

A Correlation of

SCOTT FORESMAN
Investigations
IN NUMBER, DATA, AND SPACE®
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to the

**National Council of Teaching of
Mathematics
NCTM**

Focal Points

Grades K - 5



N/M - 527

Introduction

The Correlation of *Scott Foresman Investigations in Number, Data, and Space* ©2008 to the National Council of Teachers of Mathematics (NCTM) Curriculum Focal Points ©2006 demonstrates the alignment of content presented in *Investigations* ©2008 to the NCTM Focal Points and the connections to the Focal Points for each grade Kindergarten through grade 5. To facilitate ease of correlation, bullet points have been created from the paragraphs in the NCTM document.

Investigations in Number, Data, and Space © 2008 is a Kindergarten through Grade 5 mathematics curriculum designed to engage students in making sense of mathematical ideas. Six major goals guided the development of the Investigation in Number, Data, and Space © curriculum. The curriculum is designed to:

- Support students to make sense of mathematics and learn that they can be mathematical thinkers
- Focus on computational fluency with whole number as a major goal of the elementary grades
- Provide substantive work in important areas of mathematics—rational numbers, geometry, measurement, data, and early algebra—and connections among them
- Emphasize reasoning about mathematical ideas
- Communicate mathematics content and pedagogy to teachers
- Engage the range of learners in understanding mathematics.

Underlying these goals are three guiding principals that are touchstones for the *Investigations* ©2008 team as they approach both students and teachers as agents of their own learning:

1. Students have mathematical ideas.
2. Teachers are engage in ongoing learning about mathematics content, pedagogy and student learning.
3. Teachers collaborate with the students and curriculum materials to create the curriculum as enacted in the classroom.

Investigations © 2008 is based on experience from research and practice. Based on that extensive classroom testing, the curriculum takes seriously the time student need to develop a strong conceptual foundation and skills based on that foundation. Each curriculum unit focused on an area of content in depth, providing time for students to develop and practice ideas a variety of activities and contexts that build on each other. An additional set of online lessons have been developed to address specific state standards. Daily guidelines for time spent on class sessions, Classroom Routines (K-3), and Ten-Minute Math (3-5) reflect the commitment to devoting adequate time to mathematics each school day.

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**Investigations in Number, Data, and Space © 2008
to the
NCTM Curriculum Focal Points**

Kindergarten

Number and Operation:

Children use numbers to represent quantities and solve problems

- **Counting objects**

Unit 1: Who Is in School Today? pp. 58-60, Activity 1, pp. 60-62 Math Workshop 2, pp. 87-88, Discussion 3

Unit 2: Counting and Comparing pp. 33-34, Activity 1, pp. 40-41, Activity 1, p. 44, p.45 Activity 2, pp. 53-54 Session 1.6 Discussion 2, pp. 56-58, Activity 1, pp. 59-60 Discussion 3, pp. 63-64, Discussion 3, pp. 66-67, Activity 1, pp. 92-93, Discussion 2, pp. 95-96, Activity 1

Unit 4: Measuring and Counting pp. 66-67 Activity 1 & 2, pp. 72-73 Activity 1, pp. 81-82 Activity 1, pp. 91-93 Activity 1 & 2, p. 94 Discussion 3

Unit 7: Sorting and Surveys pp. 32-34 Activity 1 & 2

- **Creating a set**

Unit 1: Who Is in School Today? pp. 101-102, Activity 1

Unit 2: Counting and Comparing p. 40-41 Activity 1 & 2, pp. 56-57 Activity 1

- **Comparing and ordering sets and numerals (cardinal & ordinal)**

Unit 2: Counting and Comparing pp. 101-103 Activity 1 & 2, p.103 Discussion 3, pp. 108-109 Discussion 3, pp. 111-113 Activity 1 & 2, p. 139 Activity 1

- **Modeling simple joining and separating situations with objects**

Unit 4: Measuring and Counting p. 77 Activity 1, p. 101 Activity 1, p. 105 Activity 1, p. 144 Activity 1, pp. 155-156 Activity 2, pp. 158-159 Activity 1

Unit 6: How Many Do You Have? p. 101 Activity 1, pp. 103-104 Activity 3, p. 116 Activity 1

- **Using strategies for answering questions about numbers & sets**

Unit 2: Counting and Comparing pp. 72-73 1.10 Discussion 2

Unit 4: Measuring and Counting pp. 96-98 Activity 1, pp. 111-112 Discussion 2

Unit 6: How Many Do You Have? pp. 111-112 Activity 1, pp. 113-114 Discussion 3, pp. 126-127 Discussion 3, p. 139 Activity 1, pp. 141-142 Discussion 3

Unit 7: Sorting and Surveys pp. 115-116 Activity 1

Geometry:

Children interpret and describe the physical world with geometric ideas and vocabulary

- **Identify, name, and describe shapes (squares, triangles, circles, rectangles, regular hexagons, isosceles trapezoids)**

Unit 5: Make a Shape, Build a Block pp. 30-32 Discussion 3, pp. 37-38 Discussion 3, pp. 70-72 Activity 1 & 2

- **Identify, name, and describe three-dimensional shapes (spheres, cubes, cylinders)**

Unit 5: Make a Shape, Build a Block pp. 93-94 Activity 1 & 2, pp. 100-103 Discussion 3, pp. 114-115 Discussion 3, pp. 117-118 Activity 1

- **Use basic shapes and spatial reasoning to model and construct objects in the environment**

