

Danvers Public Schools
Pacing Guide 2009 – 2010
2nd Edition of Investigations in Number, Data, and Space
Grade 3

Unit Name	Essential Lessons	Mathematical Emphasis	Vocabulary	Assessments
<p>Unit 1: Trading Stickers Combining Coins (Addition, Subtraction and the Number System 1)</p> <p>Standards: 3.N.1 3.N.2* 3.N.8 3.N.11** 3.N.12 3.M.2 3.P.3</p>	<p>Investigation 1</p> <p>Investigation 2</p> <p>Supplemental Activity 1 (Fact Families)</p> <p><u>Ten Minute Math</u></p> <ul style="list-style-type: none"> • Practicing Place Value • More or less? 	<p>3.N.1 Exhibit an understanding of the values of the digits in the base ten number system by reading, modeling, writing, comparing, and ordering whole numbers through 9,999.</p> <p>3.N.2 Represent, order, and compare numbers through 9,999. *Represent numbers using expanded notation (e.g., $853 = 8 \times 100 + 5 \times 10 + 3$), and written out in words (e.g., eight hundred fifty-three).</p> <p>3.N.8 Select and use appropriate operations (addition, subtraction, multiplication, and division) to solve problems, including those involving money.</p> <p>3.N.11**Round whole numbers through 1,000 to the nearest 10, 100, and 1,000.</p> <p>3.N.12 Understand and use the strategies of rounding and regrouping to estimate quantities, measures, and the results of whole-number computations (addition, subtraction, and multiplication) up to two-digit whole numbers and amounts of money to \$100, and to judge the reasonableness of the answer.</p>	<p>Addend Breaking apart numbers Colder Warmer Compute Count Difference Digit Estimate Equation Equivalent Fact Family Exactly Number Sentence Ones Tens Pennies Dimes Dollars Place value Sum</p>	<ul style="list-style-type: none"> • Session 1.6: <i>Adding and subtraction 10's</i> • Session 1.9: <i>Hundreds, Tens, and Ones</i> • Session 2.5: <i>Addition Combinations</i> <p>Due October 7:</p> <ul style="list-style-type: none"> • Session 2.8: <i>End-of-unit assessment</i> <p>Integrate these grade 3 MCAS questions into unit:</p> <ul style="list-style-type: none"> • 2006: # 2, # 6, # 13 • 2007: # 2, # 3, #16, # 24

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| | | <p>3.M.2 Carry out simple unit conversions within a system of measurement, e.g., hours to minutes, cents to dollars, yards to feet or inches, etc.</p> <p>3.P.3 Determine the value of a variable (through 10) in simple equations involving addition, subtraction, or multiplication, e.g., $2 + \square = 9$; $5 \times$ [insert upside down capital delta here] = 35.</p> | | |
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Unit Name	Essential Lessons	Mathematical Emphasis	Vocabulary	Assessments
<p>Unit 2: Survey's and Line Plots (Data Analysis)</p> <p>Standards: 3.D.1 3.D.2* 3.D.3** 3.D.4*** 3.M.1 3.M.2 3.M.5</p>	<p>Investigation 1 Investigation 2</p> <p>Activities: Pictographs</p> <p>Investigation 3</p> <p>After Session 3.5 Activity Master 12 Combinations</p> <p><u>Ten Minute Math</u></p> <ul style="list-style-type: none"> • More or less? • Guess My Rule • Today's Number 	<p>3.D.1 Collect and organize data using observations, measurements, surveys, or experiments, and identify appropriate ways to display the data.</p> <p>3.D.2 *Match representations of a data set in the forms of tables, line plots, pictographs, tallies, or bar graphs with the actual data set.</p> <p>3.D.3 **Construct and draw conclusions from representations of data sets in the forms of tables, line plots, pictographs, tallies, and bar graphs. (make sure to explore all forms of representations)</p> <p>3.D.4 ***List and count the number of possible combinations of objects from two sets, e.g., how many different outfits can one make from a set of two sweaters and a set of three skirts?</p> <p>3.M.1 Demonstrate an understanding of the attributes length, area, and weight, and select the appropriate type of unit for measuring each attribute using both the U.S. Customary (English) and metric systems.</p>	<p><i>Almost all</i> <i>Very few</i> <i>More than half</i></p> <p>Bar graph Below Closest Combinations Compare, comparison Data Exactly Key Line plot Shape of data Table Tallies Ordered Pictograph Scale</p> <p>Metric system U.S. standard system</p> <p><i>For teachers: Categorical data</i></p>	<ul style="list-style-type: none"> • Session 1.5: <i>Interpreting bar graphs and developing a survey question</i> • Session 2.5: <i>Data Projects</i> • Session 2.6: <i>How many people live in your home?</i> <p>Due: November 6</p> <ul style="list-style-type: none"> • Session 3.5: <i>End-of-unit assessment</i> <p>Integrate these MCAS grade 3 MCAS questions into unit:</p> <ul style="list-style-type: none"> • 2006: # 3, # 10, #14, # 21, # 24, # 28, # 29, # 35 • 2007: # 6, # 12, # 15, # 17, # 21, # 30, # 27

