# West Windsor-Plainsboro Regional School District
## Grade 1 Mathematics

Updated August 2023

**Math Equity Statement**

ALL learners should have access to rigorous, high-level mathematical content in an environment where risk-taking, deep conceptual understanding, and growth mindset are the norm.

**Catalyzing Change**

Our District strategic goals lay the foundation for teaching and learning from a productive stance. *Catalyzing Change in Early Childhood and Elementary School Mathematics: Initiating Critical Conversations* pushes us to consider equitable mathematics practices and move from deficit to productive beliefs (NCTM, 2020). Our goal is to have each student see themselves as doers, knowers, and sense makers of mathematics. Leveraging *Catalyzing Change*, we have three focused areas to understand our work to help each and every student develop a positive math identity and have agency within their learning.

The three areas of focus in our math learning continue to be:

1. *Build a mathematics community* through routines & structures (experience wonder, joy, and beauty in mathematics, while building agency through making conjectures, justifying thinking, and building on one another's ideas)

2. *Deepen mathematical understanding* to develop confident and capable learners through grade level appropriate goals.

3. *Develop strong foundational skills* emphasizing reasoning and sense making to ensure the highest-quality mathematics education for each and every child.

**Math Workshop**

Math workshop is a model of instruction that allows all students to be engaged in mathematics learning, provide space for reflection, and for all students to realize their abilities as mathematicians. Math workshop model provides the structures for student choice, problem solving, targeted small group instruction, time throughout the year to practice the critical concepts of the grade level (Lempp, 2017).

For students, our classrooms need to be places where they are comfortable taking intellectual risks. In *From Reading to Math*, Sienna (2009) outlines four values to support students in taking risks and creating discourse.  The values are:

- Value the thinking process as well as correct answers.
- Value problems for which more than one answer is possible.
- Value inquisitive responses.
- Value tolerance for mistakes.  (Siena, 2009, p. 68).

Math workshop allows for these values to come through creating a supportive, collaborative learning environment for each and every student.

### *Number Sense Routines*

We define a number sense routine as "an engaging, accessible, purposeful routine to begin your math class that promotes a community of positive mathematics and discussion" (Lempp, 2017, pg.146 ). It is usually done in the first 5-10 minutes of a math class. Number sense routines are the foundation of supporting social-emotional learning in mathematics. These routines invite all learners into the community while building positive math identity and sense making. It is where students begin to see themselves as doers, knowers, and sense-makers of mathematics.

### *Fluency*

Fluency is the ability to apply procedures efficiently, flexibly, and accurately. Fluency is multifaceted and encompasses basic fact fluency, computational fluency and procedural fluency (Bay-Williams & SanGiovanni, 2021, p. 2).  Bay-Williams and SanGiovanni (2021) define efficiency, flexibility, and accuracy as:

> *Efficiency:* Solving a procedure in a reasonable amount of time by selecting an appropriate strategy and readily implementing that strategy
> *Flexibility:* Knowing multiple procedures and applying or adapting strategies to solve procedural problems (Baroody & Dowker, 2003; Star, 2005 as cited by Bay-Williams & SanGiovanni, 2021, p.3).
> *Accuracy:* Correctly solving a procedure. (Bay-Williams & SanGiovanni, 2021, p. 3)

Additionally, Jennifer Bay-Williams and John SanGiovanni state, "Because effective instruction of (real) fluency values actions such as selecting, understanding, and evaluating strategies, as well as flexibility and reasonableness, students are able to develop strategic competence and adaptive reasoning. *These competencies positively shape their mathematics identity, while also nurturing their mathematical agency"* (NCTM, Figuring Out Fluency Presentation, New Orleans, 2022).

### Grade 1 Big Ideas & Standards

In Grade 1, instructional time should focus on four critical areas: (1) developing understanding of addition, subtraction, and strategies for addition and subtraction within 20; (2) developing understanding of whole number relationships and place value, including grouping in tens and ones; (3) developing understanding of linear measurement and measuring lengths as iterating length units; and (4) reasoning about attributes of, and composing and decomposing geometric shapes (NJDOE, NJSL-M, 2016).

A complete copy of the 2016 New Jersey Student Learning Standards for Grade 1 Mathematics may be found on the [NJDOE's New Jersey Student Learning Standards for Mathematics webpage](#).

## Unit 1: Number Sense

**Content Area: Elementary Mathematics**

**Course & Grade Level: Mathematics,  Grade 1**

### Summary and Rationale

In this first unit, we establish our rich learning community by practicing routines and structures so students can see themselves as doers, knowers, and sense-makers of mathematics. Students develop a sense of numbers and their relationship to one another, which is a necessary step towards operational fluency. Part-part-whole reasoning is also emphasized in this unit, setting the foundation for algebraic reasoning. This unit also introduces important mathematical tools, including the number rack and five and ten frames, to look for and make use of structure.

### Recommended Pacing

20 days

### New Jersey Student Learning Standards for Mathematics

**Standard:  1.OA.C  Add and subtract within 20.**

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| 1.OA.C.5 | Relate counting to addition and subtraction (e.g., by counting on 2 to add 2). |
| 1.OA.C.6 | Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., 8 + 6 = 8 + 2 + 4 = 10 + 4 = 14); decomposing a number leading to a ten (e.g., 13 − 4 = 13 − 3 − 1 = 10 − 1 = 9); using the relationship between addition and subtraction (e.g., knowing that 8 + 4 = 12, one knows 12 − 8 = 4); and creating equivalent but easier or known sums (e.g., adding 6 + 7 by creating the known equivalent 6 + 6 + 1 = 12 + 1 = 13). |

**Standard: 1.NBT.A  Extend the counting sequence.**

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| 1.NBT.A.1 | Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral. |

**Standard: 1.NBT.B  Understand place value.**

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| 1.NBT.B.2 | Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases: <br><br> a. 10 can be thought of as a bundle of ten ones — called a "ten." <br><br> b. The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones. <br><br> c. The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones). |

**Standard: 1.MD.A  Measure lengths indirectly and by iterating length units.**

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| 1.MD.A.2 | Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. *Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps.* |

**Standard:  1.MD.C  Represent and Interpret Data.**

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| 1.MD.C.4 | Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another. |

| Standard: 1.G.A  Reason with Shapes and Their Attributes. | |
|---|---|
| **CPI #** | **Cumulative Progress Indicator (CPI)** |
| 1.G.A.1 | Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size); build and draw shapes to possess defining attributes. |
| 1.G.A.2 | Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) or three-dimensional shapes (cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape, and compose new shapes from the composite shape.[4]<br><br>([4]Students do not need to learn formal names such as "right rectangular prism.") |

| Standard:  Standards for Mathematical Practice | |
|---|---|
| **CPI #** | **Cumulative Progress Indicator (CPI)** |
| 1.MP.1 | Make sense of problems and persevere in solving them. |
| 1.MP.2 | Reason abstractly and quantitatively. |
| 1.MP.4 | Model with mathematics. |
| 1.MP.5 | Use appropriate tools strategically. |
| 1.MP.6 | Attend to precision. |
| 1.MP.7 | Look for and make use of structure. |
| 1.MP.8 | Look for and express regularity in repeated reasoning. |

| New Jersey Student Learning Standards for Career Readiness, Life Literacies, and Key Skills | |
|---|---|
| **Standard:  9.4 Life Literacies and Key Skills: Critical Thinking and Problem-solving:** Critical thinkers must first identify a problem then develop a plan to address it to effectively solve the problem. | |
| **CPI #** | **Cumulative Progress Indicator (CPI)** |
| 9.4.2.CT.2 | Identify possible approaches and resources to execute a plan (e.g., 1.2.2.CR1b, 8.2.2.ED.3). |
| 9.4.2.CT.3 | Use a variety of types of thinking to solve problems (e.g., inductive, deductive). |
| **Standard:  9.4 Life Literacies and Key Skills: Technology Literacy:** Digital tools have a purpose. | |
| **CPI #** | **Cumulative Progress Indicator (CPI)** |
| 9.4.2.TL.6 | Illustrate and communicate ideas and stories using multiple digital tools (e.g., SL.2.5.). |

| New Jersey Student Learning Standards for Computer Science and Design Thinking | |
|---|---|
| **Standard: 8.1 Computer Science: Data & Analysis:** Data can be used to make predictions about the world. | |
| **CPI #** | **Cumulative Progress Indicator (CPI)** |
| 8.1.2.DA.3 | Identify and describe patterns in data visualizations. |
| 8.1.2.DA.4 | Make predictions based on data using charts or graphs. |

| Interdisciplinary Standards | |
|---|---|
| **English Language Arts** | |
| **CPI #** | **Cumulative Progress Indicator (CPI)** |
| W.1.6 | With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers. |
| W.1.8 | With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question. |
| SL.1.1 | Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups |
| SL.1.5 | Add drawings or other visual displays to descriptions when appropriate to clarify ideas, thoughts, and feelings. |
| RI.1.1 | Ask and answer questions about key details in a text |

| Social Studies |
|---|
| **Standard: 6.1 U.S. History: America in the World: Civics, Government, and Human Rights: Participation and Deliberation** When all members of the group are given the opportunity to participate in the decision making process, everyone's voice is heard. |

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| 6.1.2.Civics PD.1 | Engage in discussions effectively by asking questions, considering facts, listening to the ideas of others, and sharing opinions. |
| 6.1.2.Civics PD.2 | Establish a process for how individuals can effectively work together to make decisions. |

| **Standard: 6.1 U.S. History: America in the World: Civics, Government, and Human Rights: Processes and Rules** Rules and people who have authority are necessary to keep everyone safe, resolve conflicts, and treat people fairly. |
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| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| 6.1.2.Civics PR.3 | Analyze classroom rules and routines and describe how they are designed to benefit the common good. |

## Instructional Focus

### Unit Enduring Understandings
- Mathematicians use numbers to make sense of the world.
- Mathematicians talk about their math thinking.
- Mathematicians develop strategies to represent their thinking.
- Mathematicians use estimation to predict length.

### Unit Essential Questions
- How do mathematicians use math models to represent their thinking?
- Why do mathematicians use larger numbers?
- How can we subitize numbers?
- How can we use number relationships to solve for the unknown?

