Wentzville School District
Stage 1 – Desired Results

Unit 1 - Ratios and Rates
Unit Title: Ratios and Rates **Course:** Integrated Math 6 **Brief Summary of Unit:** In this unit students will develop a deep understanding of ratios and rates. Students will use their understanding of factors and multiples to learn about equivalent rates and ratios. Students will use different methods (equivalent ratio tables, graphing, etc.) to determine if a relationship is a rate or ratio. **Textbook Correlation:** Glencoe Math Course 1 Chapter 1 - Lessons 1-8 **Time Frame:** approximately 5 weeks

WSD Overarching Essential Question	**WSD Overarching Enduring Understandings**
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? ● 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?	*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 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.

Transfer
Students will be able to independently use their learning to… ● Be an educated consumer, such as finding the better deal. ● Solve problems of equivalence, such as changing recipes, map scales, and/or using measurement conversions, to fit their lives.

Meaning	
Essential Questions	Understandings
Students will consider… ● Where are ratios needed in the real-world? ● How can ratios be represented in different ways? ● What is the relationship between ratio and rate? ● How does comparing quantities describe the relationship between them? ● How do you know which deal is a better buy when shopping? ● How are factors and multiples related to equivalent ratios and rates? ● Why is considering the units in a ratio or rate problem so important? ● Why use unit rates? ● How can you use different strategies to solve problems involving ratios and rates?	*Students will understand that…* ● A ratio is a comparison between different quantities. ● When setting up a ratio or rate problem, considering units is critical. ● Ratios can represent part to part, part to whole, and whole to part relationships. ● Unit rates can be used to solve a variety of real-world problems. ● A ratio is a multiplicative comparison of two quantities. ● There is a connection of ratios and rates with factors and multiples. ● There is a connection between finding equivalent ratios and finding equivalent fractions. ● Ratios are a mathematical tool that allows us to make comparisons between different quantities and units in real life. ● A rate is a ratio that compares measurements of different units. ● A unit rate is a ratio expressed as a part to one relationship. ● Division scales down and multiplication scales up. ● A relationship between ratios can be described by plotting them on the coordinate grid.

Acquisition	
Key Knowledge	Key Skills
Students will know… ● The difference between a ratio and a rate. ● Unit rate	*Students will be able to….* ● Write ratios and rates. ● Find unit rates. ● Use multiple strategies to find equivalent ratios

● Unit rate a/b is associated with a ratio a:b, where b≠0. ● The language "For every _____, there are ____." ● A rate is equivalent to its unit rate. ● Ratio ● Rate ● equivalent ratio ● greatest common factor (gcf) ● least common multiple(lcm) ● prime factorization ● ratio table ● scaling ● unit price	and rates (e.g. tape diagrams, double number line diagram, equations, etc.). ● Solve unit rate problems, including unit pricing and constant speed. ● Use ratio language. ● Use rate language in the context of a ratio relationship. ● Find Greatest Common Factor and Least Common Multiple. ● Divide groups using ratios. ● Write ratios in different forms for a given situation. ● Contextualize a problem when given a ratio. ● Make tables of equivalent ratios. ● Find missing values in tables. ● Create a graph of a ratio table on a coordinate plane. ● Use tables to compare ratios. ● Recognize the difference between ratios, rates, and unit rates.

Standards Alignment

MISSOURI LEARNING STANDARDS

6.RP.1 Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. *For example, "The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak." "For every vote candidate A received, candidate C received nearly three votes."*

6.RP.2 Understand the concept of a unit rate a/b associated with a ratio a:b with b ≠ 0, and use rate language in the context of a ratio relationship. For example, "This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is 3/4 cup of flour for each cup of sugar." "We paid $75 for 15 hamburgers, which is a rate of $5 per hamburger."

6.RP.3Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.

a. Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.

b. Solve unit rate problems including those involving unit pricing and constant speed. *For example, if it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed?*

c. Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent.

d. Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.

6.NS.4 Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor. *For example, express 36 + 8 as 4 (9 + 2).*

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.

SHOW-ME STANDARD

Goals:
1.1, 1.4, 1.5, 1.6, 1.7, 1.8
2.2, 2.3, 2.7
3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8
4.1, 4.4, 4.5, 4.6

Performance:
Math 1, 5

Wentzville School District
Stage 1 – Desired Results

Unit 2 - Fractions, Decimals, and Percents
Unit Title: Fractions, Decimals, and Percents **Course:** Integrated Math 6 **Brief Summary of Unit:** In this unit, students explore and develop the relationships between fractions, decimals and percents. Students will then use these relationships to solve real-world problems involving fractions, decimals and percents. **Textbook Correlation:** Glencoe Math Course 1 Chapter 2 - Lessons 1, 2, 3, 4, 5, 6, 7 and 8 **Time Frame:** approximately 4 weeks

WSD Overarching Essential Question	**WSD Overarching Enduring Understandings**
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? ● 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?	*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 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.

Transfer
Students will be able to independently use their learning to… ● Know when it is best to use a fraction, a decimal, or a percent when solving real-world problems.

