2nd Grade Math Curriculum

Board Approved: March 21, 2024

Course Information

Course Description:
In Grade 2, instructional time focuses on four areas: (1) extending understanding of base-ten notation; (2) problem-solving and building fluency with addition and subtraction; (3) describing and analyzing shapes and using and solving problems involving standard units of measure; and (4) representing and interpreting data.

Transfer Goals:

- Apply mathematics to problems arising in everyday life, society, and the workplace using a problem solving model that incorporates analyzing information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution.
- Select tools as appropriate, including real objects, manipulatives, paper/pencil, and technology to solve problems.
- Select techniques as appropriate, including mental math, estimation, and number sense, to solve problems.
- Organize, record, and communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate.
- Analyze mathematical patterns and relationships to connect and communicate mathematical ideas.
- Display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication.

Curriculum Standards: Missouri Learning Standards for Mathematics, Grade 2

Curriculum Resource(s): *enVisionMATH Realize Edition © 2015, Savvas Education*

Priority standards indicated in **bold*

Patrons with questions about the course should contact curriculum@fhsdschools.org

Unit 1: Number Sense and Operations in Base Ten

Timeframe: ***See current resource scope and sequence***

Unit Description: This unit extends students' understanding of the base ten number system (including reading, writing, comparing, and ordering numbers), addition, and subtraction. Students will:

- Understand the place value of three-digit numbers.
- Use place value understanding and properties of operations to add and subtract within 1,000 and justify solutions.
- Represent and solve problems involving addition and subtraction.

Enduring Understandings:

- Digits have different values in a number depending on their location.
- Addition is adding on to a group, combining groups, or joining parts to make a whole.
- Subtraction is separating parts from a whole, finding a missing part, or comparing two quantities.
- Numbers can be broken apart (decomposed) to make adding and subtracting easier.
- Base ten blocks, number lines, patterns on a hundreds chart, number bonds, and other models can be used to add or subtract numbers and to develop mental math strategies and number sense.
- Addition and subtraction have an inverse relationship.
- An equation is a math sentence that has two equal sides separated by an equal sign.
- The equal sign is a math symbol that means "the same value as"; each side of the equal sign should show the same amount.
- There are many ways to solve addition and subtraction problems. Some are more efficient than others.
- Answers to problems should always be checked for reasonableness, and this can be done in different ways.
- There are some rules (called properties in math) that are always true in math.

Essential Questions:

- What tools and models can I use to help me understand place value and compare numbers?
- What strategies can I use to add and subtract numbers?
- How can I use addition to help me with subtraction?
- How can models help me when adding and subtracting?
- How can I use equations to represent what is happening in a math problem?
- What efficient strategies can I use for adding and subtracting two numbers?
- How can number properties (special math rules) assist me in computation?
- What strategies can I use for making a reasonable estimate?
- How can I decompose numbers to choose an efficient addition or subtraction strategy?

○ One of these properties is the identity property, which states that any number plus or minus 0 equals the start number. For example, 6 + 0 = 6, and 6 - 0 = 6. ○ Another property, commutative property, which states that numbers can be added in any order. For example, 1+2=3, and 2+1=3. ○ A third property, associative property, states that when more than 2 numbers are added together, the way they are grouped gives us the same sum. For example, (2+1)+3=6, and 2+(1+3)=6.	

Unit 1 Standards	
STANDARD CODE	**STUDENTS WILL KNOW, BE ABLE TO, AND UNDERSTAND:**
2.NBT.A.1	● **I understand three-digit numbers are composed of hundreds (100, 200, 300 ...), tens (1 0, 20, 30 ...) and ones (0, 1, 2, 3 ...).** ● **I can put any three digit number together using ones, tens, and hundreds in multiple ways.** ● **I can break down any three digit number using ones, tens, and hundreds in multiple ways.**
2.NBT.A.2	● I can decompose one hundred into tens. ● I can compose ten (10) tens into one hundred (100) called a “hundred.”
2.NBT.A.3	● I can count forward between 0 and 1,000 by ones starting with any number. ● I can count forward between 0 and 1,000 by tens starting with any number. ● I can count forward between 0 and 1,000 by hundreds starting with any number. ● I can count backward between 0 and 1,000 by ones starting with any number. ● I can count backward between 0 and 1,000 by tens starting with any number. ● I can count backward between 0 and 1,000 by hundreds starting with any number.