### Objectives

**We are learning to/that:**
- Solve addition problems by counting on
- Add within 20
- Count to 120 starting with any number
- Read numerals to 120
- Write numerals to 120
- Represent a number of objects with a written numeral up to 120
- Understand that numbers from 11 to 19 are composed of a ten and some more ones
- Measure the length of an object by laying multiple copies of a shorter unit end to end
- Express the length of an object as a whole number of units
- Count by 5's within 100
- Count by 2's within 20
- Recognize objects within a collection of 6 or fewer arranged in any configuration
- Solve for the unknown in an addition equation involving 3 whole numbers
- Solve for the unknown in a subtraction equation involving 3 whole numbers
- Apply the Commutative Property of Addition
- Organize, represent and interpret data with up to 3 categories

## Evidence of Learning

### Assessment

The assessment plan may include teacher-designed formative and summative assessments, district common assessments, self-assessments, and analysis of standardized benchmark and interim assessment data. During each common, formative, and summative assessment, teachers will provide accommodations and alternative

assessment opportunities that adhere to 504 and IEP requirements. Alternative assessments are individualized for the needs of all students. Throughout the unit, students will be engaged in activities that involve finding patterns, making generalizations, drawing conclusions, and communicating their ideas with others. Teachers will have many opportunities to observe students' growth in these areas, as well as with specific math skills and concepts throughout this unit.

| ☑ Formative Assessment |
| ☑ Summative Assessment |
| ☑ Alternative Assessment |
| ☑ Benchmark |

## Resources

**Foundational Text:**

*Bridges in Mathematics Grade 1* by The Math Learning Center

**Instructional & Professional Resources:**

- Exemplars*, Problem Solving for the 21st Century*
- K-5 Math Teaching Resources
- DreamBox Learning (Digital Tool)
- *Math in Practice: Teaching First Grade Math* by Laura Hunovice, Susan O'Connell, & John SanGiovanni
- *Math Workshop: Five Steps to Implementing Guided Math, Learning Stations, Reflection, and More* by Jennifer Lempp
- *Mathematical Mindsets: Unleashing Students' Potential through Creative Math, Inspiring Messages and Innovative Teaching* by Jo Boaler
- *Teaching Student Centered Mathematics: Developmentally Appropriate Instruction for Grades PreK-2 (Volume I)* by John A. Van de Walle, Karen S. Karp, LouAnn H. Lovin, & Jennifer M. Bay-Williams

## Additional Supports

WW-P Accommodations and Assessment (Reference Tool and Glossary)

| Unit 2: Addition and Subtraction Within Ten |
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**Content Area: Elementary Mathematics**

**Course & Grade Level: Mathematics, Grade 1**

## Summary and Rationale

The work of unit 2 is to develop confidence with efficient, effective, and sensible strategies for adding and subtracting single digit numbers. Students evolve from one-to-one counting to see smaller numbers within larger numbers (subitizing - being able to visually recognize a quantity of 10 or less). Students will understand that the equal sign signifies that two quantities have the same value rather than just standing for the answer.

## Recommended Pacing

20 days

## New Jersey Student Learning Standards for Mathematics

**Standard: 1.0A.A Represent and solve problems involving addition and subtraction.**

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| 1.OA.A.1 | Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem. |

**Standard: 1.OA.B Understand and apply properties of operations and the relationship between addition and subtraction.**

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| 1.OA.B.3 | Apply properties of operations as strategies to add and subtract.[3] *Examples: If 8 + 3 = 11 is known, then 3 + 8 = 11 is also known. (Commutative property of addition.) To add 2 + 6 + 4, the second two numbers can be added to make a ten, so 2 + 6 + 4 = 2 + 10 = 12. (Associative property of addition.) {Students need not use formal terms for these properties}* |
| 1.OA.B.4 | Understand subtraction as an unknown-addend problem. *For example, subtract 10 – 8 by finding the number that makes 10 when added to 8.* |

**Standard: 1.OA.C Add and subtract within 20.**

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| 1.OA.C.5 | Relate counting to addition and subtraction (e.g., by counting on 2 to add 2). |
| 1.OA.C.6 | Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., 8 + 6 = 8 + 2 + 4 = 10 + 4 = 14); decomposing a number leading to a ten (e.g., 13 – 4 = 13 – 3 – 1 = 10 – 1 = 9); using the relationship between addition and subtraction (e.g., knowing that 8 + 4 = 12, one knows 12 – 8 = 4); and creating equivalent but easier or known sums (e.g., adding 6 + 7 by creating the known equivalent 6 + 6 + 1 = 12 + 1 = 13). |

**Standard: 1.OA.D Work with addition and subtraction equations.**

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| 1.OA.D.7 | Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false. *For example, which of the following equations are true and which are false? 6 = 6, 7 = 8 – 1, 5 + 2 = 2 + 5, 4 + 1 = 5 + 2.* |
| 1.OA.D.8 | Determine the unknown whole number in an addition or subtraction equation relating to three whole numbers. *For example, determine the unknown number that makes the equation true in each of the equations 8 + ? = 11, 5 = □ – 3, 6 + 6 = □.* |

**Standard: 1.NBT.A Extend the counting sequence.**

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|

| 1.NBT.A.1 | Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral. |
|---|---|

**Standard: 1.NBT.B  Understand place value.**

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| 1.NBT.B.3 | Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols >, =, and <. |

**Standard:  1.MD.C Represent and interpret data.**

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| 1.MD.C.4 | Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another. |

**Standard:  Standards for Mathematical Practice**

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| 1.MP.1 | Make sense of problems and persevere in solving them. |
| 1.MP.2 | Reason abstractly and quantitatively. |
| 1.MP.3 | Construct viable arguments and critique the reasoning of others. |
| 1.MP.4 | Model with mathematics. |
| 1.MP.5 | Use appropriate tools strategically. |
| 1.MP.6 | Attend to precision. |
| 1.MP.7 | Look for and make use of structure. |
| 1.MP.8 | Look for and express regularity in repeated reasoning. |

**New Jersey Student Learning Standards for Career Readiness, Life Literacies, and Key Skills**

**Standard: 9.4 Life Literacies and Key Skills: Critical Thinking and Problem-solving:** Critical thinkers must first identify a problem then develop a plan to address it to effectively solve the problem.

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| 9.4.2.CT.2 | Identify possible approaches and resources to execute a plan (e.g., 1.2.2.CR1b, 8.2.2.ED.3). |
| 9.4.2.CT.3 | Use a variety of types of thinking to solve problems (e.g., inductive, deductive). |

**Standard: 9.4 Life Literacies and Key Skills: Technology Literacy:** Digital tools have a purpose.

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| 9.4.2.TL.6 | Illustrate and communicate ideas and stories using multiple digital tools (e.g., SL.2.5.). |

**New Jersey Student Learning Standards for Computer Science and Design Thinking**

**Standard: 8.1 Computer Science:** Data can be used to make predictions about the world.

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| 8.1.2.DA.3 | Identify and describe patterns in data visualizations. |
| 8.1.2.DA.4 | Make predictions based on data using charts or graphs. |

**Interdisciplinary Standards**

**English Language Arts**

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| W.1.6 | With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers. |
| W.1.8 | With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question. |
| SL.1.1 | Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups. |

| | |
|---|---|
| SL.1.5 | Add drawings or other visual displays to descriptions when appropriate to clarify ideas, thoughts, and feelings. |
| RI.1.1 | Ask and answer questions about key details in a text. |

**Social Studies**

**Standard: 6.1 U.S. History: America in the World: Civics, Government, and Human Rights: Participation and Deliberation** When all members of the group are given the opportunity to participate in the decision making process, everyone's voice is heard.

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| 6.1.2.Civics PD.1 | Engage in discussions effectively by asking questions, considering facts, listening to the ideas of others, and sharing opinions. |

## Instructional Focus

**Unit Enduring Understandings**

- Mathematicians solve for an unknown.
- Mathematicians understand an equation is balanced when a number sentence is true on both sides.
- Mathematicians find patterns, make generalizations, draw conclusions and discuss their thinking.
- Mathematicians know that quantities can be joined, separated, or compared.
- Addition and subtraction are inverse operations.

**Unit Essential Questions**

- How can we efficiently use strategies to solve addition and subtraction equations?
- How are addition and subtraction related?
- Why do we subitize?
- How can quantities, operations, or relationships be represented by symbols?

**Objectives**

**We are learning to/that:**

- Construct and describe fact families to 10
- Understand that addition and subtraction are closely related
- Solve addition and subtraction problems by counting on and back
- Solve subtraction problems by finding an unknown addend
- Solve comparison problems using various strategies
- Use >, <, and = symbols to record comparisons of 1- and 2-digit numbers
- Add and subtract fluently within 10
- Understand how to use the commutative property to solve problems
- Organize, represent, and interpret data with up to 3 categories
- Represent addition and subtraction on a number line

## Evidence of Learning

**Assessment**

The assessment plan may include teacher-designed formative and summative assessments, district common assessments, self-assessments, and analysis of standardized benchmark and interim assessment data. During each common, formative, and summative assessment, teachers will provide accommodations and alternative assessment opportunities that adhere to 504 and IEP requirements. Alternative assessments are individualized for the needs of all students. Throughout the unit, students will be engaged in activities that involve finding patterns, making generalizations, drawing conclusions, and communicating their ideas with others. Teachers will have many opportunities to observe students' growth in these areas, as well as with specific math skills and concepts throughout this unit.

| | |
|---|---|
| ☑ | Formative Assessment |
| ☑ | Summative Assessment |
| ☑ | Alternative Assessment |

| ☑ Benchmark |
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| **Resources** |
| --- |

**Foundational Text:**

*Bridges in Mathematics Grade 1* by The Math Learning Center

**Instructional & Professional Resources:**

- Exemplars*, Problem Solving for the 21*$^{st}$ *Century*
- K-5 Math Teaching Resources
- DreamBox Learning (Digital Tool)
- *Math in Practice: Teaching First Grade Math* by Laura Hunovice, Susan O'Connell, & John SanGiovanni
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- *Teaching Student Centered Mathematics: Developmentally Appropriate Instruction for Grades PreK-2 (Volume I)* by John A. Van de Walle, Karen S. Karp, LouAnn H. Lovin, & Jennifer M. Bay-Williams

| **Additional Supports** |
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WW-P Accommodations and Assessment (Reference Tool and Glossary)

## Unit 3: Addition, Subtraction, Counting, and Comparing

**Content Area: Elementary Mathematics**

**Course & Grade Level: Mathematics,  Grade 1**

### Summary and Rationale

In Unit 3, students will play with representations that lead to rich problem solving strategies, deep number sense and fluency with number facts. Part-part-whole relationships continue to be emphasized. Students demonstrate proficiency and agency with numbers using number racks and Unifix cubes to investigate the relationships between quantities, including comparing and finding differences. We should be confident with our number facts up to 10 and comfortable with number families to 20 by the end of this unit.

