

A Correlation of

SCOTT FORESMAN
Investigations
IN NUMBER, DATA, AND SPACE® 2004

to the

Oregon Mathematics
Content Standards
Grades 3-5

PEARSON

M/M-156

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**Investigations in Number, Data, & Space
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Mathematics Content Standards**

State of Oregon Mathematics Content Standards	Investigations in Number, Data, & Space ©2004
<p>Grade 3 It is essential that these standards be addressed in contexts that promote problem solving, reasoning, communication, making connections, and designing and analyzing representations.</p>	
<p>3.1 Number and Operations: Develop an understanding of fractions and fraction equivalence.</p>	
<p>3.1.1 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.</p>	<p>Fair Shares Investigation 1: Sessions 1-4 Investigation 2: Sessions 1-7 Investigation 3: Sessions 1-3 Things that Come in Groups Investigation 1: Sessions 1-2</p>
<p>3.1.2 Recognize and demonstrate that sizes of fractional parts are relative to the size of the whole.</p>	<p>Fair Shares Investigation 1: Sessions 1-4 Investigation 2: Sessions 1-7 Investigation 3: Sessions 1-3 Things that Come in Groups Investigation 1: Sessions 1-2</p>
<p>3.1.3 Use fractions to represent numbers that are equal to, less than, or greater than one.</p>	<p>Fair Shares Investigation 1: Sessions 1-4 Investigation 2: Sessions 1-7 Investigation 3: Sessions 1-3</p>
<p>3.1.4 Solve problems that involve comparing and ordering fractions by using models, benchmarks (0, $\frac{1}{2}$, 1), or common numerators or denominators.</p>	<p>Fair Shares Investigation 1: Sessions 1-4 Investigation 2: Sessions 1-7 Investigation 3: Sessions 1-3</p>
<p>3.1.5 Identify equivalent fractions using models, including the number line.</p>	<p>Fair Shares Investigation 1: Sessions 1-4 Investigation 2: Sessions 1-7 Investigation 3: Sessions 1-3</p>
<p>3.1.6 Add common fractions with like denominators.</p>	<p>Fair Shares Investigation 1: Sessions 1-4 Investigation 2: Sessions 1-7 Investigation 3: Sessions 1-3</p>

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3.2 <u>Number and Operations, Algebra, and Data Analysis</u> : Develop understandings of multiplication and division, and strategies for basic multiplication facts and related division facts.	
3.2.1 Represent and apply the concept of multiplication as repeated addition.	Mathematical Thinking at Grade 3 Investigation 2: Sessions 1-7 Things that Come in Groups Investigation 1: Sessions 1-4
3.2.2 Represent and apply the concept of division as repeated subtraction and forming equal groups.	Things that Come in Groups Investigation 3: Session 5 Investigation 4: Sessions 1-4
3.2.3 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.	Things that Come in Groups Investigation 1: Sessions 1-4 Investigation 2: Sessions 1-6 Investigation 3: Sessions 1-5 Investigation 4: Sessions 1-4 Investigation 5: Sessions 1-4
3.2.4 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.	Things that Come in Groups Investigation 1: Sessions 1-4 Investigation 2: Sessions 1-6 Investigation 3: Sessions 1-5 Investigation 4: Sessions 1-4 Investigation 5: Sessions 1-4
3.2.5 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.	Things that Come in Groups Investigation 3: Session 5 Investigation 4: Sessions 1-4 Investigation 5: Session 4 Ten-Minute Math Landmarks in the Hundreds Investigation 1: Sessions 6-7
3.2.6 Represent, analyze and extend number patterns using rules that involve multiplication and/or addition (e.g., $\{3, 6, 9, 12, \dots\}$, $\{1, 2, 4, 8, \dots\}$).	Things that Come in Groups Investigation 2: Sessions 1-6 Investigation 3: Sessions 1-5 Investigation 4: Sessions Landmarks in the Hundreds Investigation 1: Sessions 1-5, 6-7 Investigation 2: Sessions 1-3, 5-6 Investigation 3: Sessions 1-3

