

USD #294  
Math Curriculum

**Standard 1: Number and Computation**

**Number and Computation – The student uses numerical and computational concepts and procedures in a variety of situations.**

**Benchmark 1: Number Sense – The student demonstrates an understanding of number sense in a variety of situations.**

<b>Kindergarten Knowledge Base Indicators</b>	<b>Kindergarten Application Indicators</b>
The student... <ol style="list-style-type: none"><li>1. establishes a one-to-one correspondence with whole numbers from 0 through 20 using concrete objects and identifies, states, and writes the appropriate cardinal number (2.4.K1a) (\$).</li><li>2. compares and orders whole numbers from 0 through 20 using concrete objects (2.4.K1a) (\$).</li><li>3. recognizes a whole, a half, and parts of a whole using concrete objects (2.4.K1a,c) (\$), e.g., half a pizza, part of a cookie, or the whole school.</li><li>4. identifies positions as first and last, 1<sup>st</sup> – 5<sup>th</sup> (2.4.K1a).</li><li>5. identifies pennies, nickels, dimes, and quarters, and states the value of the coins using money models (2.4.K1d) (\$).</li></ol>	The student... <ol style="list-style-type: none"><li>1. solves real-world problems using equivalent representations and concrete objects to compare and order whole numbers from 0 through 10 (2.4.A1a) (\$).</li></ol>

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**Standard 1: Numbers and Computation**

**Number and Computation – The student uses numerical and computational concepts and procedures in a variety of situations.**

**Benchmark 2: Number Systems and Their Properties – The student demonstrates an understanding of number systems in a variety of situations.**

Kindergarten Knowledge Base Indicators	Kindergarten Application Indicators
<p>The student...</p> <ol style="list-style-type: none"> <li>1. reads and writes whole numbers from 0 through 20 in numerical form (\$).</li> <li>2. represents whole numbers from 0 through 20 using place value models (2.4.K1b) (\$), e.g., ten frames, unifix cubes, straws bundled in 10s, or base ten blocks.</li> <li>3. counts (2.4.K1a) (\$):               <ol style="list-style-type: none"> <li>a. whole numbers from 0 through 20,</li> <li>b. whole numbers from 10 to 0 backwards,</li> <li>c. subsets of whole numbers from 0 through 20.</li> </ol> </li> <li>4. groups objects by 5s and by 10s (2.4.K1a).</li> <li>5. <b>uses</b> the <b>concept</b> of the zero property of addition (additive identity) with whole numbers from 0 through 20 and demonstrates its meaning using concrete objects (2.4.K1a) (\$), e.g., 4 apples and no (zero) other apples are 4 apples.</li> </ol>	<p>The student...</p> <ol style="list-style-type: none"> <li>1. solves real-world problems with whole numbers from 0 through 20 using place value models (2.4.A1b) (\$), e.g., group the class into tens, count by tens; then continue counting by ones to find the total.</li> <li>2. counts forwards and backwards from a specific whole number using a number line from 0 through 10 (2.4.A1a).</li> </ol>

**Standard 1: Numbers and Computation**

**Number and Computation – The student uses numerical and computational concepts and procedures in a variety of situations.**

**Benchmark 3: Estimation – The student demonstrates an understanding of numerical estimation in a variety of situations.**

Kindergarten Knowledge Base Indicators	Kindergarten Application Indicators
<p>The student...</p> <ol style="list-style-type: none"> <li>1. determines if a group of 20 concrete objects or less has more, less, or about the same number of concrete objects as a second set of the same kind of objects (2.4.K1a).</li> </ol>	<p>The student...</p> <ol style="list-style-type: none"> <li>1. compares two randomly arranged groups of 10 concrete objects or less and states the comparison using the terms: more, less, about the same (2.4.A1a).</li> </ol>

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**Standard 1: Number and Computation**

**Number and Computation** – The student uses numerical and computational concepts and procedures in a variety of situations.

