Carolina™ Curriculum

a division of Carolina Biological Supply Company

Correlation to

Michigan Grade Level Content Expectations

Mathematics Grades K-5

Carolina Curriculum™ Correlation to Michigan Grade Level Content Expectations for Mathematics –Grades K-5

The following pages pertain to Math Out of the Box® K-5 modules that have been aligned with the Michigan Grade Level Content Expectations for Mathematics, for Kindergarten through Fifth grades. For your reference, we have provided the aligned strands, module titles, and lessons within that module and corresponding page numbers. Each major standard heading is highlighted in orange.

Math Out of the Box® Integrated Curriculum Matrix				
math outofthebox	*Developing Algebraic Thinking*	*Developing Geometric Logic*	*Developing Measurement Benchmarks*	*Developing Number Concepts*
K	*Rhythm and Design*	*Towers and Trails*	*Over and Under*	*Like and Unlike*
1	*Together and Apart*	*Symmetry and Shapes*	*Up and Down*	*Families and Facts*
2	*Collecting and Sorting*	*Rows and Columns*	*Large and Small*	*More and Less*
3	*Plotting and Growing*	*Shapes and Paths*	*Scales and Balances*	*Ordering and Arranging*
4	*Signs and Symbols*	*Corners and Containers*	*Inside and Outside*	*Stories and Statements*
5	*Steps and Distance*	*Conjectures and Transformations*	*Tools and Time*	*Values and Variables*

Math Out of the Box® is a K—5, inquiry-based math curriculum developed by Clemson University's College of Engineering and Science. Based on the NCTM Principles and Standards for School Mathematics, **Math Out of the Box®** is filled with engaging, hands-on activities.

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Michigan Grade Level Content Expectations – Mathematics Kindergarten - Adopted 2006	
Number and Operations **Count, write, and order numbers.**	
N.ME.00.01. Count objects in sets up to 30.	**Developing Number Concepts: Like and Unlike Module A** Teacher Guide: Lessons 3-19 (pp 19-172) **Developing Number Concepts: Like and Unlike Module B** Teacher Guide: Lessons 1-7 (pp 5-56), 9 (pp 75-82), 11-12 (pp 91-108)
N.ME.00.02. Use one-to-one correspondence to compare and order sets of objects to 30 using phrases such as 'same number', 'more than', or 'less than'; use counting and matching.	**Developing Algebraic Thinking: Rhythm and Design** Teacher Guide: Lessons 11-20 (pp 81-150) **Developing Geometric Logic: Towers and Trails** Teacher Guide: Lessons 2-3 (pp 13-25), 6 (pp 41-46), 7 (pp 53-59), 10 (pp 77-81), 12 (pp 89-93), 13-15 (pp 99-118) **Developing Measurement Benchmarks: Over and Under** Teacher Guide: Lesson 1 (pp 7-12) **Developing Number Concepts: Like and Unlike Module A** Teacher Guide: Lessons 2-20 (pp 11-179)
N.ME.00.03. Compare and order numbers to 30 using phrases such as 'more than' or 'less than.'	**Developing Geometric Logic: Towers and Trails** Teacher Guide: Lesson 15 (pp 113-118) **Developing Number Concepts: Like and Unlike Module A** Teacher Guide: Lessons 1-20 (pp 5-179) **Developing Number Concepts: Like and Unlike Module B** Teacher Guide: Lessons 1-12 (pp 5-108)

Michigan Grade Level Content Expectations – Mathematics Kindergarten - Adopted 2006	
N.ME.00.04. Read and write numbers to 30 and connect them to the quantities they represent.	**Developing Measurement Benchmarks: Over and Under** Teacher Guide: Lesson 15 (pp 13-18) **Developing Number Concepts: Like and Unlike Module A** Teacher Guide: Lessons 4-20 (pp 27-179) **Developing Number Concepts: Like and Unlike Module B** Teacher Guide: Lessons 1-3 (pp 5-26), 6 (pp 43-49), 12 (pp 101-108)
N.ME.00.05. Count orally to 100 by ones. Count to 30 by 2's, 5's and10's using grouped objects as needed.	**Developing Number Concepts: Like and Unlike Module B** Teacher Guide: Lessons 1-3 (pp 5-26), 5-7 (pp 36-56), 9 (pp 75-82), 11-12 (pp 91-108)
Number and Operations **Compose and decompose numbers.**	
N.ME.00.06. Understand the numbers 1 to 30 as having one, or two, or three groups of ten and some ones. Also count by tens with objects in ten-groups to 100.	**Developing Number Concepts: Like and Unlike Module B** Teacher Guide: Lessons 9 (pp 75-82), 11-12 (pp 91-108)
N.MR.00.07. Compose and decompose numbers from 2 to 10, e.g., 5 = 4 + 1 = 2 + 3, with attention to the additive structure of number systems, e.g., 6 is one more than 5, 7 is one more than 6.	**Developing Algebraic Thinking: Rhythm and Design** Teacher Guide: Lessons 13-20 (pp 93-150) **Developing Number Concepts: Like and Unlike Module A** Teacher Guide: Lessons 1-20 (pp 5-179) **Developing Number Concepts: Like and Unlike Module B** Teacher Guide: Lessons 1-12 (pp 5-108)

Michigan Grade Level Content Expectations – Mathematics Kindergarten - Adopted 2006	
N.MR.00.08. Describe and make drawings to represent situations/stories involving putting together and taking apart for totals up to 10; use finger and object counting.	**Developing Number Concepts:** **Like and Unlike Module A** Teacher Guide: Lessons 18-20 (pp 159-179) **Developing Number Concepts:** **Like and Unlike Module B** Teacher Guide: Lessons 13-15 (pp 119-140)
Number and Operations **Add and subtract numbers.**	
N.MR.00.09. Record mathematical thinking by writing simple addition and subtraction sentences, e.g., 7 + 2 = 9, 10 - 8 = 2.	**Developing Number Concepts:** **Like and Unlike Module A** Teacher Guide: Lessons 19-20 (pp 167-179) **Developing Number Concepts:** **Like and Unlike Module B** Teacher Guide: Post Assessment Lessons 13-15 (pp 141-144)
Number and Operations **Explore number patterns.**	
N.MR.00.10. Create, describe, and extend simple number patterns.	**Developing Number Concepts:** **Like and Unlike Module B** Teacher Guide: Lessons 2-3 (pp 15-26), 6 (pp 43-49), 9 (pp 75-82)
Measurement **Explore concepts of time.**	
M.UN.00.01. Know and use the common words for the parts of the day (morning, afternoon, evening, night) and relative time (yesterday, today, tomorrow, last week, next year).	**Developing Measurement Benchmarks:** **Over and Under** Teacher Guide: Lessons 13-14 (pp 89-102)
M.TE.00.02. Identify tools that measure time (clocks measure hours and minutes; calendars measure days, weeks, and months).	**Developing Measurement Benchmarks:** **Over and Under** Teacher Guide: Lessons 12 (pp 81-88), 14-15 (pp 97-108)

Michigan Grade Level Content Expectations – Mathematics Kindergarten - Adopted 2006	
M.UN.00.03. Identify daily landmark times to the nearest hour (lunchtime is 12 o'clock; bedtime is 8 o'clock).	**Developing Measurement Benchmarks: Over and Under** Teacher Guide: Lesson 13 (pp 89-96)
Measurement **Explore other measurement attributes.**	
M.UN.00.04. Compare two or more objects by length, weight and capacity, e.g., which is shorter, longer, taller?	**Developing Measurement Benchmarks: Over and Under** Teacher Guide: Lessons 1-3 (pp 7-24), 17-19 (pp 119-138)
M.PS.00.05. Compare length and weight of objects by comparing to reference objects, and use terms such as shorter, longer, taller, lighter, heavier.	**Developing Measurement Benchmarks: Over and Under** Teacher Guide: Lessons 1-3 (pp 7-24), 17 (pp 119-126),
Geometry **Create, explore, and describe shapes.**	
G.GS.00.01. Relate familiar three-dimensional objects inside and outside the classroom to their geometric name, e.g., ball/sphere, box/cube, soup can/cylinder, ice cream cone/cone, refrigerator/prism.	**Developing Geometric Logic: Towers and Trails** Teacher Guide: Lessons 1-6 (pp 7-46), 15 (pp 113-118), 17-19 (pp 129-145
G.GS.00.02. Identify, sort, and classify objects by attribute and identify objects that do not belong in a particular group.	**Developing Algebraic Thinking: Rhythm and Design** Teacher Guide: Lessons 11-20 (pp 81-150) **Developing Geometric Logic: Towers and Trails** Teacher Guide: Lessons 2-3 (pp 13-25), 6 (pp 41-46), 7 (pp 53-59), 10 (pp 77-81), 12 (pp 89-93), 13-15 (pp 99-118) **Developing Measurement Benchmarks: Over and Under** Teacher Guide: Lessons 1 (pp 7-12), 7 (pp 51-59)

Michigan Grade Level Content Expectations – Mathematics Kindergarten - Adopted 2006	
Geometry **Explore geometric patterns.**	
G.GS.00.03. Create, describe, and extend simple geometric patterns.	**Developing Algebraic Thinking: Rhythm and Design** Teacher Guide: Lessons 1-3 (pp 5-24), 4-6 (pp 29-50), 7-10 (pp 55-76)