Meaning	
Essential Questions	Understandings
Students will consider… ● When would it be appropriate to use decimals, fractions and percents to solve problem? Which would you prefer? ● Why would you convert between a decimal, a fraction, and/or a percent? ● Why use percents? ● What is the best way to solve a problem that involves a percent?	*Students will understand that…* ● Numbers can be written using various representations (fractions, decimals, and percents) ● Proportions, ratios, percents, decimals, and fractions can all be representations of parts of a whole. ● Proportional reasoning can be used to solve problems involving percents. ● Fractions, decimals and percents are different representations of the same value. ● Relative size and proportionality need to be considered when solving problems. ● Estimating a percent of a number is a quick way to solve a problem. ● Fractions are used to give more exact answers when decimals are not exact.

Acquisition	
Key Knowledge	Key Skills
Students will know… ● That a percent is a number compared to 100. ● Percents can be expressed in a proportional relationship. ● A percent is a rate per 100. ● A fraction, decimal and percent all represent the same value. ● Percent ● Proportion ● Least common denominator	*Students will be able to….* ● Write and solve percent proportions. ● Convert between fractions (including mixed numbers), decimals and percents (including percents greater than 100 and less than 1). ● Use a calculator to convert between fractions, decimals and percents. ● Find the missing value in a percent problem (using double number line and percent proportion). ● Find a percent of a quantity as a rate per 100. ● Compare and order decimals, fractions, and percents. ● Estimate the percent of a number. ● Estimate the rate per 100.

	● Find the percent of a number using multiple strategies. ● Solve real-world problems involving percents using multiple strategies.

Standards Alignment

MISSOURI LEARNING STANDARDS

6.RP.1 Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. *For example, "The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak." "For every vote candidate A received, candidate C received nearly three votes."*

6.RP.3 Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.

a. Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.

b. Solve unit rate problems including those involving unit pricing and constant speed. *For example, if it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed?*

c. Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent.

d. Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.

6.RP.2 Understand the concept of a unit rate a/b associated with a ratio a:b with $b \neq 0$, and use rate language in the context of a ratio relationship. For example, "This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is 3/4 cup of flour for each cup of sugar." "We paid $75 for 15 hamburgers, which is a rate of $5 per hamburger."

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.

SHOW-ME STANDARDS

Goals:
1.1, 1.4, 1.5, 1.6, 1.7, 1.8
2.2, 2.3, 2.7
3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8
4.1, 4.4, 4.5, 4.6

Performance:
Math 1, 5

Wentzville School District
Stage 1 – Desired Results

Unit 3 - Computing with Multi-Digit Numbers (Decimals)
Unit Title: Computing with Multi-Digit Numbers (Decimals) **Course:** Integrated Math 6 **Brief Summary of Unit:** In this unit, students will learn to fluently divide multi-digit numbers using the standard algorithm. In addition, students will add, subtract, multiply, and divide decimals. **Textbook Correlation:** Glencoe Math Course 1 Chapter 3 **Time Frame:** approximately 3 weeks

WSD Overarching Essential Question	**WSD Overarching Enduring Understandings**
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? ● 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?	*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 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.

Transfer
Students will be able to independently use their learning to… ● Use their learning of estimation to solve real-world problems and be an educated consumer. ● Fluently compute with decimals.

Meaning	
Essential Questions	Understandings
Students will consider… ● Can I use an estimate to determine the reasonableness of the quotient and product? ● What happens to a number when it is multiplied or divided by a decimal? ● How does using decimals contribute to the accuracy of our answer? ● When do we use estimation to be educated consumers? ● What is the relationship between a remainder, a decimal, and a fraction when dividing? ● What is the most efficient way for you to add, subtract, multiply and divide decimals? ● How are decimals used in the real-world?	*Students will understand that…* ● What happens to the value of a number when it is multiplied and/or divided by a decimal. ● Computational fluency includes understanding not only the meaning but also the appropriate use of numerical operations. ● Context is critical when using estimation and rounding final answers. ● A quotient needs to be logical given the numbers they are dividing and the context of the problem. ● Division problems can be written in different forms, i.e. fractions, using the division symbol, or the long division symbol. ● A quantity that is remaining can be represented as a remainder, decimal, or fraction, and the relationship between the three methods. ● Each time you move a decimal point to the left or right, you are multiplying or dividing by a power of 10.

Acquisition	
Key Knowledge	Key Skills
Students will know… ● Compatible numbers ● Sum ● Difference ● Product ● Dividend ● Divisor ● Quotient ● Remainder	*Students will be able to….* ● Round decimals to estimate sums, differences, products and quotients. ● Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation. ● Describe the effects of multiplication and division of decimals. ● Divide multi-digit numbers using the standard algorithm.

	● Write a remainder as a fraction and a decimal. ● Use short division. ● Add, subtract, multiply, and divide multi-digit decimals. ● Estimate products and quotients. ● Determine when it is appropriate to use a remainder, a decimal, and a fraction when dividing quantities. ● Solve real-world problems by identifying which operation should be used in the context in the problem.

Standards Alignment
MISSOURI LEARNING STANDARDS 6.NS.3 Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation. 6.NS.2 Fluently divide multi-digit numbers using the standard algorithm. 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.
SHOW-ME STANDARDS Goals: 1.1, 1.4, 1.5, 1.6, 1.7, 1.8 2.2, 2.3, 2.7 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8 4.1, 4.4, 4.5, 4.6 Performance: Math 1, 5

Wentzville School District
Stage 1 – Desired Results

Unit 4 - Multiplying and Dividing Fractions
Unit Title: Multiply and Divide Fractions **Course:** Integrated Math 6 **Brief Summary of Unit:** In this unit, students will learn to fluently multiply and divide fractions, as well as convert between customary units of measure. Students will then use these skills to solve real-world problems and determine the reasonableness of their solutions. **Textbook Correlation:** Glencoe Math Course 1 Chapter 4 Lessons 1-8 **Time Frame:** approximately 3 weeks

WSD Overarching Essential Question	**WSD Overarching Enduring Understandings**
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? ● 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?	*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 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.