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3.2.7 Analyze frequency tables, bar graphs, picture graphs, and line plots; and use them to solve problems involving addition, subtraction, multiplication, and division.	Mathematical Thinking at Grade 3 Investigation 3: Sessions 1-2 Things that Come in Groups Investigation 5: Sessions 1-3 From Paces to Feet Investigation 1: Sessions 1-2 Investigation 2: Session 2 Investigation 3: Sessions 2-3 Up and Down the Number Line Investigation 2: Sessions 1-4
3.3 <u>Geometry and Measurement</u> : Describe and analyze properties of two-dimensional shapes, including perimeters.	
3.3.1 Identify right angles in two-dimensional shapes and determine if angles are greater than or less than a right angle (obtuse and acute).	Flips, Turns, and Area Investigation 2: Session 1 Turtle Paths Investigation 2: Sessions 1-2, 3-4, 5-6 Investigation 3: Sessions 6-7 Exploring Solids and Boxes Investigation 1: Sessions 1 Investigation 2: Sessions 1-2
3.3.2 Identify, describe, compare, analyze, and informally classify triangles by their sides and angles.	Flips, Turns, and Area Investigation 2: Session 1 Turtle Paths Investigation 2: Sessions 3-4, 5-6 Investigation 3: Sessions 6-7 Exploring Solids and Boxes Investigation 1: Sessions 1 Investigation 2: Sessions 1-2
3.3.3 Identify, describe, compare, analyze, and classify quadrilaterals (square, rectangle, parallelogram, rhombus, and trapezoid) by their sides and angles.	Flips, Turns, and Area Investigation 1: Sessions 1-5 Investigation 2: Sessions 1-3 Turtle Paths Investigation 2: Sessions 5-6 Investigation 3: Sessions 6-7 Minute Math Exploring Solids and Boxes Investigation 1: Sessions 1 Investigation 2: Sessions 1-2

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3.3.4 Identify, describe, and compare pentagons, hexagons, and octagons by the number of sides or angles.	Flips, Turns, and Area Investigation 1: Sessions 1-3 Investigation 2: Sessions 1-5 Turtle Paths Investigation 2: Sessions 1-2, 5-6 Investigation 3: Sessions 6-7
3.3.5 Investigate and describe the results of decomposing, combining, and transforming polygons to make other polygons.	Flips, Turns, and Area Investigation 1: Sessions 1-3 Investigation 2: Sessions 1-5 Turtle Paths Investigation 2: Sessions 1-2, 5-6 Investigation 3: Sessions 6-7
3.3.6 Build, draw, and analyze two-dimensional shapes to understand attributes and properties of two-dimensional space.	Flips, Turns, and Area Investigation 1: Sessions 1-3 Investigation 2: Sessions 1-5 Turtle Paths Investigation 2: Sessions 1-2, 5-6 Investigation 3: Sessions 6-7
3.3.7 Determine an appropriate unit, tool, or strategy to find the perimeter of polygons.	Flips, Turns, and Area Investigation 1: Sessions 1 Turtle Paths Investigation 1: Sessions 1 Investigation 2: Sessions 5-6 Investigation 3: Sessions 1-2
3.3.8 Use attributes and properties of two-dimensional shapes to solve problems including applications involving parallel and perpendicular lines, congruence, symmetry, and perimeter.	Flips, Turns, and Area Investigation 1: Sessions 1-3, 4-5 Investigation 2: Sessions 1-5 Turtle Paths Investigation 2: Sessions 5-6 Investigation 3: Sessions 1-2, 6-7