**Benchmark 4: Computation** – The student demonstrates an understanding of computation in a variety of situations.

















Kindergarten Knowledge Base Indicators	Kindergarten Application Indicators
<p>The student...</p> <ol style="list-style-type: none"> <li>1. adds and subtracts using whole numbers from 0 through 10 and various mathematical models (2.4.K1a) (\$), e.g., concrete objects, number lines, or unifix cubes.</li> <li>2. uses repeated addition (multiplication) with whole numbers to find the sum when given the number of groups (three or less) and given the same number of <b>concrete objects</b> in each group (five or less) (2.4.K1a), e.g., two nests with three eggs in each nest means <math>3 + 3 = 6</math> or 2 groups of 3 makes 6.</li> <li>3. uses repeated subtraction (division) with whole numbers when given the total number of <b>concrete objects</b> in each group to find the number of groups (2.4.K1a), e.g., there are 9 pencils. If each student gets 2 pencils, how many students get pencils? <math>9 - 2 - 2 - 2 - 2</math> or 9 minus 2 four times means four students get 2 pencils each and there is 1 pencil left over. <i>or</i> There are eight cookies to be shared equally among four people, how many cookies will each person receive?</li> </ol>	<p>The student...</p> <ol style="list-style-type: none"> <li>1. solves one-step real-world addition or subtraction problems with whole numbers from 0 through 10 using concrete objects in various groupings and explains reasoning (2.4.A1a) (\$), e.g., seven apples are in a basket and five students each take an apple; how many apples are left in the basket?</li> </ol>

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**Standard 2: Algebra**

**Algebra – The student uses algebraic concepts and procedures in a variety of situations.**

**Benchmark 1: Patterns – The student demonstrates an understanding of relationships in patterns in a variety of situations.**

Kindergarten Knowledge Base Indicators	Kindergarten Application Indicators
<p>The student...</p> <ol style="list-style-type: none"> <li>1. uses concrete objects, drawings, and other representations to work with <b>types</b> of patterns (2.4.K1a):               <ol style="list-style-type: none"> <li>a. repeating patterns, e.g., an AB pattern is like red-blue, red-blue, ...; an ABC pattern is like dog-horse-pig, dog-horse-pig, ...; or an AAB pattern is like <math>\Delta</math>-<math>\Delta</math>-O, <math>\Delta</math>-<math>\Delta</math>-O, ...;</li> <li>b. growing (extending) patterns, e.g., 5, 6, 7, ... is an example of a pattern that adds one to the previous number to continue the pattern.</li> </ol> </li> <li>2. uses these <b>attributes</b> to generate patterns:               <ol style="list-style-type: none"> <li>a. whole numbers (2.4.K1a), e.g., 2, 4, 6, ...;</li> <li>b. geometric shapes with one attribute change (2.4.K1e), e.g., <math>\Delta</math>, O, <math>\Delta</math>, O, <math>\Delta</math>, O, ...;</li> <li>c. things related to daily life (2.4.K1a), e.g., breakfast, lunch, and dinner.</li> </ol> </li> <li>3. identifies and continues a pattern presented in various formats including numeric (list or table), visual (picture, table, or graph), verbal (oral description), and kinesthetic (action) (2.4.K1a) (\$).</li> <li>4. generates (2.4.K1a):               <ol style="list-style-type: none"> <li>a. repeating patterns for the AB pattern, the ABC pattern, and the AAB pattern;</li> <li>b. growing (extending) patterns that add 1, 2, or 10 to continue the pattern.</li> </ol> </li> <li>5. classifies and sorts concrete objects by similar attributes (2.4.K1a) (\$).</li> </ol>	<p>The student...</p> <ol style="list-style-type: none"> <li>1. generalizes the following patterns using pictorial, and/or oral descriptions including the use of concrete objects:               <ol style="list-style-type: none"> <li>a. repeating patterns for the AB pattern, the ABC pattern, and the AAB pattern (2.4.A1a) (\$);</li> <li>b. patterns using geometric shapes with one attribute change (2.4.A1c).</li> </ol> </li> <li>2. recognizes multiple representations of the AB pattern (2.4.A1a), e.g., big- little, big-little, big-little, ... and 1-2, 1-2, 1-2, ..., or AB, AB, AB, ...</li> <li>3. uses concrete objects to model a whole number pattern (2.4.A1a):               <ol style="list-style-type: none"> <li>a. counting by ones: , , , , ...;</li> <li>b. counting by twos: , ,   ,   , ...;</li> <li>c. counting by tens: , ,   ,   , ...</li> </ol> </li> </ol>