Michigan Grade Level Content Expectations – Mathematics Grade 1 - Adopted 2006	
Number and Operations **Count, write, and order numbers.**	
N.ME.01.01. Count to 110 by 1's, 2's, 5's, and 10's, starting from any number in the sequence; count to 500 by 100's and 10's; use ordinals to identify position in a sequence, e.g., 1st, 2nd, 3rd.	**Developing Algebraic Thinking: Together and Apart** Teacher Guide: Lessons 7-9 (pp 61-88) **Developing Measurement Benchmarks: Up and Down** Teacher Guide: Lessons 2 (pp 15-20), 6 (pp 37-42), 12 (pp 89-94) **Developing Number Concepts: Families and Facts Module A** Teacher Guide: Lessons 1-4 (pp 5-40), 5-12 (pp 49-118), 13-17 (pp 127-166), 18-22 (pp 173-217) **Developing Number Concepts: Families and Facts Module B** Teacher Guide: Lessons 1-3 (pp 5-33), 4-7 (pp 41-81), 8-14 (pp 89-144), 15-20 (pp 151-191)
N.ME.01.02. Read and write numbers to 110 and relate them to the quantities they represent.	**Developing Number Concepts: Families and Facts Module A** Teacher Guide: Lessons 4 (pp 33-40), 22 (pp 29-217) **Developing Number Concepts: Families and Facts Module B** Teacher Guide: Lessons 5-7 (pp 51-81)
N.ME.01.03. Order numbers to 110; compare using phrases such as 'same as', 'more than', 'greater than', 'fewer than'; use = symbol. Arrange small sets of numbers in increasing or decreasing order, e.g., write the following from smallest to largest: 21, 16, 35, 8.	**Developing Number Concepts: Families and Facts Module A** Teacher Guide: Lessons 1-4 (pp 5-40), 5-17 (pp 49-166), 18-22 (pp 173-217) **Developing Number Concepts: Families and Facts Module B** Teacher Guide: Lessons 1-3 (pp 5-33), 4-7 (pp 41-81)

Michigan Grade Level Content Expectations – Mathematics Grade 1 - Adopted 2006	
N.ME.01.04. Identify one more than, one less than, 10 more than, and 10 less than for any number up to 100.	**Developing Algebraic Thinking: Together and Apart** Teacher Guide: Lessons 11-13 (pp 99-122), 14-16 (pp 127-146), 17-20 (pp 153-176) **Developing Measurement Benchmarks: Up and Down** Teacher Guide: Lessons 2 (pp 15-20), 6 (pp 37-42), 12 (pp 89-94) **Developing Number Concepts: Families and Facts Module A** Teacher Guide: Lessons 1-4 (pp 5-40), 5-12 (pp 49-118), 13-17 (pp 127-166), 18-22 (pp 173-217) **Developing Number Concepts: Families and Facts Module B** Teacher Guide: Lessons 1-3 (pp 5-33), 6-7 (pp 63-81), 9 (pp 97-106)
N.ME.01.05. Understand that a number to the right of another number on the number line is bigger and that a number to the left is smaller.	**Developing Number Concepts: Families and Facts Module A** Teacher Guide: Lessons 8-9 (pp 77-96), 12 (pp 111-118), 14 (pp 135-142)
Number and Operations Explore place value.	
N.ME.01.07. Compose and decompose numbers through 30, including using bundles of tens and units, e.g., recognize 24 as 2 tens and 4 ones, 10 and 10 and 4, 20 and 4, and 24 ones.	**Developing Number Concepts: Families and Facts Module A** Teacher Guide: Lessons 5-7 (pp 49-76)
Number and Operations Add and subtract numbers.	
N.ME.01.08. List number facts (partners inside of numbers) for 2 through 10, e.g., 8 = 7 + 1 = 6 + 2 = 5 + 3 = 4 + 4; 10 = 8 + 2 = 2 + 8.	**Developing Number Concepts: Families and Facts Module A** Teacher Guide: Lessons 3-4 (pp 25-40), 5-12 (pp 49-118), 13-17 (pp 127-166)

Michigan Grade Level Content Expectations – Mathematics Grade 1 - Adopted 2006	
	Developing Number Concepts: **Families and Facts Module B** Teacher Guide: Lessons 8-14 (pp 89-144)
N.MR.01.09. Compare two or more sets in terms of the difference in number of elements.	**Developing Number Concepts:** **Families and Facts Module A** Teacher Guide: Lessons 3 (pp 25-31), 22 (pp 209-217)
N.MR.01.10. Model addition and subtraction for numbers through 30 for a given contextual situation using objects or pictures; explain in words; record using numbers and symbols; solve.	**Developing Number Concepts:** **Families and Facts Module A** Teacher Guide: Lessons 7 (pp 69-76), 13 (pp 127-134) **Developing Number Concepts:** **Families and Facts Module B** Teacher Guide: Lessons 10-14 (pp 107-144)
N.MR.01.11. Understand the inverse relationship between addition and subtraction, e.g., subtraction 'undoes' addition: if 3 + 5 = 8, we know that 8 - 3 = 5 and 8 - 5 = 3; recognize that some problems involving combining, 'taking away,' or comparing can be solved by either operation.	**Developing Number Concepts:** **Families and Facts Module A** Teacher Guide: Lessons 5-12 (pp 49-118), 13-17 (pp 127-166) **Developing Number Concepts:** **Families and Facts Module B** Teacher Guide: Lessons 8-14 (pp 89-144)
N.FL.01.12. Know all the addition facts up to 10 + 10, and solve the related subtraction problems fluently.	**Developing Number Concepts:** **Families and Facts Module A** Teacher Guide: Lessons 3-4 (pp 25-40), 5-12 (pp 49-118), 13-17 (pp 127-166) **Developing Number Concepts:** **Families and Facts Module B** Teacher Guide: Lessons 8-14 (pp 89-144)
N.MR.01.13. Apply knowledge of fact families to solve simple open sentences for addition and subtraction, such as: __ + 2 = 7 and 10 - __ = 6.	**Developing Number Concepts:** **Families and Facts Module A** Teacher Guide: Lessons 5-12 (pp 49-118), 13-17 (pp 127-166)

Michigan Grade Level Content Expectations – Mathematics Grade 1 - Adopted 2006	
	Developing Number Concepts: **Families and Facts Module B** Teacher Guide: Lessons 8-14 (pp 89-144)
N.FL.01.14. Add three one-digit numbers.	**Developing Number Concepts:** **Families and Facts Module A** Teacher Guide: Lesson 12 (pp 111-118)
N.FL.01.15. Calculate mentally sums and differences involving: a two-digit number and a one-digit number without regrouping; a two-digit number and a multiple of 10.	**Developing Number Concepts:** **Families and Facts Module A** Teacher Guide: Lessons 8-12 (pp 77-118) **Developing Number Concepts:** **Families and Facts Module B** Teacher Guide: Lessons 12 (pp 123-130), 14 (pp 139-144)
N.FL.01.16. Compute sums and differences through 30 using number facts and strategies, but no formal algorithm.	**Developing Number Concepts:** **Families and Facts Module A** Teacher Guide: Lessons 3-4 (pp 25-40), 5-12 (pp 49-118), 13-17 (pp 127-166) **Developing Number Concepts:** **Families and Facts Module B** Teacher Guide: Lessons 1-3 (pp 5-33), 4-7 (pp 41-81), 8-14 (pp 89-144)
Measurement **Estimate and measure length.**	
M.UN.01.01. Measure the lengths of objects in non-standard units, e.g., pencil lengths, shoe lengths, to the nearest whole unit.	**Developing Measurement Benchmarks:** **Up and Down** Teacher Guide: Lessons 1-2 (pp 7-20), 3 (pp 25-33)
M.UN.01.02. Compare measured lengths using the words shorter, shortest, longer, longest, taller, tallest, etc.	**Developing Measurement Benchmarks:** **Up and Down** Teacher Guide: Lesson 2 (pp 15-20)

Michigan Grade Level Content Expectations – Mathematics Grade 1 - Adopted 2006	
Measurement **Tell time.**	
M.UN.01.03. Tell time on a twelve-hour clock face to the hour and half-hour.	**Developing Measurement Benchmarks: Up and Down** Teacher Guide: Lessons 15-16 (pp 121-132)
Measurement **Work with money.**	
M.UN.01.04. Identify the different denominations of coins and bills.	**Developing Measurement Benchmarks: Up and Down** Teacher Guide: Lesson 11 (pp 81-88)
M.UN.01.05. Match one coin or bill of one denomination to an equivalent set of coins/bills of other denominations, e.g., 1 quarter = 2 dimes and 1 nickel.	**Developing Measurement Benchmarks: Up and Down** Teacher Guide: Lessons 10-11 (pp 73-88)
M.UN.01.06. Tell the amount of money: in cents up to $1, in dollars up to $100. Use the symbols for the dollar sign and cents.	**Developing Measurement Benchmarks: Up and Down** Teacher Guide: Lessons 9-12 (pp 65-94)
M.PS.01.07. Add and subtract money in dollars only or in cents only.	**Developing Measurement Benchmarks: Up and Down** Teacher Guide: Lessons 9-12 (pp 65-94)
Geometry **Create and describe shapes.**	
G.GS.01.01. Create common two-dimensional and three-dimensional shapes, and describe their physical and geometric attributes, such as color and shape.	**Developing Geometric Logic: Symmetry and Shapes** Teacher Guide: Lessons 1 (pp 7-15), 8 (pp 61-64), 11 (pp 77-81), 16 (pp 111-116)

