

Wentzville School District Curriculum Development Template Stage 1 – Desired Results

WSD Overarching Essential Question	WSD Overarching Enduring Understandings
 WSD Overarching Essential Question Students will consider How do I use the language of math (i.e. symbols, words) to make sense of/solve a problem? How does the math I am learning in the classroom relate to the real-world? What does a good problem solver do? What should I do if I get stuck solving a problem? How do I effectively communicate about math with others in verbal form? In written form? How do I explain my thinking to others, in written form? In verbal form? 	 WSD Overarching Enduring Understandings Students will understand that Mathematical skills and understandings are used to solve real-world problems. Problem solvers examine and critique arguments of others to determine validity. Mathematical models can be used to interpret and predict the behavior of real world phenomena. Recognizing the predictable patterns in mathematics allows the creation of functional relationships. Varieties of mathematical tools are used to analyze and solve problems and explore
 How do I construct an effective (mathematical) argument? How reliable are predictions? Why are patterns important to discover, use, and generalize in math? How do I create a mathematical model? How do I decide which is the best mathematical tool to use to solve a problem? How do I effectively represent quantities and relationships through mathematical notation? How accurate do I need to be? When is estimating the best solution to a problem? 	 concepts. Estimating the answer to a problem helps predict and evaluate the reasonableness of a solution. Clear and precise notation and mathematical vocabulary enables effective communication and comprehension. Level of accuracy is determined based on the context/situation. Using prior knowledge of mathematical ideas can help discover more efficient problem solving strategies. Concrete understandings in math lead to more abstract understanding of math.

Unit 1 - Number Sense

Unit Title: Number Sense

Course: 3rd Grade Mathematics

Brief Summary of Unit: Students count and compare numbers to 10,000 (Chapter 1) and use mental math and estimation to check the reasonableness of sums and differences (Chapter 2).

Textbook Correlation: Chapters 1-2 (all Lessons in Chapter 1 and Lessons 2.1, 2.2, 2.3, 2.4 in Chapter 2)

Time Frame: approximately 4 weeks

Transfer

Students will be able to independently use their learning to ...

use and understand numbers in everyday situations.

Meaning	
Essential Questions	Understandings
 Students will consider What is the pattern? How do I identify a pattern? How can a pattern be explained using addition or subtraction? How can addition and/or subtraction be used to create a pattern? Why do we use variables? When do you use a variable? Which algorithm will I use and why? What is the best addition strategy to use to be 	 Students will understand that There is a pattern to naming and counting numbers. Numbers have a specific order and patterns can be constructed because of this order. There are patterns involved in addition and subtraction. Addition tables can help identify a pattern. Patterns can be explained using the properties of operations. Each digit in a number has a specific place value.
 What is the best subtraction strategy that helps make problem solving more efficient? When would overestimating be necessary? 	 Being fluent in math helps to make problem solving more efficient. An algorithm is an efficient method for solving problems.

 How does estimating allow me to check reasonableness of a solution? Is my answer reasonable? 	 Mental math is a very efficient strategy for adding and subtracting. Rounding is a quick way to evaluate the reasonableness of an answer. Sometimes an estimate is a good enough solution. Assessing reasonableness is a critical step in solving problems.
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Acqui	isition
Key Knowledge	Key Skills
 Students will know Word form Standard form Digit Place value Value Expanded form Greater than Less than Least Greatest Number line Rounded Reasonable Estimate Overestimate Expression A variable represents an unknown number. Know the relationship between addition and subtraction. The word algorithm refers to a procedure or a series of steps. 	 Students will be able to Give an example of a pattern and the rule. Use mental math to solve problems. Estimate and round answers. Use base ten blocks to count, read and write numbers to 10,000. Count by 1s, 10s, 100s, and 1000s to 10,000, starting at any number up to 10,000. Given a number up to 10,000, write the number in word form. Given a number in word form up to 10,000, write the number in standard form. Use a place value chart to read, write and represent numbers to 10,000. Read and write numbers to 10,000 in standard form, expanded form, and written form. Use base ten blocks and place value to compare and order numbers to 10,000. Add 2 digit numbers mentally with and without regrouping. Subtract 2 digit numbers mentally with and without regrouping. Use multiple strategies to add 2 digit numbers close to 100 mentally. (adding 100 then subtracting extra ones, etc.) Round numbers to estimate sums and differences.

MISSOURI LEARNING STANDARDS

MP.1 Make sense of problems and persevere in solving them.

MP.2 Reason abstractly and quantitatively.

MP.3 Construct viable arguments and critique the reasoning of others.

MP.4 Model with mathematics.

MP.5 Use appropriate tools strategically.

MP.6 Attend to precision.

MP.7 Look for and make use of structure.

MP.8 Look for and express regularity in repeated reasoning.

- **3.OA.8:** Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.
- **3.OA.9:** Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. *For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends*
- **3.NBT.2:** Multiply 1 digit whole numbers by multiples of 10 in the range 10-90 (*e.g., 9 x 80, 5 x 60*) using strategies based on place value and properties of operations.

