

Englewood on the Palisades Charter School

Mathematics Curriculum

Grade 2

Aligned With the 2023 New Jersey Student Learning Standards

The Vision for Mathematics Education in New Jersey

A New Jersey education in Mathematics builds quantitatively and analytically literate citizens prepared to meet the demands of college and career, and to engage productively in an information-driven society. All students will have access to a high-quality mathematics education that fosters a population that:

- leverages data in decision-making and as a lens for discussing, analyzing, and responding to practical questions.
- persists to make sense of and model problems arising in everyday life, society, and the workplace.
- thinks critically and strategically to assess quantitative relationships and to solutions to complex problems.
- employs precise reasoning and constructs viable arguments to deduce conclusions, recognize false statements and assess peers' reasoning.
- interprets, evaluates and critiques the mathematics embedded in social, scientific and commercial systems, as well as the claims made in the private and public sectors.
- communicates precisely when conveying, representing, and justifying both qualitative and quantitative perspectives.

(NJ DOE, 2024)

Standards for Mathematical Practice

The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students.

Standard	Mathematically Proficient Students ...
1. Make sense of problems and persevere in solving them	start by explaining to themselves the meaning of a problem and looking for entry points to its solution. check their answers to problems using a different method, and they continually ask themselves, “Does this make sense?”
2. Reason abstractly and quantitatively	make sense of quantities and their relationships in problem situations.
3. Construct viable arguments and critique the reasoning of others	understand and use stated assumptions, definitions, and previously established results in constructing arguments.
4. Model with mathematics	apply the mathematics they know to solve problems arising in everyday life, society, and the workplace. are comfortable making assumptions and approximations to simplify a complicated situation, realizing that these may need revision later.
5. Use appropriate tools strategically	are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful, recognizing both the insight to be gained and their limitations.

6. Attend to precision	try to communicate precisely to others.
7. Look for and make use of structure	look closely to discern a pattern or structure
8. Look for and express regularity in repeated reasoning	notice if calculations are repeated, and look both for general methods and for shortcuts.

(NJ DOE, 2024)

New Jersey Legislative Statutes and Administrative Code Mathematics

Amistad Law: <i>N.J.S.A. 18A 52:16A-88</i>
Radical Math : includes lessons on topics for social justice in mathematics African American Mathematician Bios
Holocaust Law: <i>N.J.S.A. 18A:35-28</i>
https://www.bbc.com/future/article/20191031-hilda-geiringer-mathematician-who-fled-the-nazis
LGBT and Disabilities Law: <i>N.J.S.A. 18A:35-4.35</i>
https://prideinstem.org/ LGBTQ+ Mathematician Bios https://www.ngpf.org/blog/math/math-monday-celebrating-disabled-mathematicians/ Mathematicians with Disabilities

Diversity & Inclusion: *N.J.S.A. 18A:35-4.36a*

<http://www.ams.org/about-us/diversity>

<https://mathematicallygiftedandblack.com/>

Standards in Action: *Climate Change*

New Jersey became the first state in the nation to include climate change across content areas with the adoption of the 2020 New Jersey Student Learning Standards (NJSLS). The goal of inclusion of climate change education implementation is to foster generations of New Jersey students that can analyze, question, interpret, to think independently, and bring critical deduction to fulfill, and to lead in jobs created by burgeoning industries of the future green economy.

Suggestions for how to incorporate climate change examples into math instruction will be noted in **green text** throughout the units.

Math Curriculum Grade Two

This second grade math curriculum aligns with the 2023 New Jersey Student Learning Standards (NJSLS) and provides a solid foundation for learners. Throughout the year, lessons should include hands-on activities, games, and manipulatives to engage students and make learning math fun and interactive. Formative assessments, observations, and ongoing progress monitoring should be used to ensure that students are meeting the learning objectives. Instruction should be flexible and adaptable to meet the individual needs and learning styles of the students.

Instruction in grade two focuses broadly on four critical areas:

- extending understanding of base-ten notation;
- developing accuracy and efficiency with addition and subtraction;
- sing standard units of measure; and
- describing and analyzing shapes.

Domains and Cluster Areas

- **Operations and Algebraic Thinking**
 - Represent and solve problems involving addition and subtraction.
 - Add and subtract within 20.
 - Work with equal groups of objects to gain foundations for multiplication.
- **Number and Operations in Base Ten**
 - Understand place value.
 - Use place value understanding and properties of operations to add and subtract.
- **Measurement**
 - Measure and estimate lengths in standard units.
 - Relate addition and subtraction to length.
 - Work with time and money.
- **Data Literacy**
 - Understand concepts of data.
 - Represent and interpret data.
- **Geometry**
 - Reason with shapes and their attributes.

Emphases are given at the cluster level. Refer to the New Jersey Student Learning Standards for Mathematics for the specific standards that fall within each cluster. Even though the clusters have different levels of emphasis, this does not mean that standards can be omitted. All standards must be included in instruction throughout a grade level to ensure that students will be prepared for instruction at higher grade levels.

Indicator	Type	Cluster Heading
2.OA.A	M	Represent and solve problems involving addition and subtraction
2.OA.B	M	Add and subtract within 20

2.OA.C	S	Work with equal groups of objects to gain foundations for multiplication
2.NBT.A	M	Understand place value
2.NBT.B	M	Understand place value understanding and properties of operations to add and subtract
2.M.A	M	Measure and estimate lengths in standard units
2.M.B	M	Relate addition and subtraction to length
2.M.C	S	Work with time and money
2.DL.A	A	Understand concepts of data
2.DL.B	S	Represent and interpret data
2.G.A	A	Reason with shapes and their attributes

Key: M — Major, S — Supporting Clusters, A — Additional Clusters

Required Fluencies in Grade 2:

- **2.OA.B.2** Add and subtract within 20 using mental strategies; Know single digit sums from memory
- **2.NBT.B.5** Add and subtract within 100

(NJDOE, 2024)

Grade 2 Units and Pacing	
Unit 1: Adding, Subtracting, and Working With Data	4 weeks
Unit 2: Adding and Subtracting Within 100	4 weeks
Unit 3: Measuring Length	4 weeks
Unit 4: Adding and Subtracting on a Number Line	4 weeks
Unit 5: Numbers to 1,000	4 weeks
Unit 6: Geometry, Time, and Money	5 weeks
Unit 7: Adding and Subtracting Within 1,000	4 weeks
Unit 8: Equal Groups	3 weeks
Unit 9: Integrating Math Skills	3 weeks
Total Number of Weeks:	35 weeks

Unit 1: Adding, Subtracting, and Working With Data

Unit Goal: Students represent and solve story problems within 20 through the context of picture and bar graphs that represent categorical data. Students build toward fluency with addition and subtraction.
Duration: 4 weeks
Essential Questions: • What are strategies for finding addition and subtraction facts? • How can you use <i>counting on</i> to add numbers in any order? • How can you use connecting cubes to help you model and solve problems?

- What addition facts can you write if you change the order of the numbers being added?
- How can adding doubles help you to add quickly and accurately?
- How is a near doubles fact different from a doubles fact?
- How can the strategy of making a ten help you to add quickly and accurately?
- How can a number line help you count on or count back?
- What are some ways you can show your thinking?

Enduring Understandings:

- 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 a 0-10 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.
- There is an inverse relationship between addition and 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.
- Think of a related addition fact" is an efficient strategy for finding a subtraction fact.
- Objects, diagrams, and equations can help you solve different types of word problems.

Key NJSLS Strands:

- **2.OA.A** Represent and solve problems involving addition and subtraction
 - **2.OA.A.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 comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.
Climate Change Example: Students may solve two-step word problems involving a climate change related issue in their school, such as food waste, recycling, reusing and/or reducing the consumption of goods. They may add and subtract within 100 while using drawing or equations to represent the climate change related issue.
- **2.OA.B** Add and subtract within 20

- **B. 2.OA.B.2** With accuracy and efficiency, add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.
- **2.NBT.A** Understand place value
 - **2.NBT.A.2** Count within 1000; skip-count by 5s, 10s, and 100s.
- **2.NBT.B** Use place value understanding and properties of operations to add and subtract
 - **2.NBT.B.5** With accuracy and efficiency, add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.
- **2DL.A** Understand concepts of data
 - **2DL.A.1** Understand that people collect data to answer questions. Understand that data can vary.
 - **2DL.2.2** Identify what could count as data (e.g., visuals, sounds, numbers)
- **2DL.B** Represent and interpret data
 - **2DL.B.3** 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.
 - **2DL.B.4** 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 problems[1] using information presented in a bar graph. *Climate Change Example: Students may draw a bar graph having single-unit scale to represent a data set about a climate change related issue in their school, such as food waste, recycling, reusing and/or reducing the consumption of goods.*

Interdisciplinary Connections

- **RL.2.1** Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.
- **RL.2.7** Use information gained from the illustrations and words in a print or digital text to demonstrate understanding of its characters, setting, or plot.
- **RI.2.6** Identify the main purpose of a text, including what the author wants to answer, explain, or describe.

- **RI.2.7** Explain how specific illustrations and images (e.g., a diagram showing how a machine works) contribute to and clarify a text.
- **RF.2.4** Read with sufficient accuracy and fluency to support comprehension.
- **2-LS4-1** Make observations of plants and animals to compare the diversity of life in different habitats

21st-Century Skills

- **9.2.4.A.4** Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success.

Career Ready Practices

- **CRP 4** Communicate clearly and effectively and with reason during the Solve and Share portion of the lesson.
- **CRP 8** Utilize critical thinking to make sense of problems and persevere in solving independent practice problems.
- **CRP 11** Use technology to enhance productivity by accessing the Pearson Platform.

