

**Based on: NJ STATE STANDARD 4.1 (Number and Numerical Operations)
Strands and Cumulative Progress Indicators (CPIs)
K-5**

Benchmarks are to be addressed by the end of the marking period indicated, with instruction to continue throughout the school year. Ongoing skills (grades K, 1, and 2) are developing and should be consistently incorporated throughout the school year.

Cumulative Progress Indicators by Grade						
Strand	K	1	2	3	4	5
A. Number Sense	<p>1. Use real-life experiences, physical materials, and technology to construct meanings for numbers.</p> <p>2. Demonstrate an understanding of whole number place value concepts.</p> <p>3. Understand that numbers have a variety of uses.</p> <p>4. Count and perform simple computations with coins.</p>	<p>1. Use real-life experiences, physical materials, and technology to construct meanings for numbers. (1)</p> <p>2. Demonstrate an understanding of whole number place value concepts. (2)</p> <p>3. Understand that numbers have a variety of uses. (1)</p> <p>4. Count and perform simple computations with coins. (2)</p>	<p>1. Use real-life experiences, physical materials, and technology to construct meanings for numbers. <i>Whole numbers through hundreds (1)</i> <i>Ordinals (1)</i> <i>Proper Fractions (denominators of 2,3,4,8,10) (4)</i></p> <p>2. Demonstrate an understanding of whole number place value concepts. (1)</p> <p>3. Understand that numbers have a variety of uses. (1)</p> <p>4. Count and perform simple computations with coins. (Amounts up to \$1 (using cents notation). (1)</p>	<p>1. Use real-life experiences, physical materials, and technology to construct meanings for numbers. <i>Whole numbers through hundreds (1)</i> <i>Commonly used fractions (denominators of 2, 3, 4, 5, 6, 8, 10) as part of a whole, as a subset of a set, and as a location on a number line: (3)</i></p> <p>2. Demonstrate an understanding of whole number place value concepts. (1)</p> <p>3. Identify whether any whole number is odd or even. (1)</p> <p>4. Explore the extension of the place value system to decimals through hundredths. (3)</p>	<p>1. Use real-life experiences, physical materials, and technology to construct meanings for numbers. <i>Whole numbers through millions (1)</i> <i>Commonly used fractions (denominators of 2,3,4,5,6,8,10,12, 16) as part of a whole, as a subset of a set, and as a location on a number line. (3)</i> <i>Decimals through hundredths. (2)</i></p> <p>2. Demonstrate an understanding of whole number place value concepts. (1)</p> <p>3. Demonstrate a sense of the relative magnitudes of numbers. (1)</p> <p>4. Understand the various uses of numbers: <i>Counting, measuring, labeling, locating (1)</i></p>	<p>1. Use real-life experiences, physical materials, and technology to construct meanings for numbers. <i>All fractions as part of a whole, as subset of a set, as a location on a number line, and as divisions of whole numbers. (3)</i></p> <p>2. Recognize the decimal nature of United States currency and compute with money. (1)</p> <p>3. Demonstrate a sense of the relative magnitudes of numbers. (1)</p> <p>4. Use whole numbers, fractions, and decimals to represent equivalent forms of the same number. (3)</p>

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Strand	K	1	2	3	4	5
B. Numerical Operations	<p>1. Develop the meanings of addition and subtraction by concretely modeling and discussing a large variety of problems.</p> <p>2. Explore the meanings of multiplication and division by modeling and discussing problems.</p> <p>3. Develop proficiency with basic addition and subtraction number facts using a variety of fact strategies (such as “counting on” and “near doubles”) and then commit them to memory.</p> <p>4. Construct, use, and explain procedures for performing addition and subtraction calculations.</p>	<p>1. Develop the meanings of addition and subtraction by concretely modeling and discussing a large variety of problems. (3)</p> <p>2. Explore the meanings of multiplication and division by modeling and discussing problems. (4)</p> <p>3. Develop proficiency with basic addition and subtraction number facts using a variety of fact strategies (such as “counting on” and “near doubles”) and then commit them to memory. (3)</p> <p>4. Construct, use, and explain procedures for performing addition and subtraction calculations. (4)</p>	<p>1. Develop the meanings of addition and subtraction by concretely modeling and discussing a large variety of problems. <i>Joining, separating, and comparing</i> (3)</p> <p>2. Explore the meanings of multiplication and division by modeling and discussing problems. (4)</p> <p>3. Develop proficiency with basic addition and subtraction number facts using a variety of fact strategies (such as “counting on” and “near doubles”) and then commit them to memory. (2)</p> <p>4. Construct, use, and explain procedures for performing addition and subtraction calculations with: <i>Pencil-and-Paper Mental Math, Calculator</i> (2)</p>	<p>1. Develop the meanings of the four basic arithmetic operations by modeling and discussing a large variety of problems. <i>Addition and subtraction: joining, separating, comparing. Multiplication: repeated addition, area/array. Division: repeated subtraction, sharing.</i> (3)</p> <p>2. Develop proficiency with basic multiplication and division number facts using a variety of fact strategies (skip counting and repeated subtraction). (3)</p> <p>3. Construct, use, and explain procedures for performing whole number calculations with: <i>Pencil-and-paper Mental math Calculator</i> (1)</p> <p>4. Use efficient and accurate pencil-and-paper procedures for computation with whole numbers: <i>Addition of 3-digit numbers. (2) Subtraction of 3-digit numbers. (2) Multiplication of 2-digit numbers by 1-digit numbers. (4)</i></p>	<p>1. Develop the meanings of the four basic arithmetic operations by modeling and discussing a large variety of problems. <i>Addition and subtraction: joining, separating, and comparing.(1) Multiplication: repeated addition, area/array. Division: repeated subtraction, sharing. (2/3)</i></p> <p>2. Develop proficiency with basic multiplication and division number facts using a variety of fact strategies (skip counting and repeated subtraction) and then commit them to memory. (2)</p> <p>3. Construct, use, and explain procedures for performing whole number calculations with: <i>Pencil-and-paper Mental math Calculator (Ongoing)</i></p> <p>4. Use efficient and accurate pencil-and-paper procedures for computation with whole numbers: <i>Addition of 3-digit numbers. (1) Subtraction of 3-digit numbers. (1) Multiplication of 2-digit numbers. (2) Division of 3-digit numbers by 1-digit numbers. (2)</i></p>	<p>1. Recognize the appropriate use of each arithmetic operation in problem situations. (2)</p> <p>2. Construct, use, and explain procedures for performing addition and subtraction with fractions and decimals with: <i>Pencil-and-paper Mental math Calculator</i> (3)</p> <p>3. Use an efficient and accurate pencil-and-paper procedure for division of a 3-digit number by a 2-digit number. (2)</p> <p>4. Select pencil-and-paper, mental math, or a calculator as the appropriate computational method in a given situation depending on the context and numbers. (1)</p>

