Monroe County Schools
2015 - 2016
6th Grade Math Pacing Guide

Grade 6 Overview

Ratios and Proportional Relationships
• Understand ratio concepts and use ratio reasoning to solve problems.

The Number System
• Apply and extend previous understandings of multiplication and division to divide fractions by fractions.
• Compute fluently with multi-digit numbers and find common factors and multiples.
• Apply and extend previous understandings of numbers to the system of rational numbers.

Expressions and Equations
• Apply and extend previous understandings of arithmetic to algebraic expressions.
• Reason about and solve one-variable equations and inequalities.
• Represent and analyze quantitative relationships between dependent and independent variables.

Geometry
• Solve real-world and mathematical problems involving area, surface area, and volume.

Statistics and Probability
• Develop understanding of statistical variability.
• Summarize and describe distributions.

Mathematical Practices

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

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Month Introduced	2013 AL COS Standards	Resources	Vocabulary	Students can…	Date Tested
First Quarter					
First Quarter	**6.4** 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. [6-NS1]	Ch. 5: Les. 6	See Chapter Vocabulary equations fractions models quotients	Interpret quotients of fractions Compute quotients of fractions Solve word problems involving division of fractions by fractions	**October**
	6.5 Fluently divide multi-digit numbers using the standard algorithm. [6-NS2]	Ch. 1: Les. 2	See Chapter Vocabulary algorithm	Divide multi-digit numbers using the standard algorithm.	**October**
	6.6 Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation. [6-NS3]	Ch. 3: Les. 3, 4, 5, 6, 7	See Chapter Vocabulary decimals	Add multi-digit decimals using the standard algorithm. Subtract multi-digit decimals using the standard algorithm. Multiply multi-digit decimals using the standard algorithm. Divide multi-digit decimals using the standard algorithm.	**October**
	6.7 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. [6-NS4]	Ch. 5: Les. 1, 5 Ch. 4: Les. 2	See Chapter Vocabulary distributive property equal factor greatest common factor least common multiple sum	Find the greatest common factor (GCF) of two whole numbers less than or equal to 100. Find the least common multiple (LCM) of two whole numbers less than or equal to 12. Use the definitions of GCF and LCM along with the distributive property to express the sum of two whole numbers.	**October**
	6.12 Write and evaluate numerical expressions involving whole-number exponents. [6-EE1]	Ch. 1: Les. 3	See Chapter Vocabulary exponents numerical expressions	Write numerical expressions involving whole number exponents. Evaluate numerical expressions involving whole number exponents.	**October**

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Month Introduced	2013 AL COS Standards	Resources	Vocabulary	Students can…	Date Tested
First Quarter (continued)					
First Quarter (continued)	**6.13** Write, read, and evaluate expressions in which letters stand for numbers. [6-EE2]	Ch. 1: Les. 4 Ch. 2: Les. 1, 2, 3, 4	See Chapter Vocabulary expressions		**October**
	6.13.a. Write expressions that record operations with numbers and with letters standing for numbers. [6-EE2a]	Ch. 1: Les. 4 Ch. 2: Les. 1, 2, 3, 4	See Chapter Vocabulary expressions operations	Translate a description into a mathematical expression Use a variable to represent an unknown quantity in an expression	**October**
	6.13.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. [6-EE2b]	Ch. 1: Les. 4 Ch. 2: Les. 1, 2, 3, 4	See Chapter Vocabulary Coefficient factor product quotient sum term	Identify parts of an expression using mathematical vocabulary Identify parts of an expression as single quantities	**October**
	6.13.c. Evaluate expressions at specific values for their variables. Include expressions that arise from formulas 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.) [6-EE2c]	Ch. 1: Les. 4 Ch. 2: Les. 1, 2, 3, 4	See Chapter Vocabulary arithmetic operations exponents Order of Operations variables	Simplify expressions when a value is given for a variable Use Order of Operations without parentheses to simplify expressions that may include exponents	**October**
	6.14 Apply the properties of operations to generate equivalent expressions.[6-EE3]	Ch. 1: Les. 5	See Chapter Vocabulary equivalent expressions	Simplify algebraic expressions using the properties of operations. Use the distributive property to write equivalent expressions by multiplying. Use the distributive property to write equivalent expressions by factoring coefficients.	**October**