Michigan Grade Level Content Expectations – Mathematics Grade 1 - Adopted 2006	
G.LO.01.02. Describe relative position of objects on a plane and in space, using words such as above, below, behind, in front of.	**Developing Geometric Logic: Symmetry and Shapes** Teacher Guide: Lessons 17-19 (pp 121-139)
Geometry **Create and describe patterns involving geometric objects.**	
G.SR.01.03. Create and describe patterns, such as repeating patterns and growing patterns using number, shape, and size.	**Developing Algebraic Thinking: Together and Apart** Teacher Guide: Lessons 1-3 (pp 5-26), 4-6 (pp 31-56), 7-10 (pp 61-94) **Developing Measurement Benchmarks: Up and Down** Teacher Guide: Unit Pre Assessment (pp xxii-xxix), Post Assessment Lessons 13-17 (pp 99-101) **Developing Number Concepts: Families and Facts Module A** Teacher Guide: Lessons 1-4 (pp 5-40), 8-9 (pp 77-96), 11-12 (pp 105-118), 18-19 (pp 173-190) **Developing Number Concepts: Families and Facts Module B** Teacher Guide: Lessons 4-5 (pp 41-62)
G.SR.01.04. Distinguish between repeating and growing patterns.	**Developing Algebraic Thinking: Together and Apart** Teacher Guide: Lessons 1-3 (pp 5-26), 4-6 (pp 31-56), 7-10 (pp 61-94) **Developing Measurement Benchmarks: Up and Down** Teacher Guide: Unit Pre Assessment (pp xxii-xxix), Post Assessment Lessons 13-17 (pp 99-101) **Developing Number Concepts: Families and Facts Module A** Teacher Guide: Lessons 1-4 (pp 5-40), 8-9 (pp 77-96), 11-12 (pp 105-118), 18-19 (pp 173-190)

Michigan Grade Level Content Expectations – Mathematics Grade 1 - Adopted 2006	
	Developing Number Concepts: Families and Facts Module B Teacher Guide: Lessons 4-5 (pp 41-62)
G.SR.01.05. Predict the next element in a simple repeating pattern.	**Developing Algebraic Thinking: Together and Apart** Teacher Guide: Lessons 1-3 (pp 5-26), 4-6 (pp 31-56), 7-10 (pp 61-94) **Developing Measurement Benchmarks: Up and Down** Teacher Guide: Unit Pre Assessment (pp xxii-xxix), Post Assessment Lessons 13-17 (pp 99-101) **Developing Number Concepts: Families and Facts Module A** Teacher Guide: Lessons 1- 40 (pp 5-40), 8-9 (pp 77-96), 11-12 (pp 105-118), 18-19 (pp 173-190) **Developing Number Concepts: Families and Facts Module B** Teacher Guide: Lessons 4-5 (pp 41-62)
G.SR.01.06. Describe ways to get to the next element in simple repeating patterns.	**Developing Algebraic Thinking: Together and Apart** Teacher Guide: Unit Pre Assessment (pp xxiv-xxx), Post Assessment Lessons 7-10 (p 60)
Data and Probability **Use pictographs.**	
D.RE.01.01. Collect and organize data to use in pictographs.	**Developing Geometric Logic: Symmetry and Shapes** Teacher Guide: Lesson 6 (pp 41-45)

Michigan Grade Level Content Expectations – Mathematics Grade 1 - Adopted 2006	
D.RE.01.02. Read and interpret pictographs.	**Developing Algebraic Thinking: Together and Apart** Teacher Guide: Lessons 15-16 (pp 133-146), 17-20 (pp 153-176) **Developing Geometric Logic: Symmetry and Shapes** Teacher Guide: Lesson 6 (pp 41-45)
D.RE.01.03. Make pictographs of given data using both horizontal and vertical forms of graphs; scale should be in units of one and include symbolic representations, e.g., a smiley face represents one child.	**Developing Geometric Logic: Symmetry and Shapes** Teacher Guide: Lesson 6 (pp 41-45)

Michigan Grade Level Content Expectations – Mathematics Grade 2 - Adopted 2006	
Number and Operations **Count, write, and order whole numbers.**	
N.ME.02.01. Count to 1000 by 1's, 10's and 100's starting from any number in the sequence.	**Developing Measurement Benchmarks: Large and Small** Teacher Guide: Lessons 8 (pp 63-72), 10-11 (pp 81-94) **Developing Number Concepts: More and Less Module A** Teacher Guide: Lessons 11-12 (pp 115-133), 17 (pp 183-191) **Developing Number Concepts: More and Less Module B** Teacher Guide: Lessons 5 (pp 45-50), 7 (pp 61-67)
N.ME.02.02. Read and write numbers to 1000 in numerals and words, and relate them to the quantities they represent.	**Developing Number Concepts: More and Less Module A** Teacher Guide: Lessons 14 (pp 145-156), 16 (pp 167-173)
N.ME.02.03. Compare and order numbers to 1000; use the symbols > and <.	**Developing Number Concepts: More and Less Module A** Teacher Guide: Lessons 13 (pp 135-144), 15 (pp 157-165)
N.ME.02.04. Count orally by 3's and 4's starting with 0, and by 2's, 5's, and 10's starting from any whole number.	**Developing Algebraic Thinking: Collecting and Sorting** Teacher Guide: Lessons 6-7 (pp 45-56), 8-9 (pp 63-80) **Developing Measurement Benchmarks: Large and Small** Teacher Guide: Lessons 8 (pp 63-72), 10-11 (pp 81-94) **Developing Number Concepts: More and Less Module A** Teacher Guide: Lessons 11-12 (pp 115-133), 17 (pp 183-191)

Michigan Grade Level Content Expectations – Mathematics Grade 2 - Adopted 2006	
	Developing Number Concepts: **More and Less Module B** Teacher Guide: Lessons 5 (pp 45-50), 7 (pp 61-67), 15 (pp 129-135)
Number and Operations **Understand place value.**	
N.ME.02.05. Express numbers through 999 using place value, e.g., 137 is 1 hundred, 3 tens, and 7 ones; use concrete materials.	**Developing Number Concepts:** **More and Less Module A** Teacher Guide: Lessons 11-12 (pp 115-133), 14 (pp 145-156), 16 (pp 167-173)
Number and Operations **Add and subtract whole numbers.**	
N.FL.02.06. Decompose 100 into addition pairs, e.g., 99 + 1, 98 + 2...	**Developing Number Concepts:** **More and Less Module A** Teacher Guide: Lessons 14 (pp 145-156), 16 (pp 167-173)
N.MR.02.07. Find the distance between numbers on the number line, e.g., how far is 79 from 26?	**Developing Number Concepts:** **More and Less Module A** Teacher Guide: Lessons 8-10 (pp 79-105)
N.MR.02.08. Find missing values in open sentences, e.g., 42 + __ = 57; use relationship between addition and subtraction.	**Developing Number Concepts:** **More and Less Module A** Teacher Guide: Lessons 1-5 (pp 5-51), 6-10 (pp 59-105), 13 (pp 135-144), 15 (pp 157-165) **Developing Number Concepts:** **More and Less Module B** Teacher Guide: Lessons 4 (pp 37-44), 8 (pp 69-77), 10 (pp 89-93)

Michigan Grade Level Content Expectations – Mathematics Grade 2 - Adopted 2006	
N.MR.02.09. Given a contextual situation that involves addition and subtraction using numbers through 99: model using objects or pictures; explain in words; record using numbers and symbols; solve.	**Developing Number Concepts:** **More and Less Module A** Teacher Guide: Lessons 4-5 (pp 31-51), 6-7 (pp 59-78), 10 (pp 97-105), 18-22 (pp 193-236) **Developing Number Concepts:** **More and Less Module B** Teacher Guide: Lessons 4-10 (pp 37-93)
N.FL.02.10. Add fluently two numbers through 99, using strategies including formal algorithms; subtract fluently two numbers through 99.	**Developing Number Concepts:** **More and Less Module A** Teacher Guide: Lessons 20-22 (pp 213-236) **Developing Number Concepts:** **More and Less Module B** Teacher Guide: Lessons 5-7 (pp 45-67), 9-10 (pp 79-93), 12 (pp 109-114)
N.FL.02.11. Estimate the sum of two numbers with three digits.	**Developing Number Concepts:** **More and Less Module A** Teacher Guide: Lesson 13 (pp 135-144) **Developing Number Concepts:** **More and Less Module B** Teacher Guide: Lessons 11 (pp 101-107), 14 (pp 121-128)
Number and Operations **Understand meaning of multiplication and division.**	
N.MR.02.13. Understand multiplication as the result of counting the total number of objects in a set of equal groups, e.g., 3 x 5 gives the number of objects in 3 groups of 5 objects, or 3 x 5 = 5 + 5 + 5 = 15.	**Developing Number Concepts:** **More and Less Module B** Teacher Guide: Lessons 11-14 (pp 101-128),
N.MR.02.14. Represent multiplication using area and array models.	**Developing Geometric Logic:** **Rows and Columns** Teacher Guide: Lesson 15 (pp 123-128)