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**Standard 2: Algebra**

**Algebra – The student uses algebraic concepts and procedures in a variety of situations.**

**Benchmark 2: Variables, Equations, and Inequalities – The student demonstrates an understanding of variables, equations, and inequalities in a variety of situations.**

Kindergarten Knowledge Base Indicators	Kindergarten Application Indicators
The student... 1. finds the unknown sum using the basic facts with sums through 10 using concrete objects and pictures (2.4.K1a) (\$), e.g., 5 marbles + 5 marbles = T marbles.	The student... 1. describes real-world problems using concrete objects and pictures and the basic facts with sums through 10 (2.4.A1a) (\$), e.g., given some marbles, Sue says: There are 3 red marbles and 3 blue marbles. Altogether, there are 6 marbles.

**Standard 2: Algebra**

**Algebra – The student uses algebraic concepts and procedures in a variety of situations.**

**Benchmark 3: Functions – The student demonstrates an understanding of functions in a variety of situations.**

Kindergarten Knowledge Base Indicators	Kindergarten Application Indicators
The student... 1. locates whole numbers from 0 through 20 on a number line (2.4.K1a).	The student... 1. represents and describes mathematical relationships for whole numbers from 0 through 10 using concrete objects, pictures, and oral descriptions (2.4.A1a) (\$).

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**Standard 2: Algebra**

**Algebra – The student uses algebraic concepts and procedures in a variety of situations.**

**Benchmark 4: Models – The student demonstrates the use of models to show relationships in a variety of situations.**

Kindergarten Knowledge Base Indicators	Kindergarten Application Indicators
<p>The student...</p> <ol style="list-style-type: none"> <li>1. knows, explains, and uses mathematical models to represent mathematical concepts, procedures, and relationships. Mathematical models include:               <ol style="list-style-type: none"> <li>a. process models (concrete objects, pictures, number lines, unifix cubes, measurement tools, or calendars) to model computational procedures and mathematical relationships, to compare and order numerical quantities, and to represent fractional parts (1.1.K1-4, 1.2.K3-5, 1.3.K1, 1.4.K1-3, 2.1.K1, 2.1.K2a, 2.1.K2c, 2.1.K3-5, 2.2.K1, 2.3.K1, 3.1.K2, 3.2.K1-3, 3.3.K1-2, 3.4.K1-2) (\$);</li> <li>b. place value models (ten frames, unifix cubes, bundles of straws, or base ten blocks) to represent numerical quantities (1.2.K2) (\$);</li> <li>c. fraction models (fraction strips or pattern blocks) to represent numerical quantities (1.1.K3) (\$);</li> <li>d. money models (base ten blocks or coins) to represent numerical quantities (1.1.K5) (\$);</li> <li>e. two-dimensional geometric models (geoboards, dot paper, or attribute blocks), three-dimensional geometric models (solids), and real-world objects to compare size and to model attributes of geometric shapes (2.1.K1a, 3.1.K3);</li> <li>f. two-dimensional geometric models (spinners), three-dimensional geometric models (number cubes), and concrete objects to model probability (4.1.K1-2) (\$);</li> <li>g. graphs using concrete objects, pictographs, and frequency tables to organize and display data (4.2.K1-3) (\$).</li> </ol> </li> <li>2. uses concrete objects, pictures, drawings, diagrams, or dramatizations to show the relationship between two or more things (\$).</li> </ol>	<p>The student...</p> <ol style="list-style-type: none"> <li>1. recognizes that various mathematical models can be used to represent the same problem situation. Mathematical models include:               <ol style="list-style-type: none"> <li>a. process models (concrete objects, pictures, number lines, unifix cubes, measurement tools, or calendars) to model computational procedures and mathematical relationships, to compare and order numerical quantities, and to model problem situations (1.1.A1, 1.2.A2, 1.3.A1, 1.4.A1, 2.1.A1a, 2.1.A2-3, 2.2.A1, 2.3.A1, 3.1.A3, 3.2.A1-2, 3.3.A1-2, 3.4.A1) (\$);</li> <li>b. place value models (ten frames, unifix cubes, bundles of straws, or base ten blocks) to represent numerical quantities (1.2.A1) (\$);</li> <li>c. two-dimensional geometric models (geoboards, dot paper, or attribute blocks), three-dimensional geometric models (solids), and real-world objects to compare size and to model attributes of geometric shapes (3.1.A1-2);</li> <li>d. two-dimensional geometric models (spinners), three-dimensional geometric models (number cubes), and concrete objects to model probability (4.1.A1);</li> <li>e. graphs using concrete objects, pictographs, and frequency tables to organize and display data (4.1.A1, 4.2.A1) (\$).</li> </ol> </li> </ol>