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		<p>3.M.2 Carry out simple unit conversions within a system of measurement, e.g., hours to minutes, cents to dollars, yards to feet or inches, etc.</p> <p>3.M.5 Identify and use appropriate metric and U.S. Customary (English) units and tools (e.g., ruler, scale, thermometer, clock) to estimate, measure, and solve problems involving length, area, weight, temperature, and time.</p>	<p><i>Numerical data</i> In Inv.3: <i>Inches</i> <i>Feet</i> <i>Yards</i></p>	
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Unit Name	Essential Lessons	Mathematical Emphasis	Vocabulary	Assessments
<p>Unit 3: Collections and Travel Stories (Addition, Subtraction, and the Number System 2)</p> <p>Standards 3.N.1 3.N.2* 3.N.8 3.M.2 3.M.3</p>	<p>Investigation 1</p> <p>Investigation 2</p> <p>Investigation 3</p> <p>Investigation 4</p> <p><u>Ten Minute Math</u></p> <ul style="list-style-type: none"> • Today’s Number • What Time Is It? <p>(Telling&Elapsed Time)</p>	<p>3.N.1 Exhibit an understanding of the values of the digits in the base ten number system by reading, modeling, writing, comparing, and ordering whole numbers through 9,999.</p> <p>3.N.2 Represent, order, and compare numbers through 9,999. *Represent numbers using expanded notation (e.g., $853 = 8 \times 100 + 5 \times 10 + 3$), and written out in words (e.g., eight hundred fifty-three).</p> <p>3.N.8 Select and use appropriate operations (addition, subtraction, multiplication, and division) to solve problems, including those involving money.</p> <p>3.M.2 Carry out simple unit conversions within a system of measurement, e.g., hours to minutes, cents to dollars, yards to feet or inches, etc.</p> <p>3.M.3 Identify time to the minute on analog and digital clocks using a.m. and p.m. Compute elapsed time, using a clock for times less than one hour (i.e., minutes since), and using a calendar (e.g., days since).</p>	<p>Closest Digit Equation Equivalent</p> <p>Increasing Decreasing</p> <p>Place value Sum Difference</p> <p>Time Analog clock Digital clock Elapsed time Seconds, minutes, hours, days</p> <p>Hundreds Thousands Landmark nos. Number sentence Represent O’clock (etc)</p>	<ul style="list-style-type: none"> • Session 2.3: <i>Numbers on the 1,000 chart</i> • Session 2.7: <i>Addition Strategies</i> • Session 3.6: <i>How Far Did They Travel?</i> <p>Due: December 23</p> <ul style="list-style-type: none"> • Session 4.6: <i>End-of-Unit Assessment</i> <p>Integrate these grade 3 MCAS questions into unit:</p> <ul style="list-style-type: none"> • 2006: #8, # 9, #15, #18, #20 • 2007: # 4, # 23