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Cumulative Progress Indicators by Grade						
Strand	K	1	2	3	4	5
B. Numerical Operations	<p>5. Use efficient and accurate pencil-and-paper procedures for computation with whole numbers.</p> <p>6. Select pencil-and-paper, mental math, or a calculator as the appropriate computational method in a given situation depending on the context and numbers.</p> <p>7. Check the reasonableness of results of computations.</p> <p>8. Understand and use the inverse relationship between addition and subtraction.</p>	<p>5. Use efficient and accurate pencil-and-paper procedures for computation with whole numbers. (3)</p> <p>6. Select pencil-and-paper, mental math, or a calculator as the appropriate computational method in a given situation depending on the context and numbers. (4)</p> <p>7. Check the reasonableness of results of computations. (4)</p> <p>8. Understand and use the inverse relationship between addition and subtraction. (3)</p>	<p>5. Use efficient and accurate pencil-and-paper procedures for computation with whole numbers: <i>Addition of 2-digit numbers, Subtraction of 2-digit numbers.</i> (3).</p> <p>6. Select pencil-and-paper, mental math, or a calculator as the appropriate computational method in a given situation depending on the context and numbers. (3)</p> <p>7. Check the reasonableness of results of computations. (2)</p> <p>8. Understand and use the inverse relationship between addition and subtraction. (1)</p>	<p>5. Count and perform simple computations with money. <i>Cents notation</i> (1)</p> <p>6. Select pencil-and-paper, mental math, or a calculator as the appropriate computational method in a given situation depending on the context and numbers. (1)</p> <p>7. Check the reasonableness of results of computations. (1)</p>	<p>5. Construct and use procedures for performing decimal addition and subtraction. (2)</p> <p>6. Count and perform simple computations with money. <i>Standard dollars and cents notation</i> (2)</p> <p>7. Select pencil-and-paper, mental math, or a calculator as the appropriate computational method in a given situation depending on the context and numbers. (1)</p> <p>8. Check the reasonableness of results of computations. (ongoing)</p> <p>9. Use concrete models to explore addition and subtraction with fractions. (3)</p> <p>10. Understand and use the inverse relationships between addition and subtraction and between multiplication and division. (2)</p>	<p>5. Check the reasonableness of results of computations. (1)</p> <p>6. Understand and use the various relationships among operations and properties of operations. (1)</p>

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Strand	K	1	2	3	4	5
C. Estimation	<p>1. Judge without counting whether a set of objects has less than, more than, or the same number of objects as a reference set.</p> <p>2. Determine the reasonableness of an answer by estimating the result of computations.</p> <p>3. Explore a variety of strategies for estimating both quantities and results of computation.</p>	<p>1. Judge without counting whether a set of objects has less than, more than, or the same number of objects as a reference set. (3)</p> <p>2. Determine the reasonableness of an answer by estimating the result of computations. (4)</p> <p>3. Explore a variety of strategies for estimating both quantities and results of computation. (4)</p>	<p>1. Judge without counting whether a set of objects has less than, more than, or the same number of objects as a reference set. (1)</p> <p>2. Determine the reasonableness of an answer by estimating the result of computations. (2)</p> <p>3. Explore a variety of strategies for estimating both quantities and results of computation. (3)</p>	<p>1. Judge without counting whether a set of objects has less than, more than, or the same number of objects as a reference set. (1)</p> <p>2. Construct and use a variety of estimation strategies for estimating both quantities and the result of computations. (2)</p> <p>3. Recognize when an estimate is appropriate, and understand the usefulness of an estimate as distinct from an exact answer. (3)</p> <p>4. Use estimation to determine whether the result of a computation is reasonable. (2)</p>	<p>1. Judge without counting whether a set of objects has less than, more than, or the same number of objects as a reference set. (1)</p> <p>2. Construct and use a variety of estimation strategies for estimating both quantities and the result of computations. (2)</p> <p>3. Recognize when an estimate is appropriate, and understand the usefulness of an estimate as distinct from an exact answer. (1)</p> <p>4. Use estimation to determine whether the result of a computation is reasonable. (2)</p>	<p>1. Use a variety of estimation strategies for both number and computation. (1)</p> <p>2. Recognize when an estimate is appropriate, and understand the usefulness of an estimate as distinct from an exact answer. (1)</p> <p>3. Determine the reasonableness of an answer by estimating the result of operations. (1)</p> <p>4. Determine whether a given estimate is an overestimate or an underestimate. (1)</p>

Based on: NJ STATE STANDARD 4.2 (Geometry and Measurements)
Strands and Cumulative Progress Indicators (CPIs)
K-5

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Cumulative Progress Indicators by Grade						
Strand	K	1	2	3	4	5
A. Geometric Properties	<p>1. Identify and describe spatial relationships among objects in space and their relative shapes and sizes.</p> <p>2. Use concrete objects, drawings, and computer graphics to identify, classify, and describe standard 3-D and 2-D shapes.</p> <p>3. Describe, identify, and create instances of line symmetry.</p> <p>4. Recognize, describe, extend, and create designs and patterns with geometric objects of different shapes and colors.</p>	<p>1. Identify and describe spatial relationships among objects in space and their relative shapes and sizes. (3)</p> <p>2. Use concrete objects, drawings, and computer graphics to identify, classify, and describe standard 3-D and 2-D shapes. (4)</p> <p>3. Describe, identify, and create instances of line symmetry. (4)</p> <p>4. Recognize, describe, extend, and create designs and patterns with geometric objects of different shapes and colors. (3)</p>	<p>1. Identify and describe spatial relationships among objects in space and their relative shapes and sizes. <i>Inside/Outside, left/right, above/below, between</i> (1)</p> <p><i>Smaller/larger/same size Wider/narrower, longer/shorter</i> (2)</p> <p><i>Congruence (same size and shaper)</i> (3)</p> <p>2. Use concrete objects, drawings, and computer graphics to identify, classify, and describe standard 3-D and 2-D shapes. (3)</p> <p>3. Describe, identify, and create instances of line symmetry. (3)</p> <p>4. Recognize, describe, extend, and create designs and patterns with geometric objects of different shapes and colors. (3)</p>	<p>1. Identify and describe spatial relationships of two or more objects in space. <i>Direction, orientation, and perspectives. Relative shapes and sizes.</i> (1)</p> <p>2. Use properties of standard three-dimensional and two-dimensional shapes to identify, classify, and describe them. <i>Vertex, edge, face, side, angle 3D Figures-cube, rectangular prism, sphere, cone, cylinder, and pyramid 2D Figures- square, rectangle, circle, triangle, pentagon, hexagon, octagon</i> (3)</p> <p>3. Identify and describe relationships among two-dimensional shapes: <i>same size, same shape Lines of symmetry</i> (3)</p> <p>4. Understand and apply concepts involving lines, angles, and circles. <i>Line, line segment, endpoint</i> (3)</p> <p>5. Recognize, describe, extend, and create space-filling patterns. (3)</p>	<p>1. Identify and describe spatial relationships of two or more objects in space. <i>Direction, orientation, and perspectives. Relative shapes and sizes. Shadows of everyday objects.</i> (3)</p> <p>2. Use properties of standard three-dimensional and two-dimensional shapes to identify, classify, and describe them. <i>Vertex, edge, face, side, angle</i> (3) <i>3D Figures-cube, rectangular prism, sphere, cone, cylinder, and pyramid</i> (3) <i>2D Figures- square, rectangle, circle, triangle, pentagon, hexagon, octagon</i> <i>Inclusive relationships-squares are rectangles(1) and cubes are rectangular prisms.(4)</i></p> <p>3. Identify and describe relationships among two-dimensional shapes: <i>Congruence Lines of Symmetry</i> (3)</p>	<p>1. Understand and apply concepts involving lines and angles. <i>Notation for line, ray, angle, line segment Properties of parallel, perpendicular, and intersecting lines. Sum of the measures of the interior angles of a triangle is 180 degrees.</i>(2)</p> <p>2. Identify, describe, compare, and classify polygons. <i>-Triangles by angles and sides. -Quadrilaterals, including squares, rectangles, parallelograms, trapezoids, rhombi -Polygons by number of sides -Equilateral, equiangular, regular -All points equidistant from a given point form a circle</i> (2)</p> <p>3. Identify similar figures (2)</p> <p>4. Understand and apply the concepts of congruence and symmetry (line and rotational). (2)</p>


