

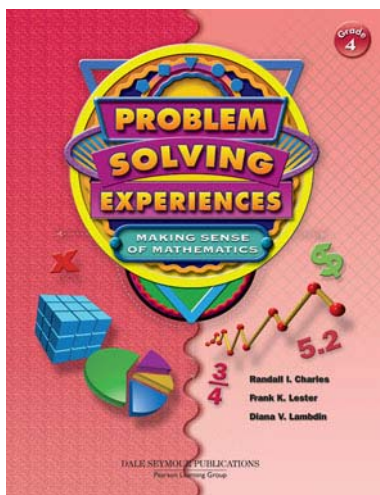
PROBLEM SOLVING EXPERIENCES ©2005



CONTENT ALIGNMENT GUIDE TO
SCOTT FORESMAN'S

INVESTIGATIONS IN NUMBER, DATA, AND SPACE® CURRICULUM

Grade 4



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Mathematical Thinking at Grade 4 (Introduction)

Students develop and share strategies as they investigate numbers in the hundreds and ways to efficiently mentally operate on numbers. They investigate patterns in number and computation. In geometry, they work with patterns of symmetry, investigating both mirror and rotational symmetry.

	Problem Solving Experiences corresponding problem #	Content Strands								
		Estimation	Number Sense and Numeration	Whole Number Operations	Whole Number Computation	Geometry and Spatial Sense	Measurement	Statistics and Probability	Fractions and Decimals	Patterns, Relations, and Functions
Mathematical Emphases										
Grouping things for more efficient counting		1:1	1:1 2:1			1:1				
Reordering numbers for more efficient mental arithmetic	20	TMM 1:4	1:1,4 2:1 TMM	1:1,4 2:1 TMM	1:4 TMM					
Finding how many more are needed	3, 28	1:4 2:3-4	1:4 2:1,3-4	1:4 2:1,3-4	1:4 2:1,3-4					
Estimating how many hundreds in the total of a group of three-digit numbers	82	1:1 TMM	1:1 TMM	1:1 TMM	1:1					
Recognizing values of U.S. coins and grouping coins for more efficient counting	96		2:1,3-4 3:4-5	2:1,3-4 3:4-5	2:1,3-4 3:4-5					
Recognizing the decimal point on the calculator	9, 54, 77		2:1	2:1	2:1					
Using known answers to find other answers	5, 68, 91		3:3,4-5							3:3,4-5
Subtracting on a 300 chart and with a calculator			3:1-2	3:1-2	3:1-2					
Adding and subtracting multiples of ten	107	1:4	1:4 3:1-2, 4-5	1:4 3:1-2, 4-5	3:1-2, 4-5					
Distinguishing between geometric patterns and random designs						4:1,2, 3-4				4:1,2, 3-4
Distinguishing between mirror symmetry and rotational symmetry						4:1,2, 3-4,5- 6				4:1,2, 3-4,5- 6
Collecting, representing, and interpreting data	6, 32							TMM		TMM
Estimating totals and differences	21, 27, 142, 147	TMM	TMM	TMM					TMM	

**Arrays and Shares
(Multiplication and Division)**

Through activities, students develop a sense of what multiplication and division are and how these processes are related. They gain fluency with multiplication and division pairs and solve problems using their own strategies as well as by breaking problems into manageable components.