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Unit Name	Essential Lessons	Mathematical Emphasis	Vocabulary	Assessments
<p>Unit 4: Perimeter, Angles, and Area (2D Geometry and Measurement)</p> <p>Standards: 3.G.1 3.G.2 3.G.3 3.G.4* 3.G.6** 3.M.1 3.M.4 3.M.5</p> <p>Look for opportunity to use the ruler (measurement tool) to reinforce the (number line) model for fractions on the number line.</p>	<p>Investigation 1</p> <p>Investigation 2</p> <p>Supplemental Activity Master 18 (Pairs of Lines)</p> <p>Investigation 3</p> <p>Session 3.6 Supplemental Activity Master 24 (Lines of Symmetry)</p> <p>After Session 3.6 Supplemental Activity Master 27 (Coordinate Graphing)</p> <p><u>Ten Minute Math</u></p> <ul style="list-style-type: none"> Practicing Place Value Quick Images 	<p>3.G.1 Compare and analyze attributes and other features (e.g., number of sides, corners, diagonals, and lines of symmetry) of two-dimensional geometric shapes.</p> <p>3.G.2 Describe, model, draw, compare, and classify two-dimensional shapes, e.g., circles, triangles, and quadrilaterals. Identify and describe simple three-dimensional shapes, e.g., cubes, spheres, and pyramids.</p> <p>3.G.3 Identify angles as right angles, less than a right angle, and greater than a right angle.</p> <p>3.G.4 *Identify and draw parallel lines, perpendicular lines, and other intersecting lines.</p> <p>3.G.6 **Identify and draw lines of symmetry in two-dimensional shapes.</p> <p>3.M.1 Demonstrate an understanding of the attributes length, area, and weight, and select the appropriate type of unit for measuring each attribute using both the U.S. Customary (English) and metric systems.</p>	<p>Angle Area Axis Congruent Coordinate grid Degree Flip (reflect) Foot (feet) Horizontal Inches Measure Ordered Pair Parallelogram Perimeter Point Quadrilateral Reflection Relationship between Right angle Ruler Side Slide Square Feet Turn (rotate) Vertex Vertical Vertices Wide Width</p>	<ul style="list-style-type: none"> Session 1.3: <i>Measuring perimeter</i> Session 2.6: <i>Make a shape</i> <p>Due January 28:</p> <ul style="list-style-type: none"> Session 3.6: <i>End-of-unit assessment</i> <p>Integrate these grade 3 MCAS questions into unit:</p> <ul style="list-style-type: none"> 2006: # 5, #7, #16, # 17, #25. #31, #34 2007: #9, #28, # 35

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| | | <p>3.M.4 Estimate and find area and perimeter of a rectangle, using diagrams and grids, or by measuring.</p> <p>3.M.5 Identify and use appropriate metric and U.S. Customary (English) units and tools (e.g., ruler, scale, thermometer, clock) to estimate, measure, and solve problems involving length, area, weight, temperature, and time.</p> | | |
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Unit Name	Essential Lessons	Mathematical Emphasis	Vocabulary	Assessments
Unit 5: Equal Groups (Multiplication & Division) Standards: 3.N.5 3.N.6 3.N.7 3.N.8 3.N.9 3.N.10* 3.P.3 3.P.4 3.M.5	Investigation 1 Investigation 2 Investigation 3 After Investigation 3.5 Toss and Talk Activities (Combinations to 10X10) Investigation 4 <u>Ten Minute Math</u> <ul style="list-style-type: none"> • What Time Is It? • Counting Around the Class 	3.N.5 Recognize classes to which a number may belong (odd numbers, even numbers, and multiples of numbers through 10). Identify the numbers in those classes, e.g., the class of multiples of 7 between 1 and 29 consists of 7, 14, 21, 28. 3.N.6 Select, use, and explain various meanings and models of multiplication (through 10 x 10). Relate multiplication problems to corresponding division problems, e.g., draw a model to represent 5×6 and $30 \div 6$. 3.N.7 Use the commutative (order) and identity properties of addition and multiplication on whole numbers in computations and problem situations, e.g., $3 + 4 + 7 = 3 + 7 + 4 = 10 + 4$. 3.N.8 Select and use appropriate operations (addition, subtraction, multiplication, and division) to solve problems, including those involving money. 3.N.9 Know multiplication facts through 10 x 10 and related division facts, e.g., $9 \times 8 = 72$ and $72 \div 9 = 8$. Use these facts to solve related problems, e.g., 3 x 5 is related to 3 x 50.	Array Compute Dimension Divide Division Doubling Halving Equal groups Equation Even Number Factor pair Multiply Skip count Multiplication combinations Multiples Prime number Product Square number	<ul style="list-style-type: none"> • Session 1.4: <i>Solving Problems About Our Picture</i> • Session 2.5: <i>Counting Around the Class</i> <p>Due March 11:</p> <ul style="list-style-type: none"> • Session 4.7: <i>End-of- unit Assessment</i> <p>Integrate these grade 3 MCAS questions into unit:</p> <ul style="list-style-type: none"> • 2006: # 11, # 23, # 26, # 27, # 32 • 2007: # 11, # 18, # 22, # 25, # 26, # 32, # 34

