

**Course Name: 2<sup>nd</sup> Grade Mathematics**

**STRAND: NUMBERS AND OPERATIONS**

Essential Outcomes/ Standards	Grade Level Content Expectations	Resources	Vocabulary	Assessments	Notes: Suggested Activities
<b>Count, write and order whole numbers</b>					
Count to 1000 by 1's, 10's, and 100's starting from any number in the sequence.	N.ME.02.01 (Extended Core)	Heath <i>Math Connections</i> Chapters 3 and 11	Skip counting 1's, 10's	1:1 Oral assessment, and/or have students fill in grids. To save your sanity, do one century at a time.	Rote practice
Read and write numbers to 1000 in numbers and words and relate them to the quantities they represent.	N.ME.02.02 (Core)	Heath <i>Math Connections</i> Chapters 3 and 11	Invariance of number	Students identify numbers on flashcards. Students write numbers dictated by teacher. Students count out a given number of objects.	Estimation jar, students estimate and count number of objects inside jar, group by 10's and 100's
Compare and Order Numbers to 1000; use the symbols < and >.	N.ME 02.03 (Core)	Heath <i>Math Connections</i> Chapters 3 and 11	Greater than, less than, equal, sign, symbol	Given 2 numbers, students place the symbol between.	Use flashcards. Students put cards in order.

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<b>Count, write, and order whole numbers</b>					
Count orally by 3's and 4's starting with 0, and by 2's, 5's, and 10's starting from any number.	N.ME.02.04 (Not Assessed at State Level)	Heath <i>Math Connections</i> Chapters 3 and 11  <a href="http://www.edhelper.com">www.edhelper.com</a> has a lot of dot-to-dots like this. It costs \$20.00 to join, but there are some freebies.	Skip count, 1's, 2's, 3's, 4's, 5's, 10's	Oral assessment	Dot to dots, including skip counting types
<b>Understand place value</b>					
Express numbers up to 1000 using place value, e.g. 137 is 1 hundred, 3 tens, and 7 ones.	N.ME.02.05 (Not Assessed at State Level)	Heath <i>Math Connections</i> , Chapters 3 and 11, base 10 blocks  <a href="http://www.beaconlearningcenter.com">www.beaconlearningcenter.com</a> Go to "teacher resources," then in the search box, type in "adding jumping beans."	1's place, 10's place, 100's place, 1000's place	Use base ten blocks to make representations of numbers; oral assessment	Base ten blocks, play "race to a flat." Beacon learning center dot com; "adding jumping beans."

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<b>Add and subtract whole numbers</b>					
Decompose 100 into addition pairs, e.g. $100 = 99 + 1 = 98 + 2...$	N.FL.02.06 (Extended Core)	Heath <i>Math Connections</i> Chapters 6 and 8. <u>One Hundred Hungry Ants</u> , Elinor Pinczes	Addition pairs, decompose = analyze	Worksheet: sample 20 of the addition pairs and have students match the fact families.	Model this idea.
Find the distance between numbers on the number line, e.g. How far is 79 from 26?	N.MR.02.07 (Core)	Heath <i>Math Connections</i> Chapter 2, number line Math Their Way, p. 320, Unifix Stacks.	Number line, difference	Have students identify the two numbers on the line. Ask them how they would find the difference?	Use unifix cubes and act out this type of problem. Play unifix stacks.
Find the missing values in open sentences, e.g. $42 + [] = 57$ ; use relationship between addition and subtraction.	N.MR.02.08 (Extended Core)	Heath <i>Math Connections</i> Chapter 2	Missing addend, number sentence fact family	Observe: do the students say “Hey, that’s a fact family.” when there is one? Chapter 2 test	Teach this using much lower numbers, then apply the concept to all numbers.

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<b>Add and subtract whole numbers</b>					
Given a contextual situation that involves addition and subtraction for numbers up to two digits, model using objects or pictures, explain in words, record using numbers and symbols, solve.	N.MR.02.09 (Core)	Heath <i>Math Connections</i> Chapter 2, base ten blocks or unifix cubes, Creative Press <i>The Problem Solver 2</i> .	Story problem, problem solving strategies such as “make a picture” and “act it out.”	Read the students a story problem and observe how they go about solving it.	Model this technique over and over. Play “race to a flat” or “race to 0.”
Add fluently two numbers up to two digits each, using strategies including formal algorithms; subtract fluently numbers up to two digits each.	N.FL.02.10 (Core)	Heath <i>Math Connections</i> Chapter 2, base 10 blocks <a href="http://www.onlineworksheets.org">www.onlineworksheets.org</a> has lots of practice pages.	Digit, 1’s place, 10’s place, carry, borrow, regroup	Observe, give the students a set of problems and evaluate their work. Chapter 10 test.	Model and practice in different ways, ex: 43 + 25 is 40 + 20 and 3+5 together, or 4+2 side by side to 3+5.