	Problem Solving Experiences corresponding problem #	Content Strands								
		Estimation	Number Sense and Numeration	Whole Number Operations	Whole Number Computation	Geometry and Spatial Sense	Measurement	Statistics and Probability	Fractions and Decimals	Patterns, Relations, and Functions
Mathematical Emphases										
Using skip counting as a model for multiplication	141		1:1-2 3:2-4 TMM	1:1-2 3:2-4 TMM		2:2-3				1:1-2 3:2-4 TMM
Seeing multiplication as an accumulation of groups of a number	78, 88, 108		1:3 2:4-5 TMM	1:3 2:2-3, 4,5-6 TMM	1:3 2:5-6	2:5-6				1:3 TMM
Looking for the multiplication patterns of numbers (including patterns of multiples highlighted on the 100 chart)	50		1:1-2,3	1:1-2,3 2:5-6 3:2-4 TMM	1:3 2:5-6 3:2-4 TMM					1:1-2,3 2:5-6 3:2-4 TMM
Using known multiplication relationships to solve harder relationships	30		1:3 2:5-6 3:1,2-4	1:3 2:5-6 3:1	1:3 2:5-6 3:1	3:1				1:3 2:5-6 3:1
Using an array as a model for multiplication			2:2-3, 4,5-6	2:1, 2-3,4, 5-6	2:2-3, 4,5-6	2:1, 2-3,4, 5-6				2:2-3, 4,5-6
Recognizing prime numbers as those that each have only one pair of factors and only one array			2:2-3	2:2-3		2:2-3				2:2-3
Understanding how division notation represents a variety of division situations (including sharing and partitioning situations)				2:7-8 3:2-4	2:7-8 3:2-4	2:7-8				2:7-8
Determining what to do with leftovers in division, depending on the situation	47, 118			2:7-8 3:2-4	2:7-8 3:2-4				2:7-8	
Partitioning numbers to multiply them more easily (e.g., 7×23 can be 7×10 plus 7×10 plus 7×3)			3:1, 2-4,5	3:1, 2-4,5	3:1, 2-4,5	3:1				3:1, 2-4,5
Learning about patterns that are useful for multiplying by multiples of 10			3:2-4 TMM	3:2-4	3:2-4					3:2-4 TMM

**Seeing Solids and Silhouettes
(3-D Geometry)**

Students develop spatial visualization skills. They pictorially represent solid shapes, then build cube configurations from pictures, mental images, and different types of instructions.

	Problem Solving Experiences corresponding problem #	Content Strands								
		Estimation	Number Sense and Numeration	Whole Number Operations	Whole Number Computation	Geometry and Spatial Sense	Measurement	Statistics and Probability	Fractions and Decimals	Patterns, Relations, and Functions
Mathematical Emphases										
Developing concepts and language needed to reflect on and communicate about spatial relationships in 3-D environments						1:1,2 2:1-2				
Understanding standard drawings of 3-D cube configurations	139					1:1,2 2:3 3:2-3	1:1			
Exploring spatial relationships between components of 3-D figures						1:1 2:3,4				
Developing visualization skills	110, 115		TMM			1:1,2 2:3 3:1,2-3 TMM				
Starting to think about problems related to volume			1:1	1:1		1:1	1:1			
Understanding how 3-D geometric solids project shadows with 2-D shape (e.g. how a cone can project a triangular shadow)						2:1-2,3				
Understanding geometric perspective	76					2:1-2, 3,4				
Learning to visualize objects from different perspectives, then integrating views to form a mental model of the whole object	150					2:1-2, 3,4 3:2-3				
Interpreting different types of instructions for building with cubes and evaluating the effectiveness of different forms of "how-to" instructions						3:1,2-3 4:1				
Integrating information given in separate views or presented verbally to form one coherent mental model of a cube figure						2:3 3:2-3				
Communicating effectively about three-dimensional objects	6					1:1 4:1				

**Landmarks in the Thousands
(The Number System)**

Students explore the structure of our number system. They work with factors and multiples of 100 and 1000, identify patterns, and use landmark numbers to solve addition and subtraction problems.