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Grade 4 It is essential that these standards be addressed in contexts that promote problem solving, reasoning, communication, making connections, and designing and analyzing representations.	
4.1 <u>Number and Operations</u> : Develop an understanding of decimals, including the connections between fractions and decimals.	
4.1.1 Extend the base-ten system to read, write, and represent decimal numbers (to the hundredths) between 0 and 1, between 1 and 2, etc.	Mathematical Thinking at Grade 4 Investigation 2: Sessions 1-4 Money, Miles, and Large Data Investigation 1: Sessions 1-7 Investigation 2: Sessions 1-2, 4
4.1.2 Use models to connect and compare equivalent fractions and decimals.	Mathematical Thinking at Grade 4 Investigation 2: Sessions 1-4 Money, Miles, and Large Data Investigation 1: Sessions 1-7 Investigation 2: Sessions 1-2, 4 Different Shapes, Equal Pieces Investigation 3: Sessions 1-2
4.1.3 Determine decimal equivalents or approximations of common fractions.	Mathematical Thinking at Grade 4 Investigation 2: Sessions 1-4 Money, Miles, and Large Data Investigation 1: Sessions 1-7 Investigation 2: Sessions 1-2, 4 Different Shapes, Equal Pieces Investigation 3: Sessions 1-2
4.1.4 Compare and order fractions and decimals.	Different Shapes, Equal Pieces Investigation 3: Session 3 Three Out of Four Like Spaghetti Investigation 1: Session 3 Investigation 2: Sessions 2, 5-7
4.1.5 Estimate decimal or fractional amounts in problem solving.	Three Out of Four Like Spaghetti Investigation 1: Session 2 Investigation 2: Sessions 5-7 Different Shapes, Equal Pieces Investigation 1: Sessions 1, 2-4 Investigation 2: Sessions 1-2 Money, Miles, and Large Data Investigation 2: Sessions 1-3

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4.1.6 Represent money amounts to \$10.00 in dollars and cents, and apply to situations involving purchasing ability and making change.	Mathematical Thinking at Grade 4 Investigation 2: Sessions 1-4 Investigation 3: Sessions 4-5 Money, Miles, and Large Data Investigation 1: Sessions 1-8
4.2 <u>Number and Operations</u> and <u>Algebra</u>: Develop fluency with multiplication facts and related division facts, and with multi-digit whole number multiplication.	
4.2.1 Apply with fluency multiplication facts to 10 times 10 and related division facts.	Arrays and Shares Investigation 1: Sessions 1-3 Investigation 2: Sessions 1-8 Investigation 3: Sessions 1-5 Packages and Groups Investigation 1: Sessions 1-3 Investigation 3: Sessions 1-9
4.2.2 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).	Arrays and Shares Investigation 1: Sessions 1-3 Investigation 2: Sessions 1-8 Investigation 3: Sessions 1-5 Packages and Groups Investigation 1: Sessions 1-3 Investigation 3: Sessions 1-9
4.2.3 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.	Related Content: Arrays and Shares Investigation 1: Sessions 1-3 Investigation 2: Sessions 1-8 Investigation 3: Sessions 1-5 Packages and Groups Investigation 1: Sessions 1-3 Investigation 3: Sessions 1-9
4.2.4 Develop and use accurate, efficient, and generalizable methods to multiply multi-digit whole numbers.	Arrays and Shares Investigation 1: Sessions 1-3 Investigation 2: Sessions 1-6 Investigation 3: Session 1 Packages and Groups Investigation 1: Sessions 3-5 Investigation 2: Sessions: 1-3