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First Quarter (continued)					
First Quarter (continued)	**6.15** Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them). [6-EE4]	Ch. 4: Les. 3	See Chapter Vocabulary equivalent expressions	Recognize equivalent expressions.	**October**
	6.16 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-EE5]	Ch. 2: Les. 4	See Chapter Vocabulary equation inequality set values	Use substitution to determine whether a given number in a specified set makes an equation true. Use substitution to determine whether a given number in a specified set makes an inequality true.	**October**
	6.17 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-EE6]	Ch. 2: Les. 5, 6, 7, 8 Ch. 3: Les. 8	See Chapter Vocabulary expression variable	Use variables to represent unknown quantities. Write expressions to represent a mathematical situation. Write expressions to represent a real-world situation.	**October**
	6.18 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-EE7]	Ch. 2: Les. 5, 7 Ch. 3: Les. 3, 4, 8 Ch. 5: Les. 4, 7	See Chapter Vocabulary equations nonnegative rational number	Use inverse operations to solve one-step equations using nonnegative rational numbers. Use the properties of equality to solve one-step equations using nonnegative rational numbers	**October**
First Quarter Notes:					

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Month Introduced	2013 AL COS Standards	Resources	Vocabulary	Students can…	Date Tested
Second Quarter					
Second Quarter	**6.8** 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, debits/credits, 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-NS5]	Ch. 9: Les. 1	See Chapter Vocabulary credits debits negative number positive number ordered pairs	Describe quantities having opposite directions or values. Use positive and negative numbers to represent quantities in real-world contexts. Explain the meaning of 0 in each situation.	**December**
	6.9 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. [6-NS6]	Ch. 7: Les. 3 Ch. 9: Les 1, 3, 4, 5	See Chapter Vocabulary coordinate axes number line diagrams plane rational number		**December**
	6.9.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. [6-NS6a]	Ch. 7: Les. 3 Ch. 9: Les 1, 3, 4, 5	See Chapter Vocabulary number line opposite	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 Recognize that 0 is its own opposite	**December**
	6.9.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. [6-NS6b]	Ch. 7: Les. 3 Ch. 9: Les 1, 3, 4, 5	See Chapter Vocabulary axes coordinate plane ordered pairs quadrants	Recognize the point where the x-axis and the y-axis intersect as the origin Identify the four quadrants of the coordinate plane Identify the quadrant for an ordered pair based on the signs of the coordinates Justify points related by reflection across either or both axes differ only by sign(s)	**December**

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Month Introduced	2013 AL COS Standards	Resources	Vocabulary	Students can…	Date Tested
Second Quarter (continued)					
Second Quarter (continued)	**6.9.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-NS6c]	Ch. 7: Les. 3 Ch. 9: Les 1, 3, 4, 5	See Chapter Vocabulary horizontal number line diagram integers rational numbers vertical number line diagram	Plot all rational numbers on a horizontal and vertical number line Identify the values of given points on a horizontal and vertical number line Plot ordered pairs on the coordinate plane	**December**
	6.10 Understand ordering and absolute value of rational numbers.[6-NS7]	Ch. 4, Les. 7 Ch. 9: Les. 1, 2	See Chapter Vocabulary absolute value ordering rational		**December**
	6.10.a. Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. [6-NS7a]	Ch. 4: Les. 7 Ch. 9: Les. 1, 2	See Chapter Vocabulary inequality		**December**
	6.10.b. Write, interpret, and explain statements of order for rational numbers in real-world contexts. [6-NS7b]	Ch. 4: Les. 7 Ch. 9: Les. 1, 2	See Chapter Vocabulary rational numbers	Explain inequalities used in real-world situations	**December**
	6.10.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. [6-NS7c]	Ch. 4: Les. 7 Ch. 9: Les. 1, 2	See Chapter Vocabulary absolute value magnitude negative positive	Define absolute value Use absolute value to describe magnitude or size in real-world situations	**December**

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Second Quarter (continued)					
Second Quarter (continued)	**6.10.d.** Distinguish comparisons of absolute value from statements about order. [6-NS7d]	Ch. 4: Les. 7 Ch. 9: Les. 1, 2	See Chapter Vocabulary absolute value	Distinguish comparisons of absolute value from statements about order	**December**
	6.11 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. [6-NS8]	Ch. 9: Les. 3, 4, 5	See Chapter Vocabulary absolute value coordinate coordinate plane quadrants	Solve real-world problems by graphing points in all four quadrants. Find the distance between points with the same first or second coordinate.	**December**
Second Quarter Notes:					
First Semester Notes:					