Transfer
Students will be able to independently use their learning to… ● Make appropriate conversions to solve real-world problems. ● Apply understanding of fraction operations to solve real-world problems. ● Use their understanding of fraction computations to justify the reasonableness of solutions to everyday problems.

Meaning	
Essential Questions	Understandings
Students will consider… ● How can you use ratios to convert units of measure? ● Why is dividing fractions the same as multiplying by the reciprocal? ● How do quantities change when you are multiplying and dividing by fractions? ● What kinds of real-world situations can be solved by using fraction multiplication and division? ● Where do we use fractions in everyday life? Why? ● What is the role of a fraction in our number system? ● How does using fractions contribute to the accuracy of your answer? ● How can I explain and justify procedures for multiplying and dividing fractions? ● When is it best to express a number as fraction, mixed number, or improper fraction?	*Students will understand that…* ● When you divide an amount by a fraction, the quotient is larger than the dividend. ● When you multiply an amount by a fraction, the product is smaller than the original value. ● A division problem can be written as a related multiplication problem. ● Division of fractions happens in real-world situations. ● There are appropriate times to use fractions, mixed numbers and improper fractions to solve problems. ● Computational fluency includes understanding not only the meaning, but also the appropriate use of numerical operations. ● Context is critical when using estimation ● Unit ratios used in conversions are equal to one.

Acquisition	
Key Knowledge	Key Skills
Students will know…. ● Reciprocal ● Unit ratio ● Equivalent forms of fractions ● The effects of multiplication and division with fractions ● The purpose of and how to write a reciprocal of a fraction	*Students will be able to…* ● Find the reciprocal of a fraction. ● Create a visual fraction model to represent a division problem. ● Check a quotient using multiplication. ● Use ratio reasoning to convert measurement units. ● Convert between mixed numbers and improper

	fractions. ● Estimate fraction products, and quotients using benchmark fractions. ● Multiply and divide with whole numbers, fractions and mixed numbers. ● Solve word problems involving division of fractions by fractions by using visual fraction models. ● Solve real-world problems involving multiplying and dividing fractions using multiple strategies.

Standards Alignment
MISSOURI LEARNING STANDARDS 6.NS.1 Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem. *For example, create a story context for (2/3) ÷ (3/4) and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that (2/3) ÷ (3/4) = 8/9 because 3/4 of 8/9 is 2/3. (In general, (a/b) ÷ (c/d) = ad/bc.) How much chocolate will each person get if 3 people share 1/2 lb of chocolate equally? How many 3/4-cup servings are in 2/3 of a cup of yogurt? How wide is a rectangular strip of land with length 3/4 mi and area 1/2 square mi?* 6.RP.3 Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations. d. Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities. 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.
SHOW-ME STANDARDS Goals: 1.1, 1.4, 1.5, 1.6, 1.7, 1.8 2.2, 2.3, 2.7 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8 4.1, 4.4, 4.5, 4.6 Performance: Math 1, 5

Wentzville School District
Stage 1 – Desired Results

Unit 5 - Integers
Unit Title: Integers **Course:** Integrated Math 6 **Brief Summary of Unit:** In this unit, students will be introduced to the integers and their relationships. Students will compare, order, and graph integers on a number line and a coordinate plane. **Textbook Correlation:** Glencoe Math Course 1 Chapter 5 - Sections 1 - 7; supplement operations of integers **Time Frame:** approximately 4 weeks

WSD Overarching Essential Question	**WSD Overarching Enduring Understandings**
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? ● 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?	*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 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.

Transfer
Students will be able to independently use their learning to… ● Use properties of integers to model real-world situations such as gains and losses, balancing a checkbook, credits and debits, etc.

Meaning	
Essential Questions	Understandings
Students will consider… ● Why are positive and negative numbers needed in the real world? ● How are positive and negative numbers used in the real world? ● What is the meaning of zero? ● Why do we need absolute value? ● How can you interpret statements of inequalities? ● What is the best way to find the distance between two points on the coordinate grid? ● How can graphing points on the coordinate grid help you solve real-world problems?	*Students will understand that…* ● The negative sign is a symbol to represent the opposite of a number. ● Absolute values can be used to determine the distance from zero or the magnitude of a number. ● The location of numbers on a number line determines their values and meanings in terms of real world situations. ● The x and y coordinates in the ordered pair determines the location in the quadrants on the coordinate plane. ● The coordinate graph can be used to model and solve real world problems. ● The starting point determines the origin of the situation. ● The same methods that were used to compare positive numbers can be used to compare integers. (number line, counters, inequality symbols) ● Positive and negative numbers model real world contexts or situations. ● Compare and order rational numbers.