Show Me-Standards

Goal 1: 1, 4, 5, 6, 7, 8 Goal 2: 2, 3, 7 Goal 3: 1, 2, 3, 4, 5, 6, 7, 8 Goal 4: 1, 4, 5, 6

Mathematics: 1, 5

Unit 2 - Addition and Subtraction

Unit Title: Addition and Subtraction

Course: 3rd Grade Mathematics

Brief Summary of Unit: Students add 4-digit to 4-digit numbers to 10,000 with or without regrouping (Chapter 3) and subtract 4-digit numbers to 10,000 with or without grouping (Chapter 4) as they solve real-world problems involving addition and subtraction of 4-digit numbers up to 10,000 with or without regrouping (Chapter 5). *Note – Using Bar Models (Chapter 5) is taught within Chapters 3 and 4.*

Textbook Correlation: Chapters 3-5

Time Frame: approximately 5 weeks

Transfer

Students will be able to independently use their learning to...

solve everyday problems that involve addition and subtraction.

Essential QuestionsUnderstandingsStudents will considerStudents will understand that• What is the best addition strategy to use to be fluent?Students will understand that• What is the best subtraction strategy to use to be fluent?• Efficient problem solving requires being fluent in mathematical processes.• What is the best subtraction strategy to use to be fluent?• There are many strategies to find a sum or difference, that all lead to the same correct answer.• Which algorithm will I use and why?• Algorithm is an efficient method for solving	Mea	ning
 Students will consider What is the best addition strategy to use to be fluent? What is the best subtraction strategy to use to be fluent? How should I solve this problem? Which algorithm will I use and why? Students will understand that Efficient problem solving requires being fluent in mathematical processes. There are many strategies to find a sum or difference, that all lead to the same correct answer. Algorithm is an efficient method for solving 	Essential Questions	Understandings
 How do I know if my solution is incorrect? Is my answer reasonable? Some strategies are more efficient than others with the traditional algorithm being the most efficient. Bar models are used to illustrate the part-whole 	 Students will consider What is the best addition strategy to use to be fluent? What is the best subtraction strategy to use to be fluent? How should I solve this problem? Which algorithm will I use and why? How do I know if my solution is incorrect? Is my answer reasonable? 	 Students will understand that Efficient problem solving requires being fluent in mathematical processes. There are many strategies to find a sum or difference, that all lead to the same correct answer. Algorithm is an efficient method for solving problems. Some strategies are more efficient than others with the traditional algorithm being the most efficient. Bar models are used to illustrate the part-whole

 Solving problems requires perseverance. Problem solving means thinking about a problem before, during, and after solving the problem.

Acqui	isition
Key Knowledge	Key Skills
Students will know	Students will be able to
 Sum Regroup Difference Fewer Know the relationship between addition and subtraction. The word algorithm refers to a procedure or a series of steps. Bar Models Part Whole 	 Add and subtract within 10,000 using the following strategies: place value boards place value strips number lines branching left to right vertical addition vertical subtraction traditional algorithm Fluently add and subtract within 10,000 using traditional algorithm with and without regrouping. Solve word real-world problems involving adding and subtracting with 10,000 using model drawing

MISSOURI LEARNING STANDARDS

- MP.1 Make sense of problems and persevere in solving them.
- MP.2 Reason abstractly and quantitatively.
- MP.3 Construct viable arguments and critique the reasoning of others.
- MP.4 Model with mathematics.
- MP.5 Use appropriate tools strategically.
- MP.6 Attend to precision.
- MP.7 Look for and make use of structure.

MP.8 Look for and express regularity in repeated reasoning.

3.OA.8: Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation

and estimation strategies including rounding.

- **3.OA.9:** Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. *For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends*
- **3. NBT.2:** Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.

Show Me-Standards

Goal 1: 1, 4, 5, 6, 7, 8 Goal 2: 2, 3, 7 Goal 3: 1, 2, 3, 4, 5, 6, 7, 8 Goal 4: 1, 4, 5, 6

Mathematics: 1, 5

Unit 3 - Multiplication and Division

Unit Title: Multiplication and Division

Course: 3rd Grade Mathematics

Brief Summary of Unit: Students multiply and divide with tables of 6, 7, 8, and 9 using models and known multiplication facts (Chapter 6), multiply 2-digit and 3-digit numbers with and without regrouping (Chapter 7), and multiply and divide 2-digit and 3-digit numbers with and without regrouping (Chapter 8) as they solve two-step real-world problems involving multiplication and division (Chapter 9). *Note – Solving two-step real-world problems involving multiplication and division (Chapter 9)*. *Note – Solving two-step real-world problems involving multiplication and division (Chapter 9)*.

Textbook Correlation: Chapters 6, 7, 8, and 9

Time Frame: approximately 9 weeks

Transfer

Students will be able to independently use their learning to ...

solve everyday problems that involve multiplication and division.