Michigan Grade Level Content Expectations – Mathematics Grade 2 - Adopted 2006	
	Developing Number Concepts: **More and Less Module B** Teacher Guide: Lessons 12-14 (pp 109-128), 16 (pp 137-142)
N.MR.02.16. Given a situation involving groups of equal size or of sharing equally, represent with objects, words, and symbols; solve.	**Developing Number Concepts:** **More and Less Module B** Teacher Guide: Lessons 15-17 (pp 129-149)
N.MR.02.17. Develop strategies for fluently multiplying numbers up to 5 x 5.	**Developing Number Concepts:** **More and Less Module B** Teacher Guide: Lessons 11-12 (pp 101-114)
Number and Operations **Work with unit fractions.**	
N.ME.02.18. Recognize, name, and represent commonly used unit fractions with denominators 12 or less; model 1/2, 1/3, and 1/4 by folding strips.	**Developing Number Concepts:** **More and Less Module B** Teacher Guide: Lesson 17 (pp 143-149)
N.ME.02.19. Recognize, name, and write commonly used fractions: 1/2, 1/3, 2/3, 1/4, 2/4, 3/4.	**Developing Number Concepts:** **More and Less Module B** Teacher Guide: Lesson 17 (pp 143-149)
N.ME.02.21. For unit fractions from 1/12 to 1/2 understand the inverse relationship between the size of a unit fraction and the size of the denominator; compare unit fractions from 1/12 to 1/2.	**Developing Geometric Logic:** **Rows and Columns** Teacher Guide: Lessons 11 (pp 89-94), 15 (pp 123-128) **Developing Number Concepts:** **More and Less Module B** Teacher Guide: Lessons 15 (pp 129-135), 17 (pp 143-149)
N.ME.02.22. Recognize that fractions such as 2/2, 3/3, and 4/4 are equal to the whole (one).	**Developing Number Concepts:** **More and Less Module B** Teacher Guide: Lesson 17 (pp 143-149)

Michigan Grade Level Content Expectations – Mathematics Grade 2 - Adopted 2006	
Measurement **Measure, add, and subtract length.**	
M.UN.02.01. Measure lengths in meters, centimeters, inches, feet, and yards approximating to the nearest whole unit and using abbreviations: cm, m, in, ft, yd.	**Developing Measurement Benchmarks: Large and Small** Teacher Guide: Lessons 3-4 (pp 21-36), 5-6 (pp 42-48)
M.PS.02.02. Compare lengths; add and subtract lengths (no conversion of units).	**Developing Measurement Benchmarks: Large and Small** Teacher Guide: Lessons 1-2 (pp 7-20), 4 (pp 29-36)
Measurement **Understand the concept of area.**	
M.UN.02.03. Measure area using non-standard units to the nearest whole unit.	**Developing Measurement Benchmarks: Large and Small** Teacher Guide: Lessons 1-2 (pp 7-20), 6 (pp 43-48)
M.TE.02.04. Find the area of a rectangle with whole number side lengths by covering with unit squares and counting, or by using a grid of unit squares; write the area as a product.	**Developing Geometric Logic: Rows and Columns** Teacher Guide: Unit Pre Assessment (pp xxiii-xxix), Post Assessment Lessons 13-16 (pp 14-15) **Developing Measurement Benchmarks: Large and Small** Teacher Guide: Lesson 7 (pp 49-56)
Measurement **Tell time and solve time problems.**	
M.UN.02.05. Using both A.M. and P.M., tell and write time from the clock face in 5 minute intervals and from digital clocks to the minute; include reading time: 9:15 as	**Developing Measurement Benchmarks: Large and Small** Teacher Guide: Lessons 14-15 (pp 117-134)

Michigan Grade Level Content Expectations – Mathematics Grade 2 - Adopted 2006	
nine-fifteen and 9:50 as nine-fifty. Interpret time both as minutes after the hour and minutes before the next hour, e.g., 8:50 as eight-fifty and ten to nine. Show times by drawing hands on clock face.	
M.UN.02.06. Use the concept of duration of time, e.g., determine what time it will be half an hour from 10:15.	**Developing Measurement Benchmarks: Large and Small** Teacher Guide: Lessons 13-15 (pp 109-134)
Measurement **Record, add and subtract money.**	
M.UN.02.07. Read and write amounts of money using decimal notations, e.g., $1.15.	**Developing Measurement Benchmarks: Large and Small** Teacher Guide: Lessons 8-10 (pp 63-86)
M.PS.02.08. Add and subtract money in mixed units, e.g., $2.50 + 60 cents and $5.75 - $3, but not $2.50 + $3.10.	**Developing Measurement Benchmarks: Large and Small** Teacher Guide: Lessons 9-10 (pp 73-86)
Measurement **Read thermometers.**	
M.UN.02.09. Read temperature using the scale on a thermometer in degrees Fahrenheit.	**Developing Measurement Benchmarks: Large and Small** Teacher Guide: Lesson 12 (pp 101-108)
Measurement **Solve measurement problems.**	
M.PS.02.10. Solve simple word problems involving length and money.	**Developing Number Concepts: More and Less Module A** Teacher Guide: Lessons 11-12 (pp 115-133)
M.TE.02.11. Determine perimeters of rectangles and triangles by adding lengths of sides, recognizing the meaning of perimeter.	**Developing Measurement Benchmarks: Large and Small** Teacher Guide: Lesson 6 (pp 43-48)

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Geometry **Identify and describe shapes.**	
G.GS.02.01. Identify, describe, and compare familiar two-dimensional and three-dimensional shapes, such as triangles, rectangles, squares, circles, semi-circles, spheres, and rectangular prisms.	**Developing Geometric Logic:** **Rows and Columns** Teacher Guide: Lessons 1-5 (pp 7-46), 7-8 (pp 61-76)
G.GS.02.02. Explore and predict the results of putting together and taking apart two-dimensional and three-dimensional shapes.	**Developing Geometric Logic:** **Rows and Columns** Teacher Guide: Lessons 6 (pp 47-53), 11 (pp 89-94)
G.GS.02.04. Distinguish between curves and straight lines and between curved surfaces and flat surfaces.	**Developing Geometric Logic:** **Rows and Columns** Teacher Guide: Lessons 4-5 (pp 33-46), 7-8 (pp 61-76), 12 (pp 95-100)
G.SR.02.05. Classify familiar plane and solid objects, e.g., square, rectangle, rhombus, cube, pyramid, prism, cone, cylinder, and sphere, by common attributes such as shape, size, color, roundness, or number of corners and explain which attributes are being used for classification.	**Developing Geometric Logic:** **Rows and Columns** Teacher Guide: Lessons 1-5 (pp 7-46), 7-8 (pp 61-76)
G.TR.02.06. Recognize that shapes that have been slid, turned, or flipped are the same shape, e.g., a square rotated 45 degrees is still a square.	**Developing Geometric Logic:** **Rows and Columns** Teacher Guide: Lessons 13-14 (pp 107-122)
Geometry **Use coordinate systems.**	
G.LO.02.07. Find and name locations using simple coordinate systems such as maps and first quadrant grids.	**Developing Geometric Logic:** **Rows and Columns** Teacher Guide: Lessons 17-20 (pp 141-166),

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Data and Probability **Create, interpret, and solve problems involving pictographs.**	
D.RE.02.01. Make pictographs using a scale representation, using scales where symbols equal more than one.	**Developing Algebraic Thinking: Collecting and Sorting** Teacher Guide: Lessons 11 (pp 99-108), 14-16 (pp 129-152), 17-18 (pp 159-174), 20 (pp 183-188)
D.RE.02.02. Read and interpret pictographs with scales, using scale factors of 2 and 3.	**Developing Algebraic Thinking: Collecting and Sorting** Teacher Guide: Lessons 11 (pp 99-108), 14-15 (pp 129-140)
D.RE.02.03. Solve problems using information in pictographs; include scales such as each fully darkened box represents 2 apples; avoid half darkened box cases.	**Developing Algebraic Thinking: Collecting and Sorting** Teacher Guide: Lessons 11 (pp 99-108), 14-15 (pp 129-140)

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Number and Operations **Understand and use number notation and place value.**	
N.ME.03.01. Read and write numbers to 10,000 in both numerals and words, and relate them to the quantities they represent, e.g., relate numeral or written word to a display of dots or objects.	**Developing Number Concepts: Ordering and Arranging Module A** Teacher Guide: Lessons 10-12 (pp 101-126), 14 (pp 137-143)
N.ME.03.02. Identify the place value of a digit in a number, e.g., in 3,241, 2 is in the hundreds place. Recognize and use expanded notation for numbers using place value through 9,999, e.g., 2,517 is 2000+ 500+10+ 7; 4 hundreds and 2 ones is 42.	**Developing Number Concepts: Ordering and Arranging Module A** Teacher Guide: Lessons 9-14 (pp 91-143), 15-16 (pp 151-170) **Developing Number Concepts: Ordering and Arranging Module B** Teacher Guide: Lesson 6 (pp 57-64)
N.ME.03.03. Compare and order numbers up to 10,000.	**Developing Number Concepts: Ordering and Arranging Module A** Teacher Guide: Lessons 13-14 (pp 127-143)
Number and Operations **Count in steps, and understand even and odd numbers.**	
N.ME.03.04. Count orally by 6's, 7's, 8's, and 9's starting with 0, making the connection between repeated addition and multiplication.	**Developing Number Concepts: Ordering and Arranging Module A** Teacher Guide: Lessons 6-7 (pp 61-76)
N.ME.03.05. Know that even numbers end in 0, 2, 4, 6,or 8; name a whole number quantity that can be shared in two equal groups or grouped into pairs with no remainders; recognize even numbers as multiples of 2. Know that odd numbers end in 1, 3, 5, 7, or 9, and work with patterns involving even and odd numbers.	**Developing Algebraic Thinking: Plotting and Growing** Teacher Guide: Lesson 6 (pp 69-76) **Developing Number Concepts: Ordering and Arranging Module A** Teacher Guide: Lessons 5 (pp 51-60), 25-28 (pp 251-285)