	Problem Solving Experiences corresponding problem #	Content Strands								
		Estimation	Number Sense and Numeration	Whole Number Operations	Whole Number Computation	Geometry and Spatial Sense	Measurement	Statistics and Probability	Fractions and Decimals	Patterns, Relations, and Functions
Mathematical Emphases										
Finding and counting by factors of 100			1:1	1:1						1:1
Recognizing factor pairs (e.g. 4 rows of 25 cubes make 100; 25 rows of 4 cubes make 100)	43, 149		1:2	1:2		1:2	1:2			1:2
Using landmarks to find differences between numbers under 100 (e.g., the difference between 48 and 100 is 52 because from 48 to 50 is 2, and then its 50 more)			1:3	1:3						
Making conjectures about factors of 100	37, 52		1:1							1:1
Using knowledge of the factors of 100 to explore multiples of 100 (e.g. if there are four 25's in 100, then there are eight in 200)	17, 112, 128		2:1, 2-4,5	2:1, 2-4,5						2:1,2-4
Relating knowledge of factors to division situations and to standard division notations (e.g. 700/20 means "How many 20's are in 700?" and can be solved by skip counting or reasoning)	90, 102, 124, 134, 137		2:1,5	2:1,5	2:5					2:1
Adding and subtracting multiples of 10 to numbers in the hundreds, and later, multiples of 100 to numbers in the thousands	12		2:2-4 3:2,3-5 4:1-3	2:2-4 3:2,3-5 4:1-3	2:2-4 3:3-5 4:1-3					2:2-4 3:3-5 4:1-3
Solving addition and subtraction problems by reasoning from known relationships	15, 19, 39, 41, 48, 58, 89, 91, 93		2:2-4 3:3-5	2:2-4 3:3-5	2:2-4 3:3-5					2:2-4 3:3-5
Reading, writing, and locating in sequence, numbers to 1000, and later, numbers in the thousands			3:1,2 4:1-3							3:1
Getting a sense of the magnitude of multiples of 100 up to 1000		3:3-5	4:1-3							
Identifying and using important landmarks up to 1000, including the factors of 1000 and the multiples of those factors (e.g., 25, 50, 75, 100, 125, 150, 175, 200, ...)	138	3:3-5	1:3 3:2,3-5	3:2						3:2
Developing strategies for adding and subtracting numbers in the hundreds	29, 148		3:3-5	3:3-5	3:3-5					3:3-5
Estimating quantities up to 1000	7, 22, 72, 92	3:3-5	3:3-5							
Getting a sense of the magnitude of 10,000 and understanding its structure (e.g. it can be constructed as 10 thousands or 100 hundreds)	35, 87		4:1-3							4:1-3
TMM--Investigating the likelihood of events								2:1,5 TMM		
TMM--Counting to become familiar with multiples, factors, and multiplication patterns	10, 53		3:3-5 4:1-3 TMM							

TMM = Ten Minute Math

1:2-3 = Investigation 1, Sessions 2-3

**Different Shapes, Equal Pieces
(Fractions and Area)**

Students explore fractions by dividing square areas into halves, fourths and eighths and rectangular areas into thirds, sixths, and twelfths. They compare and order fractions, including fractions greater than one, and identify equivalent fractions.

	Problem Solving Experiences corresponding problem #	Content Strands								
		Estimation	Number Sense and Numeration	Whole Number Operations	Whole Number Computation	Geometry and Spatial Sense	Measurement	Statistics and Probability	Fractions and Decimals	Patterns, Relations, and Functions
Mathematical Emphases										
Understanding that equal fractions of a whole have the same area but are not necessarily congruent						1:1,2-4 2:1-2	1:1,2-4		1:1,2-4 2:1-2	
Experiencing that cutting and pasting shapes conserves their area						1:1,2-4	1:1,2-4		1:1,2-4	
Becoming familiar with relationships among halves, fourths, and eighths, and then among thirds, sixths, and twelfths			1:2-4 2:1-2	1:5		1:2-4 2:1-2, 3,4	1:2-4 2:3,4		1:2-4,5 2:1-2, 3,4	1:2-4,5
Knowing that equal fractions of different-sized wholes will be different in area						2:1-2	2:1-2		2:1-2	
Using different combinations to make a whole	40		2:3	2:3	2:3	1:5 2:3,4			1:5 2:3,4	1:5
Working with fractions that have numerators larger than one	143		2:3 3:1-2	2:3	2:3	2:3,4 3:1-2			1:5 2:3,4 3:1-2	1:5 2:4
Comparing any fraction to the landmarks 0, 1/2, 1, and 2	45, 65, 130		3:3			3:3	3:3		3:3	
Using both numerical reasoning and areas to order fractions (e.g. 4/9 is smaller than 1/4 because $2 \times \frac{4}{9} = \frac{8}{9}$ which is less than 1)	85		3:3,4-5			3:3,4-5	3:3,4-5		3:3,4-5	3:3,4-5
Using the size of the numerator to compare fractions that have the same denominator and using the size of the denominator to compare fractions with the same numerator			3:4-5						3:4-5	
Understanding the fractions "missing one piece" are ordered inversely to the size of the missing piece (e.g., 2/3 is smaller than 3/4 because the 1/3 missing is larger than the 1/4 missing)						3:4-5			3:4-5	3:4-5
Identifying equivalent fractions	95					3:1-2	3:1-2		3:1-2	3:1-2
TMM--Using logical reasoning and relationships among numbers to guess a number	21, 51, 25		1:2-4 2:1-2 3:1-2 TMM	1:2-4 2:1-2 TMM	1:2-4 2:1-2 TMM				3:1-2 TMM	