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4.2.5 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.	Arrays and Shares Investigation 1: Sessions 1-3 Investigation 2: Sessions 1-6 Investigation 3: Session 1 Packages and Groups Investigation 1: Sessions 3-5 Investigation 2: Sessions: 1-3
4.3 <u>Measurement</u> : Develop an understanding of area and determine the areas of two-dimensional shapes.	
4.3.1 Recognize area as an attribute of two-dimensional regions.	Different Shapes, Equal Pieces Investigation 1: Sessions 1-4 Investigation 2: Sessions 1-4 Sunken Ships and Grid Patterns Investigation 2: Sessions 1-9
4.3.2 Determine area by finding the total number of same-sized units of area that cover a shape without gaps or overlaps.	Different Shapes, Equal Pieces Investigation 1: Sessions 1-4 Investigation 2: Sessions 1-4 Sunken Ships and Grid Patterns Investigation 2: Sessions 1-9
4.3.3 Recognize a square that is one unit on a side as the standard unit for measuring area.	Related Content: Different Shapes, Equal Pieces Investigation 1: Sessions 1-4 Investigation 2: Sessions 1-4 Sunken Ships and Grid Patterns Investigation 2: Sessions 1-9
4.3.4 Determine the appropriate units, strategies, and tools to solving problems that involve estimating or measuring area.	Different Shapes, Equal Pieces Investigation 1: Sessions 1-4 Investigation 2: Sessions 1-4 Sunken Ships and Grid Patterns Investigation 2: Sessions 1-9
4.3.5 Connect area measure to the area model used to represent multiplication and use this to justify the formula for area of a rectangle.	Related Content: Different Shapes, Equal Pieces Investigation 1: Sessions 1-4 Investigation 2: Sessions 1-4 Sunken Ships and Grid Patterns Investigation 2: Sessions 1-9
4.3.6 Find the areas of complex shapes that can be subdivided into rectangles.	Different Shapes, Equal Pieces Investigation 1: Sessions 1-4 Investigation 2: Sessions 1-4 Sunken Ships and Grid Patterns Investigation 2: Sessions 1-9

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4.3.7 Solve problems involving perimeters and areas of rectangles and squares.	Different Shapes, Equal Pieces Investigation 1: Sessions 1-4 Investigation 2: Sessions 1-4 Sunken Ships and Grid Patterns Investigation 2: Sessions 1-9
4.3.8 Recognize that rectangles with the same area can have different perimeters and that rectangles with the same perimeter can have different areas.	Related Content: Different Shapes, Equal Pieces Investigation 1: Sessions 1-4 Investigation 2: Sessions 1-4 Sunken Ships and Grid Patterns Investigation 2: Sessions 1-9

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Grade 5 It is essential that these standards be addressed in contexts that promote problem solving, reasoning, communication, making connections, and designing and analyzing representations.	
5.1 <u>Number and Operations</u> and <u>Data Analysis</u> : Develop an understanding of and fluency with addition and subtraction of fractions and decimals.	
5.1.1 Use fraction models to represent the addition and subtraction of fractions with unlike denominators.	Name That Portion Investigation 1: Session 7 Investigation 2: Sessions 1-9 Investigation 3: Sessions 1-8 Investigation 4: Sessions 1-7
5.1.2 Use decimal models, place value, and number properties to add and subtract decimals (to the thousandths).	Name That Portion Investigation 1: Session 1 Investigation 3: Sessions 1-8
5.1.3 Select and use appropriate strategies to estimate fraction and decimal sums and differences.	Related Content: Name That Portion Investigation 2: Sessions 1-9 Investigation 3: Sessions 1-8
5.1.4 Develop fluency with efficient procedures for adding and subtracting fractions and decimals and justify why the procedures work.	Name That Portion Investigation 2: Sessions 1-9 Investigation 3: Sessions 1-8
5.1.5 Solve problems involving the addition and subtraction of fractions and decimals.	Name That Portion Investigation 2: Sessions 1-9 Investigation 3: Sessions 1-8 Data, Kids, Cats, and Ads Investigation 1: Sessions 1-4 Investigation 2: Sessions 1-3 Investigation 3: Sessions 1-3 Investigation 4: Sessions 3-5
5.1.6 Use ordered pairs on coordinate graphs to specify locations and describe paths.	Patterns of Change Investigation 1: Sessions 1-4 Investigation 2: Sessions 3-4 Investigation 3: Sessions 2-3, 5-6
5.1.7 Construct and analyze double bar, line, and circle graphs to solve problems involving fractions and decimals.	Related Content: Patterns of Change Investigation 1: Sessions 1-4 Investigation 2: Sessions 1-5 Investigation 3: Sessions 1-6 Data, Kids, Cats, and Ads Investigation 1: Session 1 Investigation 2: Sessions 1-2