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Number and Operations **Add and subtract whole numbers.**	
N.FL.03.06. Add and subtract fluently two numbers through 999 with regrouping and through 9,999 without regrouping.	**Developing Number Concepts:** **Ordering and Arranging Module A** Teacher Guide: Lessons 18-19 (pp 181-198), 21-24 (pp 209-243)
N.FL.03.07. Estimate the sum and difference of two numbers with three digits (sums up to 1,000), and judge reasonableness of estimates.	**Developing Number Concepts:** **Ordering and Arranging Module A** Teacher Guide: Lesson 16 (pp 161-170)
N.FL.03.08. Use mental strategies to fluently add and subtract two-digit numbers.	**Developing Number Concepts:** **Ordering and Arranging Module A** Teacher Guide: Lessons 15-24 (pp 151-243)
Number and Operations **Multiply and divide whole numbers.**	
N.MR.03.09. Use multiplication and division fact families to understand the inverse relationship of these two operations, e.g., because 3 x 8 = 24, we know that 24 / 8 = 3 or 24 / 3 = 8; express a multiplication statement as an equivalent division statement.	**Developing Number Concepts:** **Ordering and Arranging Module A** Teacher Guide: Lessons 25-28 (pp 251-285)
N.MR.03.10. Recognize situations that can be solved using multiplication and division including finding 'How many groups?' and 'How many in a group?' and write mathematical statements to represent those situations.	**Developing Number Concepts:** **Ordering and Arranging Module A** Teacher Guide: Lessons 6-8 (pp 61-83), 27-30 (pp 269-301)
N.FL.03.11. Find products fluently up to 10 x 10; find related quotients using multiplication and division relationships.	**Developing Number Concepts:** **Ordering and Arranging Module A** Teacher Guide: Lessons 6-8 (pp 61-83), 25-30 (pp 251-301)

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N.MR.03.12. Find solutions to open sentences, such as 7 x __ = 42 or 12 / __ = 4, using the inverse relationship between multiplication and division.	**Developing Number Concepts: Ordering and Arranging Module A** Teacher Guide: Lessons 25-28 (pp 251-285)
N.FL.03.13. Mentally calculate simple products and quotients up to a three-digit number by a one-digit number involving multiples of 10, e.g., 500 x 6, or 400 / 8.	**Developing Geometric Logic: Shapes and Paths** Teacher Guide: Lessons 5 (pp 47-57), 8 (pp 81-88), 16 (pp 165-170)
Number and Operations **Problem-solving with whole numbers.**	
N.MR.03.15. Given problems that use any one of the four operations with appropriate numbers, represent with objects, words (including 'product' and 'quotient'), and mathematical statements; solve.	**Developing Number Concepts: Ordering and Arranging Module A** Teacher Guide: Lessons 4-8 (pp 47-83), 16-24 (pp 161-243), 26-30 (pp 259-301)
Number and Operations **Understand simple fractions, relation to the whole, and addition and subtraction of fractions.**	
N.ME.03.16. Understand that fractions may represent a portion of a whole unit that has been partitioned into parts of equal area or length; use the terms 'numerator' and 'denominator.'	**Developing Number Concepts: Ordering and Arranging Module B** Teacher Guide: Lessons 1-4 (pp 5-39), 5 (pp 47-55), 7 (pp 65-71)
N.ME.03.17. Recognize, name, and use equivalent fractions with denominators 2, 4, and 8, using strips as area models.	**Developing Number Concepts: Ordering and Arranging Module B** Teacher Guide: Lesson 4 (pp 31-39)
N.ME.03.18. Place fractions with denominators of 2, 4, and 8 on the number line; relate the number line to a ruler; compare and order up to three fractions with denominators 2, 4, and 8.	**Developing Number Concepts: Ordering and Arranging Module B** Teacher Guide: Lessons 1-4 (pp 5-39)

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N.ME.03.19. Understand that any fraction can be written as a sum of unit fractions, e.g., 3/4 = 1/4 + 1/4 + 1/4.	**Developing Number Concepts: Ordering and Arranging Module B** Teacher Guide: Lessons 1-4 (pp 5-39)
N.MR.03.20. Recognize that addition and subtraction of fractions with equal denominators can be modeled by joining or taking away segments on the number line.	**Developing Number Concepts: Ordering and Arranging Module B** Teacher Guide: Lessons 2-4 (pp 13-39)
Number and Operations **Understand simple decimal fractions in relation to money.**	
N.ME.03.21. Understand and relate decimal fractions to fractional parts of a dollar, e.g., 1/2 dollar = $0.50; 1/4 dollar = $0.25.	**Developing Number Concepts: Ordering and Arranging Module B** Teacher Guide: Lessons 8-12 (pp 79-119)
Measurement **Measure and use units for length, weight, temperature and time.**	
M.UN.03.01. Know and use common units of measurements in length, weight, and time.	**Developing Measurement Benchmarks: Scales and Balances** Teacher Guide: Lessons 1-3 (pp 7-34), 5 (pp 41-46), 10 (pp 81-88), 12-13 (pp 103-116), 18-19 (pp 155-168) **Developing Number Concepts: Ordering and Arranging Module B** Teacher Guide: Lesson 2 (pp 13-20)
M.UN.03.02. Measure in mixed units within the same measurement system for length, weight, and time: feet and inches, meters and centimeters, kilograms and grams, pounds and ounces, liters and milliliters, hours and minutes, minutes and seconds, years and months.	**Developing Measurement Benchmarks: Scales and Balances** Teacher Guide: Lessons 1-3 (pp 7-34), 5 (pp 41-46), 12-14 (pp 103-126), 18-19 (pp 155-168) **Developing Number Concepts: Ordering and Arranging Module B** Teacher Guide: Lesson 2 (pp 13-20)

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M.UN.03.03. Understand relationships between sizes of standard units, e.g., feet and inches, meters and centimeters.	**Developing Measurement Benchmarks: Scales and Balances** Teacher Guide: Lessons 12 (pp 103-110), 14 (pp 117-126), 18-19 (pp 155-168)
M.UN.03.04. Know benchmark temperatures such as freezing (32 degrees F, 0 degrees C); boiling (212 degrees F, 100 degrees C); and compare temperatures to these, e.g., cooler, warmer.	**Developing Measurement Benchmarks: Scales and Balances** Teacher Guide: Lesson 15 (pp 127-134)
Measurement **Understand meaning of area and perimeter and apply in problems.**	
M.UN.03.05. Know the definition of area and perimeter and calculate the perimeter of a square and rectangle given whole number side lengths.	**Developing Measurement Benchmarks: Scales and Balances** Teacher Guide: Lessons 4-6 (pp 35-54), 7 (pp 59-66)
M.UN.03.06. Use square units in calculating area by covering the region and counting the number of square units.	**Developing Algebraic Thinking: Plotting and Growing** Teacher Guide: Lesson 20 (pp 217-222)
M.UN.03.07. Distinguish between units of length and area and choose a unit appropriate in the context.	**Developing Measurement Benchmarks: Scales and Balances** Teacher Guide: Lessons 1-2 (pp 7-24), 5-6 (pp 41-54), 11 (pp 89-96), 15 (pp 127-134), 16-20 (pp 141-174)
M.UN.03.08. Visualize and describe the relative sizes of one square inch and one square centimeter.	**Developing Measurement Benchmarks: Scales and Balances** Teacher Guide: Lessons 7 (pp 59-66), 10 (pp 81-88)

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Measurement **Estimate perimeter and area.**	
M.TE.03.09. Estimate the perimeter of a square and rectangle in inches and centimeters; estimate the area of a square and rectangle in square inches and square centimeters.	**Developing Measurement Benchmarks: Scales and Balances** Teacher Guide: Lessons 7-8 (pp 59-72)
Measurement **Solve measurement problems.**	
M.PS.03.11. Add and subtract money in dollars and cents.	**Developing Number Concepts: Ordering and Arranging Module B** Teacher Guide: Lessons 8-12 (pp 79-119)
M.PS.03.12. Solve applied problems involving money, length, and time.	**Developing Number Concepts: Ordering and Arranging Module B** Teacher Guide: Lessons 11-12 (pp 105-119)
M.PS.03.13. Solve contextual problems about perimeters of rectangles and areas of rectangular regions.	**Developing Measurement Benchmarks: Scales and Balances** Teacher Guide: Lesson 9 (pp 73-80)
Geometry **Recognize the basic elements of geometric objects.**	
G.GS.03.01. Identify points, line segments, lines, and distance.	**Developing Geometric Logic: Shapes and Paths** Teacher Guide: Lessons 5-7 (pp 47-73), 8 (pp 81-88)
G.GS.03.02. Identify perpendicular lines and parallel lines in familiar shapes and in the classroom.	**Developing Geometric Logic: Shapes and Paths** Teacher Guide: Lessons 6-7 (pp 59-73)
G.GS.03.03. Identify parallel faces of rectangular prisms in familiar shapes and in the classroom.	**Developing Geometric Logic: Shapes and Paths** Teacher Guide: Lessons 1-2 (pp 7-22)