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Month Introduced	2013 AL COS Standards	Resources	Vocabulary	Students can…	Date Tested
Second Semester					
Third Quarter					
Third Quarter	**6.1** Understand the concept of ratio, and use ratio language to describe a ratio relationship between two quantities. [6-RP1]	Ch. 7: Les. 1 and 4	See Chapter Vocabulary quantities ratio relationship	Recognize a ratio in various forms Explain what a ratio is in their own words Describe a ratio relationship	**March**
	6.2 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. [6-RP2]	Ch. 7: Les. 1	See Chapter Vocabulary context unit rate	Express unit rate as a ratio of part-to-one	**March**
	6.3 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 lines, or equations. [6-RP3]	Ch. 7: Les. 1, 2, 5, 6, 7, 8 Ch. 8: Les. 1, 2 Ch. 10: Les. 3	See Chapter Vocabulary double number lines equations rate reasoning table of equivalent ratios tape diagrams		**March**
	6.3.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. [6-RP3a]	Ch. 7: Les. 1, 2, 5, 6, 7, 8 Ch. 8: Les. 1, 2 Ch. 10: Les. 3	See Chapter Vocabulary compare coordinate plane plot quadrant	Make tables of equivalent ratios Find missing values in the tables Plot ordered pairs on the coordinate plane Use tables to compare ratios	**March**
	6.3.b.Solve unit rate problems including those involving unit pricing and constant speed. [6-RP3b]	Ch. 7: Les. 1, 2, 5, 6, 7, 8 Ch. 8: Les. 1, 2 Ch. 10: Les. 3	See Chapter Vocabulary constant speed unit pricing	Recognize when to use unit rate and ratios to solve problems Use concepts of unit rate to solve problems	**March**

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Third Quarter (continued)					
Third Quarter (continued)	**6.3.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. [6-RP3c]	Ch. 7: Les. 1, 2, 5, 6, 7, 8 Ch. 8: Les. 1, 2 Ch. 10: Les. 3	See Chapter Vocabulary part percent whole	Find a percent of a quantity as a rate per 100 Solve percent problems involving finding the whole	**March**
	6.3.d. Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.[6-RP3d]	Ch. 7: Les. 1, 2, 5, 6, 7, 8 Ch. 8: Les. 1, 2 Ch. 10: Les. 3	See Chapter Vocabulary convert manipulate transform	Use ratio reasoning to convert measurement units Manipulate and transform units appropriately when multiplying or dividing quantities	**March**
	6.25 Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. [6-SP1	Ch. 6: Les. 3	See Chapter Vocabulary statistical question variability	Recognize that data generated from statistical questions will vary. Recognize that responses to statistical questions have variations that can be used to draw conclusions about the data set. Identify the difference between a statistical and non-statistical question.	**March**
	6.26 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-SP2]	Ch. 6: Les. 1, 3, 4, 5	See Chapter Vocabulary center distribution overall shape set of data spread	Interpret a set of data using center, spread, and overall shape.	**March**
	6.27 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-SP3]	Ch. 6: Les. 1, 2, 5	See Chapter Vocabulary data set measure of center measure of variation values	Recognize that a measure of center for a numerical data set summarizes all of its values using a single number. Recognize that a measure of variation describes how its values vary with a single number.	**March**

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Third Quarter (continued)					
Third Quarter (continued)	**6.28** Display numerical data in plots on a number line, including dot plots, histograms, and box plots. [6-SP4]	Ch. 6: Les. 4, 5	See Chapter Vocabulary box plots dot plots histograms	Organize numerical data on a dot plot. Organize numerical data on a histogram. Organize numerical data on a box plot. Choose the appropriate graph to display data.	**March**
	6.29 Summarize numerical data sets in relation to their context, such as by: [6-SP5]	Ch. 6: Les. 4, 5	See Chapter Vocabulary numerical data set summarize mean, median, mode, striking deviations mean absolute deviations interquartile range		**March**
	6.29.a. Reporting the number of observations [6-SP5a]	Ch. 6: Les. 4, 5	See Chapter Vocabulary	Report the number of observations	**March**
	6.29.b. Describing the nature of the attribute under investigation, including how it was measured and its units of measurement. [6-SP5b]	Ch. 6: Les. 4, 5	See Chapter Vocabulary attribute	Describe what is being investigated and how the data was gathered Justify the appropriateness of the process used for data collection Choose an appropriate unit of measurement for the investigation Explain the importance of the unit of measurement used in the investigation Identify and describe the attribute being measured	**March**