Unit 5: Make a Shape, Build a Block pp. 24-27 Activity 2 & 3, pp. 41-42 Activity 2, pp. 45-46 Activity 1 & 2, pp. 59-60 Activity 1, p. 105 Activity 1

Measurement:

Children solve problems using measurable attributes by comparing and ordering objects

- **Compare length and weight of objects**

Unit 2: Counting and Comparing pp. 83-84, Activity 1, pp. 84-85 Activity 2, pp. 89-90, Discussion 2, p. 106 Activity 1

Unit 4: Measuring and Counting pp. 29-30 Activity 1 & 2, p. 31 Discussion 3, pp. 39-40 Activity 1, pp. 49-50 Activity 1

Unit 6: How Many Do You Have? pp. 80-81 Activity 1 & 2

- **Order objects by length and weight**

Unit 2: Counting and Comparing pp. 129-130 Activity 1, pp. 134-135 Activity 1, p. 136 Math Workshop 2

Unit 4: Measuring and Counting pp. 46-47 Discussion 2

Kindergarten Connections to the Focal Points

Data Analysis:

Children sort objects by one or more attributes to collect data and solve problems

Unit 1: Who Is in School Today? pp. 67-69, Discussion 3, pp. 71-72, Activity 1, pp. 77-78, Activity 1, pp. 95, Activity 1, p. 97-99 Discussion 3, pp. 107, Activity 1, p. 111, Activity 1, pp. 113-114 Activity 3, p. 116, Activity 1, pp. 117-118 Discussion 3, p. 121, Activity 1

Unit 7: Sorting and Surveys pp. 63-65 Activity 1, pp. 76-77 Activity 1, pp. 78-79 Discussion 3, pp. 89-90 Activity 2, pp. 92-95 Discussion 3, pp. 109-110 Discussion 2

Geometry:

Children integrate understandings of geometry, measurement, and number

Unit 2: Counting and Comparing pp. 95-96 Activity 1, pp. 112-113 Activity 2, pp.122-123 Activity 1

Algebra:

Children identify, copy, and extend simple number, sequential, and growing patterns

Unit 3: What Comes Next? pp. 36-37 Discussion 1, pp. 46-47 Activity 2, pp. 59-60 Activity 2, pp. 66-67 Activity 1, pp. 77-78 Activity 2 & 3, pp. 81-82 Activity 1, pp.100-101 Activity 1, pp. 122-123 Discussion 3, pp. 135-136 Activity 1, p. 137 Discussion 3

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First Grade

Number, Operations, and Algebra:

Children develop strategies for adding and subtracting whole numbers

- **Use a variety of models (discreet objects, connecting cubes, number lines) to show part-whole, take away, and comparing to develop an understanding of addition and subtraction and to use strategies to solve problems**

Unit 1: How Many of Each? p. 44 Activity 1

Unit 3: Solving Story Problems pp. 30-32 Activity 2, pp. 98-99
Discussion 3

Unit 8: Twos, Fives, and Tens pp. 122-125 Discussion 2

- **Understand the connection between counting and addition and subtraction operations (such as counting on)**

Unit 1: How Many of Each? pp. 101-102 Activity 1, pp. 129-130
Discussion 3

Unit 3: Solving Story Problems pp. 58-60 Math Workshop 2, pp. 128-129 Assessment Activity 1

- **Use commutative and associative properties for addition**

Unit 8: Twos, Fives, and Tens pp. 61-62 Discussion 1

- **Use strategies (such as making tens) to solve basic addition and subtraction facts**

Unit 1: How Many of Each? pp. 155-158 Activity 1 & 2, pp. 158-160
Discussion 3

Unit 3: Solving Story Problems pp. 46-48 Discussion 2

Unit 6: Number Games and Crayon Puzzles pp. 27-28 Activity 1, pp. 36-37 Activity 2, pp. 56-57 Activity 1, pp. 58-60 Activity 2 & Discussion 3

- **Compare solution strategies to relate addition and subtraction as inverse operations**

Unit 6: Number Games and Crayon Puzzles pp. 103-104 Activity 1, p. 108 Activity 1, pp. 109-110 Math Workshop 2, pp. 121-124 Discussion 1

Number and Operations:

Children compare and order whole numbers (0-100) to develop understanding and solve problems

- **Think of whole numbers (10-100) as groups of tens and ones**

Unit 8: Twos, Fives, and Tens, pp. 112-113 Activity 2, pp. 118-119 Discussion 2

- **Understand sequential order of counting numbers, their relative magnitude, and represent them on a number line**

Unit 1: How Many of Each? p. 61 Activity 1, pp. 62-63 Math Workshop 2B, pp. 89-90 Activity 1

Unit 3: Solving Story Problems pp. 151-152 Discussion 2, pp. 158-159 Activity 1, p. 162 Activity 1

Geometry:

Children compose (put together) and decompose (take apart) plane and solid figures to understand part-whole relationships and properties of shapes

- **Combine figures to see different perspectives and orientations**

Unit 1: How Many of Each? pp. 41-42 Discussion 3

Unit 2: Making Shapes and Designing Quilts pp. 27-29 Activity 2, pp. 32-33 Activity 2, pp. 33-34 Math Workshop 3, pp. 39-41 Activity 2 & Math Workshop 3, pp. 45-47 Discussion 1, pp. 55-56 Activity 2, pp. 56-59 Math Workshop 3