### Recommended Pacing

20 days

### New Jersey Student Learning Standards for Mathematics

**Standard:  1.OA.A Represent and solve problems involving addition and subtraction.**

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| 1.OA.A.1 | Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem. |
| 1.OA.A.2 | Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem. |

**Standard:  1.OA.B  Understand and apply properties of operations and the relationship between addition and subtraction.**

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| 1.OA.B.3 | Apply properties of operations as strategies to add and subtract.[3] *Examples: If 8 + 3 = 11 is known, then 3 + 8 = 11 is also known. (Commutative property of addition.) To add 2 + 6 + 4, the second two numbers can be added to make a ten, so 2 + 6 + 4 = 2 + 10 = 12. (Associative property of addition.)* {Students need not use formal terms for these properties} |
| 1.OA.B.4 | Understand subtraction as an unknown-addend problem. *For example, subtract 10 – 8 by finding the number that makes 10 when added to 8.* |

**Standard: 1.OA.C Add and subtract within 20.**

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| 1.OA.C.5 | Relate counting to addition and subtraction (e.g., by counting on 2 to add 2). |
| 1.OA.C.6 | Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., 8 + 6 = 8 + 2 + 4 = 10 + 4 = 14); decomposing a number leading to a ten (e.g., 13 – 4 = 13 – 3 – 1 = 10 – 1 = 9); using the relationship between addition and subtraction (e.g., knowing that 8 + 4 = 12, one knows 12 – 8 = 4); and creating equivalent but easier or known sums (e.g., adding 6 + 7 by creating the known equivalent 6 + 6 + 1 = 12 + 1 = 13). |

**Standard: 1.OA.D Work with addition and subtraction equations.**

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| 1.OA.D.7 | Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false. For example, which of the following equations are true and which are false? 6=6, 7=8-1, 5+2= 2+5, 4+1 does not equal 5+2. |

| 1.OA.D.8 | Determine the unknown whole number in an addition or subtraction equation relating to three whole numbers. *For example, determine the unknown number that makes the equation true in each of the equations 8 + ? = 11, 5 = □ − 3, 6 + 6 = □.* |
|---|---|

**Standard: 1.NBT.B Understand place value.**

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| 1.NBT.B.2 | Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases:<br>    a. 10 can be thought of as a bundle of ten ones — called a "ten."<br>    b. The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones.<br>    c. The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones). |
| 1.NBT.B.3 | Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols >, =, and <. |

**Standard: 1.NBT.C Use place value understanding and properties of operations to add and subtract.**

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| 1.NBT.C.4 | Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models (e.g., base ten blocks) 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 and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten. |

**Standard: Standards for Mathematical Practice**

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| 1.MP.1 | Make sense of problems and persevere in solving them. |
| 1.MP.2 | Reason abstractly and quantitatively. |
| 1.MP.3 | Construct viable arguments and critique the reasoning of others. |
| 1.MP.4 | Model with mathematics. |
| 1.MP.5 | Use appropriate tools strategically. |
| 1.MP.6 | Attend to precision. |
| 1.MP.7 | Look for and make use of structure. |
| 1.MP.8 | Look for and express regularity in repeated reasoning. |

| New Jersey Student Learning Standards for Career Readiness, Life Literacies, and Key Skills |
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**Standard:  Life Literacies and Key Skills: Critical Thinking and Problem-solving:** Critical thinkers must first identify a problem then develop a plan to address it to effectively solve the problem.

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| 9.4.2.CT.2 | Identify possible approaches and resources to execute a plan (e.g., 1.2.2.CR1b, 8.2.2.ED.3). |

**Standard: 9.4 Life Literacies and Key Skills:  Technology Literacy:** Digital tools have a purpose.

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| 9.4.2.TL.6 | Illustrate and communicate ideas and stories using multiple digital tools (e.g., SL.2.5.). |

| New Jersey Student Learning Standards for Computer Science and Design Thinking |
|---|

**Standard: 8.1 Computer Science:** Data can be used to make predictions about the world.

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| 8.1.2.DA.3 | Identify and describe patterns in data visualizations. |
| 8.1.2.DA.4 | Make predictions based on data using charts or graphs. |

| Interdisciplinary Standards | |
|---|---|
| **English Language Arts** | |
| **CPI #** | **Cumulative Progress Indicator (CPI)** |
| W.1.6 | With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers. |
| W.1.8 | With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question. |
| SL.1.1 | Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups. |
| SL.1.5 | Add drawings or other visual displays to descriptions when appropriate to clarify ideas, thoughts, and feelings. |
| RI.1.1 | Ask and answer questions about key details in a text. |
| **Social Studies** | |
| **Standard: 6.1 U.S. History: America in the World: Civics, Government, and Human Rights: Participation and Deliberation** When all members of the group are given the opportunity to participate in the decision making process, everyone's voice is heard. | |
| **CPI #** | **Cumulative Progress Indicator (CPI)** |
| 6.1.2.Civics PD.1 | Engage in discussions effectively by asking questions, considering facts, listening to the ideas of others, and sharing opinions. |

## Instructional Focus

**Unit Enduring Understandings**

- Mathematicians organize numbers to count and compare.
- Mathematicians group objects to compare them in terms of greater than, less than or equal to.
- Mathematicians recognize relationships between numbers and "see" subsets of numbers within a larger number.
- Mathematicians utilize making a 10 strategy for addition combinations to 20.

**Unit Essential Questions**

- What strategies do we use to add and subtract?
- How do number relationships help us to develop and solve equations?
- How does place value help us solve addition problems efficiently?
- How can we use models to build our mathematical fluency?

**Objectives**

**We are learning to/that:**

- Solve addition and subtraction problems using counting on and counting back strategy.
- Use appropriate vocabulary; plus, minus, equals, sum, difference and addends
- Add and subtract fluently with sums and minuends to 10 and using strategies to add with sums of 20.
- Represent their thinking using a number rack.
- Decompose numbers less than or equal to 10 into pairs in more than one way represented by using drawings and equations
- Understand how to use the commutative property of addition
- Solve subtraction problems by finding the unknown addend
- Compare sets of numbers using vocabulary and (<, >, =)
- Demonstrate an understanding that the equal sign indicates equivalence
- Group and count objects by 10's, 5's and 2's
- Demonstrate understanding that the digits in a 2-digit number represent amounts of ten and ones
- Demonstrate understand that 10 can be thought of as a bundle or group of 10 ones called a 10

## Evidence of Learning

**Assessment**

The assessment plan may include teacher-designed formative and summative assessments, district common assessments, self-assessments, and analysis of standardized benchmark and interim assessment data. During each common, formative, and summative assessment, teachers will provide accommodations and alternative assessment opportunities that adhere to 504 and IEP requirements. Alternative assessments are individualized for the needs of all students. Throughout the unit, students will be engaged in activities that involve finding patterns, making generalizations, drawing conclusions, and communicating their ideas with others. Teachers will have many opportunities to observe students' growth in these areas, as well as with specific math skills and concepts throughout this unit.

- ☑ Formative Assessment
- ☑ Summative Assessment
- ☑ Alternative Assessment
- ☑ Benchmark

## Resources

**Foundational Text:**

*Bridges in Mathematics Grade 1* by The Math Learning Center

**Instructional & Professional Resources:**

- Exemplars*, Problem Solving for the 21$^{st}$ Century*
- K-5 Math Teaching Resources
- DreamBox Learning (Digital Tool)
- *Math in Practice: Teaching First Grade Math* by Laura Hunovice, Susan O'Connell, & John SanGiovanni
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- *Mathematical Mindsets: Unleashing Students' Potential through Creative Math, Inspiring Messages and Innovative Teaching* by Jo Boaler
- *Teaching Student Centered Mathematics: Developmentally Appropriate Instruction for Grades PreK-2 (Volume I)* by John A. Van de Walle, Karen S. Karp, LouAnn H. Lovin, & Jennifer M. Bay-Williams

## Additional Supports

WW-P Accommodations and Assessment (Reference Tool and Glossary)

## Unit 4: Operations on the Number Line

**Content Area: Elementary Mathematics**

**Course & Grade Level: Mathematics,  Grade 1**

### Summary and Rationale

Unit 4 helps students develop a solid footing in counting, addition, and subtraction within the range of 0-120-conceptually and procedurally. Number lines help students visualize number relationships and use those visualizations in the act of counting and calculating. This again brings in looking at structure. Students use number lines to answer the fundamental questions: *What is addition? What is subtraction?* By drawing connections between the context (frog jumps) and the models (number lines and equations), students gain a deeper understanding of both addition and subtraction.

### Recommended Pacing

20 days

### New Jersey Student Learning Standards for Mathematics

**Standard:  1.OA.A  Represent and solve problems involving addition and subtraction.**

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| 1.OA.A.1 | Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem. |

**Standard:  1.OA.C  Represent and solve problems involving addition and subtraction.**

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| 1.OA.C.5 | Relate counting to addition and subtraction (e.g., by counting on 2 to add 2). |
| 1.OA.C. 6 | Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., $8 + 6 = 8 + 2 + 4 = 10 + 4 = 14$); decomposing a number leading to a ten (e.g., $13 - 4 = 13 - 3 - 1 = 10 - 1 = 9$); using the relationship between addition and subtraction (e.g., knowing that $8 + 4 = 12$, one knows $12 - 8 = 4$); and creating equivalent but easier or known sums (e.g., adding $6 + 7$ by creating the known equivalent $6 + 6 + 1 = 12 + 1 = 13$). |

**Standard:  1.NBT.A  Extend the counting sequence.**

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| 1.NBT.A.1 | Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral. |

**Standard: 1.NBT.B  Understand place value.**

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| 1.NBT.B.2 | Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special case:<br>a.  10 can be thought of as a bundle of ten ones-called a "ten."<br>b.  The numbers from 11 to 19 are composed of ten and one, two, three, four, five, six, seven, eight, or nine ones.<br>c.  The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones). |

**Standard: 1.NBT.C  Use place value understandings and properties of operations to add and subtract.**

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| 1.NBT.C.4 | Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models (e.g., base ten blocks) 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 and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten. |
| 1.NBT.C.5 | Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used. |
| 1.NBT.C.6 | Subtract multiples of 10 in the range 10-90 from multiples of 10 in the range 10-90 (positive or zero differences), 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 and explain the reasoning used. |

**Standard: 1.MD.B Represent and interpret data.**

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| **1.MD.B.3** | Tell and write time in hours and half-hours using analog and digital clocks. |

**Standard:  Standards for Mathematical Practice**

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| 1.MP.1 | Make sense of problems and persevere in solving them. |
| 1.MP.2 | Reason abstractly and quantitatively. |
| 1.MP.4 | Model with mathematics. |
| 1.MP.5 | Use appropriate tools strategically. |
| 1.MP.6 | Attend to precision. |
| 1.MP.7 | Look for and make use of structure. |
| 1.MP.8 | Look for and express regularity in repeated reasoning. |

## New Jersey Student Learning Standards for Career Readiness, Life Literacies, and Key Skills

**Standard: 9.4 Life Literacies and Key Skills: Critical Thinking and Problem-solving:** Critical thinkers must first identify a problem then develop a plan to address it to effectively solve the problem.

