

**West Linn-Wilsonville School District
Mathematics Curriculum Content Standards
Grades K-5**

ODE Content Standard	Kindergarten
K.1	<p><u>Number and Operations</u> and <u>Algebra</u>: Represent, compare, and order whole numbers, and join and separate sets.</p> <ul style="list-style-type: none"> • Read and write whole numbers to 10. • Connect numbers, including written numerals, to the quantities they represent, using various physical models and representations. • Count forward by ones beginning with any number less than 30; count backward by ones beginning with any number 10 or less. • Recognize the number of objects in a small set (such as the arrangements of dots on a number cube) without counting. • Count objects in a set using one-to-one correspondence and produce sets of given sizes. • Compare and order sets or numerals by using both cardinal and ordinal meanings. • Model simple joining and separating situations and represent them with objects, pictures, and/or numerals. • Choose, combine, and apply effective strategies for solving joining and separating problems. • Identify, duplicate, and extend simple number patterns and sequential and growing patterns (e.g., patterns made with shapes).
K.2	<p><u>Geometry</u>: Describe shapes and space.</p> <ul style="list-style-type: none"> • Identify, name, and describe basic two-dimensional shapes (e.g., square, circle, triangle, rectangle, regular hexagon) presented in a variety of ways (e.g., with different sizes or orientations). • Identify, name, and describe basic three-dimensional shapes (e.g., sphere, cube, and cylinder). • Use basic shapes and spatial reasoning to describe and model objects in their environment, and to construct more complex shapes.
K.3	<p><u>Measurement</u>: Compare and order objects by attributes.</p> <ul style="list-style-type: none"> • Identify the measurable attributes (e.g., length, weight) and non-measurable attributes (e.g., color) of an object. • Compare, sort, and order objects according to measurable (e.g., longest to shortest, lightest to heaviest) and non-measurable (e.g., color, texture) attributes. • Compare the lengths of two objects both directly (by comparing them with each other) and indirectly (by comparing both with a third object).

It is essential that these standards be addressed in contexts that promote problem solving, reasoning, communication, making connections, and designing and analyzing representations.

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ODE Content Standard	Grade 1
1.1	<p><u>Number and Operations</u>: Develop an understanding of whole number relationships, including grouping in tens and ones.</p> <ul style="list-style-type: none"> • Compare and order whole numbers to 100. • Represent whole numbers on a number line, demonstrating an understanding of the sequential order of the counting numbers and their relative magnitudes. • Count and group objects in tens and ones. • Identify the number of tens and ones in whole numbers between 10 and 100, especially recognizing the numbers 10 to 19 as 1 group of ten and a particular number of ones. • Determine the value of collections of pennies, nickels, and dimes.
1.2	<p><u>Number and Operations</u> and <u>Algebra</u>: Develop understandings of addition and subtraction and strategies for basic addition facts and related subtraction facts.</p> <ul style="list-style-type: none"> • Model “part-whole,” “adding to,” “taking away from,” and “comparing” situations to develop an understanding of the meanings of addition and subtraction. • Develop and use efficient strategies for adding and subtracting whole numbers using a variety of models, including discrete objects, length-based models (e.g., lengths of connecting cubes) and number lines. • Apply with fluency sums to 10 and related subtraction facts. • Use the concept of commutative [$4 + 2 = 2 + 4$], associative [$(4 + 3) + 7 = 4 + (3 + 7)$], and identity [$0 + 3 = 3$] properties of addition to solve problems involving basic facts. • Relate addition and subtraction as inverse operations. • Identify, create, extend, and supply a missing element in number patterns involving addition or subtraction by a single-digit number.
1.3	<p><u>Geometry</u>: Compose and decompose two- and three-dimensional geometric shapes.</p> <ul style="list-style-type: none"> • Describe geometric attributes of shapes (e.g., round, corners, sides) to determine how they are alike and different. • Recognize and create shapes that are congruent or have symmetry. • Compose and decompose shapes (e.g., cut a square into two right triangles and put two cubes together to make a rectangular prism), thus building an understanding of part-whole relationships as well as the properties of the original and composite shapes. • Recognize shapes when viewed from different perspectives and orientations.