Meaning	
Essential Questions	Understandings
 Students will consider Why is multiplying more efficient than repeatedly adding? Why do the groups have to be equal? Why is dividing more effective than repeated subtraction? Why is it important to make equal groups? How many objects would be in each group so that each group would be equal? How many equal groups can you make? What does it mean if you have numbers left over? How can a number line show equal groups? 	 Students will understand that Multiplication represents groups of equal amount. Multiplication is an efficient way of showing repeated addition. The equations in the form of a x b = c and c = a x b can be used interchangeably, with the unknown in different positions. Multiplication properties (commutative, associative, identity/multiplication property of one, multiplication property of zero) are used to efficiently solve the problem. There are patterns involved in multiplication.

- Does it matter how you group the numbers?
- How can you represent a missing number using a variable?
- How can you represent a word problem using numbers?
- How do these three whole numbers relate to one another?
- What is a strategy I can use to solve for the unknown variable?
- How can I demonstrate my understanding of how to solve for the unknown variable?
- Why is it important to find an unknown?
- Which property would be appropriate to solve this math problem?
- When is it appropriate to use a pictorial representation to solve the problem?
- When is it appropriate to use a numerical representation to solve the problem?
- Why should I know the properties for multiplication?
- How can I write/describe a division problem in terms of a multiplication problem?
- How can I use my knowledge of multiplication facts to solve for the unknown?

- Multiplication tables can help identify a pattern.
- Patterns can be explained using the properties of operations.
- Division represents a whole number grouped into equal amounts.
- Division is an efficient way of showing repeated subtraction.
- Division can be presented as a total number and number of groups or a total number and the number of objects in each group.
- Division problems can be represented as a multiplication problem with an unknown factor.
- The equal sign represents "the same amount as".
- There are multiple strategies to solve for the unknown.
- Operations have rules.
- You can represent expressions using various objects, pictures, words and symbols in order to develop their understanding of properties.
- Properties are used to verify the relationship between multiplication and division.
- Fact families show the relationship between three numbers using multiplication and division.
- Place value strategies are used to solve more difficult problems.

Acquisition	
Key Knowledge	Key Skills
 Students will know Commutative property of multiplication Associative property of multiplication Multiplication property of one (Identity Property) Multiplication property of zero Array Model Area Model Equal groups Factor Product Quotient Remainder Multiplication and Division facts 0-10 There is a pattern for multiplying by 6, 7, 8, 9, and 10. 	 Students will be able to Visually demonstrate a multiplication problem through use of tools such as arrays, groups, number cubes, unit bars, number lines, area models, etc. Explain their method for grouping when solving a problem. Give examples of when multiplication is used in the real-world. Describe a context in which a total number of objects can be expressed as 5 x 7. (Write a word problem.) Solve problems involving equal grouping of objects using place value boards. Visually demonstrate a division problem through the use of tools such as arrays, groups, number

- Repeated addition and repeated subtraction
- Dividend
- Divisor
- In a division sentence, the first number (dividend) represents the total number. The second number (divisor) represents how many equal groups or number in a group. The last number (quotient) represents how many equal groups or number in a group.

cubes, unit bars, and place value boards.

- Explain their reasoning and the process when solving a problem.
- Give examples of when division is used in the realworld.
- Describe a context in which a number of groups can be expressed as 56 / 8 or similar problems.
- Use multiplication and division within 100 to solve problems.
- Multiply ones, tens, and hundreds by a one digit number using:
 - Place value boards
 - o Left to right
 - o Partial products
 - $\circ \quad \text{Area model} \quad$
 - o Traditional algorithm
- Multiply ones, tens, and hundreds mentally.
- Use related multiplication facts to divide.
- Divide using place value boards and partial quotients. Divide a 1-digit number or a 2-digit number by a 1-digit number with or without a remainder, and with or without regrouping, using the following strategies:
 - o Place value boards
 - o Partial quotients
 - o Area model
 - o Traditional algorithm
- Use patterns to divide multiples of 10 and 100.
- Apply the properties (commutative, associative, distributive, identity, and zero) to solve the problem.
- Develop strategies for the properties to efficiently solve multiplication and division problems.
- Use different strategies to identify odd and even numbers.
- Internalize basic facts because of experiences with arrays, pictures, manipulatives, word problems, and numbers.
- Solve one-step and two-step word problems involving multiplication & division, using multiple strategies, including model drawing.
- Choose the correct operation to solve a two-step problem that involves more than one operation.
- Use a variety of representations for creating and solving one-step and two-step word problems.

MISSOURI LEARNING STANDARDS

MP.1 Make sense of problems and persevere in solving them.

MP.2 Reason abstractly and quantitatively.

MP.3 Construct viable arguments and critique the reasoning of others.

MP.4 Model with mathematics.

MP.5 Use appropriate tools strategically.

MP.6 Attend to precision.

MP.7 Look for and make use of structure.

MP.8 Look for and express regularity in repeated reasoning.

