

**MOORESTOWN TOWNSHIP PUBLIC SCHOOLS  
MOORESTOWN, NEW JERSEY**

**Moorestown K-3 Elementary Schools  
Mathematics**

**Mathematics  
*Grade 1***

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## Course Description and Fundamental Concepts

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.

(1) Students develop strategies for adding and subtracting whole numbers based on their prior work with small numbers. They use a variety of models, including discrete objects and length-based models (e.g., cubes connected to form lengths), to model add-to, take-from, put-together, take-apart, and compare situations to develop meaning for the operations of addition and subtraction, and to develop strategies to solve arithmetic problems with these operations. Students understand connections between counting and addition and subtraction (e.g., adding two is the same as counting on two). They use properties of addition to add whole numbers and to create and use increasingly sophisticated strategies based on these properties (e.g., “making tens”) to solve addition and subtraction problems within 20. By comparing a variety of solution strategies, children build their understanding of the relationship between addition and subtraction.

(2) Students develop, discuss, and use efficient, accurate, and generalizable methods to add within 100 and subtract multiples of 10. They compare whole numbers (at least to 100) to develop understanding of and solve problems involving their relative sizes. They think of whole numbers between 10 and 100 in terms of tens and ones (especially recognizing the numbers 11 to 19 as composed of a ten and some ones). Through activities that build number sense, they understand the order of the counting numbers and their relative magnitudes.

(3) Students develop an understanding of the meaning and processes of measurement, including underlying concepts such as iterating (the mental activity of building up the length of an object with equal-sized units) and the transitivity principle for indirect measurement.<sup>1</sup>

(4) Students compose and decompose plane or solid figures (e.g., put two triangles together to make a quadrilateral) and build understanding of part-whole relationships as well as the properties of the original and composite shapes. As they combine shapes, they recognize them from different perspectives and orientations, describe their geometric attributes, and determine how they are alike and different, to develop the background for measurement and for initial understandings of properties such as congruence and symmetry.

## Grade 1 Overview

### 1. Operations and Algebraic Thinking

- Represent and solve problems involving addition and subtraction.
- Understand and apply the properties of operations and the relationship between addition and subtraction.
- Add and subtract within 20.
- Work with addition and subtraction equations.

### 2. Number and Operations in Base Ten

- Extend the counting sequence.
- Understand place value.
- Use place value understanding and properties of operations to add and subtract.

### 3. Measurement and Data

- Measure lengths indirectly and by iterating length units.
- Tell and write time.
- Represent and interpret data.

### 4. Geometry

- Reason with shapes and their attributes.

## Mathematical Practices

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

## New Jersey Student Learning Standards (NJSLs)

### **Subject/Content Standards**

*Include grade appropriate subject/content standards that will be addressed*

#### **1.OA Operations and Algebraic Thinking**

- A. Represent and solve problems involving addition and subtraction.
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.
  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.
- B. Understand and apply properties of operations and the relationship between addition and subtraction.
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}
  4. Understand subtraction as an unknown-addend problem. For example, subtract  $10 - 8$  by finding the number that makes 10 when added to 8.
- C. Add and subtract within 20.
5. Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).
  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  $6 + 6 + 1 = 12 + 1 = 13$ ).
- D. Work with addition and subtraction equations.
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?  $6 = 6$ ,  $7 = 8 - 1$ ,  $5 + 2 = 2 + 5$ ,  $4 + 1 = 5 + 2$ .
  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  $8 + ? = 11$ ,  $5 = x - 3$ ,  $6 + 6 = x$ .

#### **1.NBT Number and Operations in Base Ten**

- A. Extend the counting sequence.
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.
- B. Understand place value.
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 a 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).
3. Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols  $>$ ,  $=$ , and  $<$ .
- C. Use place value understanding and properties of operations to add and subtract.
  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.
  5. Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.
  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.

### **1.MD Measurement and Data**

- A. Measure lengths indirectly and by iterating length units.
  1. Order three objects by length; compare the lengths of two objects indirectly by using a third object.
  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.
- B. Tell and write time.
  3. Tell and write time in hours and half-hours using analog and digital clocks.
- C. Represent and interpret data.
  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.

### **1.G Geometry**

- A. Reason with shapes and their attributes.
  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.
  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.
  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.