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Cumulative Progress Indicators by Grade						
Strand	K	1	2	3	4	5
A. Geometric Properties					4. Understand and apply concepts involving lines, angles, and circles. <i>Point, line, line segment, endpoint</i> <i>Parallel, perpendicular</i> <i>Angles - acute, obtuse, right</i> <i>Circles - diameter, radius, center (1)</i>	
					5. Recognize, describe, extend, and create space-filling patterns. (4)	

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B. Transforming Shapes	<p>1. Use simple shapes to make designs, patterns, and pictures. (3)</p> <p>2. Combine and subdivide simple shapes to make other shapes. (3)</p>	<p>1. Use simple shapes to make designs, patterns, and pictures. (3)</p> <p>2. Combine and subdivide simple shapes to make other shapes. (3)</p>	<p>1. Use simple shapes to make designs, patterns, and pictures. (1)</p> <p>2. Combine and subdivide simple shapes to make other shapes. (1)</p>	<p>1. Describe and use geometric transformations (slide, flip, turn). (3)</p> <p>2. Investigate the occurrence the geometry in nature and art. (3)</p>	<p>1. Use simple shapes to cover an area (tessellations). (3)</p> <p>2. Describe and use geometric transformations (slide, flip, turn). (3)</p> <p>3. Investigate the occurrence of geometry in nature and art. (1)</p>	<p>1. Use a translation, a reflection, or a rotation to map one figure onto another congruent figure. (2)</p> <p>2. Recognize, identify, and describe geometric relationships and properties as they exist in nature, art, and other real-world settings. (2)</p>


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Cumulative Progress Indicators by Grade						
Strand	K	1	2	3	4	5
C. Coordinate Geometry	1. Give and follow directions for getting from one point to another on a map or grid. (4)	1. Give and follow directions for getting from one point to another on a map or grid. (4)	1. Give and follow directions for getting from one point to another on a map or grid. (1)	1. Locate and name points in the first quadrant on a coordinate grid. (1)	1. Locate and name points in the first quadrant on a coordinate grid. (2) 2. Use coordinates to give or follow directions from one point to another on a map or grid. (2)	1. Create geometric shapes with specified properties in the first quadrant on a coordinate grid. (4)

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Cumulative Progress Indicators by Grade						
Strand	K	1	2	3	4	5
D. Units of Measurement	<p>1. Directly compare and order objects according to measurable attributes. <i>Attributes- length, weight, capacity, time, temperature. (3)</i></p> <p>2. Recognize the need for a uniform unit of measure. (3)</p> <p>3. Select and use appropriate standard and non-standard units of measure and standard measurement tools to solve real-life problems. <i>Length- inch, foot, yard, cm, m (3)</i> <i>Weight- pound, gram, kilogram (3)</i> <i>Capacity- pint, quart, liter (3)</i> <i>Time- second, minute, hour, day, week, month, year (3)</i> <i>Temperature- degrees Celsius, degrees Fahrenheit (3)</i></p> <p>4. Estimate measures (3)</p>	<p>1. Directly compare and order objects according to measurable attributes. <i>Attributes- length, weight, capacity, time, temperature. (3)</i></p> <p>2. Recognize the need for a uniform unit of measure.</p> <p>3. Select and use appropriate standard and non-standard units of measure and standard measurement tools to solve real-life problems. <i>Length- inch, foot, yard, cm, m (3)</i> <i>Weight- pound, gram, kilogram (3)</i> <i>Capacity- pint, quart, liter (3)</i> <i>Time- second, minute, hour, day, week, month, year (3)</i> <i>Temperature- degrees Celsius, degrees Fahrenheit (3)</i></p> <p>4. Estimate measures (3)</p>	<p>1. Directly compare and order objects according to measurable attributes. <i>Attributes- length, weight, capacity, time, temperature. (2)</i></p> <p>2. Recognize the need for a uniform unit of measure.</p> <p>3. Select and use appropriate standard and non-standard units of measure and standard measurement tools to solve real-life problems. <i>Length- inch, foot, yard, cm, m (3)</i> <i>Weight- pound, gram, kilogram (3)</i> <i>Capacity- pint, quart, liter (3)</i> <i>Time- second, minute, hour, day, week, month, year (2)</i> <i>Temperature- degrees Celsius, degrees Fahrenheit (1)</i></p> <p>4. Estimate measures (2)</p>	<p>1. Understand that everyday objects have a variety of attributes, each of which can be measured in many ways. (2)</p> <p>2. Select and use appropriate standard units of measure and measurement tools to solve real-life problems. <i>Length- fractions of an inch (1/2, 1/4), mile, decimeter, kilometer(2)</i> <i>Area- square inch, square centimeter(4)</i> <i>Volume- cubic inch, cubic centimeter (4)</i> <i>Weight- ounce (4)</i> <i>Capacity- fluid ounce, cup, gallon, milliliter (4)</i></p> <p>3. Incorporate estimation in measurement activities (estimate before measuring) (2)</p>	<p>1. Understand that everyday objects have a variety of attributes, each of which can be measured in many ways. (On going)</p> <p>2. Select and use appropriate standard units of measure and measurement tools to solve real-life problems. <i>Length- fractions of an inch (1/8, 1/2, 1/4), mile, decimeter, kilometer (2)</i> <i>Area- square inch, square centimeter (3)</i> <i>Volume- cubic inch, cubic centimeter (4)</i> <i>Weight- ounce (4)</i> <i>Capacity- fluid ounce, cup, gallon, milliliter (4)</i></p> <p>3. Develop and use personal referents to approximate standard units of measure (a common paper clip is about 1 inch long). (3)</p> <p>4. Incorporate estimation in measurement activities (estimate before measuring) (2)</p> <p>5. Solve problems involving elapsed time. (2)</p>	<p>1. Select and use appropriate units to measure angles and area. (1)</p> <p>2. Convert measurement units within a system (3 feet = ___ inches). (1)</p> <p>3. Know approximate equivalents between the standard and metric systems. (4)</p> <p>4. Use measurements and estimates to describe and compare phenomena. (4)</p>