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| 9.4.2.CT.2 | Identify possible approaches and resources to execute a plan (e.g., 1.2.2.CR1b, 8.2.2.ED.3). |
| 9.4.2.CT.3 | Use a variety of types of thinking to solve problems (e.g., inductive, deductive). |

**Standard:  9.4 Life Literacies and Key Skills: Technology Literacy:** Digital tools have a purpose.

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| 9.4.2.TL.5 | Describe the difference between real and virtual experiences. |

## New Jersey Student Learning Standards for Computer Science and Design Thinking

**Standard: 8.1 Computer Science:** Data can be used to make predictions about the world.

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| 8.1.2.DA.3 | Identify and describe patterns in data visualizations. |
| 8.1.2.DA.4 | Make predictions based on data using charts or graphs. |

## Interdisciplinary Standards

**English Language Arts**

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| W.1.6 | With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers. |
| W.1.8 | With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question. |
| SL.1.1 | Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups |
| SL.1.5 | Add drawings or other visual displays to descriptions when appropriate to clarify ideas, thoughts, and feelings. |

| RI.1.1 | Ask and answer questions about key details in a text. |
|---|---|

**Social Studies**

**Standard: 6.1 U.S. History: America in the World: Civics, Government, and Human Rights: Participation and Deliberation** When all members of the group are given the opportunity to participate in the decision making process, everyone's voice is heard.

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| 6.1.2.Civics PD.1 | Engage in discussions effectively by asking questions, considering facts, listening to the ideas of others, and sharing opinions. |

## Instructional Focus

**Unit Enduring Understandings**

- Mathematicians utilize number lines to locate, identify numbers and model addition and subtraction.
- Mathematicians find number lines to be efficient tools for counting.
- Mathematicians recognize that the value of a number changes depending on where it is placed in relation to other numbers on the number line.
- Mathematicians compare lengths of different objects.

**Unit Essential Questions**

- How do we determine where numbers are located on a number line?
- How can we use a number line to skip count in different ways?
- How can we use a number line to model addition and subtraction?
- How do we compare different objects using measurement?

**Objectives**

**We are learning to/that:**

- Use a number line to represent addition and subtraction
- Use strategies like "counting on" and "counting back" to solve mathematical problems involving addition and subtraction
- Count to 120, starting with any number less than 120, including 0 or 1
- Understand that multiples of 10 from 10 to 90 refer to some number of tens and 0 ones
- Compare two numbers using symbols < , > or =
- Recognize and extend number patterns
- Use the relationship between addition and subtraction to add and subtract within 20
- Solve addition and subtraction story problems with sums and minuends to 10 involving situations of adding to and taking from
- Count by 5s and 10s to 100
- Express the length of an object as a whole number of units
- Mentally find the number that is 10 more or 10 less than a given 2-digit number, without counting, and explain the reasoning used
- Add a multiple of 10 (up to 80) and another 2-digit number, using strategies based on place value, properties of operations, or the relationship between addition and subtraction
- Subtract a 2-digit multiple of 10 from an equal or great 2-digit multiple of 10, using drawings and strategies based on place value, properties of operations, or the relationship between addition and subtraction

## Evidence of Learning

**Assessment**

The assessment plan may include teacher-designed formative and summative assessments, district common assessments, self-assessments, and analysis of standardized benchmark and interim assessment data. During each common, formative, and summative assessment, teachers will provide accommodations and alternative assessment opportunities that adhere to 504 and IEP requirements. Alternative assessments are individualized for the needs of all students. Throughout the unit, students will be engaged in activities that involve finding patterns, making generalizations, drawing conclusions, and communicating their ideas with others. Teachers will have many

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| opportunities to observe students' growth in these areas, as well as with specific math skills and concepts throughout this unit. |
| ☑ Formative Assessment |
| ☑ Summative Assessment |
| ☑ Alternative Assessment |
| ☑ Benchmark |

| Resources |
|---|

**Foundational Text:**

*Bridges in Mathematics Grade 1* by The Math Learning Center

**Instructional & Professional Resources:**

- Exemplars*, Problem Solving for the 21st Century*
- K-5 Math Teaching Resources
- DreamBox Learning (Digital Tool)
- *Math in Practice: Teaching First Grade Math* by Laura Hunovice, Susan O'Connell, & John SanGiovanni
- *Math Workshop: Five Steps to Implementing Guided Math, Learning Stations, Reflection, and More* by Jennifer Lempp
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- *Teaching Student Centered Mathematics: Developmentally Appropriate Instruction for Grades PreK-2 (Volume I)* by John A. Van de Walle, Karen S. Karp, LouAnn H. Lovin, & Jennifer M. Bay-Williams

| Additional Supports |
|---|

WW-P Accommodations and Assessment (Reference Tool and Glossary)

# Unit 5: Geometry

**Content Area: Elementary Mathematics**

**Course & Grade Level: Mathematics, Grade 1**

## Summary and Rationale

In unit 5, students embark on a journey into the world of shapes (and fractions-halves, thirds, and fourths) and explore all the fun things they can do with them. Identifying, describing, constructing, drawing, comparing, composing, sorting, and partitioning shapes are essential skills addressed in this unit. Hands-on exploration and discovery offer students the opportunity to grow their thinking about shapes and their attributes.

## Recommended Pacing

20 days

## New Jersey Student Learning Standards for Mathematics

**Standard: 1.MD.C Represent and interpret data.**

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| 1.MD.C.4 | Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another. |

**Standard: 1.OA.A Represent and solve problems involving addition and subtraction.**

| CPI# | Cumulative Progress Indicator (CPI) |
|---|---|
| 1.OA.A.1 | Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem. |
| 1.OA.A.2 | Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem. |

**Standard: 1.OA.B Understand and apply properties of operations and the relationship between addition and subtraction.**

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| 1.OA.B.3 | Apply properties of operations as strategies to add and subtract.[3] *Examples: If 8 + 3 = 11 is known, then 3 + 8 = 11 is also known. (Commutative property of addition.) To add 2 + 6 + 4, the second two numbers can be added to make a ten, so 2 + 6 + 4 = 2 + 10 = 12. (Associative property of addition.)* {Students need not use formal terms for these properties} |
| 1.OA.B.4 | Understand subtraction as an unknown-addend problem. *For example, subtract 10 – 8 by finding the number that makes 10 when added to 8.* |

**Standard: 1.OA.C Add and subtract within 20.**

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| 1.OA.A.6 | Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., 8 + 6 = 8 + 2 + 4 = 10 + 4 = 14); decomposing a number leading to a ten (e.g., 13 – 4 = 13 – 3 – 1 = 10 – 1 = 9); using the relationship between addition and subtraction (e.g., knowing that 8 + 4 = 12, one knows 12 – 8 = 4); and creating equivalent but easier or known sums (e.g., adding 6 + 7 by creating the known equivalent 6 + 6 + 1 = 12 + 1 = 13). |

**Standard: 1.G.A Reason with shapes and their attributes.**

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|

| 1.G.A.1 | Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size); build and draw shapes to possess defining attributes. |
|---------|---|
| 1.G.A.2 | Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) or three-dimensional shapes (cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape, and compose new shapes from the composite shape.[4]<br>([4]Students do not need to learn formal names such as "right rectangular prism.") |
| 1.G.A.3 | Partition circles and rectangles into two and four equal shares, describe the shares using the words halves, fourths, and quarters, and use the phrases half of, fourth of, and quarter of. Describe the whole as two of, or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares. |

| Standard:  Standards for Mathematical Practice ||
|---------|---|
| **CPI #** | **Cumulative Progress Indicator (CPI)** |
| 1.MP.1 | Make sense of problems and persevere in solving them. |
| 1.MP.2 | Reason abstractly and quantitatively. |
| 1.MP.4 | Model with mathematics. |
| 1.MP.6 | Attend to precision. |
| 1.MP.7 | Look for and make use of structure. |
| 1.MP.8 | Look for and express regularity in repeated reasoning. |

| New Jersey Student Learning Standards for Career Readiness, Life Literacies, and Key Skills ||
|---------|---|
| **Standard:  9.4 Life Literacies and Key Skills: Critical Thinking and Problem-solving:** Critical thinkers must first identify a problem then develop a plan to address it to effectively solve the problem. ||
| **CPI #** | **Cumulative Progress Indicator (CPI)** |
| 9.4.2.CT.2 | Identify possible approaches and resources to execute a plan (e.g., 1.2.2.CR1b, 8.2.2.ED.3). |
| 9.4.2.CT.3 | Use a variety of types of thinking to solve problems (e.g., inductive, deductive). |
| **Standard:  9.4 Life Literacies and Key Skills:  Technology Literacy:** Digital tools have a purpose. ||
| **CPI #** | **Cumulative Progress Indicator (CPI)** |
| 9.4.2.TL.6 | Illustrate and communicate ideas and stories using multiple digital tools (e.g., SL.2.5.). |

| New Jersey Student Learning Standards for Computer Science and Design Thinking ||
|---------|---|
| **Standard: 8.1 Computer Science:** Data can be used to make predictions about the world. ||
| **CPI #** | **Cumulative Progress Indicator (CPI)** |
| 8.1.2.DA.3 | Identify and describe patterns in data visualizations. |
| 8.1.2.DA.4 | Make predictions based on data using charts or graphs. |

| Interdisciplinary Standards ||
|---------|---|
| **English Language Arts** ||
| **CPI #** | **Cumulative Progress Indicator (CPI)** |
| W.1.6 | With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers. |
| W.1.8 | With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question. |
| SL.1.1 | Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups |
| SL.1.5 | Add drawings or other visual displays to descriptions when appropriate to clarify ideas, thoughts, and feelings. |
| RI.1.1 | Ask and answer questions about key details in a text. |

| Social Studies |
| --- |
| **Standard: 6.1 U.S. History: America in the World: Civics, Government, and Human Rights: Participation and Deliberation**  When all members of the group are given the opportunity to participate in the decision making process, everyone's voice is heard. |

| CPI # | Cumulative Progress Indicator (CPI) |
| --- | --- |
| 6.1.2.Civics PD.1 | Engage in discussions effectively by asking questions, considering facts, listening to the ideas of others, and sharing opinions. |

| **Instructional Focus** |
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**Unit Enduring Understandings**

- Mathematicians describe and compare shapes/objects  using their attributes.
- Mathematicians break apart large shapes to make new shapes and name them as halves, fourths/quarters.
- Mathematicians understand that a  fraction represents a part of a whole.
- Mathematicians understand that a  fraction represents part of a set.
- Mathematicians understand that fractions are equal parts.