Acquisition	
Key Knowledge	Key Skills
Students will know… ● integer ● negative number ● zero ● absolute value ● coordinate Plane ● x axis ● y axis	*Students will be able to…* ● Describe a real world situation using a positive number. ● Describe a real world situation using negative number. ● Describe real world situations that describe opposite directions or values. ● Understand how integers apply to real-world

● origin ● ordered pairs ● reflection ● inequality ● rational number ● terminating decimal ● repeating decimal ● The location of integers on a number line ● A number line can be written both horizontally or vertically. ● Numbers and their opposites ● Quadrants on a coordinate plane ● Rules for operations on integers	situations. ● Recognize and identify the opposite of any given number and its' relationship to 0. ● Graph integers on a number line. ● Find absolute value. ● Evaluate expressions containing absolute value. ● Compare and order integers. ● Compare and order rational numbers. ● Write inequalities to represent order. ● Write positive and negative fractions as decimals. ● Write a repeating decimal using bar notation. ● Label both the horizontal and vertical axis of a coordinate plane, including the origin. ● Recognize that the opposite of either or both coordinates in an ordered pair is a reflection across one or both axes in the coordinate plane. ● Graph reflections of points on the coordinate plane. ● Understand that the x and y coordinates in an ordered pair of each quadrant share the same signs. ● Given a point on the coordinate plane, identify its coordinates. ● Graph ordered pairs of integers on the coordinate plane. ● Find the distance between two points that have the same x value or the same y value.

Standards Alignment

MISSOURI LEARNING STANDARDS

6.NS.5 Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.

6.NS.6 Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.

a. Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g., –(–3) = 3, and that 0 is its own opposite.

b. Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.

c. Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.

6.NS.7 Understand ordering and absolute value of rational numbers.

a. Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. *For example, interpret –3 > –7 as a statement that –3 is located to the right of –7 on a number line oriented from left to right*.

b. Write, interpret, and explain statements of order for rational numbers in real-world contexts. *For example, write –3 ^{o}C > –7 ^{o}C to express the fact that –3^{o}C is warmer than –7 ^{o}C*.

c. Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation. *For example, for an account balance of –30 dollars, write |–30| = 30 to describe the size of the debt in dollars*.

d. Distinguish comparisons of absolute value from statements about order. *For example, recognize that an account balance less than –30 dollars represents a debt greater than 30 dollars*.

6.NS.8 Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.

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.

SHOW-ME STANDARDS

Goals:
1.1, 1.4, 1.5, 1.6, 1.7, 1.8
2.2, 2.3, 2.7
3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8
4.1, 4.4, 4.5, 4.6

Performance:
Math 1, 5

Wentzville School District
Stage 1 – Desired Results

Unit 6 - Expressions
Unit Title: Expressions **Course:** Integrated Math 6 **Brief Summary of Unit:** In this unit, students will learn to use numerical and algebraic expressions to solve real-world problems. They will write and evaluate expressions and apply the properties of operations to generate equivalent expressions. **Textbook Correlation:** Glencoe Math Course 1 Chapter 6 **Time Frame:** approximately 3 weeks

WSD Overarching Essential Question	**WSD Overarching Enduring Understandings**
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? ● 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?	*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 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.

Transfer
Students will be able to independently use their learning to… ● Solve problems for an unknown quantity. ● Solve complex and/or multi-step problems through logical thinking.

Meaning	
Essential Questions	Understandings
Students will consider… ● Why do we need to evaluate an expression in a specific order? ● Why are there letters in my math problem? ● How can expressions help in solving real-life problems? ● How are properties helpful in math class and in the real-world? ● How can using properties help you rewrite equivalent expressions and simplify them?	*Students will understand that…* ● There is a set system involved in solving math problems and why that system should be followed. ● Symbols and words can be used to represent an expressions. ● Expressions can be constructed to model real-life phenomena. ● Numbers can be represented by many different symbols. ● Expressions can be written in several different ways in order to work with them more flexibly. ● Variables can represent a range of numbers in an expression. ● Algebra is used to represent, understand, and solve real-world problems.

Acquisition	
Key Knowledge	Key Skills
Students will know… ● term ● like terms ● coefficient ● base ● exponent ● constant ● perfect square ● powers ● The identity, associative, commutative, and distributive properties. ● The difference between a numerical and algebraic expression.	*Students will be able to….* ● Write repeated products using exponents. ● Write expressions involving exponents as repeated products. ● Evaluate expressions involving exponents. ● Use order of operations to simplify numerical expressions that include exponents, parentheses and multiple operations. ● Identify and evaluate algebraic expressions that involve exponents, parentheses, and multiple operations. ● Use a variable correctly in an expression to represent an unknown amount. ● Translate between words and math symbols, and

● How to define a variable.	vice versa. ● Use algebraic expressions to model real-world contexts. ● Use the commutative, associative, and distributive properties to generate equivalent forms for simple algebraic expressions. ● Simplify algebraic expressions by combining like terms. ● Use symbolic algebra to represent unknown quantities in expressions to describe relationships between quantities. ● Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient, constant). ● Know which factor should be split into a sum to solve a problem mentally. ● Factor an expression using the distributive property and the greatest common factor.

Standards Alignment

MISSOURI LEARNING STANDARDS

6.EE.1 Write and evaluate numerical expressions involving whole-number exponents.

6.EE.2 Write, read, and evaluate expressions in which letters stand for numbers.

a. Write expressions that record operations with numbers and with letters standing for numbers. *For example, express the calculation "Subtract y from 5" as 5 – y*.

b. Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity. *For example, describe the expression 2 (8 + 7) as a product of two factors; view (8 + 7) as both a single entity and a sum of two terms*.

c. Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations). *For example, use the formulas $V = s^3$ and $A = 6 s^2$ to find the volume and surface area of a cube with sides of length $s = 1/2$*.