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E. Measuring Geometric Objects	<p>1. Directly measure the perimeter of simple two-dimensional shapes. (4)</p> <p>2. Directly measure the area of simple two-dimensional shapes by covering them with squares. (4)</p>	<p>1. Directly measure the perimeter of simple two-dimensional shapes. (4)</p> <p>2. Directly measure the area of simple two-dimensional shapes by covering them with squares. (4)</p>	<p>1. Directly measure the perimeter of simple two-dimensional shapes. (3)</p> <p>2. Directly measure the area of simple two-dimensional shapes by covering them with squares. (3)</p>	<p>1. Determine the area of simple two-dimensional shapes on a square grid. (3)</p> <p>2. Determine the perimeter of simple shapes by measuring all of the sides. (2)</p> <p>3. Measure and compare the volume of three-dimensional objects using materials such as rice or cubes. (4)</p>	<p>1. Determine the area of simple two-dimensional shapes on a square grid. (3)</p> <p>2. Distinguish between perimeter and area and use each appropriately in problem-solving situations. (3)</p> <p>3. Measure and compare the volume of three-dimensional objects using materials such as rice or cubes. (4)</p>	<p>2. Use a protractor to measure angles. (2)</p> <p>2. Develop and apply strategies and formulas for finding perimeter and area. <i>Square, Rectangle</i> (4)</p> <p>3. Recognize that rectangles with the same perimeter do not necessarily have the same area and vice versa. (4)</p> <p>4. Develop informal ways of approximating the measures of familiar objects (use a grid to approximate the area of the bottom of one's foot). (4)</p>

**Based on: NJ STATE STANDARD 4.3 (Patterns and Algebra)
Strands and Cumulative Progress Indicators (CPIs)
K-5**

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Cumulative Progress Indicators by Grade						
Strand	K	1	2	3	4	5
A. Patterns	<p>1. Recognize, describe, extend, and create patterns. (3)</p> <p><i>Using concrete materials, pictures, rhythms, and whole numbers (3)</i></p> <p><i>Descriptions using words and symbols (add two or + 2) (4)</i></p> <p><i>Repeating Patterns (3)</i></p> <p><i>Whole number patterns that grow or shrink as a result of repeatedly adding or subtracting a fixed number (skip counting forward or backward) (3)</i></p>	<p>1. Recognize, describe, extend, and create patterns. (3)</p> <p><i>Using concrete materials, pictures, rhythms, and whole numbers (3)</i></p> <p><i>Descriptions using words and symbols (add two or + 2) (4)</i></p> <p><i>Repeating Patterns (3)</i></p> <p><i>Whole number patterns that grow or shrink as a result of repeatedly adding or subtracting a fixed number (skip counting forward or backward) (3)</i></p>	<p>1. Recognize, describe, extend, and create patterns. (1)</p> <p><i>Using concrete materials, pictures, rhythms, and whole numbers (1)</i></p> <p><i>Descriptions using words and symbols (add two or + 2) (1)</i></p> <p><i>Repeating Patterns (1)</i></p> <p><i>Whole number patterns that grow or shrink as a result of repeatedly adding or subtracting a fixed number (skip counting forward or backward) (1)</i></p>	<p>1. Recognize, describe, extend, and create patterns. (1)</p> <p><i>Descriptions using words and number sentences/expressions (1)</i></p> <p><i>Whole number patterns that grow or shrink as a result of repeatedly adding, subtracting, (1) multiplying by, or dividing by a fixed number (5, 8, 11... or 800, 400, 200 ...) (3)</i></p>	<p>1. Recognize, describe, extend, and create patterns. (3)</p> <p><i>Descriptions using words, number sentences/expressions, graphs, tables, variables (shape, blank, or letter) (3)</i></p> <p><i>Sequences that stop or that continue infinitely (3)</i></p> <p><i>Whole number patterns that grow or shrink as a result of repeatedly adding, subtracting, (1) multiplying by, or (2) dividing by a fixed number (5, 8, 11... or 800, 400, 200 ...) (3)</i></p> <p><i>Sequences can often be extended in more than one way (the pattern 1, 2, 4... could be followed by a 7 or 8) (1)</i></p>	<p>1. Recognize, describe, extend, and create patterns involving whole numbers. (1)</p> <p><i>Descriptions using tables, verbal rules, simple equations, and graphs (1)</i></p>


Based on: NJ STATE STANDARD 4.3 (Patterns and Algebra)
Strands and Cumulative Progress Indicators (CPIs)
K-5

Benchmarks are to be addressed by the end of the marking period indicated, with instruction to continue throughout the school year. Ongoing skills (grades K, 1, and 2) are developing and should be consistently incorporated throughout the school year.

Cumulative Progress Indicators by Grade						
Strand	K	1	2	3	4	5
B. Functions & Relationships	1. Use concrete and pictorial models of function machines to explore the basic concept of a function. (3)	1. Use concrete and pictorial models of function machines to explore the basic concept of a function. (3)	1. Use concrete and pictorial models of function machines to explore the basic concept of a function. (1)	1. Use concrete and pictorial models of function machines to explore the basic concept of a function. <i>Input/Output Tables (1)</i> <i>T Charts (1)</i>	1. Use concrete and pictorial models of function machines to explore the basic concept of a function. <i>Input/Output Tables (3)</i> <i>T Charts (3)</i> <i>Combining two function machines(4)</i> <i>Reversing a function machine (2)</i>	1. Describe the general behavior of functions given by formulas or verbal rules (graph to determine whether increasing or decreasing, linear or not). (2)

Based on: NJ STATE STANDARD 4.3 (Patterns and Algebra)
Strands and Cumulative Progress Indicators (CPIs)
K-5

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Cumulative Progress Indicators by Grade						
Strand	K	1	2	3	4	5
C. Modeling	<p>1. Recognize and describe changes over time (temperature, height) (2)</p> <p>2. Construct and solve simple open sentences involving addition or subtraction. (3)</p> <p><i>Result unknown (6-2=___ Or n = 3 + 5)</i></p> <p><i>Part unknown (3+ ___=8)</i></p>	<p>1. Recognize and describe changes over time (temperature, height) (2)</p> <p>2. Construct and solve simple open sentences involving addition or subtraction. (3)</p> <p><i>Result unknown (6-2=___ Or n = 3 + 5)</i></p> <p><i>Part unknown (3+ ___=8)</i></p>	<p>1. Recognize and describe changes over time (temperature, height) (1)</p> <p>2. Construct and solve simple open sentences involving addition or subtraction.</p> <p><i>Result unknown (6-2=___ Or n = 3 + 5) (1)</i></p> <p><i>Part unknown (3+ ___=8) (2)</i></p>	<p>1. Recognize and describe change in quantities.</p> <p><i>Graphs representing change over time (temperature, height) (2)</i></p> <p>2. Construct and solve simple open sentences involving addition or subtraction (3 + 6 = ___, n = 15 - 3, 3 + ___ = 3, 16 - c = 7) (1)</p>	<p>1. Recognize and describe change in quantities. (3)</p> <p><i>Graphs representing change over time (temperature, height)(3)</i></p> <p><i>How change in one physical quantity can produce a corresponding change in another.(4)</i></p> <p>2. Construct and solve simple open sentences involving any one operation (3 x 6 = ___, N = 15 / 3, 3 x ___ = 0, 16 - c = 7) (2)</p>	<p>1. Use number sentences to model situations.</p> <p><i>Using variables to represent unknown quantities. (4)</i></p> <p><i>Using concrete materials, tables, graphs, verbal rules, algebraic expressions/equations.(4)</i></p> <p>2. Draw freehand sketches of graphs that model real phenomena and use such graphs to predict and interpret events.</p> <p><i>Changes over time (3)</i></p> <p><i>Rates of change (when is plant growing slowly/rapidly, when is temperature dropping most rapidly/slowly) (3)</i></p>

Based on: NJ STATE STANDARD 4.3 (Patterns and Algebra)
Strands and Cumulative Progress Indicators (CPIs)
K-5

Benchmarks are to be addressed by the end of the marking period indicated, with instruction to continue throughout the school year. Ongoing skills (grades K, 1, and 2) are developing and should be consistently incorporated throughout the school year.