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| | | <p>3.N.10 Add and subtract (up to four-digit numbers) and *multiply (up to two-digit numbers by a one-digit number) accurately and efficiently.</p> <p>3.P.3 Determine the value of a variable (through 10) in simple equations involving addition, subtraction, or multiplication, e.g., $2 + \square = 9$; $5 \times$ [insert upside down capital delta here] = 35.</p> <p>3.P.4 Write number sentences using +, -, \times, \div, <, =, and/or > to represent mathematical relationships in everyday situations.</p> <p>3.M.5 Identify and use appropriate metric and U.S. Customary (English) units and tools (e.g., ruler, scale, thermometer, clock) to estimate, measure, and solve problems involving length, area, weight, temperature, and time.</p> | | |
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<p>Unit 6: Stories, Tables, and Graphs (Patterns, Functions, and Change)</p> <p>Standards: 3.P.1 3.G.5* 3.M.5</p>	<p>Investigation 1 Investigation 2 Investigation 3</p> <p><u>Ten Minute Math</u></p> <ul style="list-style-type: none"> • Today’s Number • Guess My Rule • What’s the Temperature? 	<p>3.P.1 Create, describe, extend, and explain symbolic (geometric) patterns and addition and subtraction patterns, e.g., 2, 6, 10, ...; and 50, 45, 40....</p> <p>3.G.5 *Using ordered pairs of whole numbers and/or letters, locate and identify points on a grid.</p> <p>3.M.5 Identify and use appropriate metric and U.S. Customary (English) units and tools (e.g., ruler, scale, thermometer, clock) to estimate, measure, and solve problems involving length, area, weight, temperature, and time.</p>	<p>Beginning Change Column Constant Constant rate of change Degree(s) Fahrenheit Horizontal axis Graph(s) Increasing Decreasing Negative Points Repeating pattern Row Scale Table Thermometer Unit Vertical axis</p>	<ul style="list-style-type: none"> • Session 1.5: <i>A Summer Day in Cairo, Egypt</i> <p>Due April 6:</p> <ul style="list-style-type: none"> • Session 3.7: <i>End-of-unit assessment</i> <p>Integrate these grade 3 MCAS questions into unit:</p> <ul style="list-style-type: none"> • 2006: # 1, # 22, # 30, #33 • 2007: # 1, # 7

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Unit Name	Essential Lessons	Mathematical Emphasis	Vocabulary	Assessments
<p>Unit 7: Finding Fair Shares (Fractions and Decimals)</p> <p>Standards: 3.N.3 3.N.4* 3.N.13 3.G.7</p> <p>During this chapter look for opportunities to represent common (see 3.N.4) fractions on a number line.</p> <p>Some teachers effectively use string and clothespins to “pin” $\frac{1}{2}$, $\frac{1}{4}$ in their appropriate places between 0 and 1.</p>	<p>Investigation 1 Investigation 2 Investigation 3</p> <p>Supplemental Activity Master 41 (Comparing and Ordering Fractions)</p> <p>Fractions on a number line (ruler)</p> <p><u>Ten Minute Math</u></p> <ul style="list-style-type: none"> • Today’s Number • What Time Is It? 	<p>3.N.3 Identify and represent fractions (between 0 and 1 with denominators through 10) as parts of unit wholes and parts of groups. Model and represent a mixed number (with denominator 2, 3, or 4) as a whole number and a fraction, e.g., $1\frac{2}{3}$, $3\frac{1}{2}$.</p> <p>3.N.4 *Locate on the number line and compare fractions (between 0 and 1 with denominators 2, 3, or 4, e.g., $\frac{2}{3}$).</p> <p>3.N.13 Use concrete objects and visual models to add and subtract (only when the answer is greater than or equal to zero) common fractions (halves, thirds, fourths, sixths, and eighths) with like denominators.</p> <p>3.G.7 Predict and explain the results of taking apart and combining 2-dimensional shapes.</p>	<p>Combination Whole/part Fraction Equivalent fractions Greater, greatest Greater than Less than Decimal Decimal point Denominator Numerator Mixed number More than Simplify Total Value</p>	<ul style="list-style-type: none"> • Session 1.6: <i>Sharing Four Brownies</i> • Session 2.3: <i>Many Ways to Make a Share</i> <p>Due May 5:</p> <ul style="list-style-type: none"> • Session 3.4: <i>End-of-unit Assessment</i> <p>Integrate these MCAS questions into unit:</p> <ul style="list-style-type: none"> • 2006: # 4, # 19 • 2007: #13, # 20, # 33