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ODE Content Standard	Grade 2
2.1	<p>Number and Operations: Develop an understanding of the base-ten numeration system and place-value concepts.</p> <ul style="list-style-type: none"> • Write, compare, and order whole numbers to 1000. • Understand and apply base-ten numeration, and count in multiples of one, two, five, ten, and one hundred. • Compose and decompose whole numbers less than one thousand by place value (e.g., 426 as 4 hundreds + 2 tens + 6 ones and $400 + 20 + 6$). • Use place value and properties of operations to find and use equivalent representations of numbers (such as 35 represented by 35 ones, 3 tens and 5 ones, or 2 tens and 15 ones).
2.2	<p>Number and Operations and Algebra: Develop fluency with addition facts and related subtraction facts, and with multi-digit addition and subtraction.</p> <ul style="list-style-type: none"> • Apply, with fluency, sums to 20 and related subtraction facts. • Solve multi-digit whole number problems by applying various meanings (e.g., taking away, and comparing) and models (e.g., combining or separating sets, using number lines, and hundreds charts) of addition and subtraction. • Develop fluency with efficient procedures for adding and subtracting multi-digit whole numbers and understand why the procedures work on the basis of place value and number properties. • Select and apply efficient methods to estimate sums and differences or calculate them mentally depending on the numbers and context involved. • Determine the value of mixed collections of coins to \$1.00.
2.3	<p>Measurement: Develop an understanding of linear measurement and facility in measuring.</p> <ul style="list-style-type: none"> • Determine length by finding the total number of equal-length units that are placed end-to-end without gaps or overlaps. • Apply concepts of partitioning (the mental activity of slicing the length of an object into equal-sized units) and transitivity (e.g., if object A is longer than object B and object B is longer than object C, then object A is longer than object C). • Demonstrate an understanding that using different measurement units will result in different numerical measurements for the same object. • Explain the need for equal length units and the use of standard units of measure. • Use rulers and other measurement tools to estimate and measure length in common units (e.g., centimeter and inch). • Use the measurement process: choose an appropriate measurement unit, compare that unit to the object, and report the number of units. • Demonstrate an understanding of time and use of time relationships (e.g., how many minutes in an hour, days in a week, and months in a year). • Tell time in increments of five minutes using analog and digital clocks.

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ODE Content Standard	Grade 3
3.1	<p>Number and Operations: Develop an understanding of fractions and fraction equivalence.</p> <ul style="list-style-type: none"> • Represent common fractions (e.g., halves, thirds, fourths, tenths) as equal parts of a whole, parts of a set, or points or distances on a number line. • Recognize and demonstrate that sizes of fractional parts are relative to the size of the whole. • Use fractions to represent numbers that are equal to, less than, or greater than one. • Solve problems that involve comparing and ordering fractions by using models, benchmarks (0, $\frac{1}{2}$, 1), or common numerators or denominators. • Identify equivalent fractions using models, including the number line. • Add common fractions with like denominators.
3.2	<p>Number and Operations, Algebra, and Data Analysis: Develop understandings of multiplication and division, and strategies for basic multiplication facts and related division facts.</p> <ul style="list-style-type: none"> • Represent and apply the concept of multiplication as repeated addition. • Represent and apply the concept of division as repeated subtraction and forming equal groups. • Apply models of multiplication (e.g., equal-sized groups, arrays, area models, equal “jumps” on number lines and hundreds charts) and division (e.g., repeated subtraction, partitioning, and sharing) to solve problems. • Apply increasingly sophisticated strategies based on the number properties (e.g., place value, commutative, associative, distributive, identity, and zero) to solve multiplication and division problems involving basic facts. • Apply the inverse relationship between multiplication and division (e.g., $5 \times 6 = 30$, $30 \div 6 = 5$) and the relationship between multiples and factors. • Represent, analyze and extend number patterns using rules that involve multiplication and/or addition (e.g., {3, 6, 9, 12, ...}, {1, 2, 4, 8, ...}). • Analyze frequency tables, bar graphs, picture graphs, and line plots; and use them to solve problems involving addition, subtraction, multiplication, and division.
3.3	<p>Geometry and Measurement: Describe and analyze properties of two-dimensional shapes, including perimeters.</p> <ul style="list-style-type: none"> • Identify right angles in two-dimensional shapes and determine if angles are greater than or less than a right angle (obtuse and acute). • Identify, describe, compare, analyze, and informally classify triangles by their sides and angles. • Identify, describe, compare, analyze, and classify quadrilaterals (square, rectangle, parallelogram, rhombus, and trapezoid) by their sides and angles. • Identify, describe, and compare pentagons, hexagons, and octagons by the number of sides or angles. • Investigate and describe the results of decomposing, combining, and transforming polygons to make other polygons. • Build, draw, and analyze two-dimensional shapes to understand attributes and properties of two-dimensional space. • Determine an appropriate unit, tool, or strategy to find the perimeter of polygons. • Use attributes and properties of two-dimensional shapes to solve problems including applications involving parallel and perpendicular lines, congruence, symmetry, and perimeter.