Technology Integration

- **TECH.8.1.2** All students will use digital tools to access, manage, evaluate and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.
- **TECH.8.1.2.A.CS2** Select and use applications effectively and productively
- **TECH.8.2.2.C** The design process is a systematic approach to solving problem

Skills	Instructional Topics	Assessment	Resources	Vocabulary
Build toward fluency with adding within 100.	Add and Subtract Within 10	Formative Assessments:	Materials:	Bar graph
Build toward fluency with subtracting within 20.	Relate Addition and Subtraction within 10	Diagnostic Assessment	Counters	Data
		Mid-topic Checkpoint	Number Cards 0-10	Picture graph
			Connecting cubes	

Solve one- and two-step problems using addition and subtraction within 20. Interpret picture and bar graphs. Represent data using picture and bar graphs. Make sense of and interpret tape diagrams. Represent and solve Compare problems with unknowns in all positions within 100.	Relate Addition and Subtraction within 20 Add and Subtract Your Way Add Within 50 Collect and Represent Data Interpret Picture Graphs Interpret Bar Graphs Represent Data Using Picture Graphs and Bar Graphs Questions About Data Use Bar Graphs to Compare Use Diagrams to Compare Diagrams with All Kinds of Compare Problems Solve All Kinds of Compare Problems	Lesson Quizzes Lesson Self-assessment Teacher Observations Class Discussions Classwork/ Homework Exit Slips/Google Form Summative Assessments: Topic/Unit Assessments Constructed Response Questions Projects Cumulative Tests Performance Assessments Alternate and Benchmark Assessments: Progress Monitoring Assessments Cumulative/Benchmark Assessments	Connecting cubes How Close? Stage 1 Recording Sheet (groups of 1) Number Puzzles Digit Cards Number Puzzles Addition and Subtraction Chart paper Glue Markers Scissors Stickers Tape Data Tables Picture and Bar Graph Template Collections of objects	
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	Class Surveys		Sort and Display Recording Sheet Counting collections 10-Frame Standard Colored pencils Double tens frame mat Addition tables Number Lines Activities: Use concrete models (e.g., interlocking cubes, two color counters, tiles) and pictorial models to show addition and subtraction. Use patterns and relationships (e.g., doubles, doubles plus one, make-a-ten, counting on, fact families) to develop fluency in	
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			the recall of basic facts. Use a variety of flash card games and other repetitive practice to build fluency with fact recall. Use the following problem solving strategies: <i>act it out</i>, <i>draw a picture</i>, <i>look for a pattern</i>, and <i>systematic guess and check</i>. Use the strategies to solve problems involving situations relevant to everyday life. Write equations that describe the action of the problem and discuss how they solved the problem. Use the following think aloud	
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			questions to solve problems: ○ Understand the problem: What do I know? What do I need to know? Do I need more information? ○ Make a plan: How can I solve the problem? What strategy can I use? What operation should I use? ○ Carry out the plan: What steps do I take? ○ Evaluate the solution: Is my answer reasonable? Does my answer make sense? Did I add or subtract correctly? Is there another way to write this equation? Could I use a different	
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			strategy to solve the problem? Mentor Texts: <i>Rumble Bus</i> by Larry Dane Brimmer <i>Even Steven and Odd Todd</i> by Kathryn Cristaldi	
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Modifications and Accommodations	
Tier II and III Strategies	Small group instruction (Tier II) ● Explicit instruction ● Schema-based instruction ● Use visuals ● Use manipulatives ● Use a multi-sensory approach ● Guided notes and/or scaffold outline for written assignments ● Introduce key vocabulary before lesson ● Lesson taught again using a differentiated approach Small group or Individual instruction (Tier III) ● Intensive instruction ● Practice fact retrieval ● Lesson taught again using a differentiated approach ● Allow answers to be given orally or dictated ● Use visuals / Anchor Charts
Students with IEPs and 504 Plans	<u>Universal Design for Learning and Access for Students with Disabilities</u>

[Movematics \(dyscalculia.org\)](http://dyscalculia.org)

Follow all the IEP/504 plan modifications

Allow extra time to complete assignments or tests

Guided notes and/or scaffold outline for written assignments

Work in a small group

Solidify and refine concepts through repetition

Allow answers to be given orally or dictated

Use multi-sensory teaching approaches

Utilize assistive technology and materials

Use large print books, Braille, or books on CD (digital text)

Text to speech/audio recorded selections

Amplification system as needed

Leveled texts according to ability

Fine motor skill stations embedded in rotation as needed

Modified or constrained spelling word lists

Provide anchor charts with high frequency words and phonemic patterns

Students might need guidance as to what actions happen during partner work time. Invite students to discuss what it looks like when they are working with their partner while exploring the connecting cubes. Generate a list of shared expectations for partner work.

	Invite students to plan a strategy before they begin working. If time allows, invite students to share their plan with a partner. Some students may benefit from feedback that emphasizes effort and time on task. For example, moving counters in the squares of the 5-frame or filling the 5-frame with one counter in each square.
Multi-language Learners	<u>Mathematical Language Development and Access for English Learners</u> Work toward longer passages as skills in English increase Use visuals Introduce/highlight key vocabulary before lesson Teacher models reading aloud daily Provide peer tutoring Utilize translation supports including bilingual dictionary, translation device, assistive technology, and peers Guided notes and/or scaffold outline for written assignments Provide students with English Learner leveled readers Support recommended by the grade specific “can do” list outlined by WIDA, including Key Uses Edition and Descriptor Name Charts Create a visual display of what students want to do or make with the connecting cubes. As students share ideas, include a drawing or annotation to illustrate connections. After students share responses, use multimodal examples to show the meaning of 5 in the 5-frame. Point to each square and count to 5. Invite students to chorally read numbers 1–5 aloud.

	Invite students to use gestures as they count their collections aloud.
Accelerating Students	<u>Accelerating Students Guide</u> Create an enhanced set of introductory activities (e.g. advance organizers, concept maps, concept puzzles) Provide options, alternatives and choices to differentiate and broaden the curriculum Organize and offer flexible small group learning activities Provide whole group enrichment explorations Teach cognitive and methodological skills Use center, stations, or contracts Organize integrated problem-solving simulations Propose interest-based extension activities Expose students to beyond level texts.

Unit 2: Adding and Subtracting Within 100

Unit Goal: Students add and subtract within 100 using strategies based on place value, properties of operations, and the relationship between addition and subtraction. They then use what they know to solve story problems.
Duration: 4 weeks
Essential Questions: What are strategies for adding and subtracting numbers to 100?

- How can you add within 100 using place value strategies and a hundreds chart?
- What other strategies can you use to solve the same problems?
- How can you use a break apart strategy to add numbers?
- How does mental math help you to add numbers?
- Is there more than one way to solve the same problem?
- How can patterns on a hundreds chart help you to subtract numbers mentally?
- Why is it a good idea to break apart the number you are subtracting into two numbers?
- How could you break apart a two-digit number that you are subtracting in order to make it easier to subtract?
- What is compensation, and how can you use it to help you subtract?

Enduring Understandings:

- Patterns on a hundreds chart can be used to add and subtract numbers and to develop mental math strategies and number sense.
- Two-digit numbers can be broken apart and added in different ways.
- You can represent how you break apart and add numbers with hops or jumps 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.
- 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 with hops or jumps on an open number line.
- You can count back or add up to subtract.
- One-digit and two-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 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.

Key NJSLS Strands:

- **2.OA.A** Represent and solve problems involving addition and subtraction
 - **2.OA.A.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 comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.
Climate Change Example: Students may solve two-step word problems involving a climate change related issue in their school, such as food waste, recycling, reusing and/or reducing the consumption of goods. They may add and subtract within 100 while using drawing or equations to represent the climate change related issue.
- **2.OA.B** Add and subtract within 20
 - **2.OA.B.2** With accuracy and efficiency, add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.
- **2.NBT.A** Understand place value
 - **2.NBT.A.2** Count within 1000; skip-count by 5s, 10s, and 100s.
- **2.NBT.B** Use place value understanding and properties of operations to add and subtract
 - **2.NBT.B.5** With accuracy and efficiency, add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.
 - **2.NBT.B.6** Add up to four two-digit numbers using strategies based on place value and properties of operations.
 - **2.NBT.B.9** Explain why addition and subtraction strategies work, using place value and the properties of operations. (Clarification: Explanations should be supported by drawings or objects.)
- **2.DL.B** Represent and interpret data
 - **2.DL.B.4** 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 problems[1] using information presented in a bar graph. *Climate Change Example: Students may draw a bar graph having single-unit scale to represent a data set about a climate change related issue in their school, such as food waste, recycling, reusing and/or reducing the consumption of goods.*

Interdisciplinary Connections

- **RL.2.1** Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.
- **RL.2.7** Use information gained from the illustrations and words in a print or digital text to demonstrate understanding of its characters, setting, or plot.
- **RI.2.6** Identify the main purpose of a text, including what the author wants to answer, explain, or describe.
- **RI.2.7** Explain how specific illustrations and images (e.g., a diagram showing how a machine works) contribute to and clarify a text.
- **RF.2.4** Read with sufficient accuracy and fluency to support comprehension.
- **2-LS2-2** Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.

21st-Century Skills

- **9.2.4.A.4** Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success.

Career Ready Practices

- **CRP 4** Communicate clearly and effectively and with reason during the Solve and Share portion of the lesson.
- **CRP 8** Utilize critical thinking to make sense of problems and persevere in solving independent practice problems.
- **CRP 11** Use technology to enhance productivity

Technology Integration

- **TECH.8.1.2** All students will use digital tools to access, manage, evaluate and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.
- **TECH.8.1.2.A.CS.2** Select and use applications effectively and productively.
- **TECH.8.2.2.C** The design process is a systematic approach to solving problems.