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<b>Add and subtract whole numbers</b>					
Estimate and calculate the sum of two numbers with three digits that do not require regrouping.	N.FL.02.11 (Core)	Heath <i>Math Connections</i> Chapter 2. Base 10 blocks	Sum, estimate, digit, addend, 1's place, 10's place, 100's place	On worksheets, look to see if students' answers are close, or off by magnitudes of 10.	Model estimating, especially with price tags, ex: \$1.49 is almost \$1.50.
Calculate mentally sums and differences involving: three-digit numbers and ones; three-digit numbers and tens, three-digit numbers and hundreds.	N.FL.02.12 (Not Assessed at State Level)	Heath <i>Math Connections</i> Chapter 12  <i>Math Their Way Summary Newsletter</i> , p. 11.15	Sum, difference, 1's, 10's, 100's, digit	Ask students to write answer to problem without using algorithm; they can write only the answer.	Teach visualization strategy: Have a number constructed on the place value board, imagine 100's 10's Or 1's added or subtracted.

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Essential Outcomes/ Standards	Grade Level Content Expectations	Resources	Vocabulary	Assessments	Notes: Suggested Activities
<b>Understand meaning of multiplication and division</b>					
Understand multiplication as the result of counting the total number of objects in a set of equal groups, e.g. $3 \times 5$ gives the number of objects in three groups of five objects, or $3 \times 5 = 5 + 5 + 5 = 15$ .	N.MR.02.13 (Core)	Heath <i>Math Connections</i> Chapter 10. <i>Math Their Way</i> , Chapter 12, "Pattern Book Experiments." <u>Bunches and Bunches of Bunnies</u> by Louise Matthews	Set, group, equal, total	Can the student model the problem with objects? If so, can the students connect to the symbols?  Chapter 10 test	<i>Math Their Way</i> chapter 12, "Pattern book experiments."
Represent multiplication using area and array models.	N.MR.02.14 (Extended Core)	Heath <i>Math Connections</i> Chapter 10.	Array, area, multiplication	Given a set of numbers (ex. $3 \times 2$ ), have students build an array and solve problem.	Along with making sets, organize the sets into matrix form.

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<b>Understand meaning of multiplication and division</b>					
Understand division as another way of expressing multiplication, using fact families within the 5 x 5 multiplication table; emphasize that division “undoes” multiplication, e.g. $2 \times 3 = 6$ can be rewritten as $6 / 2 = 3$ or $6 / 3 = 2$ .	N.MR.02.15 (Future Core)	Heath <i>Math Connections</i> Chapter 10. <i>Math Their Way</i> Chapter 12, “Pattern book Experiments.”	Division, fact family, multiply	Chapter 10 test	Act out with objects; use sharing stories, make connections to multiplying.
Given a simple situation involving groups equal size or of sharing equally, represent with objects, words, and symbols; solve.	N.MR.02.16 (Extended Core)	Heath <i>Math Connections</i> Chapter 10.	Problem solve, model with objects, share, equal	Chapter 10 test	Use story problems from Heath <i>Math Connections</i> , chapter 10.

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<b>Understand meaning of multiplication and division</b>					
Develop strategies for fluently multiplying numbers up to 5 x 5.	N.FL.02.17 (Future Core)	Heath <i>Math Connections</i> Chapter 10. Flash cards	Strategy	Ask students, "How do you remember?"	Generate a class strategy poster; model using flash cards
<b>Work with unit fractions</b>					
Recognize, name, and represent commonly used fraction units with denominators 12 or less; model $\frac{1}{2}$ , $\frac{1}{3}$ , and $\frac{1}{4}$ by folding strips of paper.	N.ME.02.18 (Core)	Heath <i>Math Connections</i> Chapter 7. Fraction pizza (if you have it) Pattern blocks	Fraction, denominator, numerator	Chapter 7 test. Observation.	Use pattern blocks: how many triangles make a trapezoid? How many diamonds make a hexagon? Etc.
Recognize, name and write commonly used fractions: $\frac{1}{2}$ , $\frac{1}{3}$ , $\frac{2}{3}$ , $\frac{1}{4}$ , $\frac{2}{4}$ , $\frac{3}{4}$ .	N.ME.02.19 (Core)	Heath <i>Math Connections</i> Chapter 7. Fraction pizza (if you have it)	Fraction	Make a worksheet with example of fractions and have students label them. Chapter 7 test.	Model: given the symbol, write the corresponding fraction; given the model of a fraction, write the symbol.