### **Mathematical Practice Standards**

1. Make sense of problems and persevere in solving them.

2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

### 21st-Century Skills and Technology Integration ([Standard 8](#))

List appropriate units below for which strands (A through F) will be addressed

Standard 8.1 (K-12)		<b>Educational Technology:</b> <i>All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.</i>
Unit Addressed	Strand Letter	Standard Description
Units 1, 2, 3, 4	<b>Strand A</b>	<b>Technology Operations and Concepts:</b> <i>Students demonstrate a sound understanding of technology concepts, systems, and operations.</i>
	<b>Strand B</b>	<b>Creativity and Innovation:</b> <i>Students demonstrate creative thinking, construct knowledge and develop innovative products and process using technology.</i>
	<b>Strand C</b>	<b>Communication and Collaboration:</b> <i>Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others.</i>
Units 1, 2, 3, 4	<b>Strand D</b>	<b>Digital Citizenship:</b> <i>Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior.</i>
	<b>Strand E</b>	<b>Research and Information Fluency:</b> <i>Students apply digital tools to gather, evaluate, and use information.</i>
Units 1, 2, 3, 4	<b>Strand F</b>	<b>Critical thinking, problem-solving, and decision making:</b> <i>Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources.</i>



<b>Standard 8.2 (K-5)</b>		<b>Technology Education, Engineering, Design, and Computational Thinking - Programming:</b> <i>All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.</i>
Units 1, 2, 3, 4	<b>Strand A</b>	<b>The Nature of Technology: Creativity and Innovation:</b> <i>Technology systems impact every aspect of the world in which we live.</i>
	<b>Strand B</b>	<b>Technology and Society:</b> <i>Knowledge and understanding of human, cultural and societal values are fundamental when designing technological systems and products in the global society.</i>
Units 1, 2, 3, 4	<b>Strand C</b>	<b>Design:</b> <i>The design process is a systematic approach to solving problems.</i>
	<b>Strand D</b>	<b>Abilities for a Technological World:</b> <i>The designed world is the product of a design process that provides the means to convert resources into products and systems.</i>
	<b>Strand E</b>	<b>Computational Thinking: Programming:</b> <i>Computational thinking builds and enhances problem-solving, allowing students to move beyond using knowledge to creating knowledge.</i>

### Career Ready Practices ([Standard 9](#))

List appropriate units below for which CRPs will be addressed

Unit Addressed	Standard #	Standard Description
Units 1, 2, 3, 4	<b>CRP1</b>	<i>Act as a responsible and contributing citizen and employee.</i>
Units 1, 2, 3, 4	<b>CRP2</b>	<i>Apply appropriate academic and technical skills.</i>
	<b>CRP3</b>	<i>Attend to personal health and financial well-being.</i>
Units 1, 2, 3, 4	<b>CRP4</b>	<i>Communicate clearly and effectively and with reason.</i>
	<b>CRP5</b>	<i>Consider the environmental, social and economic impacts of decisions.</i>
Units 1, 2, 3, 4	<b>CRP6</b>	<i>Demonstrate creativity and innovation.</i>
	<b>CRP7</b>	<i>Employ valid and reliable research strategies.</i>

Unit Addressed	Standard #	Standard Description
Units 1, 2, 3, 4	<b>CRP8</b>	<i>Utilize critical thinking to make sense of problems and persevere in solving them.</i>
	<b>CRP9</b>	<i>Model integrity, ethical leadership, and effective management.</i>
	<b>CRP10</b>	<i>Plan education and career paths aligned to personal goals.</i>
Units 1, 2, 3, 4	<b>CRP11</b>	<i>Use technology to enhance productivity.</i>
	<b>CRP12</b>	<i>Work productively in teams while using cultural global competence</i>

### Interdisciplinary Connections

List any other content standards addressed as well as appropriate units

### Visual & Performing Arts Integration ([Standard 1](#))

List appropriate units below for which standards (1.1 through 1.4) may be addressed

Unit Addressed	Standard #	Standard Description
Units 1, 2, 3, 4	<b>Standard 1.1</b>	<b>The Creative Process:</b> <i>All students will demonstrate an understanding of the elements and principles that govern the creation of works of art in dance, music, theatre, and/or visual art.</i>
	<b>Standard 1.2</b>	<b>History of the Arts and Culture:</b> <i>All students will understand the role, development, and influence of the arts throughout history and across cultures.</i>
	<b>Standard 1.3</b>	<b>Performing/Presenting/Producing:</b> <i>All students will synthesize those skills, media, methods, and technologies appropriate to creating, performing, and/or presenting works of art in dance, music, theatre, and/or visual art.</i>
	<b>Standard 1.4</b>	<b>Aesthetic Responses &amp; Critique Methodologies:</b> <i>All students will demonstrate and apply an understanding of arts philosophies, judgment, and analysis to works of art in dance, music, theatre, and/or visual art.</i>