Skills	Instructional Topics	Assessment	Resources	Vocabulary
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Add within 100 using strategies based on: - place value - properties of operations - the relationship between addition and subtraction Subtract within 100 using strategies based on: - place value - properties of operations - the relationship between addition and subtraction Note: Problems are first limited to ones like $76 - 24$, where decomposing a ten is not required. Subtract within 100 using strategies based on: - place value, <i>including decomposing a ten</i> - the properties of operations	Add and Subtract Add and Subtract to Compare Find the Unknown Addend Add or Subtract to Solve Story Problems Decompose to Subtract Subtract Your Way Compare Methods for Subtraction Subtract Two Digits Different Ways to Decompose Add and Subtract Within 100 How Do You Solve Story Problems? Story Problems and Diagrams Story Problems and Equations	Formative Assessments: Diagnostic Assessment Mid-topic Checkpoint Lesson Quizzes Lesson Self-assessment Teacher Observations Class Discussions Classwork/ Homework Exit Slips/Google Form Summative Assessments: Topic/Unit Assessments Constructed Response Questions Projects Cumulative Tests Performance Assessments Alternate and Benchmark Assessments:	Materials: Connecting cubes (towers of 10) Connecting cubes (singles) Base-ten blocks Colored pencils or crayons Number cards 0–10 Paper clips Two-color counters Number cubes Equations for Different Types of Word Problems Place value blocks Partial sums charts	Bar graph Compose Data Decompose Picture graph
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Use drawings, models, and equations to solve one- and two-step problems involving addition and subtraction within 100, including <i>different problem types with unknowns in all positions</i>.	Solve It Your Way	Progress Monitoring Assessments Cumulative/Benchmark Assessments	Place value mat Index cards Tens and ones charts Activities: Students use the following problem solving strategies: act it out, draw a picture, look for a pattern, and systematic guess and check. Students use strategies to solve problems involving situations relevant to everyday life. Students write equations that describe the action of the problem and	
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			discuss how they solved the problem. Students use the following think aloud questions to solve problems: • Understand the problem: What do I know? What do I need to know? Do I need more information? • Make a plan: How can I solve the problem? What strategy can I use? What operation should I use? • Carry out the plan: What steps do I take?	
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			• Evaluate the solution: Is my answer reasonable? Does my answer make sense? Did I add or subtract correctly? Is there another way to write this equation? Could I use a different strategy to solve the problem? Students build models of two-digit numbers using base ten blocks or interlocking cubes on place value mats, regrouping ones and tens as needed. Students	
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			use the models to add or subtract numbers and write the corresponding addition or subtraction problems. With partners, students use different color interlocking cubes to build two-digit numbers. Students join their models, finding sums to demonstrate properties of addition (e.g., red + blue = sum; blue + red = sum). Students use make-a-ten boards and two color counters to model the	
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			make-a-ten strategy to illustrate. Students use words or drawings to write explanations. Students use triangular flashcards to explain the relationship between addition and subtraction fact families. Mentor Texts: <i>One Hundred Hungry Ants</i> by Elinor J. Pinczes <i>Mission Addition</i> by Loreen Leedy <i>Subtraction Action</i> by Loreen Leedy	
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Modifications and Accommodations

Tier II and III Strategies	Small group instruction (Tier II) ● Explicit instruction ● Schema-based instruction ● Use visuals ● Use manipulatives ● Use a multi-sensory approach ● Guided notes and/or scaffold outline for written assignments ● Introduce key vocabulary before lesson ● Lesson taught again using a differentiated approach Small group or Individual instruction (Tier III) ● Intensive instruction ● Practice fact retrieval ● Lesson taught again using a differentiated approach ● Allow answers to be given orally or dictated ● Use visuals / Anchor Charts
Students with IEPs and 504 Plans	<u>Universal Design for Learning and Access for Students with Disabilities</u> <u>Movematics (dyscalculia.org)</u> Follow all the IEP/504 plan modifications Allow extra time to complete assignments or tests Guided notes and/or scaffold outline for written assignments Work in a small group Solidify and refine concepts through repetition Allow answers to be given orally or dictated

	Use multi-sensory teaching approaches Utilize assistive technology and materials Use large print books, Braille, or books on CD (digital text) Text to speech/audio recorded selections Amplification system as needed Leveled texts according to ability Fine motor skill stations embedded in rotation as needed Modified or constrained spelling word lists Provide anchor charts with high frequency words and phonemic patterns Students might need guidance as to what actions happen during partner work time. Invite students to discuss what it looks like when they are working with their partner while exploring the connecting cubes. Generate a list of shared expectations for partner work. Invite students to plan a strategy before they begin working. If time allows, invite students to share their plan with a partner. Some students may benefit from feedback that emphasizes effort and time on task. For example, moving counters in the squares of the 5-frame or filling the 5-frame with one counter in each square.
Multi-language Learners	<u>Mathematical Language Development and Access for English Learners</u> Work toward longer passages as skills in English increase Use visuals

	Introduce/highlight key vocabulary before lesson Teacher models reading aloud daily Provide peer tutoring Utilize translation supports including bilingual dictionary, translation device, assistive technology, and peers Guided notes and/or scaffold outline for written assignments Provide students with English Learner leveled readers Support recommended by the grade specific “can do” list outlined by WIDA, including Key Uses Edition and Descriptor Name Charts Create a visual display of what students want to do or make with the connecting cubes. As students share ideas, include a drawing or annotation to illustrate connections. After students share responses, use multimodal examples to show the meaning of 5 in the 5-frame. Point to each square and count to 5. Invite students to chorally read numbers 1–5 aloud. Invite students to use gestures as they count their collections aloud.
Accelerating Students	<u>Accelerating Students Guide</u> Create an enhanced set of introductory activities (e.g. advance organizers, concept maps, concept puzzles) Provide options, alternatives and choices to differentiate and broaden the curriculum Organize and offer flexible small group learning activities Provide whole group enrichment explorations

	Teach cognitive and methodological skills Use center, stations, or contracts Organize integrated problem-solving simulations Propose interest-based extension activities Expose students to beyond level texts.
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Unit 3: Measuring Length

Unit Goal: Students measure and estimate lengths in standard units and solve measurement story problems within 100.
Duration: 4 weeks
Essential Questions: • What are ways to measure length? • How can you use the length of objects you know to estimate the length of other objects? • How can you use a ruler to measure the length of an object? • How can you measure the length or height of an object in inches, feet, or yards? • Why do you need more or fewer of some units to measure the length of an object in inches, feet, or yards? • How can you use a centimeter ruler to measure length or height to the nearest centimeter? • How can you measure the length or height of an object in meters or centimeters? • Why do you need more or fewer of some units to measure the same object in meters or centimeters? • How can you find how much longer one length is than another? • How can you tell if your work is precise when measuring length?
Enduring Understandings: • 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, and yards.
- When measuring length, the longer the chosen unit, the fewer units are needed; the shorter the unit, the more units are needed.
- Length and height are measurable in centimeters and meters.

Key NJSLS Strands:

- **2.OA.A** Represent and solve problems involving addition and subtraction
 - **2.OA.A.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 comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.
Climate Change Example: Students may solve two-step word problems involving a climate change related issue in their school, such as food waste, recycling, reusing and/or reducing the consumption of goods. They may add and subtract within 100 while using drawing or equations to represent the climate change related issue.
- **2.OA.B** Add and subtract within 20
 - **B. 2.OA.B.2** With accuracy and efficiency, add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.
- **2.NBT.A** Understand place value
 - **2.NBT.A.2** Count within 1000; skip-count by 5s, 10s, and 100s.
- **2.NBT.B** Use place value understanding and properties of operations to add and subtract
 - **2.NBT.B.5** With accuracy and efficiency, add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.
- **2.M.A** Measure and estimate lengths in standard units
 - **2.M.A.1** Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.
 - **2.M.A.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.
 - **2.M.A.3** Estimate lengths using units of inches, feet, centimeters, and meters.
 - **2.M.A.4** Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.

- **2.M.B** Relate addition and subtraction to length
 - **2.M.B.5** 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.

Interdisciplinary Connections

- **RI.2.6** Identify the main purpose of a text, including what the author wants to answer, explain, or describe.
- **RI.2.7** Explain how specific illustrations and images (e.g., a diagram showing how a machine works) contribute to and clarify a text.
- **RF.2.4** Read with sufficient accuracy and fluency to support comprehension.
- **K-2-ETS1-1** Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.
- **K-2-ETS1-2** Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.
- **K-2-ETS1-3** Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.
- **2-PS1-1** Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.

21st-Century Skills

- **9.2.4.A.1** Identify reasons why people work, different types of work, and how work can help a person achieve personal and professional goals.

Career Ready Practices

- **CRP 4** Communicate clearly and effectively and with reason while working on groups on the Solve and Share portion of the lesson.
- **CRP 11** Use technology to enhance productivity

Technology Integration

- **TECH.8.1.2** All students will use digital tools to access, manage, evaluate and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.
- **TECH.8.1.2.A.CS2** Select and use applications effectively and productively
- **TECH.8.2.2.C** The design process is a systematic approach to solving problems

Skills	Instructional Topics	Assessment	Resources	Vocabulary
Measure length in centimeters and meters. Represent and solve one-step story problems within 100. Measure length in feet and inches. Represent and solve one- and two-step story problems within 100. Represent numerical data on a line plot.	Standard Units of Measure Measure in Centimeters Create and Use a Ruler Measure and Estimate in Centimeters Measure in Meters Compare Reptile Lengths in Story Problems What is an Inch?	Formative Assessments: Diagnostic Assessment Mid-topic Checkpoint Lesson Quizzes Lesson Self-assessment Teacher Observations Class Discussions Classwork/ Homework Exit Slips/Google Form Summative Assessments:	Materials: One-inch objects One-foot objects One-yard objects Paper clips Book Inch rulers Yardsticks One-inch squares Measuring tapes Problem solving reading mat	Bar graph Centimeter Compose Data Decompose Foot Inch Line plot Meter Picture graph