2.NBT.A.4	• **I can read the number name for all numbers 0 to 1,000.** • **I can read all numbers 0 to 1,000 when given the base-ten numeral.** • **I can read all numbers 0 to 1,000 in expanded form.** • **I can write the number name for all numbers 0 to 1,000.** • **I can write all numbers 0 to 1,000 when given the base-ten numeral.** • **I can write all numbers 0 to 1,000 in expanded form.**
2.NBT.A.5	• I can compare two three-digit numbers and tell which number is less or greater. • I can compare two three-digit numbers based on the meaning (value) of the hundreds, tens, and ones digits using the symbols <, =, or >. • I can use the meaning (value) of the hundreds, tens, and ones digits to explain the comparison of two three-digit numbers.
2.NBT.B.6	• I can use multiple representations to model real-world and mathematical problems involving addition and subtraction within 100. • I can respectfully critique the reasoning of others, identifying errors and alternate approaches to solving problems involving addition and subtraction within 100. • I understand the types of real-world problems that use addition and subtraction within 100, can find their solutions, and can explain my reasoning. • I can identify and explain patterns and the structure of the problems with specific focus on the properties of mathematics when solving problems involving addition and subtraction within 100. • I can communicate my reasoning precisely to problems involving addition and subtraction within 100.
2.NBT.B.7	• I can add up to four two-digit numbers using strategies based on place value. • I understand that when adding two numbers, the final sum of the numbers is the same, regardless of their order in the equation (commutative property). For example, 2 + 1 = 3, and 1 + 2 = 3. • I understand that when adding more than two numbers, the final sum of the numbers is the same, regardless of how they are grouped (associative property). For example, (2 + 1) + 3 = 6, and 2 + (1 + 3) = 6.
2.NBT.B.8	• **I can add within 1,000.** • **I can justify sums within 1,000 using concrete models and drawings.** • **I can justify sums within 1,000 using strategies based on place value understanding.** • **I can subtract within 1,000.** • **I can justify differences within 1,000 using concrete models and drawings.** • **I can justify differences within 1,000 using strategies based on place value understanding.**

2.NBT.B.9	• I can use addition to solve problems that involve subtraction.
2.NBT.B.10	• I can mentally add ten to any within 1,000. • I can mentally subtract ten from any number within 1,000. • I can mentally add one hundred to any number within 1,000. • I can mentally subtract one hundred from any number within 1,000.
2.NBT.C.11	• **I can write (represent) problems involving addition within 100.** • **I can solve problems involving addition within 100.** • **I can write (represent) problems involving subtraction within 100.** • **I can solve problems involving subtraction within 100.** • **I can write (represent) and solve problems involving addition and subtraction within 100 to solve one-step problems with unknowns in all positions.** • **I can use drawings and equations with a symbol for the unknown number in all positions.**

Unit 2: Relationships and Algebraic Thinking

Timeframe: ***See current resource scope and sequence***

Unit Description: This unit builds a deeper understanding of problem situations for addition and subtraction. Students expand their understanding, skill, and ability to apply addition and subtraction to all problem situations, including two-step problems. Students will:

- Represent and solve problems involving addition and subtraction.
- Develop mental strategies to fluently add and subtract within 20.
- Work with equal groups of objects to develop foundations for multiplication and division.

Enduring Understandings:

- Addition problems represent adding on to a group, combining groups, or joining parts to make a whole.
- Subtraction problems represent separating parts from a whole, finding a missing part, or comparing two quantities.
- A group of objects (or a number) can also be classified as even or odd by analyzing skip counting patterns. An even number can be written as a sum of equal addends.
- An array shows items arranged in rows and columns, which shows equal groups; equations using repeated addition can be written to find the total number of objects in an array.
- Make arrays with equal rows or equal columns to solve addition problems.

Essential Questions:

- How do I decide what strategy will work best in a given problem situation?
- How can I use what I know about similar problems to help me be a more efficient problem solver?
- How do I know when I need to regroup?
- How does place value help me add and subtract?
- What strategies will help me add multiple numbers quickly and accurately?
- How do I know when my answer makes sense?
- What strategies can I use to tell if a number is odd or even?

Unit 2 Standards	
STANDARD CODE	**STUDENTS WILL KNOW, BE ABLE TO, AND UNDERSTAND:**
2.RA.A.1	• **I can use multiple representations to model real-world and mathematical problems involving addition and subtraction within 20.** • **I can respectfully critique the reasoning of others, identifying errors and alternate approaches to solving problems involving addition and subtraction within 20.** • **I can represent an addition or subtraction situation using symbols and find solutions to explain my reasoning.** • **I can make meaning of the symbols in a problem to find solutions and**

	explain my reasoning in addition and subtraction problems. ● **I can identify and explain patterns and the structure of the problems with specific focus on the properties of mathematics when solving problems involving addition and subtraction within 20.** ● **I can communicate my reasoning precisely for problems involving addition and subtraction within 20.**
2.RA.B.2	● I know if a set of objects has an odd or even number of members. ● I can count by twos to one hundred starting with any even number. ● I can show even numbers as pairings/groups of two. ● I can write an expression to represent an even number using addends of two (Ex: Four groups of two is 2+2+2+2). ● I can show even numbers as being composed of two equal groups. ● I can write an expression to represent an even number with two equal addends.
2.RA.B.3	● I can find the total number of objects arranged in a rectangular array with up to five rows and five columns. ● I can write an equation to represent the total number of objects in a rectangular array with up to five rows and five columns as a sum of equal addends.