**Unit Essential Questions**

- Where are geometric shapes found in everyday objects (Both 2-D and 3-D)?
- What are some identifying characteristics and attributes of  2-D and 3-D shapes?
- How do we compose, and decompose shapes in different ways?  How do we sort shapes, categorize, and name them?
- How do we break shapes into equal shares?

**Objectives**

**We are learning to/that:**

- Identify, name, describe, and compare 2-D shapes, including circles, triangles, rectangles, rhombuses, hexagons, and trapezoids
- Identify, name, describe, and compare 3-D shapes, including cubes, rectangular prisms, triangular prisms, pyramids, cylinders, cones and spheres
- Demonstrate an understanding of the difference between the defining and non-defining attributes of 2-D and 3-D shapes
- Draw a 2-D shape with specific defining attributes
- Build a 3-D shape with specific defining attributes
- Create a composite shape by composing 2-D shapes
- Create a composite shape by composing 3-D shapes
- Compose a new shape using composite 2-D shapes
- Compose a new shape using composite 3-D
- Partition a circle [rectangle] into 2 or 4 equal parts
- Use the terms halves and half of to talk about the 2 equal parts into which a circle [rectangle] has been partitioned
- Use the terms fourths, quarters, fourth of, and quarter of to talk about the 4 equal parts into which a circle [rectangle] has been partitioned
- Describe a whole circle [rectangle] as 2 [4] of two [four] equal parts
- Demonstrate an understanding that as a shape is partitioned into a greater number of equal parts (e.g., 4 equal parts rather than 2), the size of the parts gets smaller

| **Evidence of Learning** |
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**Assessment**

The assessment plan may include teacher-designed formative and summative assessments, district common assessments, self-assessments, and analysis of standardized benchmark and interim assessment data. During each common, formative, and summative assessment, teachers will provide accommodations and alternative assessment opportunities that adhere to 504 and IEP requirements. Alternative assessments are individualized for

the needs of all students. Throughout the unit, students will be engaged in activities that involve finding patterns, making generalizations, drawing conclusions, and communicating their ideas with others. Teachers will have many opportunities to observe students' growth in these areas, as well as with specific math skills and concepts throughout this unit.

| ☑ Formative Assessment |
| --- |
| ☑ Summative Assessment |
| ☑ Alternative Assessment |
| ☑ Benchmark |

## Resources

**Foundational Text:**
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**Instructional & Professional Resources:**
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- *Teaching Student Centered Mathematics: Developmentally Appropriate Instruction for Grades PreK-2 (Volume I)* by John A. Van de Walle, Karen S. Karp, LouAnn H. Lovin, & Jennifer M. Bay-Williams

**Additional Supports**

WW-P Accommodations and Assessment (Reference Tool and Glossary)

| Unit 6: Problem Solving Strategies |
|---|

| Content Area: Elementary Mathematics |
|---|

| Course & Grade Level: Mathematics,  Grade 1 |
|---|

| Summary and Rationale |
|---|
| Unit 6 is all about addition and subtraction within 20 and penguins! Zoologists use mathematics to understand and describe the habitats of penguins. Fact fluency is built through continued practice with addition and subtraction while learning about penguins. Solving equations with the unknown in different places builds understanding for budding scientists. It is about more than fluency in this unit. Students also develop a broader understanding of the relationship between addition and subtraction. |

| Recommended Pacing |
|---|
| 20 days |

| New Jersey Student Learning Standards for Mathematics |
|---|

**Standard:  1.OA.A  Represent and solve problems involving addition and subtraction.**

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| 1.OA.A.1 | Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem. |
| 1.OA.A.2 | Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem. |

**Standard:  1.OA.B Understand and apply properties of operations and the relationship between addition and subtraction.**

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| 1.OA.B.4 | Understand subtraction as an unknown-addend problem. *For example, subtract 10 – 8 by finding the number that makes 10 when added to 8.* |

**Standard: 1.OA.C  Add and subtract within 20.**

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| 1.OA.C.5 | Relate counting to addition and subtraction (e.g., by counting on 2 to add 2). |
| 1.OA.C.6 | Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., 8 + 6 = 8 + 2 + 4 = 10 + 4 = 14); decomposing a number leading to a ten (e.g., 13 − 4 = 13 − 3 − 1 = 10 − 1 = 9); using the relationship between addition and subtraction (e.g., knowing that 8 + 4 = 12, one knows 12 − 8 = 4); and creating equivalent but easier or known sums (e.g., adding 6 + 7 by creating the known equivalent 6 + 6 + 1 = 12 + 1 = 13). |

**Standard: 1.OA.D Work with addition and subtraction equations.**

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| 1.OA.D.7 | Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false. *For example, which of the following equations are true and which are false? 6 = 6, 7 = 8 − 1, 5 + 2 = 2 + 5, 4 + 1 = 5 + 2.* |
| 1.OA.D.8 | Determine the unknown whole number in an addition or subtraction equation relating to three whole numbers. *For example, determine the unknown number that makes the equation true in each of the equations 8 + ? = 11, 5 = □ − 3, 6 + 6 = □.* |

**Standard: 1.NBT.A  Extend the counting sequence.**

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|

| 1.NBT.A.1 | Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral. |
|---|---|

**Standard: 1.NBT.B  Understand place value.**

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| 1.NBT.B.2: | Understand that the two digits of a two-digit number represent amounts of tens and ones. |
| 1.NBT.B.3 | Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols >, =, and <. |

**Standard: 1.MD.A  Measure lengths indirectly and by iterating length units.**

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| **1.MD.A.1** | Order three objects by length; compare the lengths of two objects indirectly by using a third object. |

**Standard: Standards for Mathematical Practice**

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| 1.MP.1 | Make sense of problems and persevere in solving them. |
| 1.MP.2 | Reason abstractly and quantitatively. |
| 1.MP.3 | Construct viable arguments and critique the reasoning of others. |
| 1.MP.4 | Model with mathematics. |
| 1.MP.5 | Use appropriate tools strategically. |
| 1.MP.7 | Look for and make use of structure. |
| 1.MP.8 | Look for and express regularity in repeated reasoning. |

## New Jersey Student Learning Standards for Career Readiness, Life Literacies, and Key Skills

**Standard:  9.4 Life Literacies and Key Skills: Critical Thinking and Problem-solving:** Critical thinkers must first identify a problem then develop a plan to address it to effectively solve the problem.

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| 9.4.2.CT.2 | Identify possible approaches and resources to execute a plan (e.g., 1.2.2.CR1b, 8.2.2.ED.3). |
| 9.4.2.CT.3 | Use a variety of types of thinking to solve problems (e.g., inductive, deductive). |

**Standard:  9.4 Life Literacies and Key Skills: Technology Literacy:** Digital tools have a purpose.

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| 9.4.2.TL.6 | Illustrate and communicate ideas and stories using multiple digital tools (e.g., SL.2.5.). |

## New Jersey Student Learning Standards for Computer Science and Design Thinking

**Standard: 8.1 Computer Science:** Data can be used to make predictions about the world.

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| 8.1.2.DA.3 | Identify and describe patterns in data visualizations. |
| 8.1.2.DA.4 | Make predictions based on data using charts or graphs. |

## Interdisciplinary Standards

**English Language Arts**

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| W.1.6 | With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers. |
| W.1.8 | With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question. |
| SL.1.1 | Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups. |
| SL.1.5 | Add drawings or other visual displays to descriptions when appropriate to clarify ideas, thoughts, and feelings. |

| RI.1.1 | Ask and answer questions about key details in a text. |
|--------|--------------------------------------------------------|

## Social Studies

**Standard: 6.1 U.S. History: America in the World: Civics, Government, and Human Rights: Participation and Deliberation** When all members of the group are given the opportunity to participate in the decision making process, everyone's voice is heard.

| CPI # | Cumulative Progress Indicator (CPI) |
|-------|-------------------------------------|
| 6.1.2.Civics PD.1 | Engage in discussions effectively by asking questions, considering facts, listening to the ideas of others, and sharing opinions. |

## Instructional Focus

### Unit Enduring Understandings

- Mathematicians understand that true equations have the same value on both sides.
- Mathematicians understand that false equations have different values on both sides.
- Mathematicians can find missing numbers in a math sentence/equation or word problem using addition and subtraction.
- Mathematicians understand how addition and subtraction are related to help solve math problems.
- Mathematicians understand that using our number sense and strategies will help us solve addition and subtraction problems.

### Unit Essential Questions

- How do we find the missing number in a math sentence?
- How do we determine whether addition and subtraction equations are true or false?
- How are addition and subtraction related?
- How does understanding that addition and subtraction are related help us solve math problems?