	From Feet to Inches Measure with a Torn Tape Saree Silk Stories: Necklaces and Bracelets Saree Silk Stories: Friendship Bracelets What is a Line Plot? Create Line Plots Interpret Measurement Data Make a Yard Stick	Topic/Unit Assessments Constructed Response Questions Projects Cumulative Tests Performance Assessments Alternate and Benchmark Assessments: Progress Monitoring Assessments Cumulative/Benchmark Assessments	Center games Index cards Connecting cubes Centimeter rulers Centimeter cubes or squares Straws String Base-ten blocks Reptile pictures Bearded Dragon pictures Chart paper Activities: As standard units are introduced, students locate objects that are about the size of that unit (e.g., centimeter-width of pencil)	
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			Station Activity: Choose cards labeled with classroom items. Students select tools provided in the station, measure the objects, and record the measurements. Examine measuring tools and discuss the relationships between units. Students create their own graphic organizers labeled ruler, yardstick, and measuring tape. Students then categorize items from the classroom by the most appropriate tool for measuring.	
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			Measure objects and record the measurements in specified units. Then measure the same objects with different units and describe how the measurements are related based on the sizes of the units (e.g., measure the length of a window in inches using inchworms, in feet using a ruler, and in yards using a yardstick. Compare the number in inches, feet, and yards and discuss why the measurements are different). Games: “Race to the Yard” using a ruler, spinners,	
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			and 36-inch lengths of adding machine tape. After spinning, students use rulers to draw lines on the tape, beginning on the left, to show the number of inches indicated on the spinner. On successive spins, students continue drawing the lengths of the line segment to reach the other end of the tape. Students discuss the relationship between inches and yards. Using personal benchmarks (e.g., the width of a child's finger is about 1 cm), students estimate	
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			the lengths of objects and record their predictions. Students measure the objects with standard measuring tools and record. Students compare their estimates to the actual measurements. Mentor Texts: <i>Keep Your Distance!</i> by Gail Herma <i>How Long or How Wide?</i> By Brian Cleary	
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Modifications and Accommodations	
Tier II and III Strategies	Small group instruction (Tier II) ● Explicit instruction ● Schema-based instruction ● Use visuals ● Use manipulatives ● Use a multi-sensory approach ● Guided notes and/or scaffold outline for written assignments

	● Introduce key vocabulary before lesson ● Lesson taught again using a differentiated approach Small group or Individual instruction (Tier III) ● Intensive instruction ● Practice fact retrieval ● Lesson taught again using a differentiated approach ● Allow answers to be given orally or dictated ● Use visuals / Anchor Charts
Students with IEPS and 504 Plans	<u>Universal Design for Learning and Access for Students with Disabilities</u> <u>Movematics (dyscalculia.org)</u> Follow all the IEP/504 plan modifications Allow extra time to complete assignments or tests Guided notes and/or scaffold outline for written assignments Work in a small group Solidify and refine concepts through repetition Allow answers to be given orally or dictated Use multi-sensory teaching approaches Utilize assistive technology and materials Use large print books, Braille, or books on CD (digital text) Text to speech/audio recorded selections Amplification system as needed

	Leveled texts according to ability Fine motor skill stations embedded in rotation as needed Modified or constrained spelling word lists Provide anchor charts with high frequency words and phonemic patterns Students might need guidance as to what actions happen during partner work time. Invite students to discuss what it looks like when they are working with their partner while exploring the connecting cubes. Generate a list of shared expectations for partner work. Invite students to plan a strategy before they begin working. If time allows, invite students to share their plan with a partner. Some students may benefit from feedback that emphasizes effort and time on task. For example, moving counters in the squares of the 5-frame or filling the 5-frame with one counter in each square.
Multi-language Learners	<u>Mathematical Language Development and Access for English Learners</u> Work toward longer passages as skills in English increase Use visuals Introduce/highlight key vocabulary before lesson Teacher models reading aloud daily Provide peer tutoring Utilize translation supports including bilingual dictionary, translation device, assistive technology, and peers Guided notes and/or scaffold outline for written assignments

	Provide students with English Learner leveled readers Support recommended by the grade specific “can do” list outlined by WIDA, including Key Uses Edition and Descriptor Name Charts Create a visual display of what students want to do or make with the connecting cubes. As students share ideas, include a drawing or annotation to illustrate connections. After students share responses, use multimodal examples to show the meaning of 5 in the 5-frame. Point to each square and count to 5. Invite students to chorally read numbers 1–5 aloud. Invite students to use gestures as they count their collections aloud.
Accelerating Students	<u>Accelerating Students Guide</u> Create an enhanced set of introductory activities (e.g. advance organizers, concept maps, concept puzzles) Provide options, alternatives and choices to differentiate and broaden the curriculum Organize and offer flexible small group learning activities Provide whole group enrichment explorations Teach cognitive and methodological skills Use center, stations, or contracts Organize integrated problem-solving simulations Propose interest-based extension activities Expose students to beyond level texts.

Unit 4: Adding and Subtracting on a Number Line

Unit Goal: Students learn about the structure of a number line and use it to represent numbers within 100. They also relate addition and subtraction to length and represent the operations on the number line.

Duration: 4 weeks

Essential Questions:

- How can you use an open number line to add tens and ones?
- How can you use an open number line to subtract tens and ones?
- How can you use an open number line to add up to subtract?

Enduring Understandings:

- You can represent how to add tens and ones from a two-digit number with hops or jumps on an open number line.
- You can represent how to subtract tens from a two-digit number with hops or jumps on an open number line.

Key NJSL Standards:

- **2.M.B** Relate addition and subtraction to length
 - **2.M.B.5** 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.
 - **2.M.B.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.
- **2.NBT.A** Understand place value
 - **2.NBT.A.2** Count within 1000; skip-count by 5s, 10s, and 100s.
- **2.NBT.B** Use place value understanding and properties of operations to add and subtract
 - **2.NBT.B.5** With accuracy and efficiency, add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.
- **2.OA.A** Represent and solve problems involving addition and subtraction
 - **2.OA.A.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 comparing, with unknowns in all positions, e.g., by using

drawings and equations with a symbol for the unknown number to represent the problem.

Climate Change Example: Students may solve two-step word problems involving a climate change related issue in their school, such as food waste, recycling, reusing and/or reducing the consumption of goods. They may add and subtract within 100 while using drawing or equations to represent the climate change related issue.

Interdisciplinary Connections

- **RL.2.1** Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.
- **RL.2.7** Use information gained from the illustrations and words in a print or digital text to demonstrate understanding of its characters, setting, or plot.
- **RI.2.6** Identify the main purpose of a text, including what the author wants to answer, explain, or describe.
- **RI.2.7** Explain how specific illustrations and images (e.g., a diagram showing how a machine works) contribute to and clarify a text.
- **RF.2.4** Read with sufficient accuracy and fluency to support comprehension.
- **2-LS4-1** Make observations of plants and animals to compare the diversity of life in different habitats
- **2-LS2-2** Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.

21st-Century Skills

- **9.2.4.A.4** Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success.

Career Ready Practices

- **CRP 4** Communicate clearly and effectively and with reason during the Solve and Share portion of the lesson.
- **CRP 8** Utilize critical thinking to make sense of problems and persevere in solving independent practice problems.
- **CRP 11** Use technology to enhance productivity.

Technology Integration

- **TECH.8.1.2** All students will use digital tools to access, manage, evaluate and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.
- **TECH.8.1.2.A.CS2** Select and use applications effectively and productively.
- **TECH.8.2.2.C** The design process is a systematic approach to solving problems.

Skills	Instructional Topics	Assessment	Resources	Vocabulary
Represent whole numbers within 100 as lengths from 0 on a number line. Understand the structure of the number line. Represent sums and differences on a number line.	Whole Numbers on the Number Line Features of a Number Line Unlabeled Tick Marks Compare Numbers on a Number Line Estimate on a Number Line Add and Subtract on a Number Line Addition and Subtraction on the Number Line Equations on a Number Line	Formative Assessments: Diagnostic Assessment Mid-topic Checkpoint Lesson Quizzes Lesson Self-assessment Teacher Observations Class Discussions Classwork/ Homework Exit Slips/Google Form Summative Assessments: Topic/Unit Assessments Constructed Response Questions Projects	Materials: Objects of various lengths String Class Number Line Cards (0–30) Counters Dry erase markers Materials from a previous lesson Number cubes Sheet protectors Number Line to 100 Chart paper Markers	Bar graph Centimeter Compose Data Decompose Foot Inch Line plot Number line Picture graph

	The Difference Between Numbers Place Value and the Number Line Different Ways to Add and Subtract Equations with Unknowns Represent Story Problems	Cumulative Tests Performance Assessments Alternate and Benchmark Assessments: Progress Monitoring Assessments Cumulative/Benchmark Assessments	Order Numbers on the Number Line Cards Centimeter cubes Materials from previous centers Paper clips Number Line Scoot Game board Number Line Scoot Spinner Number Line Scoot Directions Glue Scissors Base-ten blocks Tools for creating a visual display Story Problems Card Sort (stories, equations, number lines, diagrams)	
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			Paper clips Sheet protectors Jump the Line Game board Jump the Line Spinners Activities: Locate numbers on a number line Number line walk Compare numbers on a number line Add on a number line games Subtract on a number line games Mentor Texts: <i>Elevator Magic</i> by Stuart J. Murphy <i>Ten Flashing Fireflies</i> by Philemon Sturges	
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			<i>Ten Apples Up on Top!</i> By Dr. Seuss <i>A Fair Bear Share</i> by Stuart J. Murphy	
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Modifications and Accommodations	
Tier II and III Strategies	Small group instruction (Tier II) ● Explicit instruction ● Schema-based instruction ● Use visuals ● Use manipulatives ● Use a multi-sensory approach ● Guided notes and/or scaffold outline for written assignments ● Introduce key vocabulary before lesson ● Lesson taught again using a differentiated approach Small group or Individual instruction (Tier III) ● Intensive instruction ● Practice fact retrieval ● Lesson taught again using a differentiated approach ● Allow answers to be given orally or dictated ● Use visuals / Anchor Charts
Students with IEPs and 504 Plans	<u>Universal Design for Learning and Access for Students with Disabilities</u> <u>Movematics (dyscalculia.org)</u> Follow all the IEP/504 plan modifications

	Allow extra time to complete assignments or tests Guided notes and/or scaffold outline for written assignments Work in a small group Solidify and refine concepts through repetition Allow answers to be given orally or dictated Use multi-sensory teaching approaches Utilize assistive technology and materials Use large print books, Braille, or books on CD (digital text) Text to speech/audio recorded selections Amplification system as needed Leveled texts according to ability Fine motor skill stations embedded in rotation as needed Modified or constrained spelling word lists Provide anchor charts with high frequency words and phonemic patterns Students might need guidance as to what actions happen during partner work time. Invite students to discuss what it looks like when they are working with their partner while exploring the connecting cubes. Generate a list of shared expectations for partner work. Invite students to plan a strategy before they begin working. If time allows, invite students to share their plan with a partner. Some students may benefit from feedback that emphasizes effort and time on task. For
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	example, moving counters in the squares of the 5-frame or filling the 5-frame with one counter in each square.
Multi-language Learners	<u>Mathematical Language Development and Access for English Learners</u> Work toward longer passages as skills in English increase Use visuals Introduce/highlight key vocabulary before lesson Teacher models reading aloud daily Provide peer tutoring Utilize translation supports including bilingual dictionary, translation device, assistive technology, and peers Guided notes and/or scaffold outline for written assignments Provide students with English Learner leveled readers Support recommended by the grade specific “can do” list outlined by WIDA, including Key Uses Edition and Descriptor Name Charts Create a visual display of what students want to do or make with the connecting cubes. As students share ideas, include a drawing or annotation to illustrate connections. After students share responses, use multimodal examples to show the meaning of 5 in the 5-frame. Point to each square and count to 5. Invite students to chorally read numbers 1–5 aloud. Invite students to use gestures as they count their collections aloud.