Unit 9: Blocks and Boxes p. 30 Activity 1

- **Describe geometric attributes and properties (alike and different)**

Unit 2: Making Shapes and Designing Quilts pp.25-26 Activity 1, pp. 31-32 Activity 1, pp. 37-38 Activity 1, pp. 71-73 Activity 1, pp. 73-74 Activity 2, pp. 78-79 Activity 1, pp. 80-81 Activity 2, pp. 86-87 Activity 1

Unit 4: What Would You Rather Be? pp. 24-25 Activity 2, pp. 25-26 Discussion 3

Unit 9: Blocks and Boxes pp. 23-24 Activity 1, pp. 31-32 Activity 3, p. 40 Activity 1, pp. 51-52 Activity 2

- **Develop a background for measurement and understanding of congruence and symmetry**

Unit 5: Fish Lengths and Animal Jumps, pp. 26-27 Discussion 3, pp. 32-33 Discussion 3, pp. 69-70 Discussion 1, pp. 84-85 Discussion 3

Grade 2, Unit 2: Shapes, Blocks, and Symmetry pp. 85-87 Activity 1, pp. 121-123 Activity 1, p. 133 Activity 1, pp. 138-139 Discussion 1, pp. 139-141 Activity 2

First Grade Connections to the Focal Points

Number, Operations, and Algebra:

Children use mathematical reasoning and strategies to understand, explain, and solve problems with two digit addition and subtraction

Grade 2, Unit 1: Counting, Coins, and Combinations pp. 139-140 Activity 1, pp. 141-143 Discussion 2

Grade 2, Unit 2: Stickers, Number Strings, and Story Problems pp. 73-76 Activity 1, pp. 76-78 Discussion 2, pp. 83-86 Activity 2, pp. 86-88 Discussion 3

Measurement and Data Analysis:

Children solve measurement problems by laying units end to end and counting by tens and ones providing understanding of number lines and number relationships

Unit 5: Fish Lengths and Animal Jumps pp. 23-24 Activity 23-24, pp. 29-30 Activity 1, pp. 32-33 Discussion 3, pp. 36-38 Activity 2, pp. 39-40 Activity 3, pp. 63-65 Activity 1, pp. 70-72 Activity 2, pp. 84-86 Discussion 3

Children represent measurement and data in picture and bar graphs providing meaningful connections to number relationships

Unit 4: What Would You Rather Be? pp. 56-57 Activity 3, pp. 91-92 Activity 1

Algebra:

Children identify, describe, and apply number patterns and properties to develop strategies for basic facts and other properties of number and operations (odd and even, 0 identity property)

Unit 7: Color, Shape, and Number Patterns pp. 40-43 Activity 1 & 2, pp. 43-44 Discussion 3, pp. 75-76 Activity 1, pp. 78 Discussion 3, pp. 89-91 Discussion 2, pp. 105-108 Discussion 2

Unit 8: Twos, Fives, and Tens pp. 57-58 Discussion 3, pp. 68-69 Discussion 3, p. 76 Activity 1

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Second Grade

Number and Operations:

Children develop an understanding of base-ten numeration and place value (to 1,000)

- **Counting in units and multiples of hundreds, tens, and ones**
Unit 1: Counting, Coins, and Combinations pp. 93-94 Activity 2
Unit 6: How Many Tens? How Many Ones? pp. 138-140 Math Workshop 2

- **Comparing and ordering numbers**
Unit 6: How Many Tens? How Many Ones? pp. 55-56 Activity 1, pp. 56-57 Activity 2, pp. 58-60 Discussion 4

- **Understanding multidigit numbers in terms of place value and recognizing place value as a shorthand for the sums of multiples of powers of 10 (853 as 8 hundreds + 5 tens + 3 ones)**
Unit 3: Stickers, Number Strings, and Story Problems pp. 196-197 Activity 1, pp. 197-199 Activity 2
Unit 8: Partners, Teams, and Paper Clips pp. 131-132 Discussion 1, pp. 134-135 Discussion 3

Number, Operations, and Algebra:

Children use their understanding of addition to develop quick recall of basic addition and related subtraction facts

- **Solve problems applying the understanding of models of addition and subtraction (combining or separating sets, number lines, place value, commutative and associative properties)**
Unit 1: Counting, Coins, and Combinations pp. 63-64 Activity 1, p. 85 Activity 1, pp. 91-93 Activity 1, pp.104-105 Assessment Activity 1, pp. 121-122 Discussion 1, pp. 163-164 Activity 1
Unit 3: Stickers, Number Strings, and Story Problems pp. 31-33 Activity 1, pp. 35-36 Discussion 3
Unit 6: How Many Tens? How Many Ones? pp. 89-91 Discussion 1, pp. 106-107 Activity 1, pp. 143-146 Discussion 1
Unit 8: Partners, Teams, and Paper Clips pp. 71-72 Activity 1, pp. 97-98 Discussion 1, pp. 140-145 Discussion 2

- **Develop, discuss, and use efficient and accurate methods to add and subtract multidigit whole numbers**
Unit 6: How Many Tens? How Many Ones? pp. 25-27 Activity 2, pp. 27-29 Discussion 3, pp. 38-41 Discussion 2, pp. 44-47 Discussion 2, pp. 77-81 Discussion 3, pp. 84-86 Discussion 2
Unit 8: Partners, Teams, and Paper Clips pp. 71-73 Activity 1, pp. 88-92 Discussion 1, pp. 101-103 Discussion 3, pp. 115-119 Discussion 2, pp. 127-128 Discussion 3