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<b>Work with unit fractions</b>					
Place 0 and halves, e.g. $\frac{1}{2}$ , $1\frac{1}{2}$ , $2\frac{1}{2}$ , on the number line, relate to a ruler.	N.NE.02.20 (Core)	Heath <i>Math Connections</i> Chapter 7 Rulers, number lines	Number line, fraction	<a href="http://www.mde.k12.ms.us/cad/osa/D_MCT_G2_math.pdf">www.mde.k12.ms.us/cad/osa/D_MCT_G2_math.pdf</a> This is released items from the state of Miss.'s test. Look at questions 45 and 51.	Use rulers to measure things precisely.
For unit fractions from $\frac{1}{12}$ to $\frac{1}{2}$ , understand the inverse relationship between the size of the denominator; compare unit fractions from $\frac{1}{12}$ to $\frac{1}{2}$ .	N.ME.02.21 (Future Core)	Heath <i>Math Connections</i> Chapter 7. <a href="http://www.webmath.com">www.webmath.com</a> Go to k-8 math and search for comparing fractions	Inverse, compare, denominator	Chapter 7 test	Model. Would you rather have $\frac{1}{12}$ of a pizza or $\frac{1}{6}$ ? Make paper pizzas.
Recognize that fractions such as $\frac{2}{2}$ , $\frac{3}{3}$ , and $\frac{4}{4}$ are equal to the whole (one).	N.ME.02.22 (Core)	Heath <i>Math Connections</i> Chapter 7. Fraction pizza (if you have it)	Whole, one	Observation	Same as above.

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**STRAND: MEASUREMENT**

Essential Outcomes/ Standards	Grade Level Content Expectations	Resources	Vocabulary	Assessments	Notes: Suggested Activities
<b>Measure, add and subtract length</b>					
Measure length in meters, centimeter, inches, feet, and yards approximating to the nearest whole unit using abbreviations: cm, m, in, ft, yd.	M.UN.02.01 (Core)	Heath <i>Math Connections</i> Chapter 9. Inch and centimeter rulers, yardsticks, measuring tape <i>AIMS: Math + Science = a Solution; Spring into Math and Science</i>	Standard unit, length, metric, meter, centimeter, inch, foot, yard	Chapter 9 test. Observation	AIMS Mini-metric Olympics; Feet findings
Draw rectangles and triangles and compute perimeters by adding by adding lengths of sides, recognizing the meaning of perimeter.	G.GS.02.03 (Core)	Heath <i>Math Connections</i> Chapter 7 and Chapter 9, pp. 261-2. Geoboards.	Perimeter, side, length	Chapter 9 test Observation <a href="http://www.mde.k12.ms.us/cad/osa/D_MCT_G2_math.pdf">www.mde.k12.ms.us/cad/osa/D_MCT_G2_math.pdf</a> Look at test items # 31 & 33	Use cut out squares. Give students a particular number and have them explore. What arrangement yields the largest or smallest perimeter?
Compare lengths, add and subtract lengths (no conversion of units).	M.PS.02.02 (Core)	Heath <i>Math Connections</i> Chapter 9	Length, add, subtract	Chapter 9 test	Who's the tallest kid in class? How much taller are they than the shortest kid? Are you wider (arms extended) than you are tall?