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Geometry **Name and explore properties of shapes.**	
G.GS.03.04. Identify, describe, compare, and classify two-dimensional shapes, e.g., parallelogram, trapezoid, circle, rectangle, square, and rhombus, based on their component parts (angles, sides, vertices, line segment) and on the number of sides and vertices.	**Developing Geometric Logic:** **Shapes and Paths** Teacher Guide: Lessons 5 (pp 47-57), 8-9 (pp 81-97)
G.SR.03.05. Compose and decompose triangles and rectangles to form other familiar two-dimensional shapes, e.g., form a rectangle using two congruent right triangles, or decompose a parallelogram into a rectangle and two right triangles.	**Developing Geometric Logic:** **Shapes and Paths** Teacher Guide: Lesson 10 (pp 99-105)
Geometry **Explore and name three-dimensional solids.**	
G.GS.03.06. Identify, describe, build, and classify familiar three-dimensional solids, e.g., cube, rectangular prism, sphere, pyramid, cone, based on their component parts (faces, surfaces, bases, edges, vertices).	**Developing Geometric Logic:** **Shapes and Paths** Teacher Guide: Lessons 3-4 (pp 23-39), 11 (pp 107-113)
G.SR.03.07. Represent front, top, and side views of solids built with cubes.	**Developing Geometric Logic:** **Shapes and Paths** Teacher Guide: Lesson 11 (pp 107-113)
Data and Probability **Use bar graphs.**	
D.RE.03.01. Read and interpret bar graphs in both horizontal and vertical forms.	**Developing Algebraic Thinking:** **Plotting and Growing** Teacher Guide: Lessons 15-17 (pp 171-194)

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D.RE.03.02. Read scales on the axes and identify the maximum, minimum, and range of values in a bar graph.	**Developing Algebraic Thinking: Plotting and Growing** Teacher Guide: Lessons 15-17 (pp 171-194)
D.RE.03.03. Solve problems using information in bar graphs, including comparison of bar graphs.	**Developing Algebraic Thinking: Plotting and Growing** Teacher Guide: Lessons 15-17 (pp 171-194)

Michigan Grade Level Content Expectations – Mathematics Grade 4 - Adopted 2006	
Number and Operations **Understand and use number notation and place value.**	
N.ME.04.01. Read and write numbers to 1,000,000; relate them to the quantities they represent; compare and order.	**Developing Number Concepts:** **Stories and Statements Module A** Teacher Guide: Lessons 8-12 (pp 73-106)
N.ME.04.02. Compose and decompose numbers using place value to 1,000,000's, e.g., 25,68 is 2 ten thousands, 5 thousands, 0 hundreds, 6 tens, and 8 ones.	**Developing Number Concepts:** **Stories and Statements Module A** Teacher Guide: Lesson 9 (pp 81-88)
N.ME.04.03. Understand the magnitude of numbers up to 1,000,000; recognize the place values of numbers and the relationship of each place value to the place to its right, e.g., 1,000 is 10 hundreds.	**Developing Number Concepts:** **Stories and Statements Module A** Teacher Guide: Lessons 8-10 (pp 73-96), 12 (pp 103-106), 16 (pp 141-150), 21-25 (pp 193-240) **Developing Number Concepts:** **Stories and Statements Module B** Teacher Guide: Lessons 14-15 (pp 125-140)
Number and Operations **Use factors and multiples.**	
N.ME.04.04. Find all factors of any whole number through 50, list factor pairs, and determine if a one-digit number is a factor of a given whole number.	**Developing Number Concepts:** **Stories and Statements Module A** Teacher Guide: Lesson 27 (pp 251-256)
N.ME.04.05. List the first ten multiples of a given one-digit whole number; determine if a whole number is a multiple of a given one-digit whole number.	**Developing Number Concepts:** **Stories and Statements Module A** Teacher Guide: Lesson 27 (pp 251-256)
N.MR.04.07. Use factors and multiples to compose and decompose whole numbers.	**Developing Number Concepts:** **Stories and Statements Module A** Teacher Guide: Lessons 8-9 (pp 73-88)

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Number and Operations **Add and subtract whole numbers.**	
N.FL.04.08. Add and subtract whole numbers fluently.	**Developing Number Concepts:** **Stories and Statements Module A** Teacher Guide: Lessons 1-3 (pp 5-30), 13-18 (pp 115-164)
Number and Operations **Multiply and divide whole numbers.**	
N.FL.04.10. Multiply fluently any whole number by a one-digit number and a three-digit number by a two-digit number; for a two-digit by one-digit multiplication use distributive property to develop meaning for the algorithm.	**Developing Number Concepts:** **Stories and Statements Module A** Teacher Guide: Lessons 3 (pp 23-30), 6-7 (pp 49-62), 19-25 (pp 175-240), 30 (pp 273-278)
N.FL.04.11. Divide numbers up to four-digits by one-digit numbers and by 10.	**Developing Geometric Logic:** **Corners and Containers** Teacher Guide: Lessons 18 (pp 167-174), 26-27 (pp 241-256), 30 (pp 273-278)
N.FL.04.12. Find the value of the unknowns in equations such as a / 10 = 25; 125 / b = 25.	**Developing Number Concepts:** **Stories and Statements Module A** Teacher Guide: Lesson 3 (pp 23-30)
N.MR.04.13. Use the relationship between multiplication and division to simplify computations and check results.	**Developing Number Concepts:** **Stories and Statements Module A** Teacher Guide: Lessons 5-7 (pp 39-62), 19 (pp 175-184), 26 (pp 241-250), 28-30 (pp 257-278)
N.MR.04.14. Solve contextual problems involving whole number multiplication and division.	**Developing Number Concepts:** **Stories and Statements Module A** Teacher Guide: Lessons 7 (pp 59-62), 22-30 (pp 23-278)

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Number and Operations **Read, interpret and compare decimal fractions.**	
N.ME.04.15. Read and interpret decimals up to two decimal places; relate to money and place value decomposition.	**Developing Number Concepts:** **Stories and Statements Module B** Teacher Guide: Lessons 4-5 (pp 35-50), 7-9 (pp 59-82), 10 (pp 89-96), 12 (pp 107-113), 13-15 (pp 119-140)
N.ME.04.16. Know that terminating decimals represents fractions whose denominators are 10, 10 x 10, 10 x 10 x 10, etc., e.g., powers of 10.	**Developing Number Concepts:** **Stories and Statements Module B** Teacher Guide: Lessons 4-5 (pp 35-50), 7-9 (pp 59-82), 10 (pp 89-96), 12 (pp 107-113), 14-15 (pp 125-140),
N.ME.04.17. Locate tenths and hundredths on a number line.	**Developing Number Concepts:** **Stories and Statements Module B** Teacher Guide: Lessons 6 (pp 51-59), 10 (pp 89-96)
N.ME.04.18. Read, write, interpret, and compare decimals up to two decimal places.	**Developing Number Concepts:** **Stories and Statements Module B** Teacher Guide: Lesson 8 (pp 67-74)
N.MR.04.19. Write tenths and hundredths in decimal and fraction forms, and know the decimal equivalents for halves and fourths.	**Developing Number Concepts:** **Stories and Statements Module B** Teacher Guide: Lessons 4-5 (pp 35-50), 7 (pp 59-66)
Number and Operations **Understand fractions.**	
N.ME.04.20. Understand fractions as parts of a set of objects.	**Developing Measurement Benchmarks:** **Inside and Outside** Teacher Guide: Lesson 2 (pp 19-28) **Developing Number Concepts:** **Stories and Statements Module B** Teacher Guide: Lessons 1-2 (pp 5-20), 13 (pp 119-124)

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N.MR.04.21. Explain why equivalent fractions are equal, using models such as fraction strips or the number line for fractions with denominators of 12 or less, or equal to 100.	**Developing Measurement Benchmarks: Inside and Outside** Teacher Guide: Lesson 2 (pp 19-28) **Developing Number Concepts: Stories and Statements Module B** Teacher Guide: Lessons 1-3 (pp 5-28)
N.MR.04.22. Locate fractions with denominators of 12 or less on the number line; include mixed numbers.	**Developing Number Concepts: Stories and Statements Module B** Teacher Guide: Lessons 1-3 (pp 5-28), 6 (pp 51-59)
N.MR.04.23. Understand the relationships among halves, fourths, and eighths and among thirds, sixths, and twelfths.	**Developing Measurement Benchmarks: Inside and Outside** Teacher Guide: Lesson 2 (pp 19-28) **Developing Number Concepts: Stories and Statements Module B** Teacher Guide: Lessons 1-3 (pp 5-28)
N.ME.04.24. Know that fractions of the form m/n where m is greater than n, are greater than 1 and are called improper fractions; locate improper fractions on the number line.	**Developing Number Concepts: Stories and Statements Module B** Teacher Guide: Lesson 9 (pp 75-82)
N.MR.04.25. Write improper fractions as mixed numbers, and understand that a mixed number represents the number of 'wholes' and the part of a whole remaining, e.g., 5/4 = 1 + 1/4 = 1 1/4.	**Developing Number Concepts: Stories and Statements Module B** Teacher Guide: Post Assessment Lessons 1-3 (pp 29-30)
N.MR.04.26. Compare and order up to three fractions with denominators 2, 4, and 8, and 3, 6, and 12, including improper fractions and mixed numbers.	**Developing Number Concepts: Stories and Statements Module B** Teacher Guide: Lessons 1-2 (pp 5-20)