- **Select and apply appropriate methods to estimate sums and differences or calculate them mentally**
Unit 3: Stickers, Number Strings, and Story Problems pp. 144-145 Activity 1
Unit 8: Partners, Teams, and Paper Clips pp. 53-55 Discussion 1

- **Develop fluency with efficient procedures for adding and subtracting whole numbers**
Unit 1: Counting, Coins, and Combinations pp. 116-117 Activity 1
Unit 3: Stickers, Number Strings, and Story Problems pp. 40-42 Activity 2, pp. 42-44 Discussion 3, pp. 51-53 Activity 1
Unit 6: How Many Tens? How Many Ones? pp. 63-64 Activity 1, pp. 101-102 Activity 1
Unit 8: Partners, Teams, and Paper Clips pp. 60-61 Activity 1, pp. 62-63 Discussion 3

- **Understand why procedures work and use them to solve problems**
Unit 3: Stickers, Number Strings, and Story Problems pp. 73-76 Activity 1, pp. 76-78 Discussion 2, pp. 83-86 Activity 2, pp. 96-98 Activity 1, pp. 101-102 Discussion 3, pp. 112-114 Discussion 3
Unit 8: Partners, Teams, and Paper Clips pp.79-80 Activity 1, pp. 81-84 Discussion 2

Measurement:

Children develop an understanding of the meaning and processes of measurement

- **Understand linear measure as the repeating of units using rulers and other measurement tools with understanding**
Unit 9: Measuring Length and Time pp. 25-26 Activity 1, pp. 37-38 Activity 1, pp. 62-63 Discussion 3

- **Understand the need for equal length units and use standard units of measure (centimeter and inch)**
Unit 9: Measuring Length and Time pp. 40-42 Discussion 3, pp. 49-50 Discussion 2, pp. 59-60 Discussion 1, pp. 60-62 Activity 2, pp. 80-82 Assessment Activity 2, pp. 97-98 Discussion 1
- **Understand the inverse relationship between the size of the unit and number of units used in a measurement**
Unit 9: Measuring Length and Time pp. 38-40 Math Workshop 2, pp. 40-42 Discussion 3, pp. 103-104 Discussion 3

Second Grade Connections to the Focal Points

Number and Operation:

Children use place value and properties of operations to create equivalent representations of numbers (35 is 3 tens and 5 ones or 2 tens and 15 ones)

Unit 3: Stickers, Number Strings, and Story Problems pp. 169-170 Activity 1, pp. 176-177 Activity 2, pp. 180-181 Discussion 1

Children use place value and properties of operation to create, write, and order multidigit numbers

Unit 3: Stickers, Number Strings, and Story Problems pp. 180-182 Discussion 1
Unit 6: How Many Tens? How Many Ones? pp. 76-81 Activity 2

Children compose (put together) and decompose (take apart) numbers

Unit 3: Stickers, Number Strings, and Story Problems pp. 180-181 Discussion 1, pp. 180-190 Activity 1

Unit 6: How Many Tens? How Many Ones? pp. 31-33 Discussion 1

Children apply problem solving with addition, subtraction, measurement, geometry, and data

Unit 1: Counting, Coins, and Combinations pp. 139-140 Activity 1, pp. 163-164 Activity 1, pp. 165-167 Activity 2

Unit 4: Pockets, Teeth, and Favorite Things pp. 25-27 Activity 1, pp. 27-30 Activity 2

Children develop initial understanding of multiplication as repeated addition

Unit 5: How Many Floors? How Many Rooms? pp. 41-43 Discussion 3, pp. 90-92 Discussion 1, pp. 96-97 Discussion 1

Geometry and Measurement:

Children estimate, measure, and compute lengths, solving problems in data, space, and movement through space

Unit 9: Measuring Length and Time pp. 25-26 Activity 1, pp. 30-31 Activity 1, pp. 33-35 Discussion 3, pp. 37-38 Activity 1, pp. 40-42 Discussion 3, pp. 52-53 Activity 1, pp. 60-62 Activity 2, pp. 62-64 Discussion 3

Children compose and decompose two-dimensional shapes

Unit 2: Shapes, Blocks, and Symmetry pp. 48-49 Discussion 3, pp. 52-53 Activity 2, p. 98 Activity 1

Children use geometric knowledge and spatial reasoning to understand area, fractions, and proportions

Unit 2: Shapes, Blocks, and Symmetry pp. 85-87 Activity 1

Unit 7: Parts of a Whole, Parts of a Group p. 32 Activity 1, pp. 39-40 Discussion 3, pp. 47-50 Activity 1

Algebra:

Children use number patterns to extend their knowledge of properties and operations such as skip counting to understand multiples and factors

Unit 3: Stickers, Number Strings, and Story Problems pp. 140-142 Discussion 3, pp. 144-145 Activity 1, pp. 146-147 Discussion 3, pp. 157-159 Activity 3

Unit 5: How Many Floors? How Many Rooms? pp. 83-84 Discussion 1, pp. 85-87 Activity 2, pp. 90-92 Discussion 1

Unit 6: How Many Tens? How Many Ones? pp. 132-133 Discussion 2, p. 138 Activity 1

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Third Grade

Number, Operations, and Algebra:

Students develop understandings of multiplication and division and strategies for basic multiplication facts and related division facts

- **Understand meanings of multiplication and division of whole numbers using representations (equal size group, arrays, area models, number line, repeated subtraction, portioning, and sharing for division)**

