

PARENT GUIDE

GRADE SIX MATHEMATICS CURRICULUM

DIOCESE OF CLEVELAND

Below is a list of the skills your child will be taught in Grade Six.

As parents, you are encouraged to support the work of your child's teacher in helping your child acquire each of these skills.

RATIOS AND PROPORTIONAL RELATIONSHIPS	
UNDERSTAND RATIO CONCEPTS AND USE RATIO REASONING TO SOLVE PROBLEMS.	
	Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.
	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.
	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.
	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.
	Solve unit rate problems including those involving unit pricing and constant speed.
	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.
	Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.
ANALYZE PATTERNS AND RELATIONSHIPS.	
	Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane.
NUMBER SYSTEM	
APPLY AND EXTEND PREVIOUS UNDERSTANDINGS OF MULTIPLICATION AND DIVISION TO DIVIDE FRACTIONS BY FRACTIONS.	
	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.
COMPUTE FLUENTLY WITH MULTI-DIGIT NUMBERS AND FIND COMMON FACTORS AND MULTIPLES.	
	Fluently divide multi-digit numbers using the standard algorithm.
	Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.
	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.
APPLY AND EXTEND PREVIOUS UNDERSTANDINGS OF NUMBERS TO THE SYSTEM OF RATIONAL NUMBERS.	
	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.
	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.
	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.
	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.
	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.

NUMBER SYSTEM CONTINUED

APPLY AND EXTEND PREVIOUS UNDERSTANDINGS OF NUMBERS TO THE SYSTEM OF RATIONAL NUMBERS CONTINUED.

	Understand ordering and absolute value of rational numbers.
	Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram.
	Write, interpret, and explain statements of order for rational numbers in real-world contexts.
	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.
	Distinguish comparisons of absolute value from statements about order.
	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.

EXPRESSIONS AND EQUATIONS

APPLY AND EXTEND PREVIOUS UNDERSTANDINGS OF ARITHMETIC TO ALGEBRAIC EXPRESSIONS.

	Write and evaluate numerical expressions involving whole-number exponents.
	Write, read, and evaluate expressions in which letters stand for numbers.
	Write expressions that record operations with numbers and with letters standing for numbers.
	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.
	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).
	Apply the properties of operations to generate equivalent expressions.
	Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them).

REASON ABOUT AND SOLVE ONE-VARIABLE EQUATIONS AND INEQUALITIES.

	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.
	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.
	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.
	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.

REPRESENT AND ANALYZE QUANTITATIVE RELATIONSHIPS BETWEEN DEPENDENT AND INDEPENDENT VARIABLES.

	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.
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