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Number and Operations **Add and subtract fractions.**	
N.MR.04.27. Add and subtract fractions less than 1 with denominators through 12 and/or 100, in cases where the denominators are equal or when one denominator is a multiple of the other, e.g., 1/12, 5/12 = 6/12; 1/6 + 5/12 = 7/12; 3/10 - 23/100 = 7/100.	**Developing Number Concepts:** **Stories and Statements Module B** Teacher Guide: Lessons 2-3 (pp 13-28), 11-12 (pp 97-113), 14-15 (pp 125-140)
Number and Operations **Add and subtract decimal fractions.**	
N.MR.04.31. For problems that use addition and subtraction of decimals through hundredths, represent with mathematical statements and solve.	**Developing Number Concepts:** **Stories and Statements Module B** Teacher Guide: Lessons 11-12 (pp 97-113), 14-15 (pp 125-140)
N.FL.04.32. Add and subtract decimals through hundredths.	**Developing Number Concepts:** **Stories and Statements Module B** Teacher Guide: Lessons 11-12 (pp 97-113), 14-15 (pp 125-140)
Number and Operations **Estimate.**	
N.FL.04.34. Estimate the answers to calculations involving addition, subtraction, or multiplication.	**Developing Number Concepts:** **Stories and Statements Module A** Teacher Guide: Lessons 13-15 (pp 115-140), 21-22 (pp 193-210), 24-26 (pp 217-250), 29 (pp 265-272) **Developing Number Concepts:** **Stories and Statements Module B** Teacher Guide: Lessons 11 (pp 97-106), 14 (pp 125-132)

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N.FL.04.35. Know when approximation is appropriate and use it to check the reasonableness of answers; be familiar with common place-value errors in calculations.	**Developing Number Concepts:** **Stories and Statements Module A** Teacher Guide: Lessons 13-15 (pp 115-140)
N.FL.04.36. Make appropriate estimations and calculations fluently with whole numbers using mental math strategies.	**Developing Number Concepts:** **Stories and Statements Module A** Teacher Guide: Lessons 1-3 (pp 5-30), 5-7 (pp 39-62), 13-18 (pp 115-164), 19-30 (pp 175-278)
Measurement **Measure using common tools and appropriate units.**	
M.UN.04.01. Measure using common tools and select appropriate units of measure.	**Developing Measurement Benchmarks:** **Inside and Outside** Teacher Guide: Lessons 1-4 (pp 7-50), 7-8 (pp 75-94), 10 (pp 103-110), 11 (pp 115-126), 15-19 (pp 157-192) **Developing Number Concepts:** **Stories and Statements Module B** Teacher Guide: Lessons 16-17 (pp 147-162)
M.PS.04.02. Give answers to a reasonable degree of precision in the context of a given problem.	**Developing Measurement Benchmarks:** **Inside and Outside** Teacher Guide: Lessons 1-4 (pp 7-50)
M.UN.04.03. Measure and compare integer temperatures in degrees.	**Developing Measurement Benchmarks:** **Inside and Outside** Teacher Guide: Lesson 11 (pp 115-126) **Developing Number Concepts:** **Stories and Statements Module B** Teacher Guide: Lesson 18 (pp 163-170)

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Measurement **Convert measurement units.**	
M.TE.04.05. Carry out the following conversions from one unit of measure to a larger or smaller unit of measure: meters to centimeters, kilograms to grams, liters to milliliters, hours to minutes, minutes to seconds, years to months, weeks to days, feet to inches, ounces to pounds (using numbers that involve only simple calculations).	**Developing Measurement Benchmarks: Inside and Outside** Teacher Guide: Lessons 1 (pp 7-18), 3-4 (pp 29-50), 13-14 (pp 133-150), 15 (pp 157-164), 17 (pp 171-178), 19 (pp 185-192)
Measurement **Use perimeter and area formulas.**	
M.TE.04.06. Know and understand the formulas for perimeter and area of a square and a rectangle; calculate the perimeters and areas of these shapes and combinations of these shapes using the formulas.	**Developing Geometric Logic: Corners and Containers** Teacher Guide: Lessons 11-12 (pp 101-114) **Developing Measurement Benchmarks: Inside and Outside** Teacher Guide: Lessons 5-6 (pp 51-68), 8 (pp 85-94)
M.PS.04.09. Solve contextual problems about perimeter and area of squares and rectangles in compound shapes.	**Developing Measurement Benchmarks: Inside and Outside** Teacher Guide: Lesson 6 (pp 61-68)
Measurement **Understand right angles.**	
M.TE.04.10. Identify right angles and compare angles to right angles.	**Developing Geometric Logic: Corners and Containers** Teacher Guide: Lessons 6-7 (pp 57-72)
Geometry **Understand perpendicular, parallel, and intersecting lines.**	
G.GS.04.01. Identify and draw perpendicular, parallel, and intersecting lines using a ruler and a tool or object with a square (90 degrees) corner.	**Developing Geometric Logic: Corners and Containers** Teacher Guide: Lesson 6 (pp 57-63)

Michigan Grade Level Content Expectations – Mathematics Grade 4 - Adopted 2006	
Geometry **Identify basic geometric shapes and their components, and solve problems.**	
G.GS.04.02. Identify basic geometric shapes including isosceles, equilateral, and right triangles, and use their properties to solve problems.	**Developing Geometric Logic: Corners and Containers** Teacher Guide: Lessons 5 (pp 49-56), 8-9 (pp 73-86)
G.SR.04.03. Identify and count the faces, edges, and vertices of basic three-dimensional geometric solids including cubes, rectangular prisms, and pyramids; describe the shape of their faces.	**Developing Geometric Logic: Corners and Containers** Teacher Guide: Lessons 2-4 (pp 15-42)
Geometry **Recognize symmetry and transformations.**	
G.TR.04.04. Recognize plane figures that have line symmetry.	**Developing Geometric Logic: Corners and Containers** Teacher Guide: Lesson 14 (pp 131-137)
G.TR.04.05. Recognize rigid motion transformations (flips, slides, turns) of a two-dimensional object.	**Developing Geometric Logic: Corners and Containers** Teacher Guide: Lessons 13-16 (pp 121-152),
Data and Probability **Represent and solve problems for given data.**	
D.RE.04.01. Construct tables and bar graphs from given data.	**Developing Algebraic Thinking: Signs and Symbols** Teacher Guide: Lessons 13 (pp 129-136), 17-18 (pp 179-190) **Developing Number Concepts: Stories and Statements Module B** Teacher Guide: Lesson 22 (pp 25-212)
D.RE.04.02. Order a given set of data, find the median, and specify the range of values.	**Developing Algebraic Thinking: Signs and Symbols** Teacher Guide: Lessons 14-15 (pp 143-160)

Michigan Grade Level Content Expectations – Mathematics Grade 4 - Adopted 2006	
D.RE.04.03. Solve problems using data presented in tables and bar graphs, e.g., compare data represented in two bar graphs and read bar graphs showing two data sets.	**Developing Algebraic Thinking: Signs and Symbols** Teacher Guide: Lessons 11-13 (pp 113-136), 17-18 (pp 179-190), 20 (pp 199-24)

Michigan Grade Level Content Expectations – Mathematics Grade 5 - Adopted 2006	
Number and Operations **Understand division of whole numbers.**	
N.MR.05.01. Understand the meaning of division of whole numbers with and without remainders; relate division to fractions and to repeated subtraction.	**Developing Number Concepts:** **Values and Variables Module A** Teacher Guide: Lessons 1-8 (pp 5-78), 9-14 (pp 85-132), 15-20 (pp 139-188), 21-27 (pp 195-257), 28-30 (pp 265-287) **Developing Number Concepts:** **Values and Variables Module B** Teacher Guide: Lessons 1-4 (pp 5-40), 5-12 (pp 47-109), 13-16 (pp 117-144), 17-19 (pp 151-171), 20-24 (pp 179-213)
N.MR.05.02. Relate division of whole numbers with remainders to the form a = bq + r, e.g., 34 / 5 = 6 r 4, so 5 x 6 + 4 = 34; note remainder (4) is less than divisor (5).	**Developing Number Concepts:** **Values and Variables Module A** Teacher Guide: Lessons 24-27 (pp 221-257)
N.MR.05.03. Write mathematical statements involving division for given situations.	**Developing Number Concepts:** **Values and Variables Module A** Teacher Guide: Lessons 4-5 (pp 35-52), 7-8 (pp 63-78), 23-27 (pp 215-257)
Number and Operations **Multiply and divide whole numbers.**	
N.FL.05.04. Multiply a multi-digit number by a two-digit number; recognize and be able to explain common computational errors such as not accounting for place value.	**Developing Number Concepts:** **Values and Variables Module A** Teacher Guide: Lesson 6 (pp 53-62)
N.FL.05.05. Solve applied problems involving multiplication and division of whole numbers.	**Developing Number Concepts:** **Values and Variables Module A** Teacher Guide: Lessons 4-5 (pp 35-52), 7-8 (pp 63-78), 23-27 (pp 215-257)