Accelerating Students	<u>Accelerating Students Guide</u> Create an enhanced set of introductory activities (e.g. advance organizers, concept maps, concept puzzles) Provide options, alternatives and choices to differentiate and broaden the curriculum Organize and offer flexible small group learning activities Provide whole group enrichment explorations Teach cognitive and methodological skills Use center, stations, or contracts Organize integrated problem-solving simulations Propose interest-based extension activities Expose students to beyond level texts.
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Interdisciplinary Connections	
● RI.2.6 Identify the main purpose of a text, including what the author wants to answer, explain, or describe. ● RL.2.1 Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text. ● RL.2.7 Use information gained from the illustrations and words in a print or digital text to demonstrate understanding of its characters, setting, or plot. ● RI.2.7 Explain how specific illustrations and images (e.g., a diagram showing how a machine works) contribute to and clarify a text. ● RF.2.4 Read with sufficient accuracy and fluency to support comprehension.	

21st-Century Skills
● 9.2.4.A.4 Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success.
Career Ready Practices
● CRP 4 Communicate clearly and effectively and with reason while working on groups on the Solve and Share portion of the lesson. ● CRP 11 Use technology to enhance productivity.
Technology Integration
● TECH.8.1.2 All students will use digital tools to access, manage, evaluate and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge. ● TECH.8.1.2.A.CS2 Select and use applications effectively and productively. ● TECH.8.2.2.C The design process is a systematic approach to solving problems.

Unit 5: Numbers to 1,000

Unit Goal: Students extend place value understanding to three-digit numbers.
Duration: 4 weeks
Essential Questions: ● How can you count, read, and show numbers to 1,000? ● How can you find the value of a group of hundreds? ● How can you show and write three-digit numbers? ● How does a position of a digit help you to name its value? ● How can you write three-digit numbers in different forms? ● How can you use hundreds, tens, and ones in different ways? ● How can you use place value patterns to help you count by ones and tens from a given number?

- How can you use skip counting to find missing numbers on a number line?
- How can you compare two numbers?
- How can you use a number line to help you find a number that is greater/less than a given number?
- How can you find a number that comes next in a number pattern?

Enduring Understandings:

- Numbers can be used to tell how many.
- The number system is based on groups of ten. Whenever there are 10 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 its value. It takes 10 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 an equal amount (such as 100 is equal to 10 tens and 10 is equal to 10 ones) can help you name numbers in different ways.
- Place value patterns can be used to count by ones and tens from a given number.
- Place value patterns and number lines can be used to help you skip count by 5s, 10s, and 100s.
- 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.

Key NJSLS Strands:

- **2.M.B** Relate addition and subtraction to length
 - **2.M.B.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.

- **2.OA.A** Represent and solve problems involving addition and subtraction
 - **2.OA.A.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 comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.
 Climate Change Example: Students may solve two-step word problems involving a climate change related issue in their school, such as food waste, recycling, reusing and/or reducing the consumption of goods. They may add and subtract within 100 while using drawing or equations to represent the climate change related issue.
- **2.OA.B** Add and subtract within 20
 - **2.OA.B.2** With accuracy and efficiency, add and subtract within 20 using mental strategies. By the end of Grade 2, know from memory all sums of two one-digit numbers.
- **2.NBT.A** Understand place value
 - **2.NBT.A.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. Understand the following as special cases:
 - **2.NBT.A.1.a** 100 can be thought of as a bundle of ten tens — called a “hundred.”
 - **2.NBT.A.1.b** 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).
 - **2.NBT.A.2** Count within 1000; skip-count by 5s, 10s, and 100s.
 - **2.NBT.A.3** Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.
 - **2.NBT.A.4** Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using $>$, $=$, and $<$ symbols to record the results of comparisons.
- **2.NBT.B** Use place value understanding and properties of operations to add and subtract
 - **2.NBT.B.5** With accuracy and efficiency, add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.
 - **2.NBT.B.8** Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a given number 100–900.

Interdisciplinary Connections

- **RI.2.6** Identify the main purpose of a text, including what the author wants to answer, explain, or describe.

- **RL.2.1** Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.
- **RL.2.7** Use information gained from the illustrations and words in a print or digital text to demonstrate understanding of its characters, setting, or plot.
- **RI.2.7** Explain how specific illustrations and images (e.g., a diagram showing how a machine works) contribute to and clarify a text.
- **RF.2.4** Read with sufficient accuracy and fluency to support comprehension.

21st-Century Skills

- **9.4.5.IML.3** Represent the same data in multiple visual formats in order to tell a story about the data

Career Ready Practices

- **CRP 4** Communicate clearly and effectively and with reason.
- **CRP 8** Utilize critical thinking to make sense of problems and persevere in solving independent practice problems.
- **CRP 11** Use technology to enhance productivity.

Technology Integration

- **2-PS1-3** Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object.

Skills	Instructional Topics	Assessment	Resources	Vocabulary
Represent whole numbers up to 1,000 as lengths from 0 on a number line.	How Do We Compose a Hundred? Make Hundreds	Formative Assessments: Diagnostic Assessment Mid-topic Checkpoint	Materials: Base-ten blocks Chart paper	Expanded form Number line Standard form Ones
Understand place value.	Compose Three-digit Numbers			

Count by hundreds to 1,000. Model three-digit numbers. Write three-digit numbers. Tell the value of a digit by where it is placed in a number. Read three-digit numbers in expanded form, standard form, and word form. 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 ones and tens from a given number.	Write Three-digit Numbers Expanded Form of Numbers Represent Numbers in Different Ways Compare and Order Numbers within 1,000 Three-digit Numbers on the Number Line Compare Numbers on the Number Line Place Value Comparisons (multi-day lesson) Skip Counting Hundreds of Objects	Lesson Quizzes Lesson Self-assessment Teacher Observations Class Discussions Classwork/ Homework Exit Slips/Google Form Summative Assessments: Topic/Unit Assessments Constructed Response Questions Projects Cumulative Tests Performance Assessments Alternate and Benchmark Assessments: Progress Monitoring Assessments Cumulative/Benchmark Assessments	Tools for creating a visual display Number cubes Number cards (1-100) Dry erase markers Sheet protectors Collections of objects Sticky notes Number lines Open number lines Activities: Students use place value blocks and drawings to model and write three-digit numbers. Students use place value patterns to mentally count by ones and tens from a given number. Students use	Tens Hundreds Thousands
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Skip count by 5s, 10s, and 100s 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.			manipulatives (e.g., straws, craft sticks, chenille sticks), bundling sets of tens and hundreds to represent three-digit numbers. Students build three-digit numbers using individual place value pocket charts labeled hundreds, tens, and ones and sets of digit cards. Students name the number in both standard and expanded forms. Students use hundred charts (1-100) to skip count by 5s and 10s. Discuss the patterns students find on the hundred charts when skip counting. On blank grid paper, students write numbers by tens to create thousand charts. Skip count by 100s and discuss the	
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			patterns on the charts. Students use chants and songs to practice skip-counting. Students work with partners to build a number using base ten materials; write numbers in both standard form and word form. Students use individual place value pocket charts labeled hundreds, tens, and ones and sets of digit cards to build specified numbers. Students write the numbers three ways: standard, expanded, and word form. Students work with partners to build a number using base ten materials; then build a second number using base	
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			ten materials. Students use appropriate symbol cards to show greater than, less than, or equal to to compare the two numbers. With partners, students use three colors of number cubes. After rolling cubes, students write the largest and smallest possible numbers. Students write numbers and use symbols to complete number sentences (e.g., $123 < 321$ or $321 > 123$). Use hundred charts and counters to cover numbers according to teacher directions (e.g., Cover the number 46; now cover the number that is 10 more. Cover the number that is 10 less. What pattern do you see?)	
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			Expand the activity to thousand charts (by 10s), covering numbers that are 100, or minus 100. As numbers are called, students respond by stating the equation and the solution according to their cards (e.g., called number 230; $230 + 10 = 240$; $230 - 10 = 220$; $230 + 100 = 330$; $230 - 100 = 130$). Students rotate the cards and continue the process. Mentor Texts: <i>How Many Jellybeans?</i> by Andrea Menotti <i>Sir Cumference and All the King's Tens</i> by Cindy Neuschwander	
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Modifications and Accommodations	
Tier II and III Strategies	Small group instruction (Tier II) • Explicit instruction

	● Schema-based instruction ● Use visuals ● Use manipulatives ● Use a multi-sensory approach ● Guided notes and/or scaffold outline for written assignments ● Introduce key vocabulary before lesson ● Lesson taught again using a differentiated approach Small group or Individual instruction (Tier III) ● Intensive instruction ● Practice fact retrieval ● Lesson taught again using a differentiated approach ● Allow answers to be given orally or dictated ● Use visuals / Anchor Charts
Students with IEPs and 504 Plans	<u>Universal Design for Learning and Access for Students with Disabilities</u> <u>Movematics (dyscalculia.org)</u> Follow all the IEP/504 plan modifications Allow extra time to complete assignments or tests Guided notes and/or scaffold outline for written assignments Work in a small group Solidify and refine concepts through repetition Allow answers to be given orally or dictated Use multi-sensory teaching approaches Utilize assistive technology and materials