- **3.OA.1:** Interpret products of whole numbers, e.g., interpret 5 x 7 as the total number of objects in 5 groups of 7 objects each. *For example, describe a context in which a total number of objects can be expressed as 5 x 7.*
- **3.OA.2:** Interpret whole-number quotients of whole numbers, e.g., interpret 56 divided by 8 as the number of objects in each share when 56 objects are partitioned into equal shares of 8 objects each. *For example, describe a context in which a number of shares or a number of groups can be expressed as 56 ÷ 8.*
- **3.OA.3:** Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities. (e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.)
- **3.0A.4:** Determine the unknown whole number in a multiplication or division equation relating three whole number. For example, determine the unknown number that makes the equation true in each of the equations $8 \times ? = 48$, $5 = n \div 3$, $6 \times 6 = ?$
- **3.OA.5:** Apply properties of operations as strategies to multiply and divide. Examples: If $6 \times 4 = 24$ is known, then $4 \times 6 = 24$ is also known. (Commutative property of multiplication.) $3 \times 5 \times 2$ can be found by $3 \times 5 = 15$, then $15 \times 2 = 30$, or by $5 \times 2 = 10$, then $3 \times 10 = 30$. (Associative property of multiplication.) Knowing that $8 \times 5 = 40$ and $8 \times 2 = 16$, one can find 8×7 as $8 \times (5 + 2) = (8 \times 5) + (8 \times 2) = 40 + 16 = 56$. (Distributive property.)
- **3.OA. 6:** Understand division as an unknown-factor problem. For example, find 32 ÷ 8 by finding the number that makes 32 when multiplied by 8.
- 3.OA.7: Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8 ×5 = 40, one knows 40 ÷ 5 = 8) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers. Solve problems involving the four operations, and identify and explain patterns in arithmetic.
- **3.0A.8:** Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown computation and estimation strategies including rounding.

3.OA.9: Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. *For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.*

3.NBT.3: Multiply 1-digit whole numbers by multiples of 10 in the range 10-90 (e.g., 9 x 80, 5 x 60) using strategies based on place value and properties of operations.

Show Me-Standards

Goal 1: 1, 4, 5, 6, 7, 8 Goal 2: 2, 3, 7 Goal 3: 1, 2, 3, 4, 5, 6, 7, 8 Goal 4: 1, 4, 5, 6

Mathematics: 1, 5

Unit 4 - Metric Measurement

Unit Title: Metric Measurement

Course: 3rd Grade Mathematics

Brief Summary of Unit: Students measure and convert length, mass, and volume using metric units (Chapter 11) as they solve two-step real-word problems involving metric units of measurements (Chapter 12). *Note – Solving two-step real-world problems involving metric units of measurement (Chapter 12) is taught within Chapter 11.*

Textbook Correlation: Chapters 11-12

Time Frame: approximately 3 weeks

Transfer

Students will be able to independently use their learning to ...

use metric measurement to accurately measure length, mass, and volume of real world objects.

Mea	ning
Essential Questions	Understandings
 Students will consider Why should I worry about working with measurements? What are real world examples of working with measurements? What is the best method to solve one step word problems involving liquid volume and mass using grams, kilograms, and liters? 	 Students will understand that Different tools are used to measure length, mass, and volume depending on what is being measured. Estimation is an effective tool to determine accuracy of measurement. Adding, subtracting, multiplying, and dividing with measurement is similar to those processes with whole numbers.

Acquisition	
Key Knowledge	Key Skills
 Students will know Convert Meters, centimeters, and kilometers measure length. Meters (m) Centimeters (cm) Kilometers (km) Distance Grams and kilograms measure mass. Kilograms (kg) Grams (g) Liters and milliliters measure liquid volume. Liters (I) Milliliters (mI) Capacity 	 Students will be able to Convert within each measurement unit. Use meters, centimeters, and kilometers as units of measurement of length. Estimate and measure length using the appropriate units. Estimate and find actual masses of objects. Use and interpret various tools used to measure liquid volume and mass Read scales in kilograms and grams. Estimate and find the volume of liquid in liters and milliliters. Find the volume and capacity of a container. Add, subtract, multiply, or divide to solve one-step and two-step word problems involving mass, volume, and length using multiple strategies: Bar Model Number lines Traditional algorithm

MISSOURI LEARNING STANDARDS

- MP.1 Make sense of problems and persevere in solving them.
- MP.2 Reason abstractly and quantitatively.
- MP.3 Construct viable arguments and critique the reasoning of others.
- MP.4 Model with mathematics.
- MP.5 Use appropriate tools strategically.
- MP.6 Attend to precision.
- MP.7 Look for and make use of structure.

MP.8 Look for and express regularity in repeated reasoning.

3.MD.2: Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (I). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to

represent the problem.

Show Me-Standards

Goal 1: 1, 4, 5, 6, 7, 8 Goal 2: 2, 3, 7 Goal 3: 1, 2, 3, 4, 5, 6, 7, 8 Goal 4: 1, 4, 5, 6

Mathematics: 1, 2, 5

Unit 5 - Graphing

Unit Title: Graphing

Course: 3rd Grade Mathematics

Brief Summary of Unit: Students make bar graphs with scales, read and interpret bar graphs to solve real-world problems, and use line plots to show how data is grouped, compared, and spread.

Textbook Correlation: Chapter 13

Time Frame: approximately 1 ½ weeks

Transfer

Students will be able to independently use their learning to ...

interpret data and analyze charts and graphs in everyday situations.