6.EE.3 Apply the properties of operations to generate equivalent expressions. *For example, apply the distributive property to the expression 3 (2 + x) to produce the equivalent expression 6 + 3x; apply the distributive property to the expression 24x + 18y to produce the equivalent expression 6 (4x + 3y); apply properties of operations to y + y + y to produce the equivalent expression 3y*.

6.EE.4 Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them). *For example, the expressions y + y + y and 3y are equivalent because they name the same number regardless of which number y stands for.*

6.EE.6 Use variables to represent numbers and write expressions when solving a real-world or mathematical problem;

understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.

6.NS.3 Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.
6.NS.4 Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor. *For example, express 36 + 8 as 4 (9 + 2).*

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.

SHOW-ME STANDARDS

Goals:
1.1, 1.4, 1.5, 1.6, 1.7, 1.8
2.2, 2.3, 2.7
3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8
4.1, 4.4, 4.5, 4.6

Performance:
Math 1, 4, 5

Wentzville School District
Stage 1 – Desired Results

Unit 7 - Equations
Unit Title: Equations **Course:** Integrated Math 6 **Brief Summary of Unit:** In this unit, students will learn to use variables to represent unknown numbers in an expression or equation. Additionally, students will write and solve one-variable addition, subtraction, multiplication and division equations. **Textbook Correlation:** Glencoe Math Course 1 Chapter 7 **Time Frame:** approximately 2 weeks

WSD Overarching Essential Question	**WSD Overarching Enduring Understandings**
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? ● 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?	*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 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.

Transfer
Students will be able to independently use their learning to… ● Represent and solve problems for an unknown quantity.

Meaning	
Essential Questions	Understandings
Students will consider… ● How do I know what information the variable needs to represent when writing an equation for a real-world problem? ● How do I effectively represent quantities and relationships through mathematical notation? ● How do I use the language of math (i.e. tables, equations) to make sense of/solve a problem? ● How do I solve an equation?	*Students will understand that…* ● An algebraic equation can be written from a real world situation. ● Equations are comprised of two equivalent expressions. ● The steps in solving an equation involve keeping the equation balanced through the use of inverse operations. ● A check proves that the solution balances the equation.

Acquisition	
Key Knowledge	Key Skills
Students will know… • variable • substitution • expression • operations • equation • inverse operations • Correlation of math vocabulary to math • How to solve for a single value • That variables represent a solution • Addition Property of Equality • Subtraction Property of Equality • Multiplication Property of Equality • Division Property of Equality	*Students will be able to….* • Determine if two expressions are equivalent. • Solve one-step equations mentally. • Solve one-step equations involving whole numbers, fractions, and decimals. • Define a variable. • Isolate a variable. • Balance an equation. • Write the answer algebraically with the correct unit (ex. x = 2 apples). • Model real-world problems and solve them using one-step equations. • Provide and understand the purpose of a check. • State an answer in sentence form which correctly which conveys understanding of the problem. • Model an equation with a bar diagram.

Standards Alignment

MISSOURI LEARNING STANDARDS

6.EE.5 Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.

6.EE.7 Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p, q and x are all nonnegative rational numbers.

6.RP.3 Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.

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.

SHOW-ME STANDARDS

Goals:

1.1, 1.4, 1.5, 1.6, 1.7, 1.8

2.2, 2.3, 2.7

3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8

4.1, 4.4, 4.5, 4.6

Performance:

Math 1, 4, 5

Wentzville School District
Stage 1 – Desired Results

Unit 8 - Functions and Inequalities
Unit Title: Functions and Inequalities **Course:** Integrated Math 6 **Brief Summary of Unit:** In this unit, students will learn to represent and analyze the relationships between two variables using functions. Additionally, students will write, graph, and solve one-variable inequalities. **Textbook Correlation:** Glencoe Math Course 1 Chapter 8 **Time Frame:** approximately 3 weeks

WSD Overarching Essential Question	**WSD Overarching Enduring Understandings**
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? ● 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?	*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 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.

Transfer
Students will be able to independently use their learning to… ● Use patterns and relationships to predict outcomes. ● Represent and solve problems for an unknown quantity or quantities.

Meaning	
Essential Questions	Understandings
Students will consider… ● How can inequalities be used to represent real-world problems? ● How do the independent and dependent variables relate to each other in various situations? ● If the value of the variable changes, how does it affect the outcome of an expression or real world problem? ● What mathematical symbols, language and materials should we use to communicate with others about numbers and number relationships? ● Why generalize a relationship/pattern? ● How do I develop a rule to represent the pattern, situation, or context? ● What is the difference between arithmetic and geometric sequences?	*Students will understand that…* ● A variable can represent various quantities in an inequality. ● Solving an inequality is similar to solving an equation. ● You can determine if a number is a solution to an equation or inequality by using substitution. ● An inequality can represent an infinite solution set. ● A number line is a visual representation of an inequality. ● Graphs, tables, and equations can be used to represent the same situation in various ways. ● The table, graph and equation represent a pattern in the data. ● Recognizing the predictable patterns in mathematics allows the creation of functional relationships. ● Arithmetic and geometric sequences can be used to represent common patterns in the real-world.