	Use large print books, Braille, or books on CD (digital text) Text to speech/audio recorded selections Amplification system as needed Leveled texts according to ability Fine motor skill stations embedded in rotation as needed Modified or constrained spelling word lists Provide anchor charts with high frequency words and phonemic patterns Students might need guidance as to what actions happen during partner work time. Invite students to discuss what it looks like when they are working with their partner while exploring the connecting cubes. Generate a list of shared expectations for partner work. Invite students to plan a strategy before they begin working. If time allows, invite students to share their plan with a partner. Some students may benefit from feedback that emphasizes effort and time on task. For example, moving counters in the squares of the 5-frame or filling the 5-frame with one counter in each square.
Multi-language Learners	<u>Mathematical Language Development and Access for English Learners</u> Work toward longer passages as skills in English increase Use visuals Introduce/highlight key vocabulary before lesson Teacher models reading aloud daily

	Provide peer tutoring Utilize translation supports including bilingual dictionary, translation device, assistive technology, and peers Guided notes and/or scaffold outline for written assignments Provide students with English Learner leveled readers Support recommended by the grade specific “can do” list outlined by WIDA, including Key Uses Edition and Descriptor Name Charts Create a visual display of what students want to do or make with the connecting cubes. As students share ideas, include a drawing or annotation to illustrate connections. After students share responses, use multimodal examples to show the meaning of 5 in the 5-frame. Point to each square and count to 5. Invite students to chorally read numbers 1–5 aloud. Invite students to use gestures as they count their collections aloud.
Accelerating Students	<u>Accelerating Students Guide</u> Create an enhanced set of introductory activities (e.g. advance organizers, concept maps, concept puzzles) Provide options, alternatives and choices to differentiate and broaden the curriculum Organize and offer flexible small group learning activities Provide whole group enrichment explorations Teach cognitive and methodological skills Use center, stations, or contracts

	Organize integrated problem-solving simulations Propose interest-based extension activities Expose students to beyond level texts.
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Unit 6: Geometry, Time, and Money

Unit Goal: Students reason with shapes and their attributes and partition shapes into equal shares, building a foundation for fractions. They relate halves, fourths, and skip-counting by 5 to tell time, and solve story problems involving the values of coins and dollars.
Duration: 5 weeks
Essential Questions: • How can shapes be broken into simpler parts? • What attributes are important for naming shapes? • When is one object or shape bigger than another? • What determines big and small? • How can you use what you know about addition and subtraction to solve problems about counting money? • How can you use what you know about addition and subtraction to solve problems about telling time to the nearest five minutes?
Enduring Understandings: • Equal shares can be represented in different ways. • Shapes can be classified by their attributes. • Geometric properties can be used to construct two dimensional figures. • Each kind of coin has a specific value unrelated to its physical size. • Money is measurable, and the value of the coin can be quantified using cent amounts. • Money is measurable and can be quantified using dollar and cent amounts. • Each 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 often 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.

Key NJSL Standards:

- **2.G.A** Reason with shapes and their attributes
 - **2.G.A.1** Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. Identify triangles, quadrilaterals, pentagons, hexagons, and cubes. (Clarification: sizes are compared directly or visually, not compared by measuring)
 - **2.G.A.2** Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.
 - **2.G.A.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.
- **2.M.A** Measure and estimate lengths in standard units
 - **2.M.A.1** Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.
- **2.M.C** Work with time and money
 - **2.M.C.7** Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.
 - **2.M.C.8** Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using \$ and ¢ symbols appropriately. Example: If you have 2 dimes and 3 pennies, how many cents do you have?
- **2.NBT.A** Understand place value
 - **2.NBT.A.2** Count within 1000; skip-count by 5s, 10s, and 100s.
 - **2.NBT.A.3** Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.
- **2.NBT.B** Use place value understanding and properties of operations to add and subtract

- **2.NBT.A.5** With accuracy and efficiency, add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.
- **2.NBT.A.6** Add up to four two-digit numbers using strategies based on place value and properties of operations.
- **2.NBT.A.8** Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a given number 100–900.
- **2.OA.A** Represent and solve problems involving addition and subtraction
 - **2.OA.A.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 comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.
 Climate Change Example: Students may solve two-step word problems involving a climate change related issue in their school, such as food waste, recycling, reusing and/or reducing the consumption of goods. They may add and subtract within 100 while using drawing or equations to represent the climate change related issue.

Interdisciplinary Connections

- **2-PS1-1** Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.
- **K-2-ETS1-1** Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.
- **K-2-ETS1-2** Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.
- **K-2-ETS1-3** Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.

21st-Century Skills

- **9.1.2.FP.1** Explain how emotions influence whether a person spends or saves.
- **9.1.2.FP.2** Differentiate between financial wants and needs.
- **9.1.2.FP.3** Identify the factors that influence people to spend or save (e.g., commercials, family, culture, society).

Career Ready Practices

- **CRP 8** Utilize critical thinking to make sense of problems and persevere in solving problem solving problems.
- **CRP 11** Use technology to enhance productivity.

Technology Integration

- **TECH.8.1.2** All students will use digital tools to access, manage, evaluate and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.
- **TECH.8.1.2.A.CS2** Select and use applications effectively and productively.
- **TECH.8.2.2.C** The design process is a systematic approach to solving problems.

Skills	Instructional Topics	Assessment	Resources	Vocabulary
Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.	Attributes of Shapes	Formative Assessments:	Materials:	Third
	Pattern Block Puzzles	Diagnostic Assessment	Previous activity	Thirds
	Identify and Sort Shapes	Mid-topic Checkpoint	Shape Cards	Face (solid shape)
Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces.	Draw Shapes	Lesson Quizzes	Rulers	Face (clock)
	Specific Side Lengths	Lesson Self-assessment	Geoblocks	Hexagon
	Solid Shapes	Teacher Observations	Scissors	Pentagon
	Halves, Thirds, and Fourths: Compose and Decompose Shapes	Class Discussions	Tape	Quadrilateral
Partition rectangles and circles into halves, thirds, and fourths and name the pieces.	Make Halves, Thirds, and Fourths	Classwork/ Homework	Tools for creating a visual display	Triangle
	Are All Pieces Created Equal?	Exit Slips/Google Form	Cube Pattern	
Recognize 2 halves, 3 thirds, and 4 fourths as one whole.		Summative Assessments:	Shape Design Card	
		Topic/Unit Assessments	Sort	

Understand that equal pieces do not need to be the same shape. Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m. Find the value of a group of bills and coins. Use addition and subtraction within 100 to solve one- and two-step word problems.	Time on the Clock Tell Time with Halves and Quarters Count by 5 to Tell Time Is It a.m. or p.m.? Identify Pennies, Nickels, and Dimes Identify Quarters Let's Make a Dollar Money Problems More Money Problems	Constructed Response Questions Projects Cumulative Tests Performance Assessments Alternate and Benchmark Assessments: Progress Monitoring Assessments Cumulative/Benchmark Assessments	Centimeter Dot Paper - Standard Pattern blocks Compose a Butterfly Isometric Dot Paper Construction paper Colored pencils Chart paper Halves and Quarters Clock Sort Count on the Clock Card Sort Glue Hours in a Day Timeline Materials from previous centers Picture books Picture Books Recording Sheet	
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			Coins to Cut and Count Money Poster Images Card stock Pattern blocks Activities: Sort triangles, quadrilaterals, pentagons, and hexagons based on number of sides and corners Draw Shapes on centimeter dot paper Make a poster for a solid figure Create pictures using pattern blocks Play “What do you know about telling time?”	
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			Time Concentration Game Solve story problems with money Set up a class store to solve addition and subtraction problems with money Mentor Texts: <i>Shapes, Shapes, Shapes</i> by Tara Robin <i>Three Pigs, One Wolf and Seven Magic Shapes</i> by Grace Maccarone <i>A Chair for My Mother</i> by Vera B. Williams <i>The Go-Around Dollar</i> by Barbara Adams <i>The Penny Pot</i> by Stuart J. Murphy	
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			<i>Just a Second</i> by Steve Jenkins <i>Game Time</i> by Stuart J. Murphy	
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Modifications and Accommodations	
Tier II and III Strategies	Small group instruction (Tier II) ● Explicit instruction ● Schema-based instruction ● Use visuals ● Use manipulatives ● Use a multi-sensory approach ● Guided notes and/or scaffold outline for written assignments ● Introduce key vocabulary before lesson ● Lesson taught again using a differentiated approach Small group or Individual instruction (Tier III) ● Intensive instruction ● Practice fact retrieval ● Lesson taught again using a differentiated approach ● Allow answers to be given orally or dictated ● Use visuals / Anchor Charts
Students with IEPS and 504 Plans	<u>Universal Design for Learning and Access for Students with Disabilities</u> <u>Movematics (dyscalculia.org)</u> Follow all the IEP/504 plan modifications Allow extra time to complete assignments or tests

	Guided notes and/or scaffold outline for written assignments Work in a small group Solidify and refine concepts through repetition Allow answers to be given orally or dictated Use multi-sensory teaching approaches Utilize assistive technology and materials Use large print books, Braille, or books on CD (digital text) Text to speech/audio recorded selections Amplification system as needed Leveled texts according to ability Fine motor skill stations embedded in rotation as needed Modified or constrained spelling word lists Provide anchor charts with high frequency words and phonemic patterns Students might need guidance as to what actions happen during partner work time. Invite students to discuss what it looks like when they are working with their partner while exploring the connecting cubes. Generate a list of shared expectations for partner work. Invite students to plan a strategy before they begin working. If time allows, invite students to share their plan with a partner. Some students may benefit from feedback that emphasizes effort and time on task. For example, moving counters in the squares of the 5-frame or filling the 5-frame with one counter in each square.
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Multi-language Learners	<u>Mathematical Language Development and Access for English Learners</u> Work toward longer passages as skills in English increase Use visuals Introduce/highlight key vocabulary before lesson Teacher models reading aloud daily Provide peer tutoring Utilize translation supports including bilingual dictionary, translation device, assistive technology, and peers Guided notes and/or scaffold outline for written assignments Provide students with English Learner leveled readers Support recommended by the grade specific “can do” list outlined by WIDA, including Key Uses Edition and Descriptor Name Charts Create a visual display of what students want to do or make with the connecting cubes. As students share ideas, include a drawing or annotation to illustrate connections. After students share responses, use multimodal examples to show the meaning of 5 in the 5-frame. Point to each square and count to 5. Invite students to chorally read numbers 1–5 aloud. Invite students to use gestures as they count their collections aloud.
Accelerating Students	<u>Accelerating Students Guide</u>

	Create an enhanced set of introductory activities (e.g. advance organizers, concept maps, concept puzzles) Provide options, alternatives and choices to differentiate and broaden the curriculum Organize and offer flexible small group learning activities Provide whole group enrichment explorations Teach cognitive and methodological skills Use center, stations, or contracts Organize integrated problem-solving simulations Propose interest-based extension activities Expose students to beyond level texts.
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Unit 7: Adding and Subtracting Within 1,000

Unit Goal: Students use place value understanding, the relationship between addition and subtraction, and properties of operations to add and subtract within 1,000.
Duration: 4 weeks
Essential Questions: • What are the strategies for adding numbers to 1,000? • How can you use mental math to add 10 or 100 to a three-digit number? • How can you use an open number line to add three-digit numbers? • How can you use mental math to add three-digit numbers? • How can you use partial sums to add three-digit numbers? • When do you regroup when adding three-digit numbers?