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<p>Unit 8: How Many Hundreds? How Many Miles? (Addition, Subtraction, and the Number System)</p> <p>Standards: 3.N.8 3.N.9 3.N.10* 3.N.12 3.P.2**</p>	<p>Investigation 1 Investigation 2 Investigation 3</p> <p>Supplemental Activity Master 55 (Adding 4-Digit Nos.)</p> <p>Supplemental Activity Master 56 & Pages 61 + 37 (Subtracting 4-Digit Nos.)</p> <p><u>Ten Minute Math</u></p> <ul style="list-style-type: none"> • Counting Around the Class • Guess My Rule 	<p>3.N.8 Select and use appropriate operations (addition, subtraction, multiplication, and division) to solve problems, including those involving money.</p> <p>3.N.9 Know multiplication facts through 10 x 10 and related division facts, e.g., $9 \times 8 = 72$ and $72 \div 9 = 8$. Use these facts to solve related problems, e.g., 3 x 5 is related to 3 x 50.</p> <p>3.N.10*Add and subtract (up to four-digit numbers) and multiply (up to two-digit numbers by a one-digit number) accurately and efficiently.</p> <p>3.N.12 Understand and use the strategies of rounding and regrouping to estimate quantities, measures, and the results of whole-number computations (addition, subtraction, and multiplication) up to two-digit whole numbers and amounts of money to \$100, and to judge the reasonableness of the answer.</p> <p>3.P.2 **Determine which symbol (<, >, or =) is appropriate for a given <u>number sentence</u>, e.g., $7 \times 8 \text{ ? } 49 + 6$.</p>	<p>Addend(s) Adding up Addition combinations Cents Changing Combining Dollars Difference Equation Equivalent Estimate Expression Number line Number sentence Subtracting back Sum Total</p> <p><u>Mathematical Notation</u> Inequality and equality symbols (<, >, and =)</p>	<ul style="list-style-type: none"> • Session 1.4: <i>Multiplication Combinations</i> • Session 1.5: <i>Operations with Multiples of 10 and 100</i> • Session 2.5: <i>Addition Strategies</i> • Session 3.3: <i>Subtraction Strategies</i> <p>Due June 4:</p> <ul style="list-style-type: none"> • Session 3.9: <i>End-of-unit assessment</i> <p>Integrate these grade 3 MCAS questions into unit:</p> <ul style="list-style-type: none"> • 2006: # 9 • 2007: # 14, # 10, # 19, # 31

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<p>Unit 9: Solids and Boxes (3-D Geometry and Measurement)</p> <p>Standards: 3.G.2</p>	<p>Investigation 1</p> <p>Investigation 2</p> <p>Investigation 3</p> <p><u>Ten Minute Math</u></p> <ul style="list-style-type: none"> • Practicing Place Value • More or Less? • Quick Images: 3-D • Guess my shape 	<p>3.G.2 Describe, model, draw, compare, and classify two-dimensional shapes, e.g., circles, triangles, and quadrilaterals. Identify and describe simple three-dimensional shapes, e.g., cubes, spheres, and pyramids.</p>	<p>Congruent (layers) Cubes Decomposing Recombining Sides Faces Edges Vertex Vertices Net Open boxes Polyhedra Prism(s) Pyramid(s) Rectangular prism Shape Size Volume</p>	<ul style="list-style-type: none"> • Session 1.4: <i>Building Polyhedra from Descriptions</i> • Session 3.3: <i>Patterns from the Bottom Up</i> <p>Due June 23:</p> <ul style="list-style-type: none"> • Session 3.5: <i>End-of-unit assessment</i> <p>Integrate these grade 3 MCAS questions into unit:</p> <ul style="list-style-type: none"> • 2007: # 29