Michigan Grade Level Content Expectations – Mathematics Grade 5 - Adopted 2006	
N.FL.05.06. Divide fluently up to a four-digit number by a two-digit number.	**Developing Number Concepts:** **Values and Variables Module A** Teacher Guide: Lesson 7 (pp 63-72)
Number and Operations **Find prime factorizations of whole numbers.**	
N.MR.05.07. Find the prime factorization of numbers from 2 through 50, express in exponential notation, e.g., 24 = 2 cubed x 3 to the first, and understand that every whole number greater than 1 is either prime or can be expressed as a product of primes.	**Developing Number Concepts:** **Values and Variables Module A** Teacher Guide: Lessons 28-30 (pp 265-287) **Developing Number Concepts:** **Values and Variables Module B** Teacher Guide: Lessons 1-2 (pp 5-24)
Number and Operations **Understand meaning of decimal fractions and percentages.**	
N.ME.05.08. Understand the relative magnitude of ones, tenths, and hundredths and the relationship of each place value to the place to its right, e.g., one is 10 tenths, one tenth is 10 hundredths.	**Developing Number Concepts:** **Values and Variables Module A** Teacher Guide: Lessons 16 (pp 149-158)
N.ME.05.09. Understand percentages as parts out of 100, use % notation, and express a part of a whole as a percentage.	**Developing Number Concepts:** **Values and Variables Module B** Teacher Guide: Lesson 15 (pp 129-135)
Number and Operations **Understand fractions as division statements; find equivalent fractions.**	
N.ME.05.10. Understand a fraction as a statement of division, e.g., 2 / 3 = 2/3, using simple fractions and pictures to represent.	**Developing Number Concepts:** **Values and Variables Module B** Teacher Guide: Lessons 1-4 (pp 5-40), 5-12 (pp 47-109), 13-16 (pp 117-144)

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N.ME.05.11. Given two fractions, e.g., 1/2 and 1/4, express them as fractions with a common denominator, but not necessarily a least common denominator, e.g., 1/2 = 4/8 and 3/4 = 6/8; use denominators less than 12 or factors of 100.	**Developing Number Concepts:** **Values and Variables Module B** Teacher Guide: Lessons 1-4 (pp 5-40), 5-12 (pp 47-109), 13-16 (pp 117-144)
Number and Operations **Add and subtract fractions using common denominators.**	
N.FL.05.14. Add and subtract fractions with unlike denominators through 12 and/or 100, using the common denominator that is the product of the denominators of the 2 fractions, e.g., 3/8 + 7/10: use 80 as the common denominator.	**Developing Number Concepts:** **Values and Variables Module B** Teacher Guide: Lessons 10 (pp 87-93), 12 (pp 103-109)
Number and Operations **Multiply and divide by powers of ten.**	
N.FL.05.16. Divide numbers by 10's, 100's, 1,000's using mental strategies.	**Developing Number Concepts:** **Values and Variables Module A** Teacher Guide: Lessons 24 (pp 221-228), 26-27 (pp 241-257)
Number and Operations **Solve applied problems with fractions.**	
N.FL.05.18. Use mathematical statements to represent an applied situation involving addition and subtraction of fractions.	**Developing Number Concepts:** **Values and Variables Module B** Teacher Guide: Lessons 10-12 (pp 87-109)
N.MR.05.19. Solve contextual problems that involve finding sums and differences of fractions with unlike denominators using knowledge of equivalent fractions.	**Developing Number Concepts:** **Values and Variables Module B** Teacher Guide: Lessons 10-12 (pp 87-109)

Michigan Grade Level Content Expectations – Mathematics Grade 5 - Adopted 2006	
N.FL.05.20. Solve applied problems involving fractions and decimals; include rounding of answers and checking reasonableness.	**Developing Number Concepts: Values and Variables Module A** Teacher Guide: Lessons 16-17 (pp 149-166), 19-20 (pp 175-188) **Developing Number Concepts: Values and Variables Module B** Teacher Guide: Lessons 10-12 (pp 87-109)
Number and Operations **Express, interpret, and use ratios; find equivalences.**	
N.MR.05.22. Express fractions and decimals as percentages and vice versa.	**Developing Number Concepts: Values and Variables Module B** Teacher Guide: Post Assessment Lessons 13-16 (pp 145-146)
N.ME.05.23. Express ratios in several ways given applied situations, e.g., 3 cups to 5 people, 3 : 5, 3/5; recognize and find equivalent ratios.	**Developing Number Concepts: Values and Variables Module B** Teacher Guide: Lessons 20-22 (pp 179-199)
Measurement **Know, and convert among, measurement units within a given system.**	
M.UN.05.01. Recognize the equivalence of 1 liter, 1,000 ml and 1,000 cubic cm and include conversions among liters, milliliters, and cubic centimeters.	**Developing Measurement Benchmarks: Tools and Time** Teacher Guide: Lesson 16 (pp 135-140)
M.UN.05.04. Convert measurements of length, weight, area, volume, and time within a given system using easily manipulated numbers.	**Developing Measurement Benchmarks: Tools and Time** Teacher Guide: Lessons 1 (pp 7-14), 4 (pp 31-38), 11 (pp 95-100), 13 (pp 109-114), 16-17 (pp 135-146)

Michigan Grade Level Content Expectations – Mathematics Grade 5 - Adopted 2006	
Measurement **Find areas of geometric shapes using formulas.**	
M.PS.05.05. Represent relationships between areas of rectangles, triangles, and parallelograms using models.	**Developing Measurement Benchmarks: Tools and Time** Teacher Guide: Lesson 8 (pp 69-74)
M.TE.05.06. Understand and know how to use the area formula of a triangle: A = 1/2 bh (where b is length of the base and h is the height), and represent using models and manipulatives.	**Developing Measurement Benchmarks: Tools and Time** Teacher Guide: Lesson 8 (pp 69-74)
M.TE.05.07. Understand and know how to use the area formula for a parallelogram: A = bh, and represent using models and manipulatives.	**Developing Geometric Logic: Conjectures and Transformations** Teacher Guide: Lesson 12 (pp 115-122) **Developing Measurement Benchmarks: Tools and Time** Teacher Guide: Lessons 7-8 (pp 61-74)
Measurement **Understand the concept of volume**	
M.TE.05.08. Build solids with unit cubes and state their volumes.	**Developing Geometric Logic: Conjectures and Transformations** Teacher Guide: Lesson 13 (pp 123-129)
M.TE.05.09. Use filling (unit cubes or liquid), and counting or measuring to find the volume of a cube and rectangular prism.	**Developing Measurement Benchmarks: Tools and Time** Teacher Guide: Lesson 10 (pp 81-88)

Michigan Grade Level Content Expectations – Mathematics Grade 5 - Adopted 2006	
Geometry **Know the meaning of angles, and solve problems.**	
G.TR.05.01. Associate an angle with a certain amount of turning; know that angles are measured in degrees; understand that 90 degrees, 180 degrees, 270 degrees, and 360 degrees are associated respectively, with 1/4, 1/2, and 3/4, and full turns.	**Developing Geometric Logic: Conjectures and Transformations** Teacher Guide: Lessons 14 (pp 135-141), 16 (pp 151-157)
G.GS.05.02. Measure angles with a protractor and classify them as acute, right, obtuse, or straight.	**Developing Geometric Logic: Conjectures and Transformations** Teacher Guide: Lessons 8-9 (pp 79-93) **Developing Number Concepts: Values and Variables Module A** Teacher Guide: Post Assessment Lesson 28-30 (p 288)
G.GS.05.06. Understand why the sum of the interior angles of a triangle is 180 degrees and the sum of the interior angles of a quadrilateral is 360 degrees, and use these properties to solve problems.	**Developing Geometric Logic: Conjectures and Transformations** Teacher Guide: Lessons 8-9 (pp 79-93), 11 (pp 107-114)
Geometry **Solve problems about geometric shapes.**	
G.GS.05.07. Find unknown angles and sides using the properties of: triangles, including right, isosceles, and equilateral triangles; parallelograms, including rectangles and rhombuses; and trapezoids.	**Developing Geometric Logic: Conjectures and Transformations** Teacher Guide: Lessons 8-9 (pp 79-93), 11 (pp 107-114)

Michigan Grade Level Content Expectations – Mathematics Grade 5 - Adopted 2006	
Data and Probability **Construct and interpret line graphs.**	
D.RE.05.01. Read and interpret line graphs, and solve problems based on line graphs, e.g., distance-time graphs, and problems with two or three line graphs on same axes, comparing different data.	**Developing Algebraic Thinking: Steps and Distance** Teacher Guide: Lesson 16 (pp 151-158) **Developing Measurement Benchmarks: Tools and Time** Teacher Guide: Lesson 15 (pp 123-128)
D.RE.05.02. Construct line graphs from tables of data; include axis labels and scale.	**Developing Number Concepts: Values and Variables Module B** Teacher Guide: Lesson 19 (pp 165-171)
Data and Probability **Find and interpret mean and mode for a given set of data**	
D.AN.05.03. Given a set of data, find and interpret the mean (using the concept of fair share) and mode.	**Developing Algebraic Thinking: Steps and Distance** Teacher Guide: Unit Pre Assessment (pp xxiii-xxxiii), Post Assessment Lessons 11-13 (pp 102-103), Post Assessment Lessons 17-20 (pp 162-163)
D.AN.050.4. Solve multi-step problems involving means.	**Developing Algebraic Thinking: Steps and Distance** Teacher Guide: Post Assessment Lessons 11-13 (pp 102-103), Post Assessment Lessons 17-20 (pp 162-163)

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