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**STRAND: MEASUREMENT**

Essential Outcomes/ Standards	Grade Level Content Expectations	Resources	Vocabulary	Assessments	Notes: Suggested Activities
<b>Understand the concept of area</b>					
Measure area using non-standard units to the nearest whole unit.	M.UN.02.03 (Extended Core)	Heath <i>Math Connections</i> p. 207-8. Pattern blocks Geoboards	Whole unit, area	Chapter 10 test	How many (squares, triangles, etc) can fit on a _____?
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.	M.TE.02.04 (Future Core)	Heath <i>Math Connections</i> , Chapter 10 Geoboards Grid paper <a href="http://www.oswego.org">www.oswego.org</a> Go to study zone, and click on elementary test prep, then on math 4. Click on grades 3-4, then type in "area" in the search box.	Length, grid, area, product (times)	Chapter 10 test	With geoboards, mark off an area. How many squares are inside the area? Are there more inside or outside the area?

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**STRAND: MEASUREMENT**

Essential Outcomes/ Standards	Grade Level Content Expectations	Resources	Vocabulary	Assessments	Notes: Suggested Activities
<b>Tell time and solve time problems</b>					
<p>Using both A.M. and P.M., tell and write time from the clock face in five minute intervals and from the digital to the minute; include reading time: 9:15 as 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 ‘till nine. Show time by drawing hands on the clock face.</p>	<p>M.UN.02.05 (Core)</p>	<p>Heath <i>Math Connections</i> Chapter 5</p> <p><i>Math Their Way</i>, Chapter 5 and 9.</p> <p>Analog and digital clocks</p>	<p>Meridian, Ante Meridian, Post Meridian, hour, minute, hands, face, interval</p>	<p>Chapter 5 test</p>	<p>“Water timer,” “Duration,” “Intervals of time,” and “Time trials.” Activities can be adjusted to accommodate use of clock. Also, to understand A.M. and P.M. make a sundial. Make hourly marks on it to show the movement of the shadow. Notice size of shadow changing and link</p>
<p>Use the concept of duration of time, e.g. determine what time it will be half an hour from 10:15.</p>	<p>M.UN.02.06 (Core)</p>	<p>Heath <i>Math Connections</i> Chapter 5</p> <p>Model clocks</p>	<p>Duration, interval</p>	<p>Chapter 5 test</p>	<p>to sun’s position before (ante) the meridian or after (post) the meridian.</p>

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Essential Outcomes/ Standards	Grade Level Content Expectations	Resources	Vocabulary	Assessments	Notes: Suggested Activities
<b>Record, add and subtract money</b>					
Read and write amounts of money using decimal notations, e.g. \$1.15.	M.UN.02.07 (Core)	Heath <i>Math Connections</i> Chapter 5 <a href="http://www.usmint.gov">www.usmint.gov</a>	Decimal notation, dollars, cents	Chapter 5 test	Compare decimal notation to place value mat. Ex: \$1.15 is 115 cents.
Add and subtract money in mixed units, e.g. \$2.50 + 60 cents and \$5.75 - \$3, but not \$2.50 + \$3.10.	M.PS.02.08 (Future Core)	Heath <i>Math Connections</i> Chapter 5 <i>Math Their Way</i> , Chapter 11 Place value mats, coins, cut-out catalog items with price on	Mixed units, dollars, cents	Chapter 5 test	“Determining prices” <i>MTW</i> p. 312. “The store,” <i>MTW</i> p.317. Students add or subtract the price of various items.

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**STRAND: MEASUREMENT**

Essential Outcomes/ Standards	Grade Level Content Expectations	Resources	Vocabulary	Assessments	Notes: Suggested Activities
<b>Read thermometers</b>					
Read temperature using the scale on a thermometer in degrees Fahrenheit.	M.UN.02.09 (Extended Core)	Heath <i>Math Connections</i> , p. 269 <i>AIMS: Primarily Physics Thermometers</i>	Fahrenheit, Celsius, degree, thermometer, temperature	Make model thermometers. Ask students to represent 2-3 different temperatures.	AIMS "Temperature told." Keep weekly record of temperature as part of calendar activities.
<b>Solve measurement problems</b>					
Solve simple word problems involving length and money.	M.PS.02.10 (Core)	Heath <i>Math Connections</i> Chapter 5.	strategy	Chapter 5 test.	Look in chapter 5 for story problems.