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**Standard 3: Geometry**

**Geometry – The student uses geometric concepts and procedures in a variety of situations.**

**Benchmark 1: Geometric Figures and Their Properties – The student demonstrates an understanding of geometric shapes and their attributes.**

Kindergarten Knowledge Base Indicators	Kindergarten Application Indicators
<p>The student...</p> <ol style="list-style-type: none"> <li>1. recognizes circles, squares, rectangles, triangles, and ellipses (ovals) (plane figures/ two-dimensional figures) (2.4.K1e).</li> <li>2. recognizes and investigates attributes of circles, squares, rectangles, triangles, and ellipses using concrete objects, drawings, and/or appropriate technology (2.4.K1a,e).</li> <li>3. sorts cubes, rectangular prisms, cylinders, cones, and spheres (solids/three-dimensional figures) by their attributes using concrete objects (2.4.K1e).</li> </ol>	<p>The student...</p> <ol style="list-style-type: none"> <li>1. demonstrates how several plane figures (circles, squares, rectangles, triangles, ellipses) can be combined to make a new shape (2.4.A1c).</li> <li>2. sorts by one attribute real-world geometric shapes that are representations of the solids (cubes, rectangular prisms, cylinders, cones, spheres) (2.4.A1c), e.g., boxes can be sorted as rectangular prisms, cans can be sorted as cylinders, some ice cream cones can be sorted as cones, and some balls can be sorted as spheres.</li> <li>3. recognizes (2.4.A1a):               <ol style="list-style-type: none"> <li>a. circles, squares, rectangles, triangles, and ellipses (plane figures) within a picture;</li> <li>b. cubes, rectangular prisms, cylinders, cones, and spheres (solids) within a picture.</li> </ol> </li> </ol>

**Standard 3: Geometry**

**Geometry – The student uses geometric concepts and procedures in a variety of situations.**

**Benchmark 2: Measurement and Estimation – The student demonstrates an understanding of estimation and measurement using standard and non-standard units of measure in a variety of situations.**

Kindergarten Knowledge Base Indicators	Kindergarten Application Indicators
<p>The student...</p> <ol style="list-style-type: none"> <li>1. uses whole number approximations (estimations) for length using nonstandard units of measure (2.4.K1a) (\$), e.g., the classroom door is about two kindergartners high or this paper is about two pencils long.</li> <li>2. compares two measurements using these attributes (2.4.K1a) (\$):               <ol style="list-style-type: none"> <li>a. longer, shorter (length);</li> <li>b. taller, shorter (height);</li> <li>c. heavier, lighter (weight).</li> <li>d. hotter, colder (temperature).</li> </ol> </li> <li>3. reads and tells time at the hour using analog and digital clocks (2.4.K1a).</li> </ol>	<p>The student...</p> <ol style="list-style-type: none"> <li>1. compares and orders concrete objects by length or weight (2.4.A1a) (\$).</li> <li>2. locates and names concrete objects that are about the same length or weight as a given concrete object (2.4.A1a) (\$).</li> </ol>