### Objectives

**We are learning to/that:**

- Solve addition and subtraction story problems with sums and minuends to 20 involving situations of adding to, putting together, taking from, and taking apart with unknowns in all positions
- Solve addition problems by counting on
- Solve subtraction problems by finding an unknown addend
- Use strategies to add with sums to 20
- Subtract with minuends to 20
- Use the relationship between addition and subtraction to add and subtract within 20
- Recognize, describe, and extend number patterns
- Represent a number of objects with a written numeral up to 120
- Count by 2s to 20
- Group and count objects by tens, fives and twos
- Determine whether addition equations are true
- Solve for unknown in an addition or subtraction equation involving 3 whole numbers
- Demonstrate an understanding that numbers from 11 to 19 are composed of a 10 and some ones
- Measure and compare the lengths of two objects
- Demonstrates an understanding that the equal sign indicates equivalence
- Express the length of an object as a whole number of units

## Evidence of Learning

### Assessment

The assessment plan may include teacher-designed formative and summative assessments, district common assessments, self-assessments, and analysis of standardized benchmark and interim assessment data. During each common, formative, and summative assessment, teachers will provide accommodations and alternative assessment opportunities that adhere to 504 and IEP requirements. Alternative assessments are individualized for the needs of all students. Throughout the unit, students will be engaged in activities that involve finding patterns,

making generalizations, drawing conclusions, and communicating their ideas with others. Teachers will have many opportunities to observe students' growth in these areas, as well as with specific math skills and concepts throughout this unit.

| ☑ Formative Assessment |
| --- |
| ☑ Summative Assessment |
| ☑ Alternative Assessment |
| ☑ Benchmark |

## Resources

**Foundational Text:**

*Bridges in Mathematics Grade 1* by The Math Learning Center, Modules

**Instructional & Professional Resources:**

- Exemplars*, Problem Solving for the 21st Century*
- K-5 Math Teaching Resources
-  DreamBox Learning (Digital Tool)
- *Math in Practice: Teaching First Grade Math* by Laura Hunovice, Susan O'Connell, & John SanGiovanni
- *Math Workshop: Five Steps to Implementing Guided Math, Learning Stations, Reflection, and More* by Jennifer Lempp
- Mathematical *Mindsets: Unleashing Students' Potential through Creative Math, Inspiring Messages and Innovative Teaching*  by Jo Boaler
- *Teaching Student Centered Mathematics: Developmentally Appropriate Instruction for Grades PreK-2 (Volume I)*  by John A. Van de Walle, Karen S. Karp, LouAnn H. Lovin, & Jennifer M. Bay-William

## Additional Supports

WW-P Accommodations and Assessment (Reference Tool and Glossary)

| Unit 7: Place Value |
|---|

| Content Area: Elementary Mathematics |
|---|
| Course & Grade Level: Mathematics,  Grade 1 |

| Summary and Rationale |
|---|
| In unit 7, students continue to develop an understanding of numbers to 120 as they estimate, count, compare, add, and subtract two-digit quantities. They will model with sticks & bundles, coins (dimes, nickels, and pennies), and the number line. Place value is central to this study. Students will visualize, model and manipulate numbers, understand how predictable patterns can help navigate numbers in context, and understand that strategies used with small numbers also help to solve problems with larger numbers. |

| Recommended Pacing |
|---|
| 20 days |

| New Jersey Student Learning Standards for Mathematics | |
|---|---|
| **Standard:  1.NBT.A  Extend the counting sequence.** | |
| 1.NBT.A.1 | Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral. |
| **Standard:  1.NBT.B  Understand place value.** | |
| 1.NBT.B.2 | Understand that the two digits of a two-digit number represent amounts of tens and ones. |
| 1.NBT.B.3 | Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols >,  =, and <. |
| **Standard:  1.NBT.C  Use place value understanding and properties of operations to add and subtract.** | |
| 1.NBT.C.4 | Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models (e.g., base ten blocks) 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 and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten. |
| 1.NBT.C. 5 | Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used. |
| 1.NBT.C. 6 | Subtract multiples of 10 in the range 10-90 from multiples of 10 in the range 10-90 (positive or zero differences), 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 and explain the reasoning used. |
| **Standard: 1.MD.A  Measure lengths indirectly and by iterating length units.** | |
| **CPI #** | **Cumulative Progress Indicator (CPI)** |
| 1.MD.A.1 | Order three objects by length; compare the lengths of two objects indirectly by using a third object. |
| 1.MD.A.2 | Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps. |
| **Standard 1.MD.B Tell and write time.** | |
| **CPI #** | **Cumulative Progress Indicator (CPI)** |
| 1.MD.B.3 | Tell and write time in hours and half-hours using analog and digital clocks. |
| **Standard:  Standards for Mathematical Practice** | |
| **CPI #** | **Cumulative Progress Indicator (CPI)** |
| 1.MP.1 | Make sense of problems and persevere in solving them. |

| 1.MP.2 | Reason abstractly and quantitatively. |
|---|---|
| 1.MP.3 | Construct viable arguments and critique the reasoning of others. |
| 1.MP.4 | Model with mathematics. |
| 1.MP.7 | Look for and make use of structure. |
| 1.MP.8 | Look for and express regularity in repeated reasoning. |

| New Jersey Student Learning Standards for Career Readiness, Life Literacies, and Key Skills |||
|---|---|---|
| **Standard: 9.4 Life Literacies and Key Skills: Critical Thinking and Problem-solving:** Critical thinkers must first identify a problem then develop a plan to address it to effectively solve the problem. |||
| **CPI #** | **Cumulative Progress Indicator (CPI)** ||
| 9.4.2.CT.1 | Gather information about an issue, such as climate change, and collaboratively brainstorm ways to solve the problem (e.g., K-2-ETS1-1, 6.3.2.GeoGI.2). ||
| 9.4.2.CT.2 | Identify possible approaches and resources to execute a plan (e.g., 1.2.2.CR1b, 8.2.2.ED.3). ||
| 9.4.2.CT.3 | Use a variety of types of thinking to solve problems (e.g., inductive, deductive). ||
| **Standard: 9.4 Technology Literacy:** Digital tools have a purpose. |||
| **CPI #** | **Cumulative Progress Indicator (CPI)** ||
| 9.4.2.TL.6 | Illustrate and communicate ideas and stories using multiple digital tools (e.g., SL.2.5.). ||

| New Jersey Student Learning Standards for Computer Science and Design Thinking |||
|---|---|---|
| **Standard: 8.1 Computer Science:** Data can be used to make predictions about the world. |||
| **CPI #** | **Cumulative Progress Indicator (CPI)** ||
| 8.1.2.DA.3 | Identify and describe patterns in data visualizations. ||
| 8.1.2.DA.4 | Make predictions based on data using charts or graphs. ||

| Interdisciplinary Connections |||
|---|---|---|
| **English Language Arts** |||
| **CPI #** | **Cumulative Progress Indicator (CPI)** ||
| W.1.6 | With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers. ||
| W.1.8 | With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question. ||
| SL.1.1 | Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups. ||
| SL.1.5 | Add drawings or other visual displays to descriptions when appropriate to clarify ideas, thoughts, and feelings. ||
| RI.1.1 | Ask and answer questions about key details in a text. ||
| **Social Studies** |||
| **Standard: 6.1 U.S. History: America in the World: Civics, Government, and Human Rights: Participation and Deliberation** When all members of the group are given the opportunity to participate in the decision making process, everyone's voice is heard. |||
| **CPI #** | **Cumulative Progress Indicator (CPI)** ||
| 6.1.2.Civics PD.1 | Engage in discussions effectively by asking questions, considering facts, listening to the ideas of others, and sharing opinions. ||

| Instructional Focus |
|---|
| **Unit Enduring Understandings** |
| <ul><li>Mathematicians use their number sense and strategies to solve addition and subtraction problems.</li><li>Mathematicians organize numbers by tens and ones to count and compare numbers.</li><li>Mathematicians recognize a sequential pattern when reading, writing and counting numbers.</li><li>Mathematicians understand that adding or subtracting changes how much or how many we have.</li></ul> |

| Unit Essential Questions |
| --- |
| ● How does the position of a digit in a number affect the value of a number? <br> ● Why do we break numbers apart by tens and ones? <br> ● What strategies can we use to figure out how many or how much we have? <br> ● How can we use a number pattern to recite a counting sequence? |
| **Objectives** |
| **We are learning to/that:** <br> ● Read and write numbers 120 <br> ● Solve story problems involving addition of 3 whole numbers whose sum is less than or equal to 20 <br> ● Count to 120, starting with any number less than 120, including 0 or 1 <br> ● Read and write numerals to 120 <br> ● Count by 5s and 10s to 100 <br> ● Demonstrate an understanding that the digits in a 2-digit number represent amounts of tens and ones <br> ● Add a 1-digit number and a 2-digit number <br> ● Add a multiple of 10 (up to 80) and another 2-digit number <br> ● Use concrete models or drawings and strategies based on place value, properties of operations, or the relationship between addition and subtraction to add with sums to 100 <br> ● Relate strategies for adding with sums to 100 to written methods; use written numbers and symbols to represent strategies for adding with sums to 100 <br> ● Explain the reasoning behind a strategy used to add with sums to 100 <br> ● Add with sums to 100 using strategies that involve adding tens to tens and ones to ones, as well as composing a ten (regrouping) <br> ● Determine the value of a collection of coins totaling less than $1.00 <br> ● Compare pairs of 3-digit numbers <br> ● Use >, <, and = symbols to record comparisons of 2-digit numbers <br> ● Apply the commutative and associative properties of addition to add <br> ● Demonstrate an understanding that multiples of 10 from 10 to 90 refer to some number of tens and 0 ones. <br> ● Mentally find the number that is 10 more or 10 less than a given 2-digit number without counting and explain the reasoning behind a strategy to do so |
| **Evidence of Learning** |
| **Assessment** |
| The assessment plan may include teacher-designed formative and summative assessments, district common assessments, self-assessments, and analysis of standardized benchmark and interim assessment data. During each common, formative, and summative assessment, teachers will provide accommodations and alternative assessment opportunities that adhere to 504 and IEP requirements. Alternative assessments are individualized for the needs of all students. Throughout the unit, students will be engaged in activities that involve finding patterns, making generalizations, drawing conclusions, and communicating their ideas with others. Teachers will have many opportunities to observe students' growth in these areas, as well as with specific math skills and concepts throughout this unit. |
| ☑ Formative Assessment |
| ☑ Summative Assessment |
| ☑ Alternative Assessment |
| ☑ Benchmark |
| **Resources** |
| **Foundational Text:** <br> *Bridges in Mathematics Grade 1* by The Math Learning Center <br> **Instructional & Professional Resources:** |

- Exemplars, *Problem Solving for the 21$^{st}$ Century*
- K-5 Math Teaching Resources
- DreamBox Learning (Digital Tool)
- *Math in Practice: Teaching First Grade Math* by Laura Hunovice, Susan O'Connell, & John SanGiovanni
- *Math Workshop: Five Steps to Implementing Guided Math, Learning Stations, Reflection, and More* by Jennifer Lempp
- *Mathematical Mindsets: Unleashing Students' Potential through Creative Math, Inspiring Messages and Innovative Teaching* by Jo Boaler
- *Teaching Student Centered Mathematics: Developmentally Appropriate Instruction for Grades PreK-2 (Volume I)* by John A. Van de Walle, Karen S. Karp, LouAnn H. Lovin, & Jennifer M. Bay-Williams