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ODE Content Standard	Grade 4
4.1	<p>Number and Operations: Develop an understanding of decimals, including the connections between fractions and decimals.</p> <ul style="list-style-type: none"> • Extend the base-ten system to read, write, and represent decimal numbers (to the hundredths) between 0 and 1, between 1 and 2, etc. • Use models to connect and compare equivalent fractions and decimals. • Determine decimal equivalents or approximations of common fractions. • Compare and order fractions and decimals. • Estimate decimal or fractional amounts in problem solving. • Represent money amounts to \$10.00 in dollars and cents, and apply to situations involving purchasing ability and making change.
4.2	<p>Number and Operations and Algebra: Develop fluency with multiplication facts and related division facts, and with multi-digit whole number multiplication.</p> <ul style="list-style-type: none"> • Apply with fluency multiplication facts to 10 times 10 and related division facts. • Apply understanding of models for multiplication (e.g., equal-sized groups, arrays, area models, equal intervals on the number line), place value, and properties of operations (commutative, associative, and distributive). • Select and use appropriate estimation strategies for multiplication (e.g., use benchmarks, overestimate, underestimate, round) to calculate mentally based on the problem situation when computing with whole numbers. • Develop and use accurate, efficient, and generalizable methods to multiply multi-digit whole numbers. • Develop fluency with efficient procedures for multiplying multi-digit whole numbers and justify why the procedures work on the basis of place value and number properties.
4.3	<p>Measurement: Develop an understanding of area and determine the areas of two-dimensional shapes.</p> <ul style="list-style-type: none"> • Recognize area as an attribute of two-dimensional regions. • Determine area by finding the total number of same-sized units of area that cover a shape without gaps or overlaps. • Recognize a square that is one unit on a side as the standard unit for measuring area. • Determine the appropriate units, strategies, and tools to solving problems that involve estimating or measuring area. • Connect area measure to the area model used to represent multiplication and use this to justify the formula for area of a rectangle. • Find the areas of complex shapes that can be subdivided into rectangles. • Solve problems involving perimeters and areas of rectangles and squares. • Recognize that rectangles with the same area can have different perimeters and that rectangles with the same perimeter can have different areas.

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ODE Content Standard	Grade 5
5.1	<p><u>Number and Operations</u> and <u>Data Analysis</u>: Develop an understanding of and fluency with addition and subtraction of fractions and decimals.</p> <ul style="list-style-type: none"> • Use fraction models to represent the addition and subtraction of fractions with unlike denominators. • Use decimal models, place value, and number properties to add and subtract decimals (to the thousandths). • Select and use appropriate strategies to estimate fraction and decimal sums and differences. • Develop fluency with efficient procedures for adding and subtracting fractions and decimals and justify why the procedures work. • Solve problems involving the addition and subtraction of fractions and decimals. • Use ordered pairs on coordinate graphs to specify locations and describe paths. • Construct and analyze double bar, line, and circle graphs to solve problems involving fractions and decimals.
5.2	<p><u>Number and Operations</u> and <u>Algebra</u>: Develop an understanding of and fluency with division of whole numbers.</p> <ul style="list-style-type: none"> • Apply understanding of models for division (e.g., equal-sized groups, arrays, area models, equal intervals on the number line) and the relationship of division to multiplication to solve problems. • Apply concepts of place value and the properties of operations to solve problems involving division. • Select and use appropriate estimation strategies for division (e.g., use benchmarks, overestimate, underestimate, round) to calculate mentally based on the problem situation when computing with whole numbers. • Develop and use accurate, efficient, and generalizable methods to find quotients for multi-digit division problems. • Develop fluency with efficient procedures for dividing whole numbers and justify why the procedures work on the basis of place value and number properties. • Determine the most appropriate form of the quotient and interpret the remainder in a problem situation.
6.2 6.2.1 – 6.2.4	<p><u>Number and Operations</u> and <u>Probability</u>: Connect ratio, rate, and percent to multiplication and division.</p> <ul style="list-style-type: none"> • Develop, analyze, and apply the meaning of ratio, rate, and percent to solve problems. • Determine decimal and percent equivalents for common fractions, including approximations. • Understand the meaning of probability and represent probabilities as ratios, decimals, and percents. • Determine simple probabilities, both experimental and theoretical.
6.3 6.3.2 – 6.3.3	<p><u>Algebra</u>: Write, interpret, and use mathematical expressions and equations.</p> <ul style="list-style-type: none"> • Develop the meanings and uses of variables. • Write, evaluate, and use expressions and formulas to solve problems.

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5.3	<p><u>Geometry, Measurement, and Algebra</u>: Describe and relate two-dimensional shapes to three-dimensional shapes and analyze their properties, including volume and surface area.</p> <ul style="list-style-type: none">• Identify and classify triangles by their angles (acute, right, obtuse) and sides (scalene, isosceles, equilateral).• Find and justify relationships among the formulas for the areas of triangles and parallelograms.• Describe three-dimensional shapes (triangular and- rectangular prisms, cube, triangular- and square-based pyramids, cylinder, cone, and sphere) by the number of edges, faces, and/or vertices as well as types of faces.• Recognize volume as an attribute of three-dimensional space.• Determine volume by finding the total number of same-sized units of volume that fill a three-dimensional shape without gaps or overlaps.• Recognize a cube that is one unit on an edge as the standard unit for measuring volume.• Determine the appropriate units, strategies, and tools for solving problems that involve estimating or measuring volume.• Decompose three-dimensional shapes and find surface areas and volumes of triangular and rectangular prisms.• Identify and measure necessary attributes of shapes to use area, surface area, and volume formulas to solve problems (e.g., to find which of two gift boxes needs the most wrapping paper or has the greater volume?).

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