

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

**Moorestown K-3 Elementary Schools
Mathematics**

**Mathematics
*Kindergarten***

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[Course Description and Fundamental Concepts](#)

In Kindergarten, instructional time should focus on two critical areas: (1) representing, relating, and operating on whole numbers, initially with sets of objects; (2) describing shapes and space. More learning time in Kindergarten should be devoted to numbers than to other topics.

(1) Students use numbers, including written numerals, to represent quantities and to solve quantitative problems, such as: counting objects in a set; counting out a given number of objects; comparing sets or numerals and modeling simple joining and separating situations with sets of objects, or eventually with equations such as $5 + 2 = 7$ and $7 - 2 = 5$. (Kindergarten students should see addition and subtraction equations. Student writing of equations in kindergarten is encouraged, but it is not required). Students choose, combine, and apply effective strategies for answering quantitative questions, including quickly recognizing the cardinalities of small sets of objects, counting and producing sets of given sizes, counting the number of objects in combined sets, or counting the number of objects that remain in a set after some are taken away.

(2) Students describe their physical world using geometric ideas (shape, orientation, spatial relations) and associated vocabulary. They identify, name, and describe basic two-dimensional shapes, (such as squares, triangles, circles, rectangles, and hexagons, presented in a variety of ways (e.g., with different sizes and orientations), as well as three-dimensional shapes (such as cubes, cones, cylinders, and spheres). They use basic shapes and spatial reasoning to model objects in their environment and to construct more complex shapes.

Grade K Overview

Counting and Cardinality

- Know number names and the count sequence.
- Count to tell the number of objects.
- Compare numbers.

Operations and Algebraic Thinking

- Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.

Number and Operations in Base Ten

- Work with numbers 11-19 to gain foundations for place value.

Measurement and Data

- Describe and compare measurable attributes.
- Classify objects and count the number of objects in each category

Geometry

- Identify and describe shapes.
- Analyze, compare, create, and compose shapes.

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.

Subject/Content Standards

K.CC Counting and Cardinality

- A. Know number names and the count sequence.
 - 1. Count to 100 by ones and by tens.
 - 2. Count forward beginning from a given number within the known sequence (instead of having to begin at 1).
 - 3. Write numbers from 0 to 20. Represent a number of objects with a written numeral 0-20 (with 0 representing a count of no objects).

- B. Count to tell the number of objects.
 - 4. Understand the relationship between numbers and quantities; connect counting to cardinality.
 - a. When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object.
 - b. Understand that the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted.
 - c. Understand that each successive number name refers to a quantity that is one larger.
 - 5. Count to answer “how many?” questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1–20, count out that many objects.

- C. Compare numbers.
 - 6. Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group, e.g., by using matching and counting strategies.
 - 7. Compare two numbers between 1 and 10 presented as written numerals.

K.OA Operations and Algebraic Thinking

- A. Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.
 - 1. Represent addition and subtraction up to 10 with objects, fingers, mental images, drawings, sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations.
 - 2. Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem.
 - 3. Decompose numbers less than or equal to 10 into pairs in more than one way, e.g., by using objects or drawings, and record each decomposition by a drawing or equation (e.g., $5 = 2 + 3$ and $5 = 4 + 1$).
 - 4. For any number from 1 to 9, find the number that makes 10 when added to the given number, e.g., by using objects or drawings, and record the answer with a drawing or equation.
 - 5. Demonstrate fluency for addition and subtraction within 5.

K.NBT Number and Operations in Base Ten

- A. Work with numbers 11–19 to gain foundations for place value.
 - 1. Compose and decompose numbers from 11 to 19 into ten ones and some further ones, e.g., by using objects or drawings, and record each composition or decomposition by a drawing or equation (e.g., $18 = 10 + 8$); understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones.

K.MD Measurement and Data

- A. Describe and compare measurable attributes.
 - 1. Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.
 - 2. Directly compare two objects with a measurable attribute in common, to see which object has “more of”/“less of” the attribute, and describe the difference. For example, directly compare the heights of two children and describe one child as taller/shorter.
- B. Classify objects and count the number of objects in each category.
 - 3. Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.

K.G Geometry

- A. Identify and describe shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres).
 - 1. Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as above, below, beside, in front of, behind, and next to.
 - 2. Correctly name shapes regardless of their orientations or overall size.
 - 3. Identify shapes as two-dimensional (lying in a plane, “flat”) or three-dimensional (“solid”).
- B. Analyze, compare, create, and compose shapes.
 - 4. Analyze and compare two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts (e.g., number of sides and vertices/“corners”) and other attributes (e.g., having sides of equal length).
 - 5. Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes.
 - 6. Compose simple shapes to form larger shapes. For example, “Can you join these two triangles with full sides touching to make a rectangle?”

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)		Educational Technology: <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, 5	Strand A	Technology Operations and Concepts: <i>Students demonstrate a sound understanding of technology concepts, systems, and operations.</i>
Units 1, 2, 3, 4, 5	Strand B	Creativity and Innovation: <i>Students demonstrate creative thinking, construct knowledge and develop innovative products and process using technology.</i>
	Strand C	Communication and Collaboration: <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>
	Strand D	Digital Citizenship: <i>Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior.</i>
Unit 5	Strand E	Research and Information Fluency: <i>Students apply digital tools to gather, evaluate, and use information.</i>
Units 2, 3, 4, 5	Strand F	Critical thinking, problem-solving, and decision making: <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>
Standard 8.2 (K-5)		Technology Education, Engineering, Design, and Computational Thinking - Programming: <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, 5	Strand A	The Nature of Technology: Creativity and Innovation: <i>Technology systems impact every aspect of the world in which we live.</i>