**Additional Supports**

WW-P Accommodations and Assessment (Reference Tool and Glossary)

| Unit 8: Measuring Change | |
|---|---|
| **Content Area: Elementary Mathematics** | |
| **Course & Grade Level: Mathematics,  Grade 1** | |
| **Summary and Rationale** | |
| Let's wrap up the year by reinforcing all our new skills by studying change through  engaging, inquiry-based learning. Unit 8 blends math and science to reinforce the concepts of time and change through hands-on explorations of gliders and paper airplanes. Using the engineering process, students collect and analyze data by creating simple charts and graphs. | |
| **Recommended Pacing** | |
| 20 days | |
| **New Jersey Student Learning Standards for Mathematics** | |
| **Standard:  1.OA.A Represent and solve problems involving addition and subtraction.** | |
| **CPI #** | **Cumulative Progress Indicator (CPI)** |
| 1.OA.A.1 | Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem. |
| 1.OA.A.2 | Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the number. |
| **Standard:  1.OA.B  Understand and apply properties of operations and the relationship between addition and subtraction.** | |
| **CPI #** | **Cumulative Progress Indicator (CPI)** |
| 1.OA.B.3 | Apply properties of operations as strategies to add and subtract. Examples: If 8 + 3 = 11 is known, then 3 + 8 = 11 is also known. (Commutative property of addition.) To add 2 + 6 + 4, the second two numbers can be added to make a ten, so 2 + 6 + 4 = 2 + 10 = 12. (Associative property of addition.) (*Students need not use formal terms for these properties*) |
| **Standard:  1.OA.C Add and subtract within 20.** | |
| **CPI #** | **Cumulative Progress Indicator (CPI)** |
| 1.OA.C.5 | Relate counting to addition and subtraction (e.g., by counting on 2 to add 2). |
| 1.OA.C.6 | Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., 8 + 6 = 8 + 2 + 4 = 10 + 4 = 14); decomposing a number leading to a ten (e.g., 13 − 4 = 13 − 3 − 1 = 10 − 1 = 9); using the relationship between addition and subtraction (e.g., knowing that 8 + 4 = 12, one knows 12 − 8 = 4); and creating equivalent but easier or known sums (e.g., adding 6 + 7 by creating the known equivalent 6 + 6 + 1 = 12 + 1 = 13). |
| **Standard: 1.OA.D Work with addition and subtraction equations.** | |
| **CPI #** | **Cumulative Progress Indicator (CPI)** |
| 1.OA.D.8 | Determine the unknown whole number in an addition or subtraction equation relating to three whole numbers. *For example, determine the unknown number that makes the equation true in each of the equations 8 + ? = 11, 5 = □ − 3, 6 + 6 = □.* |
| **Standard: 1.NBT.A  Extend the counting sequence.** | |
| **CPI #** | **Cumulative Progress Indicator (CPI)** |
| 1.NBT.A.1 | Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral. |
| **Standard: 1.NBT.B Understand place value.** | |
| **CPI #** | **Cumulative Progress Indicator (CPI)** |

| 1.NBT.B.2 | Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases:<br>a. 10 can be thought of as bundle of ten ones – called a "ten."<br>b. The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones.<br>c. The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones). |
|---|---|
| 1.NBT.B.3 | Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols >, =, and <. |
| **Standard: 1.NBT.C  Use place value understandings and properties of operations to add and subtract.** | |
| **CPI #** | **Cumulative Progress Indicator (CPI)** |
| 1.NBT.C.4 | Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models (e.g., base ten blocks) 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 and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten. |
| 1.NBT.C.5 | Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used. |
| 1.NBT.C.6 | Subtract multiples of 10 in the range 10-90 from multiples of 10 in the range 10-90 (positive or zero differences), 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 and explain the reasoning used. |
| **Standard: 1.MD.A  Measure lengths indirectly and by iterating length units.** | |
| **CPI #** | **Cumulative Progress Indicator (CPI)** |
| 1.MD.A.1 | Order three objects by length; compare the lengths of two objects indirectly by using a third object. |
| 1.MD.A.2 | Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. *Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps.* |
| **Standard: 1.MD.B  Tell and write time.** | |
| **CPI #** | **Cumulative Progress Indicator (CPI)** |
| 1.MD.B.3 | Tell and write time in hours and half-hours using analog and digital clocks. |
| **Standard: 1.MD.C  Represent and Interpret Data.** | |
| **CPI #** | **Cumulative Progress Indicator (CPI)** |
| 1.MD.C.4 | Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another. |
| **Standard: 1.G.A  Reasons with shapes and their attributes.** | |
| **CPI #** | **Cumulative Progress Indicator (CPI)** |
| 1.G.A.3 | Partition circles and rectangles into two and four equal shares, describe the shares using the words halves, fourths, and quarters, and use the phrases half of, fourth of and quarter of. Describe the whole as two of or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares. |
| **Standard:  Standards for Mathematical Practice** | |
| **CPI #** | **Cumulative Progress Indicator (CPI)** |

| 1.MP.1 | Make sense of problems and persevere in solving them. |
|---|---|
| 1.MP.2 | Reason abstractly and quantitatively. |
| 1.MP.3 | Construct viable arguments and critique the reasoning of others. |
| 1.MP.4 | Model with mathematics. |
| 1.MP.5 | Use appropriate tools strategically. |
| 1.MP.6 | Attend to precision. |
| 1.MP.7 | Look for and make use of structure. |

| New Jersey Student Learning Standards for Career Readiness, Life Literacies, and Key Skills | |
|---|---|

**Standard: 9.4 Life Literacies and Key Skills: Critical Thinking and Problem-solving:** Critical thinkers must first identify a problem then develop a plan to address it to effectively solve the problem.

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| 9.4.2.CT.1 | Gather information about an issue, such as climate change, and collaboratively brainstorm ways to solve the problem (e.g., K-2-ETS1-1, 6.3.2.GeoGI.2). |
| 9.4.2.CT.2 | Identify possible approaches and resources to execute a plan (e.g., 1.2.2.CR1b, 8.2.2.ED.3). |

**Standard: 9.4 Technology Literacy:** Digital tools have a purpose.

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| 9.4.2.TL.6 | Illustrate and communicate ideas and stories using multiple digital tools (e.g., SL.2.5.). |

| New Jersey Student Learning Standards for Computer Science and Design Thinking | |
|---|---|

**Standard: 8.1 Computer Science:** Data can be used to make predictions about the world.

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| 8.1.2.DA.3 | Identify and describe patterns in data visualizations. |
| 8.1.2.DA.4 | Make predictions based on data using charts or graphs. |

| Interdisciplinary Studies | |
|---|---|

**English Language Arts**

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| W.1.6 | With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers. |
| W.1.8 | With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question. |
| SL.1.1 | Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups. |
| SL.1.5 | Add drawings or other visual displays to descriptions when appropriate to clarify ideas, thoughts, and feelings. |
| RI.1.1 | Ask and answer questions about key details in a text. |

**Science**

**Standard: K-2-ETS1 Engineering Design**

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| 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. |

**Social Studies**

| Standard: 6.1 U.S. History: America in the World: Civics, Government, and Human Rights: Participation and Deliberation When all members of the group are given the opportunity to participate in the decision making process, everyone's voice is heard. | |
|---|---|
| CPI # | Cumulative Progress Indicator (CPI) |
| 6.1.2.Civics PD.1 | Engage in discussions effectively by asking questions, considering facts, listening to the ideas of others, and sharing opinions. |

## Instructional Focus

### Unit Enduring Understandings

- Mathematicians understand objects (non-standard units) can be used to measure the lengths of things and measurements can be compared.
- Mathematicians tell time to the hour and half hour and its passages.
- Mathematicians collect, organize, represent and analyze data (up to 3 categories).
- Mathematicians modify their original plans with the intent of improvement. (Science Connection)
- Mathematicians find patterns when adding or subtracting by the same numbers. (Function Machines)

### Unit Essential Questions

- How do we measure objects accurately and compare lengths?
- How long is a second, a minute, an hour?
- How can we discover number patterns using a function machine?
- How do we collect, organize, analyze and represent data?
- How can we modify or develop new or improved plans? (Science Connection)

### Objectives

**Note: This unit provides students the opportunity to put previous learning into action and encompasses the following objectives that were studied in previous units.**

**The learner will:**

- Recognize, describe, extend, and create number patterns
- Represent a number of objects with a written numeral up to 120
- Add a multiple of 10 (up to 80) and another 2-digit number
- Use concrete models or drawings and strategies based on place value, properties of operations, or the relationship between addition and subtraction to add with sums to 100
- Mentally find the number that is 10 more or 10 less than a given 2-digit number, without counting, and explain the reasoning use
- Subtract a 2-digit multiple of 10 from an equal or greater 2-digit multiple of 10
- Order 3 objects by length
- Compare the lengths of 2 objects indirectly by comparing the length of each to a third object
- Measure the length of an object by laying multiple copies of a shorter unit end to end (iterating)
- Express the length of an object as a whole number of units
- Demonstrate an understanding that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps
- Tell and write time to the hour and half-hour on an analog and a digital clock
- Organize, represent, and interpret data with up to 3 categories
- Answer questions about the total number of data points in a set of data, how many data points are in each category, and how many more or fewer data points are in each category in a set of data with up to 3 categories
- Partition a circle and/or rectangle into 2 equal parts, and use terms to talk about the 2 equal parts

## Evidence of Learning

### Assessment

The assessment plan may include teacher-designed formative and summative assessments, district common assessments, self-assessments, and analysis of standardized benchmark and interim assessment data. During each common, formative, and summative assessment, teachers will provide accommodations and alternative assessment

opportunities that adhere to 504 and IEP requirements. Alternative assessments are individualized for the needs of all students. Throughout the unit, students will be engaged in activities that involve finding patterns, making generalizations, drawing conclusions, and communicating their ideas with others. Teachers will have many opportunities to observe students' growth in these areas, as well as with specific math skills and concepts throughout this unit.

| ☑ Formative Assessment |
| ☑ Summative Assessment |
| ☑ Alternative Assessment |
| ☑ Benchmark |