Acquisition	
Key Knowledge	Key Skills
Students will know… ● input ● output ● inequality ● solution set ● inequalities ● independent variables ● dependent variables ● function rule ● arithmetic sequence	*Students will be able to….* ● Find the output for a function table, given an input and a function rule. ● Find the input for a function table, given an output and a function rule. ● Write a function rule for a table of data. ● Write solutions of equations as an ordered pair. ● Graph data points on a coordinate plane. ● Represent functions with tables, graphs, and/or equations.

● geometric sequence ● linear function ● nonlinear function ● The meaning of the inequality signs ● The independent variable correlates to the x-axis ● The dependent variable correlates to the y-axis	● Identify, evaluate, and find terms in an arithmetic and geometric sequence. ● Find patterns in sequences. ● Write an equation to represent a function. ● Graph linear functions using a table. ● Identify functions as linear or nonlinear. ● Use verbal descriptions and equations to model real-world contexts that are functions. ● Evaluate an expression to determine whether an inequality is true when given specific values. ● Represent an inequality on a number line. ● Solve a one-step inequality and graph the solution on a number line. ● Write a real world example as an inequality. ● Communicate the meaning of the table, graph, equation and inequality.

Standards Alignment

MISSOURI LEARNING STANDARDS

6.EE.2 Write, read, and evaluate expressions in which letters stand for numbers.
c. Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations). *For example, use the formulas* $V = s^3$ *and* $A = 6\ s^2$ *to find the volume and surface area of a cube with sides of length* $s = 1/2$.
6.EE.5 Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine wher a given number in a specified set makes an equation or inequality true.
6.EE.6 Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.
6.EE.8 Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form $x > c$ or $x <$ c have infinitely many solutions; represent solutions of such inequalities on number line diagrams.
6.EE.9 Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation d = 65t to represent the relationship between distance and time.

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.

SHOW-ME STANDARDS

Goals:
1.1, 1.4, 1.5, 1.6, 1.7, 1.8
2.2, 2.3, 2.7
3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8
4.1, 4.4, 4.5, 4.6

Performance:
Math 1, 4, 5

Wentzville School District
Stage 1 – Desired Results

Unit 9 - Area
Unit Title: Area **Course:** Integrated Math 6 **Brief Summary of Unit:** In this unit students will learn that a composite figure can be decomposed into triangles and other shapes. Students will also learn to find the area of triangles, quadrilaterals, and composite figures. **Textbook Correlation:** Glencoe Math Course 1 Chapter 9 **Time Frame:** approximately 2 weeks

WSD Overarching Essential Question	**WSD Overarching Enduring Understandings**
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? ● 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?	*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 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.

Transfer
Students will be able to independently use their learning to… ● Use the appropriate measurement in different situations. ● Apply geometric concepts to solve problems in everyday life, such as redecorate their house, build a project, design a family garden, reading a blueprint, etc.

Meaning	
Essential Questions	Understandings
Students will consider… ● What is the best method for finding area of polygons in real-world situations? ● How can area formulas help you solve real-world problems? ● How do you know when to use a perimeter formula and an area formula? ● Why is careful use of geometric language necessary? ● What is the best measurement to use when solving a problem? ● What are the similarities and differences among perimeter and area? ● How can graphing points on the coordinate grid help you solve real-world problems?	*Students will understand that…* ● The area is the inside/surface of a flat 2D object. ● Area represents the number of square units contained within a 2D object. ● Formulas are an efficient tool that can be used to determine the exact area of a 2D object. ● The area of polygons can be determined by decomposing the polygon into triangles and other shapes. ● Measurements can be used to describe, compare, and make sense of the real-world. ● Geometric properties can be used to construct geometric figures. ● Geometry and spatial sense offer ways to visualize, to interpret, and to reflect on our physical environment. ● The coordinate graph can be used to model and solve real world problems.

Acquisition	
Key Knowledge	Key Skills

Students will know…
● area
● perimeter
● composite figure
● height
● base
● congruent
● rhombus
● Formula for the area of a triangle
● Formula for the area of a rectangle
● Formula for the area of a parallelogram
	Students will be able to….
	● Find the area of triangles.
	● Find the area of quadrilaterals including:
	  ○ square
	  ○ rectangle
	  ○ parallelogram
	  ○ rhombus
	  ○ trapezoid
	● Given the area of a figure and some of the dimensions of the figure, find the measure of the missing dimension.

	● Find the area of polygons by composing into rectangles or decomposing into triangles and other shapes. ● Solve real world problems using area formulas. ● Determine and describe the effect of changing the dimensions of an object by a constant amount would have on the perimeter and area of that object. ● Use coordinate systems to construct geometric shapes and then find the perimeter and area of those shapes. ● Identify and justify the unit of measure for area (customary and metric). ● Solve problems involving the area and perimeter of polygons and composite figures using the appropriate formulas.

Standards Alignment
MISSOURI LEARNING STANDARDS
6.G.1 Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.
6.G.3 Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.
6.NS.8 Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.
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.

