.</p> <p>Even numbers can be connected to doubles facts.</p>	<p>Attend to precision when partitioning real-life polygons into same size units.</p> <p>Describe the whole as two halves, three thirds, four fourths.</p> <p>Recognize that equal shares of identical wholes need not have the same shape.</p> <p>Visualize the rows and columns of the shape and represent it with a repeated addition model.</p> <p>Use appropriate tools strategically to construct arrays to solve number stories.</p> <p>Create a repeated addition model to accompany an array.</p> <p>Collaborate to see the pattern or connection when grouping objects to determine if the number is even or odd.</p> <p>Understand and build on the concept that the sum of two even numbers or two odd numbers is always an even.</p>
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Unit VII: Geometry & Arrays

<p> MP.6 Attend to precision. MP.7 Look for and make use of structure. MP.8 Look for and express regularity in repeated reasoning. </p> <p> ELA NJSLSA.SL1. Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively. </p> <p> NJSLSA.SL2. Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally. </p> <p> NJSLSA.SL3. Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric. </p> <p> NJSLSA.SL.2.1. Participate in collaborative conversations with diverse partners about grade 2 topics and texts with peers and adults in small and larger groups. </p> <p> NJSLSA.W4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience </p> <p> TECHNOLOGY 8.1.2.A.4 Demonstrate developmentally appropriate navigation skills in virtual environments (i.e. games, museums). </p> <p> 8.1.2.E.1 Use digital tools and online resources to explore a problem or issue. </p>	<p>Mathematically proficient students should look closely to discern a pattern or structure.</p> <p>KEY TERMS: quadrilateral, triangle, pentagon, hexagon, cube, array, equal group, even number, odd number, repeated addition, row, column, half, third, fourth, whole, compare & contrast</p>	<p>Construct viable arguments with peers to compare and contrast various real-life shapes when grouping them.</p>
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Unit VII: Geometry & Arrays

8.2.2.B.1 Identify how technology impacts or improves life.

8.2.2.D.1 Collaborate and apply a design process to solve a simple problem from everyday experiences.

ASSESSMENT EVIDENCE: Students will show their learning by:

- Describing the attributes of shapes
- Comparing and contrasting attributes between shapes and supporting their thinking
- Dividing shapes into two and four equal shares and describe the shares using words *halves*, *fourths*, and *quarters*.
- Construct arguments, reason, and justify why a particular shape is or isn't that shape (i.e. "It can't be a square because, even though it has 4 sides and 4 corners the sides are not all the same length.").
- Representing arrays through repeated addition models
- Explaining why a group of objects is even/odd
- Drawing a quadrilateral with given attributes and arguing their reasoning (i.e. Open Response 8.4)
- Partitioning shapes and naming the shares (i.e. Open Response 9.3)
- Applying prior knowledge of arrays and geometry (i.e. performance task)

KEY LEARNING EVENTS AND INSTRUCTION:

- Explore and define shapes based on attributes (i.e. shape, size, vertices, angles, sides)
- Compare 2-dementiona and 3-dementional shapes
- Make right angle fingers
- Partition and name shares
 - Introduce thirds
 - Create fourths
 - Explore size of shares
- Identify a repeated addition model to represent an array
 - Create equal groups in arrays and area models

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<ul style="list-style-type: none"> ○ Visualize equal groups with arrays ● Pair objects and count by 2s to help identify even numbers (or odd numbers when objects can't be paired) <ul style="list-style-type: none"> ○ Identify and count even and odd Numbers ○ Explore the concept of odd and even numbers ● Participate in number talks and math discussions (i.e.- teacher facilitated, small group discussions, student led, etc.) ● Look for and make use of structures when utilizing addition and subtraction strategies to solve real-world problems 	
SUGGESTED TIME ALLOTMENT	6 weeks
SUPPLEMENTAL UNIT RESOURCES	Everyday Math Manual: <ul style="list-style-type: none"> ● 1.9 Even and Odd Number Patterns ● 2.9 Even Numbers and Equal Addends ● 8.1 Attributes of 2D Shapes ● 8.2 Playing Shape Capture ● 8.3 Comparing Triangles, Pentagons & Hexagons ● 8.4 Drawing & Reasoning about Quadrilaterals ● 8.5 Attributes of 3D Shapes ● 8.6 Partitioning Rectangles Part 1 ● 8.7 Partitioning Rectangles Part 2 ● 8.8 Equal Groups & Array Number Stories ● 8.9 More Equal Groups & Arrays ● 8.10 Playing Array Concentration ● 9.1 Creating & Naming Equal Parts ● 9.2 Exploring Equal Shares, Pattern-Block Fractions & Number Lines ● 9.3 Sharing Muffins ● 9.10 Connecting Doubles Facts, Even Numbers & Equal Groups ● 9.11 Multiples of 10 and 5

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	<p>Math in Practice- 2nd Grade:</p> <ul style="list-style-type: none">• Module 3: Building Foundations for Multiplication• Module 14: Describing Geometric Shapes• Module 15: Partitioning Shapes <p>Technology: See Appendix A</p>
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APPENDIX A

Technology Resources:

Virtual Math Manipulatives: <https://www.mathlearningcenter.org/resources/apps>

Three Act Math Tasks: <https://gfletchy.com/3-act-lessons/>

Youcubed Suggested Math Sites: <https://www.youcubed.org/resource/apps-games/>

Estimation 180: <http://www.estimation180.com/>

Visual Patterns: <http://www.visualpatterns.org/>

Scholastic/Study Jams for Math and Science: <http://studyjams.scholastic.com/studyjams/jams/math/index.htm>

Everyday Math Online: <https://www.rtnj.org/Page/3378>

Heinemann Math in Practice: <http://hein.pub/MathinPractice>

Number Talk: <https://elemath.hallco.org/web/wp-content/uploads/2014/05/Number-Talks-Quick-Start-Guide.pdf>

Greg Tang Math Games: <https://gregtangmath.com/>

Prodigy Math: <https://www.prodigygame.com/>

Money Games: <http://www.technologyrocksseriously.com/2012/04/money-money-money.html#.WdA60yiGO01>

Math Playground: <http://www.mathplayground.com/>