**The Shape of the Data
(Statistics)**

Students record, represent, and analyze simple data sets. They organize data in working draft and then presentation form, and describe the shape of the data distribution.

	Problem Solving Experiences corresponding problem #	Content Strands								
		Estimation	Number Sense and Numeration	Whole Number Operations	Whole Number Computation	Geometry and Spatial Sense	Measurement	Statistics and Probability	Fractions and Decimals	Patterns, Relations, and Functions
Mathematical Emphases										
Making quick sketches of the data to use as working tools during the analysis process	16		1:1,2-3				2:1,2-3	1:1,2-3 2:1 3:1		2:2-3 3:1
Describing the shape of the data, moving from noticing individual features of the data to describing the overall shape of the distribution		1:1	1:1, 2-3, 6-7				2:1	1:1,2-3 2:1,4, 6-7 3:1	3:1	1:2-3 2:1
Defining the way data will be collected			1:2-3				2:1, 2-3	1:2-3 2:1,2-3 3:1,3-5		2:1
Summarizing to express what is typical of the data	106		1:2-3 2:1					1:2-3 2:1,4, 6-7 3:1,3-5		1:2-3 2:4 3:1
Inventing ways, including representations to compare two sets of data by describing the shape of the data and what's typical of the data	1, 136		2:1				2;4	1:2-3 2:1, 2-3,4		2:1, 2-3
Revising and refining sketches to make a presentation graph or chart	36, 100, 125								2:2-3 3:3-5	
Visualizing and estimating lengths and heights; using linear measure							2:1,4	2:1, 2-3,4		2:1
Using the median to describe a set of data to compare one data set to another			2:6-7	2:6-7	2:6-7		2:4,6-7	2:4,6-7		
Understanding that the median is only one landmark in the data								2:5,6-7		
Finding the median in a set of data arranged in numerical order (e.g. when students line up in order by height)			2:5,6-7				2:5,6-7	2:5,6-7		2:5
Finding the median in a set of data grouped by frequency (e.g. on a line plot or other graph)								2:6-7		
Carrying out all the stages of a data analysis investigation								3:1		
Choosing and refining a research question								3:1,3-5		
Viewing the data in several different ways; using quick sketches and other representations to organize and display the data	71, 80							3:3-5		
TMM--Developing strategies for mental computations and judging the reasonableness of results		1:2-3 2:1 TMM	1:2-3 2:1 TMM						1:2-3 2:1 TMM	
TMM--Finding alternate paths to answer	20		2:4 3:1-2 TMM	2:4 3:1-2 TMM	2:4 3:1-2 TMM					2:4 3:1-2 TMM

TMM = Ten Minute Math

1:2-3 = Investigation 1, Sessions 2-3

**Money, Miles, and Large Numbers
(Addition and Subtraction)**

Students add and subtract decimal numbers and numbers in the hundreds and thousands within the contexts of money and distance.