SHOW-ME STANDARDS

Goals:
1.1, 1.4, 1.5, 1.6, 1.7, 1.8
2.2, 2.3, 2.7
3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8
4.1, 4.4, 4.5, 4.6

Performance:
Math 1, 2, 5

Wentzville School District
Stage 1 – Desired Results

Unit 10 - Volume and Surface Area
Unit Title: Volume and Surface Area **Course:** Integrated Math 6 **Brief Summary of Unit:** In this unit, students will learn to measure volume and surface area of rectangular prisms. Students will also learn to represent three-dimensional figures using nets made up of triangles and rectangles and to use those nets to find surface area of prisms and pyramids. **Textbook Correlation:** Glencoe Math Course 1 Chapter 10 **Time Frame:** approximately 3 weeks

WSD Overarching Essential Question	**WSD Overarching Enduring Understandings**
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? ● 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?	*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 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.

Transfer
Students will be able to independently use their learning to… ● Use volume and surface area as attributes of 3-dimensional figures to solve real world problems.

Meaning	
Essential Questions	Understandings
Students will consider… ● How do you know when to use volume and surface area formulas? ● How is shape important when measuring a figure? ● Why is careful use of geometric language necessary? ● What is the best measurement to use when solving a problem? ● What are the similarities and differences among volume and surface area? ● What is the relationship between area and surface area? ● When would you use volume in everyday life? ● What are ways that volume can be measured? ● How is volume affected by a change in one dimension? ● How can you find the surface area of 3D figures? ● How is a net utilized to represent a 3D figure? ● What is a real world application of surface area?	*Students will understand that…* ● Two dimensional figures can be used to represent three dimensional objects. ● Measurements can be used to describe, compare, and make sense of the real-world. ● Three dimensional objects can be described, classified, and analyzed by their attributes. ● Geometry and spatial sense offer ways to visualize, to interpret, and to reflect on our physical environment. ● Volume measures the number of unit cubes of needed to fill a given space. ● The dimensions of a unit cube must be of equal length – not necessarily a whole number. ● Surface area is the sum of the areas of each individual face of the 3D figure. ● Three-dimensional figures can be “unfolded” into flat 2D shapes (nets) which can then be used to find the surface area.

Acquisition	
Key Knowledge	Key Skills
Students will know…. ● nets ● isometric dot paper ● base ● cubic units ● lateral face ● slant height ● surface area ● three-dimensional figure ● prism	*Students will be able to….* ● Model the volume of prisms. ● Use unit cubes to find volume of right rectangular prisms. ● Use a formula to find volume of right rectangular prisms. ● Given the volume of a right rectangular prism, determine any missing dimensions. ● Use appropriate tools to precisely measure the dimensions of the right rectangular prism. ● Calculate the volume of triangular prisms.

● triangular prism ● rectangular prism ● pyramid ● vertex ● volume ● Three dimensional figures ● The area of a rectangle, triangle and parallelogram	● Given the volume of a triangular prism, determine any missing dimensions. ● Use nets to represent three-dimensional figures (rectangular prisms, triangular prisms, pyramids). ● Calculate surface area of rectangular prisms. ● Calculate the surface of triangular prisms. ● Calculate the surface area of pyramids. ● Solve real-world problems involving surface area and volume using multiple strategies.

Standards Alignment

MISSOURI LEARNING STANDARDS

6.G.2 Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of a prism. Apply the formulas V = lwh and V = Bh to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.
6.G.4 Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.

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.

SHOW-ME STANDARDS

Goals:
1.1, 1.4, 1.5, 1.6, 1.7, 1.8
2.2, 2.3, 2.7
3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8
4.1, 4.4, 4.5, 4.6

Performance:
Math 1, 2, 5

Wentzville School District
Stage 1 – Desired Results

Unit 11- Statistical Measures and Displays
Unit Title: Statistical Measures and Displays **Course:** Integrated Math 6 **Brief Summary of Unit:** Students will learn to use measures of center and measures of variation to describe sets of data. They will also learn that statistical data can be represented in a variety of ways. Students will learn to represent and analyze data using line plots, histograms, and box plots. **Textbook Correlation:** Glencoe Math Course 1 Chapter 11 Sections 1, 2, 3 Glencoe Math Course 1 Chapter 12 Sections 1, 2, 3, 4 **Time Frame:** approximately 4 weeks

WSD Overarching Essential Question	**WSD Overarching Enduring Understandings**
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? ● 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?	*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 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.

Transfer
Students will be able to independently use their learning to… ● Recognize a question as statistically valid. ● Describe sets of data using the appropriate measure of center. ● Understand statistics in the real world. ● Understand how to display and interpret data in the appropriate graph.

Meaning	
Essential Questions	Understandings
Students will consider… ● How are surveys constructed to collect and analyze data? ● What is the best way to summarize data collected from a study? ● How can the understanding and use of measures of central tendency be useful for interpreting and drawing conclusions about data? ● How can you manipulate data to fool others? ● What does variability mean? ● How do you ask a question to collect statistical data? ● What is the difference between measures of center and measures of variation? ● How can data sets be summarized with a single value? ● How do you know which measure of center would be best used to describe data? ● How do measures of variation describe data? ● How can the spread of a data set be described? ● Why can't we believe everything we see and read? ● What is the best way to summarize data collected from a study? ● How can the understanding and use of various graphical representations of be useful for interpreting and drawing conclusions about data? ● How can you manipulate data to mislead others? ● What are the ways in which a set of data can be displayed? ● How can use describe the spread of a data set? ● Looking at a display of data, how can you describe the spread of the data set? ● How can the data be displayed to show the correct distribution? ● What audience would you choose to display the	*Students will understand that…* ● Data can be collected, organized, sorted, represented, and analyzed in a variety of ways. ● There is an appropriate time to use each of the different measures of center to describe different types of data. ● The results of a statistical investigation can be used to support or refute an argument. ● The message conveyed by the data depends on how the data is collected, represented and summarized. ● A statistical question should anticipate variability or more than one answer. ● Measure of variation is a measure that describes how spread out or scattered a set of data. ● A measure of center for a numerical data set summarizes all of its values with a single number. ● A measure of variation describes how its values vary with a single number. ● Data can be collected, organized, sorted, represented, and analyzed in a variety of ways. ● There is an appropriate time to use each of the different measures of center to describe different types of data. ● Different displays of data are appropriate at different times depending on the information you are trying to present. ● The display of statistical results can be used to support or refute an argument. ● The message conveyed by the data depends on how the data is collected, represented and summarized. ● Data can be described by measures of center, range and shape created when displayed in graphical form. ● Numerical data can be displayed in different types of graphs depending on the information.