Cumulative Progress Indicators by Grade						
Strand	K	1	2	3	4	5
D. Procedures	<p>1. Understand and apply (but don't name) the following properties of addition:</p> <p><i>Commutative:</i> (5 + 3 = 3 + 5)(3)</p> <p><i>Zero as the identity element</i> (7 + 0 = 7)(3)</p> <p><i>Associative:</i> (7 + 3 + 2 can be found by adding 7 + 3 or 3 + 2 first).(3)</p>	<p>1. Understand and apply (but don't name) the following properties of addition:</p> <p><i>Commutative:</i> (5 + 3 = 3 + 5) (3)</p> <p><i>Zero as the identity element</i> (7 + 0 = 7)(3)</p> <p><i>Associative:</i> (7 + 3 + 2 can be found by adding 7 + 3 or 3 + 2 first).(3)</p>	<p>1. Understand and apply (but don't name) the following properties of addition:</p> <p><i>Commutative:</i> (5 + 3 = 3 + 5) (1)</p> <p><i>Zero as the identity element</i> (7 + 0 = 7) (1)</p> <p><i>Associative:</i> (7 + 3 + 2 can be found by adding 7 + 3 or 3 + 2 first). (1)</p>	<p>1. Understand and apply the properties of operations and numbers.</p> <p><i>Commutative:</i> (5 x 3 = 3 x 5) (1)</p> <p><i>Identity element for multiplication is 1</i> (1 x 8 = 8) (2)</p> <p><i>Any number multiplied by zero is zero.</i> (2)</p> <p>2. Understand and use the concepts of equals, less than, and greater than to describe relations between numbers.</p> <p><i>Symbols</i> (=, <, >)</p>	<p>1. Understand, name, and apply the properties of operations and numbers.</p> <p><i>Commutative:</i> (5 x 3 = 3 x 5) (2)</p> <p><i>Identity element for multiplication is 1</i> (1 x 8 = 8) (2)</p> <p><i>Associative</i> (2 x 4 x 25 can be found by first multiplying either 2 x 4 or 4 x 25) (2/3)</p> <p><i>Division by zero is undefined.</i> (2)</p> <p><i>Any number multiplied by zero is zero.</i></p> <p>2. Understand and use the concepts of equals, less than, great than in simple number sentences.</p> <p><i>Symbols</i> (=, <, >)</p>	<p>1. Solve simple linear equations with manipulatives and informally</p> <p><i>Whole-number coefficients only, answers also whole numbers</i> (4)</p> <p><i>Variables on one side of equation</i> (4)</p>


Based on: NJ STATE STANDARD 4.4 (Data Analysis, Probability, and Discrete Mathematics)
Strands and Cumulative Progress Indicators (CPIs)
K-5

Benchmarks are to be addressed by the end of the marking period indicated, with instruction to continue throughout the school year. Ongoing skills (grades K, 1, and 2) are developing and should be consistently incorporated throughout the school year.

Cumulative Progress Indicators by Grade						
Strand	K	1	2	3	4	5
A. Data Analysis	<p>1. Collect, generate, record, and organize data in response to questions, claims, or curiosity.</p> <p><i>Data collected from students' everyday experiences.(3)</i></p> <p><i>Data generated from chance devices, such as spinners and dice.(4)</i></p> <p>2. Read, interpret, construct, and analyze displays of data. (3)</p> <p><i>Pictures, tally chart, pictograph, bar graph, Venn Diagram.(3)</i></p> <p><i>Smallest to largest, most frequent (mode) (3)</i></p>	<p>1. Collect, generate, record, and organize data in response to questions, claims, or curiosity.</p> <p><i>Data collected from students' everyday experiences.(3)</i></p> <p><i>Data generated from chance devices, such as spinners and dice. (4)</i></p> <p>2. Read, interpret, construct, and analyze displays of data. (3)</p> <p><i>Pictures, tally chart, pictograph, bar graph, Venn Diagram.(3)</i></p> <p><i>Smallest to largest, most frequent (mode) (3)</i></p>	<p>1. Collect, generate, record, and organize data in response to questions, claims, or curiosity.</p> <p><i>Data collected from students' everyday experiences. (3)</i></p> <p><i>Data generated from chance devices, such as spinners and dice.(3)</i></p> <p>2. Read, interpret, construct, and analyze displays of data. (3)</p> <p><i>Pictures, tally chart, pictograph, bar graph, Venn Diagram. 23)</i></p> <p><i>Smallest to largest, most frequent (mode) (3)</i></p>	<p>1. Collect, generate, record, and organize data in response to questions, claims, or curiosity.</p> <p><i>Data collected from the classroom environment (1)</i></p> <p>2. Read, interpret, construct, and analyze displays of data. (1)</p> <p><i>Pictograph, bar graph, table (2)</i></p>	<p>1. Collect, generate, record, and organize data in response to questions, claims, or curiosity.</p> <p><i>Data collected from the classroom environment (1)</i></p> <p>2. Read, interpret, construct, and analyze, generate questions about, and draw inferences from displays of data. (1)</p> <p><i>Pictograph, bar graph, line plot, line graph, table. (3)</i></p> <p><i>Average (mean), most frequent (mode), middle term (median) (1)</i></p>	<p>1. Collect, generate, organize, and display data.</p> <p><i>Data generated from surveys (1)</i></p> <p>2. Read, interpret, construct, and analyze, generate questions about, and draw inferences from displays of data.</p> <p><i>Bar graph, line graph, circle graph, table (3)</i></p> <p><i>Range, median, mean(1)</i></p> <p>3. Respond to questions about data and generate their own questions and hypotheses. (3)</p>

Based on: NJ STATE STANDARD 4.4 (Data Analysis, Probability, and Discrete Mathematics)
Strands and Cumulative Progress Indicators (CPIs)
K-5

Benchmarks are to be addressed by the end of the marking period indicated, with instruction to continue throughout the school year. Ongoing skills (grades K, 1, and 2) are developing and should be consistently incorporated throughout the school year.