Mea	ning
Essential Questions	Understandings
 Students will consider Is a bar graph the most effective tool to represent the given data? Why? When is it best to use a picture graph? Why should I use a bar graph? Picture graph? Where are bar graphs and picture graphs found in the real-world? When is it best to use a line plot graph? Is a line plot the best way to display the given data? Why? Why not? What information do I need to know to accurately display the data? What would be a reasonable increment to use to represent the given data? 	 Students will understand that Bar graphs, picture graphs, and line plots can be used as an effective tool to visually represent data. Bar graphs and picture graphs can be used to solve problems. Collecting data and analyzing the results helps us describe the real world.

Acqu	isition
Key Knowledge	Key Skills
Students will know Bar graph Picture graph Key/legend Title Axis Labels Vertical Horizontal	 Students will be able to Construct and use tally charts. Read and interpret data from bar graphs. Draw a scaled picture graph and a scaled bar graph using given data with several categories. Make a line plot to represent and interpret data. Create a line plot to display length measurement data with a scale of whole numbers Solve one and two step word problems using scaled bar graphs to determine "how many more"
Line plotSurvey	scaled bar graphs to determine "how many more" or "how many less".

MISSOURI LEARNING STANDARDS

- MP.1 Make sense of problems and persevere in solving them.
- MP.2 Reason abstractly and quantitatively.
- MP.3 Construct viable arguments and critique the reasoning of others.
- MP.4 Model with mathematics.
- MP.5 Use appropriate tools strategically.
- MP.6 Attend to precision.
- MP.7 Look for and make use of structure.
- MP.8 Look for and express regularity in repeated reasoning.
- 3.MD.3: Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve oneand two-step "how many more" and "how many less" problems using information presented in scaled bar graphs. For example, draw a bar graph in which each square in the bar graph might represent 5 pets.
- 3.MD.4: Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by marking a line plot, where the horizontal scale is marked off in appropriate units--whole numbers, halves, or quarters.

Show Me-Standards

Goal 1: 1, 4, 5, 6, 7, 8 Goal 2: 2, 3, 7 Goal 3: 1, 2, 3, 4, 5, 6, 7, 8 Goal 4: 1, 4, 5, 6

Mathematics: 1, 3, 5

Unit 6 - Fractions and Fraction Applications

Unit Title: Fractions and Fraction Applications

Course: 3rd Grade Mathematics

Brief Summary of Unit: Students understand and use fractions to represent parts of a whole, points or distances on a number line, and parts of a set (Chapter 14), measure length, weight, and capacity in customary units, and solve real-world problems involving customary units (Chapter 15).

Textbook Correlation: Chapter 14 (Include Focus Lesson 14.6.a) and Chapter 15 (Include Focus Lesson 15.1.a)

Time Frame: approximately 5 1/2 weeks

Transfer

Students will be able to independently use their learning to ...

use fractions to more accurately measure real-world objects and describe everyday objects.

Mean	ning
Essential Questions	Understandings
 Students will consider How can I represent a fraction on a number line? Why do I need to know the location of a fraction? How can knowing benchmark fractions help me problem solve? Example: ¹/₂, 1, 1 ¹/₂, 2 How can a number line help to compare fractions? Which equivalent fraction should I use? When comparing, what is the best way to represent the fractions? How does having the same numerator let me compare fractions? 	 Students will understand that Fractional quantities can be represented on a number line. There is a specific location for all fractions between 2 whole numbers. Dividing a number line into equal parts is an efficient method for plotting fractions. The greater the denominator the smaller the piece. For fractions with the same denominator, the greater the numerator the larger the piece. For fractions with the same numerator, the

- How does having the same denominator let me compare fractions?
- Why would I need to write a whole number as a fraction?
- Why do some fractions represent the same quantity?
- What visual could I use to represent this fraction?
- Why are the fractional parts equal?
- When would you need to use partition a whole into equal parts?
- What unit of measurement should I use to best describe this object?
- What is the best way to measure this object?
- What is the best way to estimate the length, the weight or the capacity of this object?
- What is the best way to measure length?
- Should I measure to the nearest inch, ½ inch, or ¼ inch? Why?
- When is it best to use a line plot graph?
- Is a line plot the best way to display the given data? Why? Why not?
- What information do I need to know to accurately display the data?
- Where are line plot graphs found in the realworld?

greater the denominator, the smaller the piece.