correct distribution? ● How does your audience affect your choice of which type of graph to use?	

Acquisition	
Key Knowledge	Key Skills
Students will know…. ● statistical question ● outlier ● variability ● quartiles ● first quartile ● third quartile ● data charts ● interquartile range ● number line ● dot plots ● histograms ● box plots ● distribution ● symmetric distribution ● skewed distribution ● cluster ● Measures of center (mean, median, mode) ● Measures of variation (range, interquartile range) ● The type of situation for which each graph is appropriate (circle, bar, line, stem-and-leaf plot, and line plot)	*Students will be able to….* ● Write a statistical question to collect data. ● Identify between questions that account for variability and those do not. ● Calculate measures of center (mean, median, mode) given a set of data or a statistical display. ● Given a set of data, determine the first quartile, second quartile (median), and the third quartile. ● Calculate measures of variation (interquartile range, range, mean absolute deviation). ● Determine outliers for a data set. ● Compare two or more data sets using measures of center and measures of variation. ● Determine the appropriate measure of center to give an accurate representation of a set of data. ● Explain how an outlier effects measures of center. ● Formulate questions, design studies, collect, and organize data into an appropriate graph. ● Create and analyze dot plots/line plots given a set of data. ● Create and analyze histograms given a set of data. ● Create and analyze box plots given a set of data. ● Make inferences and predictions based on data presented in a graph. ● Identify different types of graphs and their characteristics. ● Determine if a graph is misleading and explain why. ● Calculate measures of center and range. ● Identify data that has a skewed distribution or symmetrical distribution. ● Describe the shape of a distribution. ● Describe the measures of center and spread for a given distribution. ● Choose an appropriate measure of center and spread to describe a distribution. ● Create and analyze line graphs. ● Select the best statistical display for analyzing a set of data.

Standards Alignment

MISSOURI LEARNING STANDARDS

6.SP.1 Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. *For example, "How old am I?" is not a statistical question, but "How old are the students in my school?" is a statistical question because one anticipates variability in students' ages*.

6.SP.2 Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape

6.SP.3 Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.

6.SP.4 Display numerical data in plots on a number line, including dot plots, histograms, and box plots.

6.SP.5 Summarize numerical data sets in relation to their context, such as by:

a. Reporting the number of observations.
b. Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.
c. Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.
d. Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.

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.

SHOW-ME STANDARDS

Goals:
1.1, 1.4, 1.5, 1.6, 1.7, 1.8
2.2, 2.3, 2.7
3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8
4.1, 4.4, 4.5, 4.6

Performance:
Math 1, 3, 5

Wentzville School District
Stage 1 – Desired Results

Unit 12 – Operations of Integers
Unit Title: Operations of Integers **Course:** Integrated Math 6 **Brief Summary of Unit:** In this unit, students will add, subtract, multiply, and divide integers. **Textbook Correlation:** None; supplement operations of integers **Time Frame:** approximately 1 week

WSD Overarching Essential Question	**WSD Overarching Enduring Understandings**
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? ● 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?	*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 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.

Transfer
Students will be able to independently use their learning to… ● Use properties of integers to model real-world situations such as gains and losses, balancing a checkbook, credits and debits, etc.

Meaning	
Essential Questions	Understandings
Students will consider… ● What happens when you add, subtract, multiply and divide integers? ● What real world situations can be modeled by using operations of integers?	*Students will understand that…* ● The negative sign is a symbol to represent the opposite of a number. ● Adding integers is still putting quantities together. ● Subtracting integers is still finding the difference between two quantities. ● Multiplying integers is still putting the groups of quantities together. ● Dividing integers is still determining the number of groups of equal size.

Acquisition	
Key Knowledge	Key Skills
Students will know… ● integer ● negative number ● rational Number ● Rules for operations on integers	*Students will be able to…* ● Describe a real world situation using negative number. ● Understand how integers apply to real-world situations. ● Model the operations of integers (with manipulatives and/or number line). ● Add, subtract, multiply, and divide integers. ● Describe the effects of addition, subtraction, multiplication and division with negative numbers.

Standards Alignment

MISSOURI LEARNING STANDARDS

6.NS.5 Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.

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.

SHOW-ME STANDARDS

Goals:
1.1, 1.4, 1.5, 1.6, 1.7, 1.8
2.2, 2.3, 2.7
3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8
4.1, 4.4, 4.5, 4.6

Performance:
Math 1, 5