- What are some ways you can add two three-digit numbers?
- What are the steps when adding three-digit numbers?
- What are strategies for subtracting numbers to 1,000?
- How can you use mental math to subtract 10 or 100 from a three-digit number?
- How can you use an open number line to subtract hundreds, tens, and ones?
- How can you use an open number line to add up to subtract?
- How can you use mental math to subtract three-digit numbers?
- How can models help you regroup to subtract three-digit numbers?
- How can you use different strategies to solve subtraction problems involving three-digit numbers?
- How can you make sense of a word problem that has a hidden question, and what steps can you use to solve it?

Enduring Understandings:

- Place value patterns and basic facts can be used to help you mentally add 10 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 change the 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 hundreds. 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.
- Place value patterns and basic facts can be used to help you mentally subtract 10 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 with hops or jumps 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 three-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.

Key NJSLS Strands:

- **2.NBT.A** Understand place value
 - **2.NBT.A.2** Count within 1000; skip-count by 5s, 10s, and 100s.
 - **2.NBT.A.4** Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using $>$, $=$, and $<$ symbols to record the results of comparisons.
- **2.NBT.B** Use place value understanding and properties of operations to add and subtract
 - **2.NBT.A.5** With accuracy and efficiency, add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.
 - **2.NBT.A.6** Add up to four two-digit numbers using strategies based on place value and properties of operations.
 - **2.NBT.B.7** Add and subtract within 1000, 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.
 - **2.NBT.A.8** Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a given number 100–900.
 - **2.NBT.B.9** Explain why addition and subtraction strategies work, using place value and the properties of operations. (Clarification: Explanations should be supported by drawings or objects.)
- **2.DL.A** Understand concepts of data
 - **2.DL.A.4** 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 problems using information presented in a bar graph.

Interdisciplinary Connections

- **RI.2.6** Identify the main purpose of a text, including what the author wants to answer, explain, or describe.
- **RI.2.7** Explain how specific illustrations and images (e.g., a diagram showing how a machine works) contribute to and clarify a text.
- **RF.2.4** Read with sufficient accuracy and fluency to support comprehension.
- **K-2-ETS1-1** Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.
- **2-PS1-1** Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.

21st-Century Skills

- **9.4.2.CT.3** Use a variety of types of thinking to solve problems

Career Ready Practices

- **CRP 4** Communicate clearly and effectively and with reason while working in groups.
- **CRP 11** Use technology to enhance productivity.

Technology Integration

- **TECH.8.1.2** All students will use digital tools to access, manage, evaluate and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.

Skills	Instructional Topics	Assessment	Resources	Vocabulary
Add and subtract numbers within 1,000 without composition or decomposition, and use strategies based on the relationship between	Compare, Count on, and Count Back Add and Subtract with Tens and Hundreds	Formative Assessments: Diagnostic Assessment Mid-topic Checkpoint	Materials: Base-ten blocks Number cubes	Compose Decompose Expanded form

addition and subtraction and the properties of operations. Add numbers within 1,000 using strategies based on place value understanding, including composing a ten or hundred. Subtract numbers within 1,000 using strategies based on place value understanding, including decomposing a ten or hundred.	Count on or Count Back to Subtract Add and Subtract Three-digit Numbers in Different Ways Use a Ten to Add Within 1,000 Compose a Larger Unit Compose Tens and Hundreds to Add Add Three-digit Numbers Add within 1,000 Decompose to Subtract Decompose Tens or Hundreds Think Before You Subtract Decompose a Ten and a Hundred to Subtract Subtract Within 1,000	Lesson Quizzes Lesson Self-assessment Teacher Observations Class Discussions Classwork/ Homework Exit Slips/Google Form Summative Assessments: Topic/Unit Assessments Constructed Response Questions Projects Cumulative Tests Performance Assessments Alternate and Benchmark Assessments: Progress Monitoring Assessments	Paper clips Two-color counters Number cards 0–10 Paper clips Tens board Hundreds chart Number cubes Activities: In pairs, students use base ten models and place value mats to solve and record addition and subtraction problems, composing or decomposing (regrouping) as needed. Students draw pictorial models of three-digit numbers (e.g., squares as flats, sticks as rods, dots as units) and use the models to	Number line
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		Cumulative/Benchmark Assessments	complete the computations. Students record the addition and subtraction problems. Students use hundred charts and counters to cover numbers according to teacher directions (e.g., Cover the number 46; now cover the number that is 10 more. Cover the number that is 10 less. What pattern do you see?) Expand the activity to thousand charts (by 10s), covering numbers that are 100, or minus 100. As numbers are called, students respond by stating the equation and the solution according to their cards (e.g., called number 230; $230 + 10 = 240$; $230 - 10 = 220$; $230 +$	
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			100 = 330; 230 - 100 = 130). Students rotate the cards and continue the process. Students use make-a-ten boards and two color counters to model the make-a-ten strategy to illustrate. Students use words or drawings to write explanations. Students use triangular flashcards to explain the relationship between addition and subtraction fact families. Mentor Texts: <i>365 Penguins</i> by Jean-Luc Fromental <i>Shark Swimathon</i> by Stuart J. Murphy	
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Modifications and Accommodations	
Tier II and III Strategies	Small group instruction (Tier II)

	● Explicit instruction ● Schema-based instruction ● Use visuals ● Use manipulatives ● Use a multi-sensory approach ● Guided notes and/or scaffold outline for written assignments ● Introduce key vocabulary before lesson ● Lesson taught again using a differentiated approach Small group or Individual instruction (Tier III) ● Intensive instruction ● Practice fact retrieval ● Lesson taught again using a differentiated approach ● Allow answers to be given orally or dictated ● Use visuals / Anchor Charts
Students with IEPs and 504 Plans	<u>Universal Design for Learning and Access for Students with Disabilities</u> <u>Movematics (dyscalculia.org)</u> Follow all the IEP/504 plan modifications Allow extra time to complete assignments or tests Guided notes and/or scaffold outline for written assignments Work in a small group Solidify and refine concepts through repetition Allow answers to be given orally or dictated Use multi-sensory teaching approaches

	Utilize assistive technology and materials Use large print books, Braille, or books on CD (digital text) Text to speech/audio recorded selections Amplification system as needed Leveled texts according to ability Fine motor skill stations embedded in rotation as needed Modified or constrained spelling word lists Provide anchor charts with high frequency words and phonemic patterns Students might need guidance as to what actions happen during partner work time. Invite students to discuss what it looks like when they are working with their partner while exploring the connecting cubes. Generate a list of shared expectations for partner work. Invite students to plan a strategy before they begin working. If time allows, invite students to share their plan with a partner. Some students may benefit from feedback that emphasizes effort and time on task. For example, moving counters in the squares of the 5-frame or filling the 5-frame with one counter in each square.
Multi-language Learners	<u>Mathematical Language Development and Access for English Learners</u> Work toward longer passages as skills in English increase Use visuals Introduce/highlight key vocabulary before lesson

	Teacher models reading aloud daily Provide peer tutoring Utilize translation supports including bilingual dictionary, translation device, assistive technology, and peers Guided notes and/or scaffold outline for written assignments Provide students with English Learner leveled readers Support recommended by the grade specific “can do” list outlined by WIDA, including Key Uses Edition and Descriptor Name Charts Create a visual display of what students want to do or make with the connecting cubes. As students share ideas, include a drawing or annotation to illustrate connections. After students share responses, use multimodal examples to show the meaning of 5 in the 5-frame. Point to each square and count to 5. Invite students to chorally read numbers 1–5 aloud. Invite students to use gestures as they count their collections aloud.
Accelerating Students	<u>Accelerating Students Guide</u> Create an enhanced set of introductory activities (e.g. advance organizers, concept maps, concept puzzles) Provide options, alternatives and choices to differentiate and broaden the curriculum Organize and offer flexible small group learning activities Provide whole group enrichment explorations Teach cognitive and methodological skills

	Use center, stations, or contracts Organize integrated problem-solving simulations Propose interest-based extension activities Expose students to beyond level texts.
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Unit 8: Equal Groups

Unit Goal: Students work with equal groups of objects to gain foundations for multiplication.
Duration: 3 weeks
Essential Questions: • How can you show even and odd numbers? • How do arrays relate to repeated addition? • What patterns can be seen with even and odd numbers?
Enduring Understandings: • Numbers can be classified as even or odd by showing numbers as two equal parts. • A group of objects (or numbers) 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.
Key NJSLS Strands: • 2.OA.B Add and subtract within 20

- **2.OA.B.2** With accuracy and efficiency, add and subtract within 20 using mental strategies. By the end of Grade 2, know from memory all sums of two one-digit numbers.
- **2.OA.C** Work with equal groups of objects to gain foundations for multiplication
 - **2.OA.C.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.
 - **2.OA.C.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.
- **2.NBT.A** Understand place value
 - **2.NBT.A.2** Count within 1000; skip-count by 5s, 10s, and 100s.
 - **2.NBT.B.7** 7. Add and subtract within 1000, 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.
- **2.G.A** Reason with shapes and their attributes
 - **2.G.A.2** Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.