- Fractional parts must be equal sized.
- The number of equal parts tells how many make a whole.
- As the number of equal pieces in the whole increases, the size of the fractional pieces decreases.
- The size of the fractional part is relative to the whole.
- When a whole is cut into equal parts, the denominator represents the number of equal parts.
- The numerator of a fraction is the count of the number of equal parts.
- Two fractions are equivalent if they are the same size.
- Models can be used to identify equivalent fractions.
- Fractions must have the same equal parts (denominators) in order to add or subtract them.
- A line plot can be marked off in whole numbers, halves, and quarters to solve problems.
- A line plot can be used to compare the lengths of different objects.
- Lengths can be measured using customary units of whole numbers, halves, and quarters of an inch

Key Knowledge Key Skills Students will know Students will be able to • Whole • Plot a fraction on a number line. • Equal parts • Explain what the lines on a number line represe • Numerator • Partition a number line appropriately.	Acquisition	
Students will knowStudents will be able to• Whole• Plot a fraction on a number line.• Equal parts• Explain what the lines on a number line represe• Numerator• Partition a number line appropriately.	/ Knowledge	
 Denominator Equivalent fractions Simplest form How to read a number line using fractions Benchmark fractions: 0,½, 1, 1½, 2 Like fractions Unlike fractions Unlike fractions 	 dents will know Whole Equal parts Numerator Denominator Equivalent fractions Simplest form How to read a number line using fractions Benchmark fractions: 0,½, 1, 1 ½, 2 Like fractions Unlike fractions 	

Referent	and division.
• Inch	• Write fractions in simplest form.
• Foot	 Identify equivalent fractions using bar models and
• Yard	number lines.
Mile	 Show a whole number as a fraction
• Mass	 Becognize a whole number and its fractional
• Ividss	• Recognize a whole number and its nactional
	nictorial model etc
• Pound	Compare fractions using like numerators
• Ion	Compare fractions using like denominators.
• Capacity	Compare fractions using like denominators.
• Cup	 Explain why two fractions are equivalent using a visual model
• Pint	 Justify a comparison statement e.g. Explain why ¼
• Quart	 Justify a comparison statement. e.g. Explain wily 72 1/2 using a number line visual model bar model
• Gallon	etc.
	 Justify if a picture is a correct representation of a
	fraction.
	Distinguish between pictures for a correct
	representation of a fraction.
	 Models can be used to identify equivalent
	fractions.
	 Identify polygons that represent fractions.
	Express whole shapes as fractions
	 Add two or three fractions with sums to 1
	 Add two of three fractions with sums to 1. Subtract a like fraction from another like fraction
	or a whole
	 Read write and identify fractions of a set
	 Find the number of items in a fraction of a set
	• This the number of items in a fraction of a set.
	• Use inch, foot, yard, and mile as units of
	measurement for lengths.
	 Estimate and measure given lengths.
	• Measure to the nearest ¼ inch.
	Use referents to estimate lengths.
	• Use ounce, pound, and ton as units of
	measurement for weight.
	• Read scales in ounces (oz.) and pounds (lb.).
	• Estimate and find actual weights of objects by
	using different scales.
	• Use referents to estimate weight.
	• Measure capacity with cup (c), pint (pt), quart (qt),
	and gallon (gal).
	• Estimate and find the actual capacity of a
	container.
	• Relate units of capacity to one another.
	 Solve real-world problems involving customary
	measurements using multiple strategies.

MISSOURI LEARNING STANDARDS

MP.1 Make sense of problems and persevere in solving them.

MP.2 Reason abstractly and quantitatively.

MP.3 Construct viable arguments and critique the reasoning of others.

MP.4 Model with mathematics.

MP.5 Use appropriate tools strategically.

MP.6 Attend to precision.

MP.7 Look for and make use of structure.

MP.8 Look for and express regularity in repeated reasoning.

- 3.NF.1: Understand that a fraction 1/b as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction a/b as the quantity formed by a parts of size 1/b.
- 3.NF.2: Understand a fraction as a number on the number line; represent fractions on a number line diagram.
 - a. Represent a fraction 1/b on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into *b* equal parts. Recognize that each part has size 1/b and that the endpoint of the part based at 0 locates the number 1/b on the number line.
 - b. Represent a fraction *a/b* on a number line diagram by marking off *a* lengths 1/b from 0. Recognize that the resulting interval has size *a/b* and that its endpoint locates the number *a/b* on the number line.

3.NF.3 Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.

- a. Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line.
- b. Recognize and generate simple equivalent fractions, e.g., $\frac{1}{2} = \frac{2}{4}, \frac{4}{6} = \frac{3}{3}$). Explain why the fractions are equivalent, e.g., by using a visual fraction model.
- c. Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. Examples: Express 3 in the form of 3 = 3/1; recognize that 6/1 = 6; locate 4/4 and 1 at the same point of a number line diagram.
- d. Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.
- 3.MD.4: Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by marking a line plot, where the horizontal scale is marked off in appropriate units--whole numbers, halves, or quarters.
- 3.G.2: Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. For example, partition a shape into 4 parts with equal area, and describe the area of each part as ¼ of the area of the shape.

Show Me-Standards

Goal 1: 1, 4, 5, 6, 7, 8 Goal 2: 2, 3, 7 Goal 3: 1, 2, 3, 4, 5, 6, 7, 8 Goal 4: 1, 4, 5, 6

Mathematics: 1, 2, 5

Unit 7 - Time and Temperature

Unit Title: Time and Temperature

Course: 3rd Grade Mathematics

Brief Summary of Unit: Students tell time to the nearest minute, convert time to hours and minutes, add and subtract time in hours and minutes, and find elapsed time. Students also measure and read temperature, and then apply knowledge to real-world problems.