Cumulative Progress Indicators by Grade						
Strand	K	1	2	3	4	5
B. Probability	<p>1. Use chance devices like spinners and dice to explore concepts of probability.</p> <p><i>Certain, impossible (4)</i></p> <p><i>More likely, less likely, equally likely (4)</i></p> <p>2. Provide probability of specific outcomes.</p> <p><i>Probability of getting specific outcome when coin is tossed, when die is rolled, when spinner is spun (if spinner has 5 equal sectors, then probability of getting a particular sector is one out of five). (4)</i></p> <p><i>When picking a marble from a bag with three red marbles and four blue marbles, the probability of getting a red marble is three out of seven. (4)</i></p>	<p>1. Use chance devices like spinners and dice to explore concepts of probability.</p> <p><i>Certain, impossible (4)</i></p> <p><i>More likely, less likely, equally likely (4)</i></p> <p>2. Provide probability of specific outcomes.</p> <p><i>Probability of getting specific outcome when coin is tossed, when die is rolled, when spinner is spun (if spinner has 5 equal sectors, then probability of getting a particular sector is one out of five).(4)</i></p> <p><i>When picking a marble from a bag with three red marbles and four blue marbles, the probability of getting a red marble is three out of seven. (4)</i></p>	<p>1. Use chance devices like spinners and dice to explore concepts of probability.</p> <p><i>Certain, impossible (3)</i></p> <p><i>More likely, less likely, equally likely (3)</i></p> <p>2. Provide probability of specific outcomes.</p> <p><i>Probability of getting specific outcome when coin is tossed, when die is rolled, when spinner is spun (if spinner has 5 equal sectors, then probability of getting a particular sector is one out of five).(4)</i></p> <p><i>When picking a marble from a bag with three red marbles and four blue marbles, the probability of getting a red marble is three out of seven. (4)</i></p>	<p>1. Use everyday events and chance devices, such as dice, coins, and unevenly divided spinners, to explore concepts of probability.</p> <p><i>Likely, unlikely, certain, impossible (3)</i></p> <p><i>More likely, less likely, equally likely (3)</i></p> <p>2. Predict probabilities in a variety of situations (given the number of items of each color in a bag, what is the probability that an item picked will have a particular color).</p> <p><i>What students think will happen (intuitive) (3)</i></p> <p><i>Collect data and use that data to predict the probability (experimental)(3)</i></p>	<p>1. Use everyday events and chance devices, such as dice, coins, and unevenly divided spinners, to explore concepts of probability.</p> <p><i>Likely, unlikely, certain, impossible, improbable, fair, unfair</i> <i>More likely, less likely, equally likely (3)</i></p> <p><i>Probability of tossing "heads" does not depend on outcomes of previous tosses (3)</i></p> <p>2. Determine probabilities of simple events based on equally likely outcomes and express them as fractions. (3)</p> <p>3. Predict probabilities in a variety of situations (given the number of items of each color in a bag, what is the probability that an item picked will have a particular color). (3)</p> <p><i>What students think will happen (intuitive)(3)</i></p> <p><i>Collect data and use that data to predict the probability (experimental) (3)</i></p> <p><i>Analyze all possible outcomes to find the probability (theoretical)(3)</i></p>	<p>1. Determine the probabilities of events.</p> <p><i>Event, probability of an event</i></p> <p><i>Probability of certain event is 1 and of impossible event is 0 (1)</i></p> <p>2. Determine probability using intuitive, experimental, and theoretical methods.</p> <p><i>Given numbers of various types of items in a bag, what is the probability that an item of one type will be picked. (4)</i></p> <p><i>Given data obtained experimentally, what is the likely distribution of items in the bag? (4)</i></p> <p>3. Model situations involving probability using simulations (with spinners, dice) and theoretical models. (1)</p>

Based on: NJ STATE STANDARD 4.4 (Data Analysis, Probability, and Discrete Mathematics)
Strands and Cumulative Progress Indicators (CPIs)
K-5

Benchmarks are to be addressed by the end of the marking period indicated, with instruction to continue throughout the school year. Ongoing skills (grades K, 1, and 2) are developing and should be consistently incorporated throughout the school year.

Cumulative Progress Indicators by Grade						
Strand	K	1	2	3	4	5
C. Discrete Mathematics- Systematic Listing and Counting	<p>1. Sort and classify objects according to attributes.</p> <p><i>Venn Diagrams (3)</i></p> <p>2. Generate all possibilities in simple counting situations (all outfits involving two shirts and three pants). (4)</p>	<p>1. Sort and classify objects according to attributes.</p> <p><i>Venn Diagrams(3)</i></p> <p>2. Generate all possibilities in simple counting situations (all outfits involving two shirts and three pants). (4)</p>	<p>1. Sort and classify objects according to attributes.</p> <p><i>Venn Diagrams(3)</i></p> <p>2. Generate all possibilities in simple counting situations (all outfits involving two shirts and three pants). (4)</p>	<p>1. Represent and classify data according to attributes, such as shape or color, and relationships.</p> <p><i>Venn diagrams (3)</i></p> <p><i>Numerical and alphabetical order (3)</i></p> <p>2. Represent all possibilities for a simple counting situation in an organized way and draw conclusions from this representation.</p> <p><i>Organized lists, charts(1)</i></p>	<p>1. Repeat and classify data according to attributes, such as shape or color, and relationships.</p> <p><i>Venn diagrams Numerical and alphabetical order (1)</i></p> <p>2. Represent all possibilities for a simple counting situation in an organized way and draw conclusions from this representation.</p> <p><i>Organized lists, charts, tree diagrams (2)</i></p> <p><i>Dividing into categories (to find the total number of rectangles in a grid, find the number of rectangles of each size and add the results). (1)</i></p>	<p>1. Solve counting problems and justify that all possibilities have been enumerated without duplication.</p> <p><i>Organized lists, charts, tree diagrams, tables (3)</i></p> <p>2. Explore the multiplication principle of counting in simple situations by representing all possibilities in an organized way (you can make $3 \times 4 = 12$ outfits using 3 shirts and 4 skirts) (3)</p>

Based on: NJ STATE STANDARD 4.4 (Data Analysis, Probability, and Discrete Mathematics)
Strands and Cumulative Progress Indicators (CPIs)
K-5

Benchmarks are to be addressed by the end of the marking period indicated, with instruction to continue throughout the school year. Ongoing skills (grades K, 1, and 2) are developing and should be consistently incorporated throughout the school year.