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5.2 <u>Number and Operations and Algebra</u> : Develop an understanding of and fluency with division of whole numbers.	
5.2.1 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.	Building on Numbers You Know Investigation 2: Sessions 1-7 Investigation 3: Sessions 1-10 Investigation 5: Sessions 3-7
5.2.2 Apply concepts of place value and the properties of operations to solve problems involving division.	Building on Numbers You Know Investigation 2: Sessions 1-7 Investigation 3: Sessions 1-10 Investigation 5: Sessions 3-7
5.2.3 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.	Related Content: Building on Numbers You Know Investigation 2: Sessions 1-7 Investigation 3: Sessions 1-10 Investigation 5: Sessions 3-7
5.2.4 Develop and use accurate, efficient, and generalizable methods to find quotients for multi-digit division problems.	Building on Numbers You Know Investigation 2: Sessions 1-7 Investigation 3: Sessions 1-10 Investigation 5: Sessions 3-7
5.2.5 Develop fluency with efficient procedures for dividing whole numbers and justify why the procedures work on the basis of place value and number properties.	Building on Numbers You Know Investigation 2: Sessions 1-7 Investigation 3: Sessions 1-10 Investigation 5: Sessions 3-7
5.2.6 Determine the most appropriate form of the quotient and interpret the remainder in a problem situation.	Building on Numbers You Know Investigation 2: Sessions 1-7 Investigation 3: Sessions 1-10 Investigation 5: Sessions 3-7
5.3 <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.	
5.3.1 Identify and classify triangles by their angles (acute, right, obtuse) and sides (scalene, isosceles, equilateral).	Picturing Polygons Investigation 1: Session 1 Investigation 2: Sessions 1-3, 4-5, 6-7, 8-9 Investigation 3: Sessions 1-2
5.3.2 Find and justify relationships among the formulas for the areas of triangles and parallelograms.	Related Content: Picturing Polygons Investigation 1: Session 2 Containers and Cubes Investigation 1: Sessions 1-4

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5.3.3 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.	Containers and Cubes Investigation 1: Sessions 1-4 Investigation 2: Sessions 1-5 Investigation 3: Sessions 1-4 Investigation 4: Sessions 1-9
5.3.4 Recognize volume as an attribute of three-dimensional space.	Containers and Cubes Investigation 1: Sessions 1-4 Investigation 2: Sessions 1-5 Investigation 3: Sessions 1-4 Investigation 4: Sessions 1-9
5.3.5 Determine volume by finding the total number of same-sized units of volume that fill a three-dimensional shape without gaps or overlaps.	Containers and Cubes Investigation 1: Sessions 1-4 Investigation 2: Sessions 1-5 Investigation 3: Sessions 1-4 Investigation 4: Sessions 1-9
5.3.6 Recognize a cube that is one unit on an edge as the standard unit for measuring volume.	Containers and Cubes Investigation 1: Sessions 1-4 Investigation 2: Sessions 1-5 Investigation 3: Sessions 1-4 Investigation 4: Sessions 1-9
5.3.7 Determine the appropriate units, strategies, and tools for solving problems that involve estimating or measuring volume.	Containers and Cubes Investigation 1: Sessions 1-4 Investigation 2: Sessions 1-5 Investigation 3: Sessions 1-4 Investigation 4: Sessions 1-9
5.3.8 Decompose three-dimensional shapes and find surface areas and volumes of triangular and rectangular prisms.	Containers and Cubes Investigation 1: Sessions 1-4 Investigation 2: Sessions 1-5 Investigation 3: Sessions 1-4 Investigation 4: Sessions 1-9
5.3.9 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?).	Related Content: Containers and Cubes Investigation 1: Sessions 1-4 Investigation 2: Sessions 1-5 Investigation 3: Sessions 1-4 Investigation 4: Sessions 1-9