	Problem Solving Experiences corresponding problem #	Content Strands								
		Estimation	Number Sense and Numeration	Whole Number Operations	Whole Number Computation	Geometry and Spatial Sense	Measurement	Statistics and Probability	Fractions and Decimals	Patterns, Relations, and Functions
Mathematical Emphases										
Estimating sums, including total amounts of money	2, 13, 42, 82, 122	1:1-2, 3,4-5, 7-8, 2:1-2, 3:1,2-4	1:1-2, 3,4-5, 7-8, 3:1,2-4	1:1-2, 4-5,7-8, 3:1,2,4	1:7-8, 3:1,2-4					
Exploring strategies for comparing and combining numbers, through hundreds and thousands	4, 34, 73	1:1-2, 3,4-5, 7-8, 3:1,2-4	1:1-2, 3,4-5, 6,7-8, 3:1,2-4	1:1-2, 3,4-5, 6,7-8, 2:1-2, 3:1,2-4	1:1-2, 3,6, 7-8, 3:1,2-4					
Using landmark numbers (multiples of 10 or .10 and 100 or 1.00) to compare and find differences between two quantities		1:1-2, 3,4-5, 3:1,2-4	1:1-2, 3,4-5, 3:1,2-4	1:1-2, 3,4-5, 3:1,2-4	1:1-2, 3:1,2-4					
Using standard addition and subtraction notation to record combining and comparing situations	18, 33, 38, 59, 63, 89, 113, 119				1:6,7-8, 3:2-4					
Using the calculator to solve problems and interpreting decimals on the calculator as amounts of money	14, 49, 104, 109, 112, 114, 132, 133		1:4-5, 7-8	1:4-5, 7-8	1:4-5, 7-8				1:4-5	
Estimating local distances in miles and tenths of miles: developing a sense of about how long a mile and 1/10 of a mile are		2:1-2,3	2:3			2:1-2,3	2:1-2,3			2:3
Comparing and combining decimal numbers and, later, quantities with decimal portions	8, 24, 67, 70, 97, 99, 105	2:1-2	2:1-2	1:6,7-8, 2:1-2,4	1:6,7-8, 2:1-2,4		2:4			
Seeing the relationships of decimal parts to the whole	27						2:1-2,3		2:1-2,3	
Measuring distances on maps using a scale		2:4, 3:2-4	3:2-4	3:2-4	3:2-4		2:4, 3:2-4		2:4	2:4, 3:2-4
Becoming familiar with common decimal and fraction equivalents	140		2:1-2,3						2:1-2, 3,4	
TMM--Considering whether events are likely or unlikely to occur							1:3, 2:7-8, 3:1, TMM			

**Changes Over Time
(Graphs)**

Students investigate change over time and ways to describe and represent changes. They explore continuous and discrete changes, and get an overall sense of change from a graph.