Cumulative Progress Indicators by Grade						
Strand	K	1	2	3	4	5
D. Discrete Mathematics-Vertex-Edge Graphs and Algorithms	<p>1. Follow simple sets of directions (from one location to another, or from a recipe). (3)</p> <p>2. Color simple maps with a small number of colors. (3)</p> <p>3. Play simple two-person games (tic-tac-toe) and informally explore the idea of what the outcome should be. (3)</p> <p>4. Explore concrete models of vertex-edge graphs (vertices as “islands” and edges as “bridges”) (4)</p> <p><i>Paths from one vertex to another (4)</i></p>	<p>1. Follow simple sets of directions (from one location to another, or from a recipe). (3)</p> <p>2. Color simple maps with a small number of colors. (3)</p> <p>3. Play simple two-person games (tic-tac-toe) and informally explore the idea of what the outcome should be. (3)</p> <p>4. Explore concrete models of vertex-edge graphs (vertices as “islands” and edges as “bridges”) (4)</p> <p><i>Paths from one vertex to another(4)</i></p>	<p>1. Follow simple sets of directions (from one location to another, or from a recipe). (1)</p> <p>2. Color simple maps with a small number of colors. (1)</p> <p>3. Play simple two-person games (tic-tac-toe) and informally explore the idea of what the outcome should be. (1)</p> <p>4. Explore concrete models of vertex-edge graphs (vertices as “islands” and edges as “bridges”) (4)</p> <p><i>Paths from one vertex to another (3)</i></p>	<p>1. Follow, devise, and describe practical sets of directions (to add two 2-digit numbers). (1)</p> <p>2. Explore vertex-edge graphs.</p> <p><i>Vertex, edge (3)</i></p> <p><i>Path</i></p> <p>3. Find the smallest number of colors needed to color a map. (4)</p>	<p>1. Follow, devise, and describe practical sets of directions (to add two 2-digit numbers). (1)</p> <p>2. Play two-person games and devise strategies for winning the games (“make 5” where players alternately add 1 or 2 and the person who reaches 5, or another designated number, is the winner). (1)</p> <p>3. Explore vertex-edge graphs and tree diagrams.</p> <p><i>Vertex, edge, neighboring/adjacent, number of neighbors (3)</i></p> <p><i>Path, circuit (path that ends at its starting point) (3)</i></p> <p>4. Find the smallest number of colors needed to color a map of a graph. (4)</p>	<p>1. Devise strategies for winning simple games (start with two piles of objects, each of two players in turn removes any number of objects from a single pile, and the person to take the last group of objects wins) and express those strategies as sets of directions. (3)</p>


Based on: NJ STATE STANDARD 4.5 (Mathematical Processes)
Strands and Cumulative Progress Indicators (CPIs)
K-5

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Cumulative Progress Indicators by Grade						
Strand	K	1	2	3	4	5
C. Connections	<p>1. Recognize recurring themes across mathematical domains (patterns in number, algebra, and geometry). Ongoing</p> <p>2. Use connections among mathematical ideas to explain concepts (two linear equations have a unique solution because the lines they represent intersect at a single point). Ongoing</p> <p>3. Recognize that mathematics is used in a variety of contexts outside of mathematics. Ongoing</p> <p>4. Apply mathematics in practical situations and in other disciplines. Ongoing</p> <p>5. Trace the development of mathematical concepts over time and across cultures (world languages and social studies standards). Ongoing</p> <p>6. Understand how mathematical ideas interconnect and build on one another to produce a coherent whole. Ongoing</p>	<p>1. Recognize recurring themes across mathematical domains (patterns in number, algebra, and geometry). Ongoing</p> <p>2. Use connections among mathematical ideas to explain concepts (two linear equations have a unique solution because the lines they represent intersect at a single point). Ongoing</p> <p>3. Recognize that mathematics is used in a variety of contexts outside of mathematics. Ongoing</p> <p>4. Apply mathematics in practical situations and in other disciplines. Ongoing</p> <p>5. Trace the development of mathematical concepts over time and across cultures (world languages and social studies standards). Ongoing</p> <p>6. Understand how mathematical ideas interconnect and build on one another to produce a coherent whole. Ongoing</p>	<p>1. Recognize recurring themes across mathematical domains (patterns in number, algebra, and geometry). Ongoing</p> <p>2. Use connections among mathematical ideas to explain concepts (two linear equations have a unique solution because the lines they represent intersect at a single point). Ongoing</p> <p>3. Recognize that mathematics is used in a variety of contexts outside of mathematics. Ongoing</p> <p>4. Apply mathematics in practical situations and in other disciplines. Ongoing</p> <p>5. Trace the development of mathematical concepts over time and across cultures (world languages and social studies standards). Ongoing</p> <p>6. Understand how mathematical ideas interconnect and build on one another to produce a coherent whole. Ongoing</p>	<p>1. Recognize recurring themes across mathematical domains (patterns in number, algebra, and geometry). Ongoing</p> <p>2. Use connections among mathematical ideas to explain concepts (two linear equations have a unique solution because the lines they represent intersect at a single point). Ongoing</p> <p>3. Recognize that mathematics is used in a variety of contexts outside of mathematics. Ongoing</p> <p>4. Apply mathematics in practical situations and in other disciplines. Ongoing</p> <p>5. Trace the development of mathematical concepts over time and across cultures (world languages and social studies standards). Ongoing</p> <p>6. Understand how mathematical ideas interconnect and build on one another to produce a coherent whole. Ongoing</p>	<p>1. Recognize recurring themes across mathematical domains (patterns in number, algebra, and geometry). Ongoing</p> <p>2. Use connections among mathematical ideas to explain concepts (two linear equations have a unique solution because the lines they represent intersect at a single point). Ongoing</p> <p>3. Recognize that mathematics is used in a variety of contexts outside of mathematics. Ongoing</p> <p>4. Apply mathematics in practical situations and in other disciplines. Ongoing</p> <p>5. Trace the development of mathematical concepts over time and across cultures (world languages and social studies standards). Ongoing</p> <p>6. Understand how mathematical ideas interconnect and build on one another to produce a coherent whole. Ongoing</p>	<p>1. Recognize recurring themes across mathematical domains (patterns in number, algebra, and geometry). Ongoing</p> <p>2. Use connections among mathematical ideas to explain concepts (two linear equations have a unique solution because the lines they represent intersect at a single point). Ongoing</p> <p>3. Recognize that mathematics is used in a variety of contexts outside of mathematics. Ongoing</p> <p>4. Apply mathematics in practical situations and in other disciplines. Ongoing</p> <p>5. Trace the development of mathematical concepts over time and across cultures (world languages and social studies standards). Ongoing</p> <p>6. Understand how mathematical ideas interconnect and build on one another to produce a coherent whole. Ongoing</p>

Based on: NJ STATE STANDARD 4.5 (Mathematical Processes)
Strands and Cumulative Progress Indicators (CPIs)
K-5

Benchmarks are to be addressed by the end of the marking period indicated, with instruction to continue throughout the school year. Ongoing skills (grades K, 1, and 2) are developing and should be consistently incorporated throughout the school year.