Textbook Correlation: Chapter 16

Time Frame: approximately 2 weeks

Transfer

Students will be able to independently use their learning to ...

have an awareness of time and temperature to plan appropriately.

Mea	ning
Essential Questions	Understandings
 Students will consider How long will it take? What is the best way to estimate time? What is the best method to solve problems using time intervals? Where do I need to use elapsed time/time intervals? Why is it important to know how to measure temperature? 	 Students will understand that Time and temperature can be measured. A number line is an effective tool to measure time intervals Telling time and elapsed time is used every day in the real-world. Time can be used to tell when activities start and end, or how long an activity will last. Temperature is used to measure how hot or cold something is.

Acquisition	
Key Knowledge	Key Skills
Students will know a.m. p.m. Analog clock Digital clock Minute hand Hour hand past just Minutes Hours Hours Noon Midnight Elapsed time Temperature Water boils at 212 degrees Fahrenheit Water freezes at 32 degrees Fahrenheit Fahrenheit Thermometer	 Students will be able to Use an analog and digital clock to measure time to the nearest minute. Tell time in different ways. (For ex: 5 minutes past 10 and 10:05). Convert minutes to hours and hours to minutes. Use mental math, analog clock, branching, and/or number lines to add and subtract time. Add and subtract time with and without regrouping. Use an analog clock to add and subtract time. Solve word problems involving the addition and subtraction in time intervals. Find the elapsed time. (For ex: 4 hours past 3:40) (For ex: 6:15 to 7:05: 50 minutes) Measure temperature in degrees Fahrenheit. Estimate temperature. The temperature is read at the point where the red line ends. Use referents such as hot, warm, cool, or cold to describe temperature. Solve real world problems over time and temperature using multiple strategies.

MISSOURI LEARNING STANDARDS

MP.1 Make sense of problems and persevere in solving them.

MP.2 Reason abstractly and quantitatively.

MP.3 Construct viable arguments and critique the reasoning of others.

MP.4 Model with mathematics.

MP.5 Use appropriate tools strategically.

MP.6 Attend to precision.

MP.7 Look for and make use of structure.

MP.8 Look for and express regularity in repeated reasoning.

3.MD.1: Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.

Show Me-Standards

Goal 1: 1, 4, 5, 6, 7, 8 Goal 2: 2, 3, 7 Goal 3: 1, 2, 3, 4, 5, 6, 7, 8 Goal 4: 1, 4, 5, 6

Mathematics: 1, 5

Unit 8 - Geometry

Unit Title: Geometry

Course: 3rd Grade Mathematics

Brief Summary of Unit: Students recognize angles, perpendicular, and parallel lines (Chapter 17); classify polygons by the number of sides, corners, and angles; determine that figures can be congruent and/or symmetrical based on certain properties (Chapter 18); and find the area and perimeter of figures in metric and customary units (Chapter 19).

Textbook Correlation: Chapters 17, 18, and 19 (Include Focus Lesson 19.4.a)

Time Frame: approximately 5 1/2 weeks

Transfer

Students will be able to independently use their learning to ...

use geometric properties to describe and measure real-world objects.

Mea	ning
Essential Questions	Understandings
Students will consider	Students will understand that
 How do you compare angles and shapes? When will recognizing lines of symmetry in objects be helpful? How can we describe this object? What shapes do you see in this object? What are ways I can move this shape and it still be congruent to the original? How can you tell if two shapes are congruent? When will you need to measure area? Why would you need to measure area? What is the best unit or square unit of measure to find the area of a given plane figure? What do you do if you need to find the area of an 	 You can compare the number of sides and angles of plane shapes. Parallel lines will not meet no matter how long they are. Perpendicular lines are two lines that meet at right angles. Angles and shapes are found in real world objects. Polygons can be combined and separated to make other polygons Real world objects can be described using the language of geometry. Geometric properties can be used to organize

Acquisition	
Key Knowledge	Key Skills
Students will know Point Angle Line Line segment Endpoint Right angle Perpendicular lines Parallel lines Plane figures Open figures Closed figures Polygon Vertex Quadrilateral Rhombus	 Students will be able to Make a right angle. Compare angles to right angles using greater than, less than, and equal to. Identify right angles in plane shapes. Define and identify parallel and perpendicular lines. Identify open and closed figures. Identify special polygons and quadrilaterals. Classify polygons by the number of sides, vertices, and angles. Classify quadrilaterals by parallel sides, length of sides, and angles. Compose and decompose polygons to make other polygons. Identify a slide, flip, and turn. Slide flip, and turn shapes to make congruent

- Parallelogram
- Pentagon
- Octagon
- Slide (translation)
- Flip (reflection)
- Turn (rotation)
- Congruent
- Symmetry
- Line of symmetry
- Area
- Square unit
- cm, cm²
- m, m ²
- in., in ²
- ft., ft ²
- Improvised units (any square object, eg. floor tiles)
- Perimeter

figures.