Unit 5: Equal Groups pp. 25-26 Activities 1 & 2, pp. 31-33 Discussion 2, p. 40 Discussion 1, pp. 49-50 Activity 1, pp. 54-55 Discussion 1, pp. 83-86 Activities 1 & 2, pp. 89-91 Activity 2, pp. 93-95 Discussion 1, pp. 98-99 Activity 1, pp. 117-119 Activity 1, p. 119 Discussion 2

- **Use properties of addition and multiplication (commutative, associative, distributive) and multiply whole numbers, apply strategies based on properties to solve multiplication and division problems**

Unit 5: Equal Groups pp. 72-73 Discussion 1, pp. 84-85 Activity 2, pp. 102-103 Discussion 1

- **Relate multiplication and division as inverse operations**

Unit 5: Equal Groups pp. 122-124 Discussion 2, pp.126-128 Activity 2, pp. 130-131 Activity 1, pp. 139-140 Discussion 2

Number and Operations:

Students develop an understanding of fractions and fraction equivalence

- **Develop understanding of fractions as parts of a whole, parts of a set, points or distances on number line and understand that size of a fraction part is relative to size of the whole**

Unit 7: Finding Fair Shares pp. 25-27 Activity 1, pp. 27-28 Discussion 2, pp. 30-32 Activity 1, pp. 37-39 Activity 1, p. 44 Activity 1, pp. 61-64 Activity 1, p. 70 Activity 1, pp. 81-82 Activity 1

- **Solve problems involving comparing and ordering fractions using models, benchmark fractions, or common numerators or denominators**

Unit 7: Finding Fair Shares pp. 32-33 Activity 2, pp. 33-34 Discussion 3

- **Understand and use models including number lines to identify equivalent fractions**

Unit 7: Finding Fair Shares pp. 50-51 Discussion 2, pp. 64-65 Activity 2, pp. 66-68 Discussion 3, pp. 72-73 Discussion 3

Geometry:

Students describe and analyze properties of two-dimensional shapes

- **Describe, analyze, compare, and classify two-dimensional shapes by sides and angles to define the shape**

Unit 4: Perimeter, Angles, and Area pp.108-109 Discussion 3, pp. 111-112 Activity 1, pp. 112-113 Discussion 2, p. 117 Activity 1, pp. 120-122 Discussion 3, pp. 124-126 Discussion 1, pp. 131-133 Discussion 2

- **Investigate, describe, and reason about decomposing (taking apart), combining, and transforming polygons to make other polygons**

Unit 4: Perimeter, Angles, and Area pp. 76-77 Activity 2, pp. 82-83 Activity 1, pp. 86-87 Discussion 3

- **Build, draw, and analyze two-dimensional shapes**

Unit 4: Perimeter, Angles, and Area pp. 105-106 Activity 1, pp. 118-119 Math Workshop 2

- **Understand attributes/properties of two-dimensional space and use in problem solving (congruency and symmetry)**

Unit 4: Perimeter, Angles, and Area pp. 64-65 Discussion 2, pp. 108-109 Discussion 3

Third Grade Connections to the Focal Points

Algebra:

Understand properties of multiplication and relationship to division

Unit 5: Equal Groups p. 40 Discussion 1, pp. 72-73 Discussion 1, pp. 84-86 Activity 2, pp. 102-103 Discussion 1

Create and analyze patterns with multiplication and division

Unit 6: Stories, Tables, and Graphs pp.79-80 Activity 1, pp. 83-84 Discussion 3, pp. 86-87 Discussion 1, pp. 94-96 Discussion 2

Describe relationships such as “The number of legs is four times the number of chairs.”

Unit 5: Equal Groups pp. 25-27 Activity 1, pp. 29-30 Activity 1, pp. 31-33 Discussion 2, pp. 36-37 Activity 2

Measurement:

Develop skills of measuring with fractional parts of linear units

Unit 2: Surveys and Line Plots pp. 130-132 Discussion 3

Unit 4: Perimeter, Angles, and Area pp. 51-52 Discussion 1

Develop measurement concepts and skills by analyzing attributes and properties of two-dimensional objects

Unit 4: Perimeter, Angles, and Area pp. 112-113 Discussion 2, pp. 117-119

Activity 1, pp. 120-122 Discussion 3, pp. 124-126 Discussion 1

Understand perimeter as a measurable attribute and select appropriate units, strategies, and tools to solve perimeter problems

Unit 4: Perimeter, Angles, and Area pp. 30-31 Activity 1, pp. 32-34 Discussion

2, pp. 38-39 Discussion 1, pp. 46-47 Discussion 1

Data Analysis: Use addition, subtraction, multiplication, and division to construct and analyze frequency tables, bar graphs, picture graphs, and line plots to solve problems

Unit 2: Surveys and Line Plots pp. 44-48 Discussion 3, pp. 59-61 Assessment

Activity, pp. 83-85 Discussion 1, pp. 92-96 Discussion 3, pp. 108-110 Discussion 1

Unit 6: Stories, Tables, and Graphs pp. 100-102 Activity 2, pp. 104-105

Discussion 1, pp. 109-110 Activity 1

Number and Operations:

Extend understanding of place value up to 10,000 *Grade 4*,

Unit 5: Landmarks and Large Numbers pp.101-102 Discussion 1, pp. 102-106

Activity 2, pp. 110-111 Discussion 3, pp. 113-114 Discussion 1

Represent numbers in different equivalent forms (expanded notation)