Interdisciplinary Connections

- **RL.2.7** Use information gained from the illustrations and words in a print or digital text to demonstrate understanding of its characters, setting, or plot.
- **RI.2.7** Explain how specific illustrations and images (e.g., a diagram showing how a machine works) contribute to and clarify a text.
- **RF.2.4** Read with sufficient accuracy and fluency to support comprehension.
- **2-PS1-1** Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.
- **K-2-ETS1-1** Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.
- **K-2-ETS1-2** Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

21st-Century Skills
● 9.2.4.A.1 Identify reasons why people work, different types of work, and how work can help a person achieve personal and professional goals.
Career Ready Practices
● CRP 8 Utilize critical thinking to make sense of problems and persevere in solving problem solving problems. ● CRP 11 Use technology to enhance productivity by accessing various online skill based websites.
Technology Integration
● TECH.8.1.2 All students will use digital tools to access, manage, evaluate and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge. ● TECH.8.1.2.A.CS2 Select and use applications effectively and productively ● TECH.8.2.2.C The design process is a systematic approach to solving problems

Skills	Instructional Topics	Assessment	Resources	Vocabulary
Determine whether a group of objects (up to 20) has an odd or even number of members. Write an equation to express an even number as a sum of two equal addends. Find the total number of objects arranged in rectangular arrays with	Can You Share? Partners Make Pairs Is it Odd or Even? Decompose Even and Odd Numbers Patterns with Even and Odd Numbers What is an Array? Count Columns and	Formative Assessments: Diagnostic Assessment Mid-topic Checkpoint Lesson Quizzes Lesson Self-assessment Teacher Observations Class Discussions Classwork/ Homework	Materials: Chart paper Connecting cubes Counters Even and Odd Card Sort Crayons Dry erase markers	Array Column Equal Even Odd

up to 5 rows and up to 5 columns using addition. Partition rectangles into rows and columns of equal-size squares, and count to find the total number of squares. Represent the total number of objects in an array as a sum of equal addends.	Objects in Columns A Sum of Equal Addends Write Expressions and Equations to Represent Arrays Arrays and Rectangles Partition Rectangles into Squares	Exit Slips/Google Form Summative Assessments: Topic/Unit Assessments Constructed Response Questions Projects Cumulative Tests Performance Assessments Alternate and Benchmark Assessments: Progress Monitoring Assessments Cumulative/Benchmark Assessments	Sheet protectors Colored pencils Inch tiles Rulers Activities: Make a group of objects and tell if it 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.	
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			Mentor Texts: <i>Even Steven and Odd Todd</i> by Kathryn Cristaldi <i>My Even Day</i> by Doris Fisher and Dani Sneed <i>One Odd Day</i> by Doris Fisher and Dani Sneed	
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Modifications and Accommodations	
Tier II and III Strategies	Small group instruction (Tier II) ● Explicit instruction ● Schema-based instruction ● Use visuals ● Use manipulatives ● Use a multi-sensory approach ● Guided notes and/or scaffold outline for written assignments ● Introduce key vocabulary before lesson ● Lesson taught again using a differentiated approach Small group or Individual instruction (Tier III) ● Intensive instruction ● Practice fact retrieval ● Lesson taught again using a differentiated approach ● Allow answers to be given orally or dictated

	● Use visuals / Anchor Charts
Students with IEPs and 504 Plans	<u>Universal Design for Learning and Access for Students with Disabilities</u> <u>Movematics (dyscalculia.org)</u> Follow all the IEP/504 plan modifications Allow extra time to complete assignments or tests Guided notes and/or scaffold outline for written assignments Work in a small group Solidify and refine concepts through repetition Allow answers to be given orally or dictated Use multi-sensory teaching approaches Utilize assistive technology and materials Use large print books, Braille, or books on CD (digital text) Text to speech/audio recorded selections Amplification system as needed Leveled texts according to ability Fine motor skill stations embedded in rotation as needed Modified or constrained spelling word lists Provide anchor charts with high frequency words and phonemic patterns

	Students might need guidance as to what actions happen during partner work time. Invite students to discuss what it looks like when they are working with their partner while exploring the connecting cubes. Generate a list of shared expectations for partner work. Invite students to plan a strategy before they begin working. If time allows, invite students to share their plan with a partner. Some students may benefit from feedback that emphasizes effort and time on task. For example, moving counters in the squares of the 5-frame or filling the 5-frame with one counter in each square.
Multi-language Learners	<u>Mathematical Language Development and Access for English Learners</u> Work toward longer passages as skills in English increase Use visuals Introduce/highlight key vocabulary before lesson Teacher models reading aloud daily Provide peer tutoring Utilize translation supports including bilingual dictionary, translation device, assistive technology, and peers Guided notes and/or scaffold outline for written assignments Provide students with English Learner leveled readers Support recommended by the grade specific “can do” list outlined by WIDA, including Key Uses Edition and Descriptor Name Charts Create a visual display of what students want to do or make with the connecting cubes. As students share ideas, include a drawing or annotation to illustrate connections.

	After students share responses, use multimodal examples to show the meaning of 5 in the 5-frame. Point to each square and count to 5. Invite students to chorally read numbers 1–5 aloud. Invite students to use gestures as they count their collections aloud.
Accelerating Students	<u>Accelerating Students Guide</u> Create an enhanced set of introductory activities (e.g. advance organizers, concept maps, concept puzzles) Provide options, alternatives and choices to differentiate and broaden the curriculum Organize and offer flexible small group learning activities Provide whole group enrichment explorations Teach cognitive and methodological skills Use center, stations, or contracts Organize integrated problem-solving simulations Propose interest-based extension activities Expose students to beyond level texts.

Unit 9: Integrating Math

Unit Goal: Students consolidate and solidify their understanding of various concepts and skills related to major work of the grade. They also continue to work toward fluency goals of the grade.
Duration: 3 weeks

Essential Questions:

- How can line plots, bar graphs, and picture graphs be used to show data and answer questions?
- How do we decide what type of graph we should use to record and organize data?

Enduring Understandings:

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

Key NJSL Standards:

- **2.OA.A** Represent and solve problems involving addition and subtraction
 - **2.OA.A.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 comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.
Climate Change Example: Students may solve two-step word problems involving a climate change related issue in their school, such as food waste, recycling, reusing and/or reducing the consumption of goods. They may add and subtract within 100 while using drawing or equations to represent the climate change related issue.
- **2.OA.B** Add and subtract within 20
 - **2.OA.B.2** With accuracy and efficiency, add and subtract within 20 using mental strategies. By the end of Grade 2, know from memory all sums of two one-digit numbers.
- **2.M.A** Measure and estimate lengths in standard units
 - **2.M.A.1** Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.

- **2.M.A.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.
- **2.M.A.4** Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.
- **2.M.B** Relate addition and subtraction to length
 - **2.M.B.5** 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.
- **2.M.D** Represent and Determine Data
 - **2.M.D.9** Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object.

Interdisciplinary Connections

- **RL.2.7** Use information gained from the illustrations and words in a print or digital text to demonstrate understanding of its characters, setting, or plot. RI.2.7. Explain how specific illustrations and images (e.g., a diagram showing how a machine works) contribute to and clarify a text. RF.2.4. Read with sufficient accuracy and fluency to support comprehension.
- **2-PS1-1** Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.
- **K-2-ETS1-1** Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.
- **K-2-ETS1-2** Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

21st-Century Skills

- **9.2.4.A.1** Identify reasons why people work, different types of work, and how work can help a person achieve personal and professional goals.

Career Ready Practices

- **CRP 8** Utilize critical thinking to make sense of problems and persevere in solving problem solving problems.
- **CRP 11** Use technology to enhance productivity by accessing various online skill based websites.

Technology Integration

- **TECH.8.1.2** All students will use digital tools to access, manage, evaluate and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.
- **TECH.8.1.2.A.CS2** Select and use applications effectively and productively
- **TECH.8.2.2.C** The design process is a systematic approach to solving problems

Skills	Instructional Topics	Assessment	Resources	Vocabulary
Fluently add and subtract within 20.	Sums and Differences Within 20	Formative Assessments: Diagnostic Assessment	Materials: Paper clips	Array
Add and subtract within 1,000 using strategies based on place value and the properties of operations.	Fluency Flip	Mid-topic Checkpoint	Spin and Find the Missing Number	Centimeter
Fluently add and subtract within 100.	Measure on a Map	Lesson Quizzes	Spinners	Column
Represent and solve one- and two-step story problems within 100.	Measure and Plot	Lesson Self-assessment	Number Cards 0-19	Compose
	Compose and Decompose Numbers Within 1,000	Teacher Observations	Rulers (centimeters)	Data
	Represent Numbers with Expressions	Class Discussions	Measurement Map	Decompose
	Add and Subtract Within 100	Classwork/ Homework	Pencils	Foot
		Exit Slips/Google Form	Base-ten blocks	Inch
		Summative Assessments: Topic/Unit Assessments		Line plot
				Meter

	Add and Subtract Within 1,000 Create and Solve Story Problems Sort the Story Problems What's the Question? All About Tape Diagrams What's the Story? Let's Solve Our Story Problems	Constructed Response Questions Projects Cumulative Tests Performance Assessments Alternate and Benchmark Assessments: Progress Monitoring Assessments Cumulative/Benchmark Assessments	Tools for creating a visual display Add and Subtract within 100 Number Cards Card Sort Story Problems Represent Story Problem Cards Connecting cubes Chart paper Colored pencils Crayons Markers Sticky notes Activities: Addition and subtraction games Measure the lengths of objects and make a	Row
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			line plot to organize the data. Draw bar graphs and use them to solve problems. Draw picture graphs and use them to solve problems. Draw conclusions from graphics. Reason about data in bar graphs and picture graphs to write and solve problems. Story problems Mentor Texts: <i>The Math Curse</i> by Jon Scieszka and Lane Smith <i>The Great Divide</i> by Dayle Ann Dodds <i>One Hundred Hungry Ants</i> by Elinor J.	
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			Pinczes <i>If You Were a Minus Sign</i> by Trudy Harris <i>The Very Busy Spider</i> by Eric Carle <i>The Doorbell Rang</i> by Pat Hutchins	
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(NJDOE, 2024)

Prepared by Julie Lang, MA

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