- Identify congruent figures.
- Identify symmetric figures.
- Use folding to find a line of symmetry.
- Measure area using square units (units², cm², m², in², ft², improvised) of regular and irregular shapes (no curved shapes)
- Find the area of plane figures when given unit squares and or half unit squares, square cm, square m, square in, square ft., and improvised units
- Relate finding the area of a rectangle to the distributive property:

- Correctly label area answers
- Find area of rectangles by tiling
- Find area of rectangles by multiplying side lengths
- Construct an explanation why tiling and multiplying side lengths of a rectangle give the same results.
- Solve real world problems to determine the area of rectangle using multiple strategies.
- Given the area of rectangle, write a real world problem that could be used to give that answer.
- Estimate the area of small and large surfaces.
- Find the perimeter when length and width are given.
- Explore and analyze the relationship between units that are used to find area and perimeter of figures.
- Solve problems and real world problems involving perimeters of polygons using multiple strategies.
- Construct two or more rectangles that have the same area but different perimeters (given graph paper)
- Construct two or more rectangles with the same perimeter, but with different area.
- Find angles in plane shapes and real-world objects.
- Compare the number of sides and angles of plane shapes.

MISSOURI LEARNING STANDARDS

MP.1 Make sense of problems and persevere in solving them.

MP.2 Reason abstractly and quantitatively.

MP.3 Construct viable arguments and critique the reasoning of others.

MP.4 Model with mathematics.

MP.5 Use appropriate tools strategically.

MP.6 Attend to precision.

MP.7 Look for and make use of structure.

MP.8 Look for and express regularity in repeated reasoning.

- 3.MD.5: Recognize area as an attribute of plane figures and understand concepts of area measurement.
 - a. A square with side length 1 unit, called "a unit square," is said to have "one square unit" of area, and can be used to measure area.
 - b. A plane figure which can be covered without gaps or overlaps by n unit squares is said to have an area of n square units.

3.MD.7: Relate area to the operations of multiplication and addition.

- a. Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths.
- b. Multiply side lengths to find areas of rectangles with whole number side lengths in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning.
- c. Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths a and b
 + c is the sum of a × b and a × c. Use area models to represent the distributive property in mathematical reasoning.
- d. Recognize area as additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real world problems.
- 3.MD.8: Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.
- 3.G.1: Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.

Show Me-Standards

Goal 1: 1, 4, 5, 6, 7, 8 Goal 2: 2, 3, 7 Goal 3: 1, 2, 3, 4, 5, 6, 7, 8 Goal 4: 1, 4, 5, 6

Mathematics: 1, 2, 5

Unit 9 - Money

Unit Title: Money

Course: 3rd Grade Mathematics

Brief Summary of Unit: Students recognize, read, and write the decimal notation for money. They also add and subtract money with and without regrouping.

Textbook Correlation: Chapter 10

Time Frame: approximately 2 weeks

Transfer

Students will be able to independently use their learning to ...

solve everyday problems that involve the use of money.

Mea	ning
Essential Questions	Understandings
 Students will consider How is working with money similar to working with whole numbers? How is it different? Why do I care about working with money? Why do we solve an expression in a certain order? When do you use a variable? Why do we use variables? How does estimating allow me to check the reasonableness of a solution? 	 Students will understand that You can add and subtract money the same way you add and subtract whole numbers. There is a correct order to solve an expression with two operations. A variable represents an unknown number. Assessing reasonableness is important.

Acquisition	
Key Knowledge	Key Skills
Students will know Number bonds Penny is 1 cent Nickel is 5 cents Dime is 10 cents Quarter is 25 cents A decimal separates dollars from cents When to estimate and when to round Bar model	 Students will be able to Add and subtract with money using the mental math method, branching method, number bonds, vertical method, and traditional algorithm. Add money in different ways with and without regrouping. (For example: Add the cents to make one dollar. Then add the dollars. Change dollars and cents to cents. Then add., etc.) Subtract money in different ways with and without regrouping. (For example: Subtract using the 'subtracting whole dollars and adding the extra cents' strategy, or change dollars and cents to cents, then subtract, etc.) Use a strategy to mentally solve money addition and subtraction problems. (example: use the 'adding one dollar and subtracting the cents' strategy or subtracting whole dollars and adding the extra cents' strategy) (example: add the cents to make one dollar, then add the dollars) Solve up to two-step real-world problems including addition and subtraction of money using multiple strategies including bar models and mental math. Write real-world problems for given situations. Estimate and round 2 step problems involving money.

MISSOURI LEARNING STANDARDS

MP.1 Make sense of problems and persevere in solving them.

MP.2 Reason abstractly and quantitatively.

MP.3 Construct viable arguments and critique the reasoning of others.

MP.4 Model with mathematics.

MP.5 Use appropriate tools strategically.

MP.6 Attend to precision.

MP.7 Look for and make use of structure. MP.8 Look for and express regularity in repeated reasoning.

3.OA.8: Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computations and estimation strategies including rounding.

Show Me-Standards

Goal 1: 1, 4, 5, 6, 7, 8 Goal 2: 2, 3, 7 Goal 3: 1, 2, 3, 4, 5, 6, 7, 8 Goal 4: 1, 4, 5, 6

Mathematics: 1, 5