	Problem Solving Experiences corresponding problem #	Content Strands								
		Estimation	Number Sense and Numeration	Whole Number Operations	Whole Number Computation	Geometry and Spatial Sense	Measurement	Statistics and Probability	Fractions and Decimals	Patterns, Relations, and Functions
Mathematical Emphases										
Deciding how to group data								1:1-2, 3-4		
Inventing representations of data, including graphs to show change over time							3:2	1:1-2, 3-4 3:1,2, 6-7		3:1,2, 6-7
Interpreting different kinds of graphs	23, 31, 79, 93, 94, 101							1:1-2		
Developing a scale that includes all the data								1:3-4 3:3		
Establishing conventions for consistency								1:3-4		
Understanding how changes and total are related	61, 121, 146		1:5-6	1:5-6	1:5-6			1:5-6		
Developing strategies for solving missing-information problems when the information is missing from the beginning, middle, or end	41, 63, 68, 84, 131, 111			1:5-6	1:5-6			1:5-6		
Writing missing-information problems				1:5-6	1:5-6					
Examining real situations and events that show change	11, 116		3:2					2:1-2 3:1,2	3:2	
Making and interpreting representations that show change	46, 81, 86		3:6-7				3:1,2	2:1-2 3:1,2, 6-7		3:2,6-7
Distinguishing between representations of something that can change and representations that show changes								2:1-2		
Using curves to communicate information			3:2,4, 5,6-7				2:1-2 3:2,4, 6-7	2:1-2 3:4,5, 6-7		2:1-2 3:4,6-7
Developing and understanding of the difference between continuous and discrete changes			3:2					3:2	3:2	3:2
Making, interpreting, and comparing line graphs	60, 69, 74, 75		3:3,4				3:2,4	3:1,2, 3,4		
Integrating quantitative, qualitative, and graphical descriptions of the same data							3:4,5	3:1,4,5		3:1,4,5
Making and interpreting different graphical shapes	62		3:4,6-7				3:4,5	1:3-4 3:1,2, 4,5, 6-7		3:1,2, 4,5, 6-7
TMM--Developing visual images of spatial representations			1:3-4 2:1-2 TMM				1:3-4 2:1-2 TMM			
TMM--Finding alternative ways to arrive at a solution	66, 126		3:3,4 TMM	3:3,4 TMM	3:3,4 TMM					

**Packages and Groups
(Multiplication and Division)**

Students continue their work with multiplication. They find multiples and factors, continue to learn single-digit multiplication pairs, and solve multi-digit multiplication and division problems.

	Problem Solving Experiences corresponding problem #	Content Strands								
		Estimation	Number Sense and Numeration	Whole Number Operations	Whole Number Computation	Geometry and Spatial Sense	Measurement	Statistics and Probability	Fractions and Decimals	Patterns, Relations, and Functions
Mathematical Emphases										
Looking for and using multiplication patterns of numbers (e.g. identifying multiples of 5 by seeing that the units is either a 5 or a 0)	43		1:1-2 3:4-6	1:1-2 3:4-6	3:4-6	1:1-2				1:1-2 3:4-6
Finding multiples and becoming familiar with the multiples of larger numbers (e.g. skip counting by 2-digit numbers like 25)		1:4-5	1:3,4-5 3:4-6	1:3,4-5 3:4-6	1:4-5 3:4-6	1:4-5				1:3,4-5 3:4-6
Identifying factors of larger numbers (including triple-digit numbers)			3:7-8,9	1:4-5 3:7-8,9	1:4-5 3:7-8,9					3:7-8,9
Using familiar landmark numbers to solve problems (e.g. determining whether the solution is greater than 100, 200, 300, etc. or estimating 32×9 as 30×10 or 300)		2:2-3 3:4-6	2:1,2-3 3:4-6	2:1,2-3 3:4-6, 10	2:1 3:4-6, 10					2:1
Partitioning large numbers to multiply them more easily (e.g., 24×8 is thought of as $20 \times 8 / 4 \times 8$)	98, 125	2:2-3	2:1,2-3 3:3	2:1,2-3 3:3,4-6	2:1,2-3 3:3,4-6					2:1
Solving double-digit multiplication problems (e.g. 32×21)		2:2-3	2:2-3	2:2-3 3:4-6	2:2-3 3:4-6					2:2-3
Understanding how division notation can represent a variety of division situations, including sharing and grouping situations	83, 103	3:3	3:1-2,3	3:1-2, 3,4-6, 10	3:10					
Creating a context that is representative of a division equation (e.g. representing $152/4=38$ with 152 apples divided into 38 packages of 4)		3:3		3:1-2, 3, 10	3:1-2, 3, 10					
Using multiplication and division relationships in order to solve problems	120, 129	3:4-6	3:3,4-6	3:1-2, 3,4-6	3:1-2, 3,4-6					
TMM--Describing features of data; interpreting and posing questions about data	56, 96							1:4-5 TMM		
TMM--Recognizing and describing characteristics of numbers and relationships among numbers	26, 55, 123, 127		3:3,7-8 TMM							

**Sunken Ships and Grid Patterns
(2-D Geometry)**

Students name and locate points on a coordinate grid with ordered pairs of numbers, both positive and negative, and measure distances on the grid. Students discuss properties of rectangles and write rectangle procedures for the computer using Geo-Logo.