Cumulative Progress Indicators by Grade						
Strand	K	1	2	3	4	5
D. Reasoning	<p>1. Recognize that mathematical facts, procedures, and claims must be justified. Ongoing</p> <p>2. Use reasoning to support their mathematical conclusions and problem solutions. Ongoing</p> <p>3. Select and use various types of reasoning and methods of proof. Ongoing</p> <p>4. Rely on reasoning, rather than answer keys, teachers, or peers, to check the correctness of their problem solutions. Ongoing</p> <p>5. Make and investigate mathematical conjectures. Ongoing</p> <p><i>Counterexamples as a means of disproving conjectures</i></p> <p><i>Verifying conjectures using informal reasoning or proofs.</i></p> <p>6. Evaluate examples of mathematical reasoning and determine whether they are valid. Ongoing</p>	<p>1. Recognize that mathematical facts, procedures, and claims must be justified. Ongoing</p> <p>2. Use reasoning to support their mathematical conclusions and problem solutions. Ongoing</p> <p>3. Select and use various types of reasoning and methods of proof. Ongoing</p> <p>4. Rely on reasoning, rather than answer keys, teachers, or peers, to check the correctness of their problem solutions. Ongoing</p> <p>5. Make and investigate mathematical conjectures. Ongoing</p> <p><i>Counterexamples as a means of disproving conjectures</i></p> <p><i>Verifying conjectures using informal reasoning or proofs.</i></p> <p>6. Evaluate examples of mathematical reasoning and determine whether they are valid. Ongoing</p>	<p>1. Recognize that mathematical facts, procedures, and claims must be justified. Ongoing</p> <p>2. Use reasoning to support their mathematical conclusions and problem solutions. Ongoing</p> <p>3. Select and use various types of reasoning and methods of proof. Ongoing</p> <p>4. Rely on reasoning, rather than answer keys, teachers, or peers, to check the correctness of their problem solutions. Ongoing</p> <p>5. Make and investigate mathematical conjectures. Ongoing</p> <p><i>Counterexamples as a means of disproving conjectures</i></p> <p><i>Verifying conjectures using informal reasoning or proofs.</i></p> <p>6. Evaluate examples of mathematical reasoning and determine whether they are valid. Ongoing</p>	<p>1. Recognize that mathematical facts, procedures, and claims must be justified. Ongoing</p> <p>2. Use reasoning to support their mathematical conclusions and problem solutions. Ongoing</p> <p>3. Select and use various types of reasoning and methods of proof. Ongoing</p> <p>4. Rely on reasoning, rather than answer keys, teachers, or peers, to check the correctness of their problem solutions. Ongoing</p> <p>5. Make and investigate mathematical conjectures. Ongoing</p> <p><i>Counterexamples as a means of disproving conjectures</i></p> <p><i>Verifying conjectures using informal reasoning or proofs.</i></p> <p>6. Evaluate examples of mathematical reasoning and determine whether they are valid. Ongoing</p>	<p>1. Recognize that mathematical facts, procedures, and claims must be justified. Ongoing</p> <p>2. Use reasoning to support their mathematical conclusions and problem solutions. Ongoing</p> <p>3. Select and use various types of reasoning and methods of proof. Ongoing</p> <p>4. Rely on reasoning, rather than answer keys, teachers, or peers, to check the correctness of their problem solutions. Ongoing</p> <p>5. Make and investigate mathematical conjectures. Ongoing</p> <p><i>Counterexamples as a means of disproving conjectures</i></p> <p><i>Verifying conjectures using informal reasoning or proofs.</i></p> <p>6. Evaluate examples of mathematical reasoning and determine whether they are valid. Ongoing</p>	<p>1. Recognize that mathematical facts, procedures, and claims must be justified. Ongoing</p> <p>2. Use reasoning to support their mathematical conclusions and problem solutions. Ongoing</p> <p>3. Select and use various types of reasoning and methods of proof. Ongoing</p> <p>4. Rely on reasoning, rather than answer keys, teachers, or peers, to check the correctness of their problem solutions. Ongoing</p> <p>5. Make and investigate mathematical conjectures. Ongoing</p> <p><i>Counterexamples as a means of disproving conjectures</i></p> <p><i>Verifying conjectures using informal reasoning or proofs.</i></p> <p>6. Evaluate examples of mathematical reasoning and determine whether they are valid. Ongoing</p>

Based on: NJ STATE STANDARD 4.5 (Mathematical Processes)
Strands and Cumulative Progress Indicators (CPIs)
K-5

Benchmarks are to be addressed by the end of the marking period indicated, with instruction to continue throughout the school year. Ongoing skills (grades K, 1, and 2) are developing and should be consistently incorporated throughout the school year.

Cumulative Progress Indicators by Grade						
Strand	K	1	2	3	4	5
F. Technology	<p>1. Use technology to gather, analyze, and communicate mathematical information. Ongoing</p> <p>2. Use computer spreadsheets, software, and graphing utilities to organize and display quantitative information. Ongoing</p> <p>3. Use graphing calculators and computer software to investigate properties of functions and their graphs. Ongoing</p> <p>4. Use calculators as problem-solving tools (to explore patterns, to validate solutions). Ongoing</p> <p>5. Use computer software to make and verify conjectures about geometric objects. Ongoing</p> <p>6. Use computer-based laboratory technology for mathematical applications in the sciences. Ongoing</p>	<p>1. Use technology to gather, analyze, and communicate mathematical information. Ongoing</p> <p>2. Use computer spreadsheets, software, and graphing utilities to organize and display quantitative information. Ongoing</p> <p>3. Use graphing calculators and computer software to investigate properties of functions and their graphs. Ongoing</p> <p>4. Use calculators as problem-solving tools (to explore patterns, to validate solutions). Ongoing</p> <p>5. Use computer software to make and verify conjectures about geometric objects. Ongoing</p> <p>6. Use computer-based laboratory technology for mathematical applications in the sciences. Ongoing</p>	<p>1. Use technology to gather, analyze, and communicate mathematical information. Ongoing</p> <p>2. Use computer spreadsheets, software, and graphing utilities to organize and display quantitative information. Ongoing</p> <p>3. Use graphing calculators and computer software to investigate properties of functions and their graphs. Ongoing</p> <p>4. Use calculators as problem-solving tools (to explore patterns, to validate solutions). Ongoing</p> <p>5. Use computer software to make and verify conjectures about geometric objects. Ongoing</p> <p>6. Use computer-based laboratory technology for mathematical applications in the sciences. Ongoing</p>	<p>1. Use technology to gather, analyze, and communicate mathematical information. Ongoing</p> <p>2. Use computer spreadsheets, software, and graphing utilities to organize and display quantitative information. Ongoing</p> <p>3. Use graphing calculators and computer software to investigate properties of functions and their graphs. Ongoing</p> <p>4. Use calculators as problem-solving tools (to explore patterns, to validate solutions). Ongoing</p> <p>5. Use computer software to make and verify conjectures about geometric objects. Ongoing</p> <p>6. Use computer-based laboratory technology for mathematical applications in the sciences. Ongoing</p>	<p>1. Use technology to gather, analyze, and communicate mathematical information. Ongoing</p> <p>2. Use computer spreadsheets, software, and graphing utilities to organize and display quantitative information. Ongoing</p> <p>3. Use graphing calculators and computer software to investigate properties of functions and their graphs. Ongoing</p> <p>4. Use calculators as problem-solving tools (to explore patterns, to validate solutions). Ongoing</p> <p>5. Use computer software to make and verify conjectures about geometric objects. Ongoing</p> <p>6. Use computer-based laboratory technology for mathematical applications in the sciences. Ongoing</p>	<p>1. Use technology to gather, analyze, and communicate mathematical information. Ongoing</p> <p>2. Use computer spreadsheets, software, and graphing utilities to organize and display quantitative information. Ongoing</p> <p>3. Use graphing calculators and computer software to investigate properties of functions and their graphs. Ongoing</p> <p>4. Use calculators as problem-solving tools (to explore patterns, to validate solutions). Ongoing</p> <p>5. Use computer software to make and verify conjectures about geometric objects. Ongoing</p> <p>6. Use computer-based laboratory technology for mathematical applications in the sciences. Ongoing</p>