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Month Introduced	2013 AL COS Standards	Resources	Vocabulary	Students can…	Date Tested
Third Quarter (continued)					
Third Quarter (continued)	**6.29.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. [6-SP5c]	Ch. 6: Les. 4, 5	Minimum Maximum Median Mean Range interquartile range mean absolute deviation striking deviations overall pattern	Compute mean absolute deviation. Compute interquartile range. Summarize data sets in relation to measures of center. Summarize data sets in relation to measures of variability.	**March**
	6.29.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. [6-SP5d]	Ch. 6: Les. 4, 5	See Chapter Vocabulary data distribution measures of center variability	Choose the most appropriate measures of center to describe the data based on the shape of the data distribution and how the data was gathered Choose the most appropriate measure of variability to describe the data based on the shape of the data distribution and how the data was gathered Determine if the measure of center or variability is appropriate to describe the set of data Explain deviations in a pattern for a set of data	**March**
Third Quarter Notes:					

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Month Introduced	2013 AL COS Standards	Resources	Vocabulary	Students can…	Date Tested
Fourth Quarter					
Fourth Quarter	**6.19** 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-EE8]	Ch. 10: Les. 4	See Chapter Vocabulary condition constraint infinitely	Recognize that infinity refers to a set of numbers that has no end but may not include all numbers. Recognize that a variable can stand for an infinite number of solutions when used in inequalities. Recognize that a constraint or condition in an inequality refers to the boundary defined in the solution set. Write an inequality that represents real world mathematical problems that contain a constraint or condition. Graph an inequality on a number line.	**May**
	6.20 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. [6-EE9]	Ch. 10: Les. 1, 2	See Chapter Vocabulary dependent dependent variable graphs independent variable tables	Use variable to represent two quantities in a real world problem. Recognize that a change in the independent variable creates a change in the dependent variable. Recognize which quantitative relationships between dependent and independent variables are linear. Organize and display a set of data using tables and graphs. Make a table, graph, and/or equation to represent a problem context. Compare the relationship between the dependent and independent variables using graphs and tables.	**May**

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Fourth Quarter (continued)					
Fourth Quarter (continued)	**6.21** Find 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-G1]	Ch. 8: Les. 3, 4, 5	See Chapter Vocabulary composing decomposing polygons quadrilaterals right triangles	Relate the area of triangles to the area of rectangles. Visually and physically decompose and compose polygons into rectangles and triangles to determine area.	**May**
	6.22 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 the prism. Apply the formulas *V = l wh* 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-G2]	Ch. 8: Les. 6	See Chapter Vocabulary right rectangular prism cubes V = lwh V = Bh volume	Determine the volume of a right rectangular prism with fractional edge lengths. Make the connection that when finding volume l x w is the same as B (area of the base). Use these formulas interchangeably, *V = lwh* and *V = Bh*.	**May**
	6.23 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-G3]	Ch. 9: Les. 4	See Chapter Vocabulary coordinates coordinate plane polygons vertices	Draw polygons in the coordinate plane given coordinates for the vertices. Use the coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Explain that a line segment from one coordinate pair to another represents a distance. Explain that two coordinates having the same x or y value are on the same line. Recognize that the distance between two points on a coordinate plane is an absolute value. Recognize that the units on a coordinate plane define the unit of distance measure. Show how a coordinate plane can be used to represent real-world contexts (e.g., streets).	**May**

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Fourth Quarter (continued)					
Fourth Quarter (continued)	**6.24** 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. [6-G4]	Ch. 8: Les. 7	See Chapter Vocabulary nets rectangles surface area triangles	Represent three-dimensional figures using nets. Use nets to find surface area of three-dimensional figures. Determine surface area in a real-world context.	**May**
Fourth Quarter Notes:					
Second Semester Notes:					
"I can" statements from ND., NC., and Utah.					

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Formative Assessment Schedule

1st Nine Weeks	2nd Nine Weeks	3rd Nine Weeks	4th Nine Weeks
Date Tested: October	Date Tested: December	Date Tested: March	Date Tested: May
AL CCRS Standards	AL CCRS Standards	AL CCRS Standards	AL CCRS Standards
4 5 6 7 12 13 13 a-c 14 15 16 17 18	8 9 9 a 9b 9c 10 10a 10b 10c 10d 11	1 2 3 3a 3b 3c 3d 25 26 27 28 29 29a 29b 29c 29d	19 20 21 22 23 24