**Other Interdisciplinary Content Standards**

List appropriate units below for any other content/standards that may be addressed

<b>Unit Addressed</b>	<b>Content / Standard #</b>	<b>Standard Description</b>
Units 1, 2, 3, 4	RI.1.1	<i>Ask and answer questions about key details in a text.</i>
Units 1, 2, 3, 4	RI.1.5	<i>Know and use various text features (e.g., headings, tables of contents, glossaries, electronic menus, icons) to locate key facts or information in a text.</i>
Units 1, 2, 3, 4	RI.1.7	<i>Use the illustrations and details in a text to describe its key ideas.</i>
Units 1, 2, 3, 4	RI.1.8	<i>Identify the reasons an author gives to support points in a text and explain the application of this information with prompting as needed.</i>
Units 1, 2, 3, 4	RI.1.9	<i>Identify basic similarities in and differences between two texts on the same topic (e.g., in illustrations, descriptions, or procedures).</i>
Units 1, 2, 3, 4	SL.1.1	<i>Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups.</i>
Units 1, 2, 3, 4	SL.1.2	<i>Ask and answer questions about key details in a text read aloud or information presented orally or through other media.</i>
Units 1, 2, 3, 4	SL.1.3	<i>Ask and answer questions about what a speaker says in order to gather additional information or clarify something that is not understood.</i>
Units 1, 2, 3, 4	SL.1.6	<i>Produce complete sentences when appropriate to task and situation.</i>
Units 1, 2, 3, 4	L.1.1	<i>Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.</i>
Units 1, 2, 3, 4	L.1.2	<i>Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.</i>
Units 1, 3	1-ESS1-1	<i>Use observations of the sun, moon, and stars to describe patterns that can be predicted.</i>
Units 1, 3	1-ESS1-2	<i>Make observations at different times of year to relate the amount of daylight to the time of year.</i>
Unit 3	1-PS4-4	<i>Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance.</i>

<b>Unit Addressed</b>	<b>Content / Standard #</b>	<b>Standard Description</b>
Unit 3	1-LS3-1	<i>Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents.</i>
Units 1, 3	1-ESS1-2	<i>Make observations at different times of year to relate the amount of daylight to the time of year.</i>
Units 1, 2, 3	K-2-ETS1-1	<i>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.</i>
Units 1, 2, 3, 4	K-2-ETS1-2	<i>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.</i>
Units 2, 3	6.1.2.Geo.SV.1	<i>Use maps to identify physical features (e.g., continents, oceans, rivers, lakes, mountains).</i>
Units 2, 3	6.1.2.Geo.SV.2	<i>Describe how maps are created for a specific purpose (e.g., school fire-drill map, route from home to school, learning centers in a classroom).</i>
Units 2, 3	6.1.2.Geo.SV.3	<i>Identify and describe the properties of a variety of maps and globes (e.g., title, legend, cardinal directions, scale, symbols,) and purposes (wayfinding, thematic).</i>
Unit 1	6.1.2.Geo.HE.4	<i>Investigate the relationship between the physical environment of a place and the economic activities found there.</i>

**Pacing Guide** (All Dates are approximate based on the school calendar)

<b>Unit/ Topic</b>	<b>Month</b> (w/Approx number of Teaching Days)
<b>Operations and Algebraic Thinking</b> Addition Concepts	<b>September</b> (~19 days)
<b>Operations and Algebraic Thinking</b> Subtraction Concepts	<b>October</b> (~19 days)
<b>Operations and Algebraic Thinking</b> Addition Strategies to 20	<b>November</b> (~16 days)
<b>Operations and Algebraic Thinking</b> Addition Strategies to 20 Subtraction Strategies to 20	<b>December</b> (~15 days)
<b>Numbers and Operation Base Ten</b> Place Value	<b>January</b> (~18 days)
<b>Numbers and Operation Base Ten</b> Two-Digit Addition and Subtraction	<b>February</b> (~18 days)
<b>Numbers and Operation Base Ten</b> Two-Digit Addition and Subtraction	<b>March</b> (~15-20 days)
<b>Measurement and Data</b> Organize and Use Graphs Measurement and Time	<b>April</b> (~15-20 days)
<b>Geometry</b> Two-Dimensional Shapes and Equal Shares	<b>May</b> (~18 days)
<b>Geometry</b> Three-Dimensional Shapes	<b>June</b> (~15 days)

## Units

Contact the Content Supervisor for unit details.