Unit 1: Trading Stickers, Combining Coins pp.37-39 Discussion 1, pp. 40-42

Activity 2

Develop understanding of numbers with mental computation (such as $2,500 + 6,000$ and $9,000 - 5,000$) using estimation and pencil/paper computation

Unit 1: Trading Stickers, Combining Coins pp. 103-106 Activity 1, pp. 113-115

Discussion 3

Unit 3: Collections and Travel Stories pp. 76-78 Activity 1

Unit 8: How Many Hundreds? How Many Miles? pp. 73-75 Activity 1, pp. 77-78

Discussion 3, pp. 92-94 Discussion 1, pp. 134-136

Discussion 2

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Fourth Grade

Number, Operations, and Algebra:

Students develop fluency in multiplication of whole numbers

- **Students use understanding of multiplication for quick recall of multiplication facts and related division facts**

Unit 1: Factors, Multiples, and Arrays pp. 43-44 Activity 1, pp. 44-46 Activity 2, pp. 59-61 Activity 1, pp. 61-62 Activity 2, pp. 62-63 Discussion 3, pp. 65-66 Activity 1, pp. 72-73 Activity 2, pp. 89-90 Activity 1

Unit 3: Multiple Towers and Division Stories pp. 35-38 Activity 1, pp. 106-107 Activity 1

Unit 8: How Many Packages? How Many Groups? pp. 46-47 Activity 1

- **Students apply models for multiplication (equal sized groups, arrays, area models, number lines), place value, and properties of operations (distributive property) to multiply multidigit whole numbers**

Unit 1: Factors, Multiples, and Arrays pp. 28-31 Activity 2, pp. 33-34 Activity 1, pp. 34-37 Activity 2, pp. 40-41 Discussion 3

Unit 3: Multiple Towers and Division Stories pp. 112-113 Discussion 1, pp. 125-126 Activity 1, pp. 132-133 Activity 3

Unit 8: How Many Packages? How Many Groups? pp. 41-44 Discussion 2, pp. 55-57 Discussion 2, pp.75-76 Discussion 1, pp. 79-81 Discussion 1

- **Students estimate products or calculate mentally**

Unit 1: Factors, Multiples, and Arrays pp.92-93 Discussion 3, pp. 93-95 Activity 4

Unit 3: Multiple Towers and Division Stories pp. 52-53 Assessment Activity 1, pp. 119-120 Discussion 3

Unit 8: How Many Packages? How Many Groups? pp. 33-34 Activity 1, pp. 40-41 Activity 1

- **Students develop fluency with procedures, including the standard algorithm, for multiplying whole numbers and understand why the procedures work as they solve problems**

Unit 1: Factors, Multiples, and Arrays pp. 108-110 Discussion 2

Unit 3: Multiple Towers and Division Stories pp. 30-32 Discussion 2, pp. 32-33 Activity 3, pp. 117-118 Assessment Activity 1, pp. 130-131 Activity 1, pp. 146-147 Discussion 2

Unit 8: How Many Packages? How Many Groups? pp. 36-38
Discussion 3

Number and Operations:

Students develop an understanding of decimals and the connection to fractions

- **Students understand decimal notation as part of the base ten system of writing whole numbers**
Unit 6: Fraction Cards and Decimal Squares pp.105-107 Discussion 1, pp. 107-108 Activity 2, pp. 108-110 Activity 3
- **Students relate their understanding of fractions to decimals**
Unit 6: Fraction Cards and Decimal Squares pp. 117 Discussion 1
- **Students identify equivalent decimals**
Unit 6: Fraction Cards and Decimal Squares pp. 107-108 Activity 2
- **Students compare and order decimals**
Unit 6: Fraction Cards and Decimal Squares pp. 112-113 Activity 1, pp. 114-115 Activity 2
- **Students estimate decimals and fractions in problem solving**
Unit 6: Fraction Cards and Decimal Squares pp. 125-126 Discussion 3
- **Students connect equivalent fractions and decimals comparing models to symbols**
Unit 6: Fraction Cards and Decimal Squares pp. 105-107 Discussion 1, pp. 107-108 Activity 2, pp. 112-113 Activity 1, pp. 114-115 Activity 2
- **Students locate equivalent fractions and decimals on the number line**
Grade 5, Unit 6 Decimals on Grids and Number Lines pp. 39-40 Activity 2, pp. 45-47 Activity 2

Measurement:

Students develop an understanding of area and determine the area of two-dimensional shapes

- **Students recognize area as an attribute of two-dimensional regions**
Unit 4: Size, Shape, and Symmetry pp. 114-115 Activity 3, pp. 117-118 Discussion 1, pp. 142-144 Activity 2

- **Students express area by finding the total number of same-sized units that cover a shape**

Unit 4: Size, Shape, and Symmetry pp. 117-118 Discussion 1, pp. 118-119 Activity 2, pp. 119-120 Discussion 3, 142-144 Activity 2

- **Students understand that a square that is 1 unit on a side is the standard unit for measuring area**

Unit 4: Size, Shape, and Symmetry pp. 128-131 Activity 1, pp. 136-137 Discussion 1, pp. 139-140 Discussion 4

- **Students select appropriate units, strategies, and tools for solving measurement problems and estimation**

Unit 4: Size, Shape, and Symmetry pp. 23-24 Activity 1, pp. 24-26 Activity 2, pp. 144-145 Discussion 3

- **Students connect area measurement to an area model for multiplication and use it to demonstrate the formula for the area of a rectangle**