	Problem Solving Experiences corresponding problem #	Content Strands								
		Estimation	Number Sense and Numeration	Whole Number Operations	Whole Number Computation	Geometry and Spatial Sense	Measurement	Statistics and Probability	Fractions and Decimals	Patterns, Relations, and Functions
Mathematical Emphases										
Using positive and negative coordinates to name and locate points on grids			1:2,3-4			1:1,2,3-4	1:2,3-4			1:3-4
Calculating distances on a grid based on paths along grid lines	144					1:1,2,3-4,5-6	1:1,2,3-4,5-6			1:5-6
Exploring numerical patterns that represent geometric situations	141		1:3-4			1:3-4,5-6	1:3-4,5-6			1:3-4,5-6
Connecting visual and numerical descriptions of distances on a grid			1:5-6	1:5-6		1:3-4,5-6	1:3-4,5-6			
Applying knowledge of coordinates to locate points on a computer screen			1:3-4 2:2-3			1:3-4,5-6 2:2-3	1:3-4,5-6 2:2-3			
Describing geometric figures such as rectangles and squares in several ways	135, 145					2:1,6-7	2:1			
Understanding how logo commands and patterns of commands reflect the properties of geometric figures						2:1,4,5,6-7	2:1,4,5,6-7			2:4
Creating and applying patterns and mental arithmetic strategies to solve turtle geometry problems			2:5	2:5		2:4,5	2:4,5			2:4
Using mirror and rotational symmetry to place rectangles on a grid and to design complex patterns of rectangles			2:2-3			2:2-3,6-7,8-9	2:2-3,6-7,8-9			2:2-3,8-9
TMM--Relating the perimeter of a polygon to the length of its sides and using arithmetic operations in the context of perimeter	44, 57, 64, 108		1:5-6 2:4 TMM	1:5-6 2:4 TMM		1:5-6 2:4 TMM	1:5-6 2:4 TMM			

**Three out of Four Like Spaghetti
(Data and Fractions)**

Students collect, describe, display, and compare categorical data. They classify the data in different ways and use fractions to describe and compare the categorizations.

	Problem Solving Experiences corresponding problem #	Content Strands								
		Estimation	Number Sense and Numeration	Whole Number Operations	Whole Number Computation	Geometry and Spatial Sense	Measurement	Statistics and Probability	Fractions and Decimals	Patterns, Relations, and Functions
Mathematical Emphases										
Partitioning a group according to a rule			1:1					1:1	1:1	1:1
Finding familiar fractions (1/2,1/4,1/3) of a group	65	1:2	1:2				1:2	1:2	1:2	
Collecting, recording, and analyzing categorical (nonnumerical) data and describing data in terms of fractions		1:3 2:2	1:3				1:3 2:1,2, 3,5-7	1:3 2:2,5-7	1:3 2:5-7	
Using fractions to compare data from two groups, including two groups of different sizes		1:3	1:3				1:3	1:3 2:5-7		
Recognizing that fractions are always fractions of a particular whole	45							1:3	1:3	
Estimating complex fractions with familiar fractions (e.g., 12/25 is about 1/2)		1:2 2:5-7	2:5-7				1:2 2:5-7	1:2 2:5-7		
Organizing data into categories and defining categories to accommodate additional data							2:1,2, 3,4, 5-7			
Making judgments about sets of categories							1:4 2:1,2,3 4, 5-7	2:2,3	2:3,5-7	
Representing categorical data, including use of bar graphs, and describing the data		2:2					1:4 2:1,2, 5-7	2;2		
TMM--Making predictions about outcomes and exploring samples							1:3 2:2 TMM			