## Resources

**Foundational Text:**

*Bridges in Mathematics Grade 1* by The Math Learning Center

**Instructional & Professional Resources:**

- Exemplars*, Problem Solving for the 21st Century*
- K-5 Math Teaching Resources
- DreamBox Learning (Digital Tool)
- *Math in Practice: Teaching First Grade Math* by Laura Hunovice, Susan O'Connell, & John SanGiovanni
- *Math Workshop: Five Steps to Implementing Guided Math, Learning Stations, Reflection, and More* by Jennifer Lempp
- *Mathematical Mindsets: Unleashing Students' Potential through Creative Math, Inspiring Messages and Innovative Teaching* by Jo Boaler
- *Teaching Student Centered Mathematics: Developmentally Appropriate Instruction for Grades PreK-2 (Volume I)* by John A. Van de Walle, Karen S. Karp, LouAnn H. Lovin, & Jennifer M. Bay-Williams

**Additional Supports**

WW-P Accommodations and Assessment (Reference Tool and Glossary)

## Yearlong Unit: Calendar Routines

**Content Area: Elementary Mathematics**

**Course & Grade Level: Mathematics,  Grade 1**

### Summary and Rationale

Calendar Routines provide ongoing encounters with broader mathematical concepts.  Calendar Routines feature daily routines that introduce, reinforce, and extend skills and concepts related to the critical areas of study in first

grade mathematics. The rigor, focus, and coherence in each routine promote conceptual understanding and procedural fluency.

| **Recommended Pacing** |
|---|
| yearlong |

| **New Jersey Student Learning Standards for Mathematics** |
|---|

**Standard: 1.OA.A Represent and solve problems involving addition and subtraction.**

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| 1.OA.A.1 | Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem. |
| 1.OA.A.2 | Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the number. |

**Standard: 1.OA.B Understand and apply properties of operations and the relationship between addition and subtraction.**

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| 1.OA.B.3 | Apply properties of operations as strategies to add and subtract. Examples: If 8 + 3 = 11 is known, then 3 + 8 = 11 is also known. (Commutative property of addition.) To add 2 + 6 + 4, the second two numbers can be added to make a ten, so 2 + 6 + 4 = 2 + 10 = 12. (Associative property of addition.) (*Students need not use formal terms for these properties*) |
| 1.OA.B.4 | Understand subtraction as an unknown-addend problem. For example, subtract 10 − 8 by finding the number that makes 10 when added to 8. |

**Standard: 1.OA.C Add and subtract within 20.**

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| 1.OA.C.5 | Relate counting to addition and subtraction (e.g., by counting on 2 to add 2). |
| 1.OA.C.6 | Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., 8 + 6 = 8 + 2 + 4 = 10 + 4 = 14); decomposing a number leading to a ten (e.g., 13 − 4 = 13 − 3 − 1 = 10 − 1 = 9); using the relationship between addition and subtraction (e.g., knowing that 8 + 4 = 12, one knows 12 − 8 = 4); and creating equivalent but easier or known sums (e.g., adding 6 + 7 by creating the known equivalent 6 + 6 + 1 = 12 + 1 = 13). |

**Standard: 1.OA.D Work with addition and subtraction equations.**

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| 1.OA.C.7 | Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false. *For example, which of the following equations are true and which are false? 6 = 6, 7 = 8 − 1, 5 + 2 = 2 + 5, 4 + 1 = 5 + 2.* |
| 1.OA.D.8 | Determine the unknown whole number in an addition or subtraction equation relating to three whole numbers. *For example, determine the unknown number that makes the equation true in each of the equations 8 + ? = 11, 5 = □ − 3, 6 + 6 = □.* |

**Standard: 1.NBT.A Extend the counting sequence.**

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| 1.NBT.A.1 | Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral. |

**Standard: 1.NBT.B Understand place value.**

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|

| 1.NBT.B.2 | Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases: |
| --- | --- |
| | a. 10 can be thought of as bundle of ten ones – called a "ten." |
| | b. The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones. |
| | c. The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones). |
| 1.NBT.B.3 | Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols >, =, and <. |

**Standard:  1.NBT.C  Use place value understandings and properties of operations to add and subtract.**

| CPI # | Cumulative Progress Indicator (CPI) |
| --- | --- |
| 1.NBT.C.4 | Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models (e.g., base ten blocks) 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 and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten. |
| 1.NBT.C.5 | Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used. |
| 1.NBT.C.6 | Subtract multiples of 10 in the range 10-90 from multiples of 10 in the range 10-90 (positive or zero differences), 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 and explain the reasoning used. |

**Standard: 1.MD.A  Measure lengths indirectly and by iterating length units.**

| CPI # | Cumulative Progress Indicator (CPI) |
| --- | --- |
| 1.MD.A.1 | Order three objects by length; compare the lengths of two objects indirectly by using a third object. |
| 1.MD.A.2 | Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. *Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps.* |

**Standard: 1.MD.B  Tell and write time.**

| CPI # | Cumulative Progress Indicator (CPI) |
| --- | --- |
| 1.MD.B.3 | Tell and write time in hours and half-hours using analog and digital clocks. |

**Standard:  1.MD.C  Represent and Interpret Data.**

| CPI # | Cumulative Progress Indicator (CPI) |
| --- | --- |
| 1.MD.C.4 | Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another. |

**Standard: 1.G.A  Reasons with shapes and their attributes.**

| CPI # | Cumulative Progress Indicator (CPI) |
| --- | --- |
| 1.G.A.1 | Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size); build and draw shapes to possess defining attributes. |
| 1.G.A.2 | Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) or three-dimensional shapes (cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape, and compose new shapes |

| | from the composite shape. |
|---|---|
| 1.G.A.3 | Partition circles and rectangles into two and four equal shares, describe the shares using the words halves, fourths, and quarters, and use the phrases half of, fourth of and quarter of. Describe the whole as two of or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares. |

**Standard: Standards for Mathematical Practice**

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| 1.MP.1 | Make sense of problems and persevere in solving them. |
| 1.MP.2 | Reason abstractly and quantitatively. |
| 1.MP.3 | Construct viable arguments and critique the reasoning of others. |
| 1.MP.4 | Model with mathematics. |
| 1.MP.5 | Use appropriate tools strategically. |
| 1.MP.6 | Attend to precision. |
| 1.MP.7 | Look for and make use of structure. |

**New Jersey Student Learning Standards for Career Readiness, Life Literacies, and Key Skills**

**Standard: 9.4 Life Literacies and Key Skills: Critical Thinking and Problem-solving:** Critical thinkers must first identify a problem then develop a plan to address it to effectively solve the problem.

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| 9.4.2.CT.2 | Identify possible approaches and resources to execute a plan (e.g., 1.2.2.CR1b, 8.2.2.ED.3). |

**Standard: 9.4 Technology Literacy:** Digital tools have a purpose.

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| 9.4.2.TL.6 | Illustrate and communicate ideas and stories using multiple digital tools (e.g., SL.2.5.). |

**Standard: Financial Institutions**: Money comes in different values, forms, and uses.

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| 9.1.2. FI.1 | Differentiate the various forms of money and how they are used (e.g., coins, bills, checks, debit and credit cards). |

**New Jersey Student Learning Standards for Computer Science and Design Thinking**

**Standard: 8.1 Computer Science:** Data can be used to make predictions about the world.

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| 8.1.2.DA.3 | Identify and describe patterns in data visualizations. |
| 8.1.2.DA.4 | Make predictions based on data using charts or graphs. |

**Interdisciplinary Studies**

**English Language Arts**

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| SL.1.1 | Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups. |
| SL.1.5 | Add drawings or other visual displays to descriptions when appropriate to clarify ideas, thoughts, and feelings. |
| RI.1.1 | Ask and answer questions about key details in a text. |

**Science**

**Standard: K-2-ETS1 Engineering Design**

| CPI # | Cumulative Progress Indicator (CPI) |
|---|---|
| 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. |

| Social Studies |
| --- |
| **Standard: 6.1 U.S. History: America in the World: Civics, Government, and Human Rights: Participation and Deliberation**  When all members of the group are given the opportunity to participate in the decision making process, everyone's voice is heard. |

| CPI # | Cumulative Progress Indicator (CPI) |
| --- | --- |
| 6.1.2.Civics PD.1 | Engage in discussions effectively by asking questions, considering facts, listening to the ideas of others, and sharing opinions. |

## Instructional Focus

### Unit Enduring Understandings

- Mathematicians use models and visual strategies to understand concepts and develop abstract and quantitative thinking.
- Mathematical concepts and skills learned such as addition, subtraction, patterns, and place value, are essential tools that can be applied to real-world situations and problem-solving.
- Mathematicians build on their natural interest in counting, collecting, and organizing objects and information.
- Mathematicians look for and make use of structure in various types of patterns and make connections to the world.
- Mathematicians practice combining and partitioning numbers to develop a strong foundation for mental computation and number sense.

### Unit Essential Questions

- How do mathematicians use models and visual strategies to enhance their understanding of complex concepts and foster abstract and quantitative thinking?
- In what ways can mathematical concepts like addition, subtraction, patterns, and place value be applied practically in solving real-world problems and situations?
- How does a mathematician's natural interest in counting, collecting, and organizing objects and information lay the foundation for developing more advanced mathematical skills?
- What strategies do mathematicians employ to identify and utilize structures in patterns, whether in numbers, shapes, or real-world scenarios, to facilitate problem-solving and analysis?
- How does the application of mathematical tools and skills contribute to the overall problem-solving abilities and critical thinking of mathematicians in diverse fields and disciplines?

### Objectives

**We are learning to/that:**

- Recognize, describe, extend, and create patterns
- Add/Subtract 1-digit numbers and 2-digit numbers
- Count to 120 starting with any number
- Tell and write time in hours and half-hours
- Demonstrate an understanding that the digits in a 2-digit number represent amounts of tens and ones
- Understand how to use the commutative property of addition
- Organize, represent and interpret data with 3 categories
- Use concrete models or drawings and strategies
- Order and compare objects by length
- Tell and write time in hours and half hours
- Organize, represent, analyze and interpret data
- Partition a circle and/or rectangle into equal parts

## Evidence of Learning

### Assessment

☑ Formative Assessment

| ☑ Summative Assessment |
|---|
| ☑ Alternative Assessment |
| ☑ Benchmark |

Assessment plan may include teacher designed formative and summative assessments and district common assessments. Throughout the unit, students will be engaged in activities that involve finding patterns, making generalizations, drawing conclusions, and communicating their ideas with others. Teachers will have many opportunities to observe students' growth in these areas, as well as with specific math skills and concepts throughout this unit.

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## Additional Supports

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**References**

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