Unit 6: Fraction Cards and Decimal Squares pp. 25-27

Fourth Grade Connections to the Focal Points

Algebra:

Students identify, describe, extend numeric patterns and non-numeric (growing & repeating) and give the rule

Unit 9: Penny Jars and Plant Growth pp. 47-48 Activity 1, pp. 55-58 Activity 1, pp. 69-70 Discussion 1, pp. 72-74 Discussion 3, pp. 77-79 Activity 1, pp. 85-86 Discussion 1, pp. 98-100 Activity 1, pp. 101-102 Discussion 2

Geometry:

Students extend their understanding of two-dimensional shapes as they work with area, symmetry, congruency, and use transformations (reflection (flips), translations (slides), and rotations (turns)) to understand two-dimensional space

Unit 4: Size, Shape, and Symmetry pp. 55-56 Activity 1, pp. 56-57 Discussion 2, pp. 58-59 Activity 3, pp. 61-62 Activity 1, pp. 64-65 Activity 3, pp. 113-114 Activity 1

Measurement:

Students measure and classify angles

Unit 4: Size, Shape, and Symmetry pp. 89-90 Activity 1, pp. 90-91 Activity 2, pp. 92-93 Discussion 3, pp. 95-96 Activity 1, pp. 99-101 Discussion 3, pp. 103-104 Discussion 1, pp. 106-107 Discussion 3

Data Analysis:

Students solve problems by making tables, bar & picture graphs, line plots, and stem and leaf plots

Unit 2: Describing the Shape of the Data pp. 25-27 Activity 2, pp. 33-34 Discussion 2, pp. 38-40 Activity 2, pp. 57-58 Activity 1, pp. 68-69 Discussion 1, pp. 76-77 Discussion 1, pp. 77-80 Activity 2

Unit 9: Penny Jars and Plant Growth pp. 70-72 Activity 2, pp. 72-74 Discussion 3

Number and Operations:

Students use place value and represent numbers to 100,000

Unit 5: Landmarks and Large Numbers pp. 101-102 Discussion 1, pp. 110-111 Discussion 3

Students use estimation

Unit 8: How Many Packages? How Many Groups? pp. 27-28 Activity 1, pp. 33-34 Activity 1, pp. 107-108 Activity 1

Students develop understanding of strategies for multidigit division by using models (division as inverse of multiplication, partitioning, and repeated subtraction)

Unit 3: Multiple Towers and Division Stories pp. 61-62 Discussion 1, pp. 66-68 Discussion 1, p. 73 Discussion 1, pp. 81-83 Discussion 3, pp. 85-86 Activity 1, pp. 89-91 Discussion 1

Unit 8: How Many Packages? How Many Groups? p. 103 Discussion 1, pp. 108-109 Discussion 2

Students work with decimals and equivalent fractions using models to support understanding of techniques to find equivalent fractions and to simplify fractions

Unit 6: Fraction Cards and Decimal Squares pp. 25-28 Activity 1, pp. 34-36 Discussion 2, pp. 76-77 Discussion 2, pp. 79-80 Discussion 1, p. 117 Discussion 1

**Investigations in Number, Data, and Space © 2008
to the
NCTM Curriculum Focal Points**

Fifth Grade

Number, Operations, and Algebra:

Students develop an understanding of and fluency with division of whole numbers

- **Apply understandings of models for division, place value, properties, and the relationship of division to multiplication**
Unit 1: Number Puzzles and Multiple Towers pp. 115-117 Activity 1, pp. 117-118 Activity 2, pp. 122-124 Activity 2, pp. 132-133 Activity 1

- **Develop, discuss, and use efficient and accurate procedures to find quotients (multidigit dividends)**
Unit 1: Number Puzzles and Multiple Towers pp. 127-128 Activity 1, pp. 129-130 Discussion 2
Unit 7: How Many People? How Many Teams? pp. 73-74 Discussion 2, pp. 80-81 Activity 1, pp. 82-84 Discussion 3

- **Select appropriate methods to estimate quotients or calculate mentally**
Unit 1: Number Puzzles and Multiple Towers pp. 137-139 Activity 1, p. 140 Discussion 2, p. 145 Discussion 3
Unit 2: Prisms and Pyramids pp. 42-43 Activity 1

- **Develop fluency with efficient procedures, including standard algorithms for division, understand why the procedures work, and use to solve problems**
Unit 1: Number Puzzles and Multiple Towers pp. 134-135 Discussion 2, pp. 142-143 Activity 1
Unit 7: How Many People? How Many Teams? pp. 76-77 Discussion 1

- **Consider the context of a problem and select the most useful form of the quotient for the solution and interpret it appropriately**
Unit 1: Number Puzzles and Multiple Towers pp. 127-128 Activity 1, pp. 149-150 Discussion 2
Unit 7: How Many People? How Many Teams? pp. 69-72 Activity 1

Number and Operations:

Students develop an understanding of and fluency with addition and subtraction of fractions and decimals

- **Understand fractions and fraction models to represent addition and subtraction of fractions with unlike denominators as equivalent calculations with like denominators**

Unit 4: What's That Portion? pp. 95-96 Activity 1, pp. 96-98 Activity 2, pp. 98-100 Activity 3, pp. 108-111 Assessment Activity 2, pp. 113-114 Activity 1

Unit 6: Decimals on Grids and Number Lines pp. 87-88 Activity 1, pp. 90-91 Discussion 3

- **Apply understanding of decimal models, place value, and properties to add and subtract decimals**