Unit 3: Geometry and Measurement

Timeframe: ***See current resource scope and sequence***

Unit Description: Students describe and analyze shapes by examining their sides and angles. Through building, drawing, and analyzing two- and three-dimensional shapes, students develop a foundation for understanding area, volume, congruence, similarity, and symmetry in later grades. Students will experience measuring in various units and learn that the measure of length is a count of how many units are needed to match the length of the object or distance being measured. Students will:

- Reason with shapes and their attributes.
- Measure and estimate lengths in standard units.
- Relate addition and subtraction to length.
- Work with time and money.

Enduring Understandings:

GEOMETRY

- Shapes have specific attributes, such as angles, sides, and faces, that can be used to categorize them.
- Circles and rectangles can be partitioned in halves, thirds, fourths and quarters, which create smaller, equal-sized shares of the whole.
- Two halves is the same as one, or one whole; so is three thirds and four fourths.

MEASUREMENT- LENGTH

- Length is the distance from one end on an object to its other end.
- Length and height are measurable in inches, feet, and yards as well as centimeters and meters.
- When measuring length, the longer the chosen unit, the fewer units needed; the shorter the unit, the more units needed.

MEASUREMENT- TIME

- Time can be described before and after the hour in different ways.
- There is a standard unit of time which is represented by an analog or digital clock.

MEASUREMENT- MONEY

- Money is measurable; the value of coins can be quantified using cent amount and the value of dollar bills can be

Essential Questions:

GEOMETRY

- How do I describe and compare shapes?
- What shapes can I identify?
- How can I show halves, thirds, and fourths of the same whole in different ways?

MEASUREMENT- LENGTH

- How do I measure and estimate measurements with inches, feet, yards, meters, and centimeters?
- How can I use the length of a known object to estimate the length of another object?
- How are the different units of length related?
- How is a ruler like a number line?

MEASUREMENT- TIME

- How can I write time in different ways?
- How can I solve problems about telling time?

MEASUREMENT- MONEY

- What strategies can I use to count money?
- How is adding and subtracting money similar to adding and subtracting whole numbers?
- How can I solve problems about counting money?

MEASUREMENT- PROBLEM-SOLVING

- **When is it important to have an exact**

quantified using dollar amounts. ● Each kind of coin has a specific value (unrelated to its physical size). ● I need to understand and know dollars, quarters, dimes, nickels and pennies, and the quantities they represent, in order to solve money problems. **MEASUREMENT- PROBLEM-SOLVING** ● **Measurements in the same unit of measurement can be added or subtracted in the same way as adding and subtracting whole numbers.** ● **Pictures and equations and be used to solve word problems involving measurement.**	**measurement and when is an estimate good enough?** ● **How can I decide on appropriate tools and units of measurement?** ● **How does using a different unit change my measurement?**

Unit 3 Standards	
STANDARD CODE	**STUDENTS WILL KNOW, BE ABLE TO, AND UNDERSTAND:**
2.GM.A.1	● I can identify triangles, quadrilaterals, pentagons, and hexagons in different orientations. ● I can identify circles and cubes. ● I can name shapes when given specified attributes such as sides and angles. ● I understand that three-dimensional objects have two-dimensional faces. ● I can identify the shapes of two-dimensional faces on three-dimensional objects. ● I can draw a face of a three-dimensional figure.
2.GM.A.2	● I can partition (divide) a rectangle into rows and columns of same-sized squares. ● I can count to find the total number of squares in a partitioned rectangle.
2.GM.A.3	● **I can partition (divide) circles and rectangles into two, three or four equal shares.** ● **I can describe the shares using the words halves, thirds, half of, a third of, etc.** ● **I can describe the whole as two halves, three thirds or four fourths.** ● **I can show that equal shares of identical wholes need not have the same shape.**
2.GM.B.4	● I know the customary units of measurement (inches, feet and yards) and metric units of measurement (centimeters, meters).