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**STRAND: GEOMETRY**

Essential Outcomes/ Standards	Grade Level Content Expectations	Resources	Vocabulary	Assessments	Notes: Suggested Activities
<b>Identify and describe shapes</b>					
Identify, describe, and compare familiar two-dimensional and three dimensional shapes such as triangles, rectangles, squares, circles, semi-circles, spheres, and rectangular prisms.	G.GS.02.01 (Core)	Heath <i>Math Connections</i> Chapter 7 Pattern blocks Geoboards 3-D shape blocks, if you have them	Triangle, rectangle, square, circle, trapezoid, semi-circle, sphere, rectangular prism, triangular prism, corner, side, face, edge	Chapter 7 test	Use your materials to create things: patterns, quilts, designs, etc. Use the vocabulary.
Explore and predict the results of putting together and taking apart two-dimensional and three-dimensional shapes.	G.GS.02.02 (Future Core)	Heath <i>Math Connections</i> Chapter 7. Pattern blocks tangrams	Dimension, two dimensional, three dimensional, predict	Chapter 7 test	Compare real-world items to the various figures. If you put two triangular prisms together, do you get a rectangular prism?
Draw rectangles and triangles, and compute perimeters by adding lengths of sides, recognizing the meaning of perimeter.	G.GS.02.03 (Core)	Heath <i>Math Connections</i> p. 261 <i>Math Their Way</i> , p. 315	Perimeter, length, rectangle, triangle	Observation	<i>MTW</i> , "Perimeters"

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**STRAND: GEOMETRY**

Essential Outcomes/ Standards	Grade Level Content Expectations	Resources	Vocabulary	Assessments	Notes: Suggested Activities
<b>Identify and describe shapes</b>					
Distinguish between curves and straight lines and between curved surfaces and flat surfaces.	G.GS.02.04 (Extended Core)	Building art teacher	Line, surface, curve, straight, flat	Just have your students draw a straight line and a curvy line. Describe why objects slide, roll, or both.	Make paper chains or paper moebius strips. Roll versus slide classification of objects.
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 or corners and explain which attributes are used for classification.	G.SR.02.05 (Core)	Heath <i>Math Connections</i> Chapter 7	Attribute, solid, plane, classify	Observation; written response to questions like “What shape is a football?”	Compare/contrast tasks: how is a circle different from a sphere? How is a triangular prism like a rectangular prism?

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**STRAND: GEOMETRY**

Essential Outcomes/ Standards	Grade Level Content Expectations	Resources	Vocabulary	Assessments	Notes: Suggested Activities
<b>Identify and describe shapes</b>					
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	G.TR.02.06 (Future Core)	Heath <i>Math Connections</i> Chapter 7 AIMS <i>Pieces and Patterns</i> <i>Math Their Way</i> <i>Summary Newsletters</i> , 9.7-9.9	Rotate, slide, flip	Chapter 7 test	AIMS “Mirror, Mirror.” <i>MTW Summary Newsletters</i> “Symmetry Activities.”
<b>Use coordinate systems</b>					
Find and name locations using simple coordinate systems such as maps and first quadrant grids.	G.LO.02.07 (Future Core)	Heath p. 121-122 Geoboards <i>Battleship</i> <i>Math Their Way</i> , p.195	Coordinates	Given a simple map with coordinates, identify three locations	Use unifix cubes to mark different pegs on the geoboard. Students must ID coordinates to sink your “ship.” <i>MTW</i> , “Capture.”

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**STRAND: DATA AND PROBABILITY**

Essential Outcomes/ Standards	Grade Level Content Expectations	Resources	Vocabulary	Assessments	Notes: Suggested Activities
<b>Create, interpret, and solve problems involving pictographs</b>					
Make pictographs using a scale representation, using scales where symbols equal more than one.	D.RE.02.01 (Future Core)	There are graphs all throughout the Heath <i>Math Connections</i> book- at least one per chapter. <i>Math Their Way</i> , Chapter 6.	Graph, scale, symbol, pictograph, data, matrix	From the Heath enrichment book, number 4.11 worksheet.	<i>Math Their Way</i> Chapter 6 has many good ideas for graphs.
Read and interpret pictographs with scales, using scale factors of 2 and 3	D.RE.02.02 (Future Core)	<i>Scholastic News</i> often has a graph.	Scale, data	Heath <i>Math Connections</i> , p. 248	Use a shoe graph: one shoe = both the student's shoes
Solve problems using information in pictographs, include scales such as each [] = 2 apples; avoid ½ [] cases.	D.RE.02.03 (Future Core)	AIMS <i>Primarily Bears</i>	Scale	Heath Enrichment 8.11.	"Gummy Bears," "M&M Math," "Joys of Jelly Beans," and "Let me count the ways."