	Strand B	Technology and Society: <i>Knowledge and understanding of human, cultural and societal values are fundamental when designing technological systems and products in the global society.</i>
	Strand C	Design: <i>The design process is a systematic approach to solving problems.</i>
	Strand D	Abilities for a Technological World: <i>The designed world is the product of a design process that provides the means to convert resources into products and systems.</i>
Units 2, 3, 4, 5	Strand E	Computational Thinking: Programming: <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, 5	CRP1	<i>Act as a responsible and contributing citizen and employee.</i>
Units 1, 2, 3, 4, 5	CRP2	<i>Apply appropriate academic and technical skills.</i>
	CRP3	<i>Attend to personal health and financial well-being.</i>
Units 1, 2, 3, 4, 5	CRP4	<i>Communicate clearly and effectively and with reason.</i>
	CRP5	<i>Consider the environmental, social and economic impacts of decisions.</i>
Units 1, 2, 3, 4, 5	CRP6	<i>Demonstrate creativity and innovation.</i>
	CRP7	<i>Employ valid and reliable research strategies.</i>
Units 1, 2, 3, 4, 5	CRP8	<i>Utilize critical thinking to make sense of problems and persevere in solving them.</i>
	CRP9	<i>Model integrity, ethical leadership, and effective management.</i>
	CRP10	<i>Plan education and career paths aligned to personal goals.</i>
	CRP11	<i>Use technology to enhance productivity.</i>
	CRP12	<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, 5	Standard 1.1	The Creative Process: 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.
	Standard 1.2	History of the Arts and Culture: All students will understand the role, development, and influence of the arts throughout history and across cultures.
	Standard 1.3	Performing/Presenting/Producing: 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.
	Standard 1.4	Aesthetic Responses & Critique Methodologies: 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.

Other Interdisciplinary Content Standards

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

Unit Addressed	Content / Standard #	Standard Description
Units 1, 2, 3, 4, 5	RL.K.1	With prompting and support, ask and answer questions about key details in a text (e.g., who, what, where, when, why, how).
Units 1, 2, 3, 4, 5	RL.K.2	With prompting and support, retell familiar stories, including key details (e.g., who, what, where, when, why, how).
Units 1, 2, 3, 4, 5	RL.K.3	With prompting and support, identify characters, settings, and major events in a story.
Units 1, 2, 3, 4, 5	RL.K.7	With prompting and support, describe the relationship between illustrations and the story in which they appear (e.g., what moment in a story an illustration depicts).
Units 1, 2, 3, 4, 5	RL.K.9	With prompting and support, compare and contrast the adventures and experiences of characters in familiar stories.

Units 1, 2, 3, 4, 5	RL.K.10	<i>Actively engage in group reading activities with purpose and understanding.</i>
Units 1, 2, 3, 4, 5	RI.K.1	<i>With prompting and support, ask and answer questions about key details in a text</i>
Units 1, 2, 3, 4, 5	RI.K.7	<i>With prompting and support, describe the relationship between illustrations and the text in which they appear</i>
Units 1, 2, 3, 4, 5	RI.K.8	<i>With prompting and support, identify the reasons an author gives to support points in a text.</i>
Units 1, 2, 3, 4, 5	RI.K.10	<i>Actively engage in group reading activities with purpose and understanding.</i>
Units 1, 2, 3, 4, 5	W.K.8	<i>With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.</i>
Units 1, 2, 3, 4, 5	SL.K.2	<i>Confirm understanding of a text read aloud or information presented orally or through other media by asking and answering questions about key details and requesting clarification if something is not understood.</i>
Units 1, 2, 3, 4, 5	SL.K.6	<i>Speak audibly and express thoughts, feelings, and ideas clearly.</i>
Units 1, 4	K-ESS2-1	<i>Use and share observations of local weather conditions to describe patterns over time.</i>
Unit 1	K-ESS3-2	<i>Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather.</i>
Unit 4	K-PS3-1	<i>Make observations to determine the effect of sunlight on Earth's surface.</i>
Units 2, 4	K-LS1-1	<i>Use observations to describe patterns of what plants and animals (including humans) need to survive.</i>
Units 3, 4, 5	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>
Unit 4	K-PS2-2	<i>Analyze data to determine if a design solution works as intended to change the speed or direction of an object with a push or a pull.</i>

Units 1, 2	6.1.4.C.6	<i>Describe the role and relationship among households, businesses, laborers, and governments within the economic system.</i>
Unit 2	6.1.4.D.11	<i>Determine how local and state communities have changed over time, and explain the reasons for changes.</i>

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

Unit/ Topic	Month (w/Approx number of Teaching Days)
Counting and Cardinality Numbers 0 to 5 Numbers to 10	September (~19 days)
Counting and Cardinality Numbers Beyond 10	October (~19 days)
Operations and Algebraic Thinking Compose and Decompose Numbers to 10	November (~16 days)
Operations and Algebraic Thinking Compose and Decompose Numbers to 10 Addition	December (~15 days)
Operations and Algebraic Thinking Addition Subtraction	January (~18 days)
Operations and Algebraic Thinking Subtraction	February (~18 days)
Numbers and Operations in Base Ten Compose and Decompose Numbers to 19	March (~15-20 days)
Measurement and Data Measurement Classify Objects	April (~15-20 days)
Geometry Position Two Dimensional Shapes	May (~18 days)
Geometry Two Dimensional Shapes Three Dimensional Shapes	June (~15 days)

[Units](#)

Contact the Content Supervisor for unit details.