Unit 6: Decimals on Grids and Number Lines pp. 93-95 Activity 1, pp. 95-96 Discussion 2, pp. 98-100 Activity 1, pp. 100-101 Discussion 2, p. 104 Discussion 2

- **Develop fluency with standard procedures for adding and subtracting fractions and decimals**

Unit 4: What's That Portion? pp. 102-103 Activity 1, pp. 105-106 Discussion 3, p. 108 Discussion 1, pp. 122-123 Activity 1, pp. 129-131 Discussion 1, pp. 132-134 Math Workshop 2

Unit 6: Decimals on Grids and Number Lines pp. 105-106 Activity 3, pp. 108-109 Activity 1

- **Make reasonable estimates of fraction and decimal sums and differences**

Unit 4: What's That Portion? pp. 105-106 Discussion 3, pp. 137-138 Discussion 2

Unit 6: Decimals on Grids and Number Lines pp. 108-109 Activity 1, pp. 113-114 Discussion 2

- **Solve problems with addition and subtraction of fractions and decimals (including measurement)**

Unit 4: What's That Portion? p. 108 Discussion 1

Unit 6: Decimals on Grids and Number Lines pp. 113-114 Discussion 2

Geometry, Measurement, and Algebra:

Students describe three-dimensional shapes and analyze their properties including volume and surface area

- **Relate two-dimensional shapes to three-dimensional shapes and describe them by number of faces or vertices**

Unit 2: Prisms and Pyramids pp. 93-94 Activity 3, pp. 96-97 Activity 1, pp. 97-98 Discussion 2 (Teacher Notes pp.126-127)

- **Recognize volume as an attribute of three-dimensional space, find total number of same-sized units of volume to fill the space**

Unit 2: Prisms and Pyramids pp. 26-28 Activity 2, pp. 28-30 Activity 3, p. 32 Discussion 1, pp. 33-34 Activity 2

- **Understand that a cube that is 1 unit on an edge is the standard unit of measuring volume and select appropriate units, strategies, and tools for solving problems with estimating and measuring volume**

Unit 2: Prisms and Pyramids pp. 65-67 Activity 1, pp. 68-70 Discussion 3, pp. 72-73 Activity 1, pp. 73-74 Discussion 2

- **Decompose (take apart) three-dimensional shapes and find surface areas and volumes of prisms finding relationships among formulas for area of polygons**

Unit 2: Prisms and Pyramids pp. 74-76 Activity 3, pp. 78-80 Activity 1, pp. 80-82 Discussion 2

- **Measure attributes of shapes to use area formulas to solve problems**

Unit 2: Prisms and Pyramids pp. 37-38 Activity 1, pp. 38-40 Discussion 2, pp. 44-46 Activity 2, pp. 56-57 Discussion 2, pp. 102-103 Discussion 2, pp. 106-108 Activity 1

Fifth Grade Connections to the Focal Points

Algebra:

Use patterns, models, and relationships as contexts for writing and solving simple equations and inequalities

Unit 7: How Many People? How Many Teams? pp. 27-28 Activity 1, pp. 28-30 Assessment Activity 2, pp. 30-31 Discussion 3, pp. 33-34 Assessment Activity 1, pp. 34-36 Discussion 2, pp. 39-40 Discussion 2, pp. 42-43 Activity 1

Create graphs of simple equations

Unit 8: Growth Patterns pp. 44-47 Discussion 2, pp. 52-55 Discussion 3

Explore prime and composite numbers

Unit 1: Number Puzzles and Multiple Towers pp. 37-38 Discussion 1

Discover concepts related to addition and subtraction of fractions using factors and multiples, including applying common factors and common multiples

Unit 4: What's That Portion? pp. 96-98 Activity 2, pp. 102-103 Activity 1, pp. 108-111 Assessment Activity 2

Develop an understanding and use of order of operations

Grade 4, Unit 3: Multiple Towers and Division Stories pp. 43-44 Activity 1

Grade 4, Unit 9: Penny Jars and Plant Growth pp. 92-95 Discussion 2

Measurement:

Connect work with solids and volume to earlier work with capacity and weight or mass

Unit 2: Prisms and Pyramids pp. 28-30 Activity 3, p. 32 Discussion 1, pp. 65-67 Activity 1

Solve problems to approximation and precision of measurement

Unit 8: Growth Patterns pp. 27-29 Activity 1

Unit 2: Prisms and Pyramids pp. 74-76 Activity 3, pp. 78-80 Activity 1, pp. 80-82 Discussion 2, pp. 106-108 Activity 1

Data Analysis:

Apply understanding of whole numbers, fractions, and decimals to construct and analyze double-bar and line graphs and use ordered pairs on coordinate grids

Unit 8: Growth Patterns pp. 29-32 Activity 2, pp. 34-36 Discussion 1, pp. 36-37 Activity 2, pp. 37-40 Discussion 3

Number and Operations:

Extend understanding of place value to numbers through millions and millionths in various contexts

Unit 3: Thousands of Miles, Thousands of Seats pp. 52-54 Discussion 2

Apply multiplication of whole numbers to larger numbers

Unit 1: Number Puzzles and Multiple Towers pp. 86-87 Discussion 1, pp. 88-89 Activity 2, pp. 101-103 Activity 1

Explore contexts to describe negative numbers (such as owing money or measuring elevations above and below sea level)

Grade 4, Unit 5: Landmarks and Large Numbers pp. 39-40 Activity 2