	• I know the customary units of measurement (inches, feet and yards) of a yardstick. • I know the metric units of measurement (centimeters, meter) of a meter stick. • I can select an appropriate tool, such as rulers, yardsticks, meter sticks and measuring tapes, to measure length. • I can use tools such as rulers, yardsticks, meter sticks and measuring tapes, to measure length. • I can measure the length of an object.
2.GM.B.5	• I can measure the same object with different units. • I can compare the results of measuring the same object with different units. • I understand that the size of the measurement unit used is related to the number of units needed to measure the object. When larger units are used, fewer of the units will be used to measure the objects.
2.GM.B.6	• I can estimate lengths using inches. • I can estimate lengths using feet. • I can estimate lengths using yards. • I can estimate lengths using centimeters. • I can estimate lengths using meters.
2.GM.B.7	• I can measure two objects using customary or metric units of measurement. • I can determine how much longer one object is than another, telling the length difference in terms of customary or metric units of length.
2.GM.C.8	• I can use addition within one hundred to solve problems involving lengths that are given in the same units. • I can use subtraction within one hundred to solve problems involving lengths that are given in the same units. • I can use drawings and/or equations to solve problems involving lengths.
2.GM.C.9	• I can show whole numbers as lengths on a number line. • I can show whole number sums within 100 on a single number line. • I can use two number lines to show two addends within 100, and find the sum. • I can use two number lines for a minuend (total) and subtrahend (one part) within 100 and find the difference (other part). • I can show whole number differences within 100 on a single number line.
2.GM.D.10	• **I can tell time from a digital clock to the nearest five minutes, using a.m. and p.m. when given a scenario.** • **I can tell time from an analog clock to the nearest five minutes, using a.m. and p.m. when given a scenario.** • **I can write time from a digital clock to the nearest five minutes, using a.m. and p.m. when given a scenario.** • **I can write time from an analog clock to the nearest five minutes, using**

	a.m. and p.m. when given a scenario.
2.GM.D.11	• I can describe a time shown on a digital clock as representing hours and minutes, to the nearest five minutes. • I can describe a time shown on an analog clock as representing hours and minutes, to the nearest five minutes. • I can relate a time shown on a digital clock to the same time on an analog clock.
2.GM.D.12	• **I can represent 100¢ as $1 in multiple ways.** • **I can find and represent the value of multiples of the same coin using the ¢ symbol.** • **I can find and represent the value of combinations of any two different types of coins using the ¢ symbol.** • **I can find and represent the value of multiples of the same dollar using the $ symbol.** • **I can find and represent the value of combinations of any two different types of bills using the $ symbol.** • **I can find and represent the value of combinations of dollar bills, quarters, dimes, nickels and pennies, using $ and ¢ symbols appropriately.**
2.GM.D.13	• I can find multiple combinations of coins that equal a given amount.

Unit 4: Data and Statistics

Timeframe: ***See current resource scope and sequence***

Unit Description:

Students will learn about data through the study of line plots, picture graphs, and bar graphs. They will pose questions, collect data, and analyze and interpret the results, as well as solve problems about the data. Students will:

- Collect and represent data in line plots, picture graphs, and bar graphs.
- Be able to share a summary of data, conclusions, comparisons, and generalizations.

Enduring Understandings:	**Essential Questions:**
● Graphs can be used to visually organize information and make comparisons. ● Data can be displayed in a variety of ways. ● The question asked and the data collected help determine the most appropriate type of data display.	● Why would I use a graph to share information? ● How do I summarize, draw conclusions, and make comparisons and generalizations of data from line plots, picture graphs, and bar graphs? ● How do I create, label, and put data in a line plot, picture graph, and bar graph?

Unit 4 Standards	
STANDARD CODE	**STUDENTS WILL KNOW, BE ABLE TO, AND UNDERSTAND:**
2.DS.A.1	● I can create a line plot on a given horizontal scale (number line) marked in whole numbers to represent a set of numbers.
2.DS.A.2	● I can generate measurement data by measuring lengths of several related objects to the nearest whole unit. ● I can make multiple measurements of the same object to the nearest whole unit. ● I can construct a complete line plot (number line, scale, axis label and title) that will display the measurement data. ● I can display measurement data on a line plot.
2.DS.A.3	● I can construct a picture graph (number line, scale, axis label and title) to display given or collected data. ● I can display data in a picture graph. ● I can construct a bar graph (intersecting number lines, axes labels and title) to display given or collected data. ● I can display data in a bar graph.
2.DS.A.4	● I can solve addition and subtraction problems using information presented

	in line plots. ● I can solve addition and subtraction problems using information presented in picture graphs. ● I can solve addition and subtraction problems using information presented in bar graphs.
2.DS.A.5	● **I can draw conclusions from line plots.** ● **I can draw conclusions from picture graphs.** ● **I can draw conclusions from bar graphs.**