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**Standard 3 – Geometry**

**Geometry – The student uses geometric concepts and procedures in a variety of situations.**

**Benchmark 3: Transformational Geometry – The student demonstrates an understanding of spatial sense and relationships in a variety of situations.**

<b>Kindergarten Knowledge Base Indicators</b>	<b>Kindergarten Application Indicators</b>
The student... <ol style="list-style-type: none"><li>describes the spatial relationship between two concrete objects using appropriate vocabulary (2.4.K1a), e.g., behind, above, below, on, or under.</li><li>identifies two like objects or shapes from a set of four objects or shapes (2.4.K1a).</li></ol>	The student... <ol style="list-style-type: none"><li>shows two concrete objects or shapes are congruent by physically fitting one object or shape on top of the other (2.4.A1a).</li><li>follows directions to move concrete objects from one location to another using appropriate vocabulary (2.4.A1a), e.g., up, down, behind, or above.</li></ol>

**Standard 3: Geometry**

**Geometry – The student uses geometric concepts and procedures in a variety of situations.**

**Benchmark 4: Geometry From An Algebraic Perspective – The student identifies one or more points on a number line in a variety of situations.**

<b>Kindergarten Knowledge Base Indicators</b>	<b>Kindergarten Application Indicators</b>
The student... <ol style="list-style-type: none"><li>locates and plots whole numbers from 0 through 20 on a horizontal number line (2.4.K1a).</li><li>counts forwards and backwards from a given whole number from 0 through 10 on a number line (2.4.K1a).</li></ol>	The student... <ol style="list-style-type: none"><li>solves real-world problems involving counting whole numbers from 0 through 20 using a number line (2.4.A1a) (\$), e.g., if Bill has 8 pieces of candy and his dad gives him 4 more pieces, how many pieces of candy does he have now?</li></ol>

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**Standard 4: Data**

**Data – The student uses concepts and procedures of data analysis in a variety of situations.**

**Benchmark 1: Probability – The student demonstrates an understanding of the concepts of probability in a variety of situations.**

Kindergarten Knowledge Base Indicators	Kindergarten Application Indicators
<p>The student...</p> <ol style="list-style-type: none"> <li>recognizes whether an event is impossible or possible (2.4.K1f) (\$), e.g., the possibility of a person having ten heads is impossible, while the possibility of a person having red hair is possible.</li> <li>recognizes and states whether a simple event in an experiment or simulation including the use of concrete objects can have more than one outcome (2.4.K1a,f).</li> </ol>	<p>The student...</p> <ol style="list-style-type: none"> <li>conducts an experiment or simulation with a simple event and records the results in a graph using concrete objects or frequency tables (tally marks) (2.4.A1a,d-e).</li> </ol>

**Standard 4: Data**

**Data – The student uses concepts and procedures of data analysis in a variety of situations.**

**Benchmark 2: Statistics – The student demonstrates an understanding of data sets in a variety of situations.**

Kindergarten Knowledge Base Indicators	Kindergarten Application Indicators
<p>The student...</p> <ol style="list-style-type: none"> <li>records numerical (quantitative) and non-numerical (qualitative) data including concrete objects, graphs, and tables using these <b>data displays</b> (2.4.K1a,g) (\$):               <ol style="list-style-type: none"> <li>graphs using concrete objects,</li> <li>pictographs with a whole symbol or picture representing one (no partial symbols or pictures),</li> <li>frequency tables (tally marks).</li> </ol> </li> <li>collects data related to familiar everyday experiences by counting and tallying (2.4.K1a,g) (\$).</li> <li>determines the mode (most) after sorting by one attribute (2.4.K1a,g) (\$), e.g., color, shape, or size.</li> </ol>	<p>The student...</p> <ol style="list-style-type: none"> <li>communicates the results of data collection from graphs using concrete objects and frequency tables (2.4.A1e) (\$), e.g., there are sixteen kindergartners. Using themselves as concrete objects, the six students wearing tennis shoes line up in a row. The ten students wearing sandals line up in a row. The kindergartners become the bar graph. Then someone says: There are less kids wearing tennis shoes than kids wearing sandals.</li> </ol>