Warren County School District

PLANNED INSTRUCTION

COURSE DESCRIPTION

Course Title: Mathematics – Grade 6

Course Number: 00203

Course Description and Prerequisites: Completion of Mathematics – Grade 5

This course strengthens previously learned skills with fractions, decimals, percents and geometry. Students will be encouraged to further explore problem-solving to enhance simple algebraic concepts such as integers, equations and expressions. Daily math activities will require students to make several connections, relate skills within the content area and among others, and develop various approaches to become confident problem solvers.

Suggested Grade Level: Sixth Grade

Length of Course: ___ One Semester _X_ Two Semesters ____ Other

Units of Credit: 1.0

PDE *Certification and Staffing Policies and Guidelines (CSPG)* Required Teacher Certification(s) Elementary

Certification verified by WCSD Human Resources Department:
_X_ Yes ____No

Board Approved Textbooks, Software, Materials:
Title:
Publisher:
ISBN #:
Copyright Date:
Date of WCSD Board Approval:

BOARD APPROVAL:

Date Written: ____Spring of 2006_____

Date Approved: ___April 10, 2006_____

Implementation Year: ___2006-2007_____

Suggested Supplemental Materials:
Geoboard, color tiles, tangram pieces, pentonimoes, clock, attribute blocks, probability dice, spinner, pattern blocks, snap cubes, coins & dollar bills, base ten blocks, calculator, thermometer and ruler.

Course Standards

PA Academic Standards:
2.1 Numbers, Number Systems and Number Relationships
2.2 Computation and Estimation
2.3 Measurement and Estimation
2.4 Mathematical Reasoning and Connections
2.5 Mathematical Problem Solving and Communication
2.6 Statistics and Data Analysis
2.7 Probability and Predictions
2.8 Algebra and Functions
2.9 Geometry
2.10 Trigonometry
2.11 Concepts of Calculus

WCSD Academic Standards: None

Industry or Other Standards: Common Core: See Appendix A

WCSD EXPECTATIONS

WCSD K-12 Expectations for instruction in writing, reading, mathematics and, technology have been developed and revised annually. The teacher will integrate all WCSD Expectations into this planned instruction

SPECIAL EDUCATION AND GIFTED REQUIREMENTS

The teacher shall make appropriate modifications to instruction and assessment based on a student's Individual Education Plan (I.E.P.) or Gifted Individual Education Plan (G.I.E.P.).

REQUIRED COURSE SEQUENCE AND TIMELINE

Content Sequence	Dates
Data & statistics	September
Fractions	October
Addition & subtraction of fractions	November
Multiplication & division of fractions	December
Geometry and measurement	January/February
Perimeter, area, and volume	March
Integers	
Ratios & probability	April
Percents	
Placement Test*	April
Multiplication & division of whole numbers & decimals	May/June
Numeration	

WRITING TEAM:
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A yearly review will be done following the PDE release of the annual Eligible Content. Our goal is to keep the math planned instruction updated and effective.

WCSD STUDENT DATA SYSTEM INFORMATION

1. Is there a required final examination? ____ Yes _X_ No
2. Does this course issue a mark/grade for the report card? _X_ Yes____ No
3. Does this course issue a Pass/Fail mark? ____ Yes _X_ No
4. Is the course mark/grade part of the GPA calculation? __X__ Yes No
5. Is the course eligible for Honor Roll calculation? __X__ Yes _ No
6. What is the academic weight of the course? __X__ Standard weight

____ Enhanced weight

SPECIFIC EDUCATIONAL OBJECTIVES/CORRESPONDING STANDARDS AND ELIGIBLE CONTENT WHERE APPLICABLE

The Eligible Content is not in sequence. It is a checklist to be used to comply with state standards.

2.1 Numbers, Number Systems and Number Relationships
Mathematics – Grade 6

	Eligible Content	Performance Indicator	Assessment
2.1.8A	M6.A.1.1.1 M6.A.1.1.2 M6.A.1.1.4	• Represent and explain relationships among decimals, fractions and percents and distinguish appropriate form to use to solve problems. • Represent percents as fractions and decimals. • Convert between fractions and decimal and differentiate between terminating and repeating decimal. • Convert mixed numbers to improper fractions.	**Formative Assessments:** • Observation • Evaluate written work • Performance assessment • Tests/quizzes • Problem-solving journal/activity • Create an illustration • Develop a model using manipulatives • Hands on representation • Evaluate oral response • Self-evaluation • 4Sight • SuccessMaker • Portfolio • K-W-L • Venn diagram • Homework • Interview **Summative Assessments:** • Portfolio • Test • Performance assessment • Cooperative project • PSSA • Final Exam
2.1.8B	M6.A.2.1.1 M6.A.1.13	• Simplify numerical expressions including ones that contain exponents and use the order of operations when required. • Simplify expressions involving powers.	
2.1.8C	M6.A.1.2.1	• Use a number line to represent and compare whole numbers, fractions, decimals and mixed numbers and to model real life situations. • Round decimals. • Compare and order fractions.	
2.1.8D		• Use appropriate ratios and proportions to solve problems.	
2.1.8E	M6.A.1.3.1 M6.A.1.3.2	• Classify numbers including prime, composite, factors and multiples. • Find the greatest common factor. • Find the least common multiple.	
2.1.8F		• Model and solve real life situations using one step equations.	
2.1.8G		Solve equations that involve whole numbers, fractions, decimals and mixed numbers by undoing the operation.	

2.2 Computation and Estimation
Mathematics – Grade 6

	Eligible Content	Performance Indicator	Assessment
2.2.8A	M6.A.3.2.1	Simplify expressions using the order of operations.	**Formative Assessments:** • Observation • Evaluate written work • Performance assessment • Tests/quizzes • Problem-solving journal/activity • Create an illustration • Develop a model using manipulatives • Hands on representation • Evaluate oral response • Homework • Interview **Summative Assessments:** • Test • Final Exam
2.2.8B	M6.A.1.3.3	Add, subtract, multiply and divide decimals, fractions (like and unlike denominators) and mixed numbers.	
2.2.8C		Create and solve word problems involving decimals, fractions and integers.	
2.2.8D	M6.A.1.4.1	• Define percent. • Solve percent problems by estimating the answer using appropriate techniques. • Model percents using drawings, graphs and sets.	
2.2.8E		• Use estimation to determine the reasonableness of an answer.	
2.2.8F	M6.A.3.1.1	• Solve problems that require estimated or rounded answers. • Solve problems that require exact answers.	

2.3 Measurement and Estimation
Mathematics – Grade 6

	Eligible Content	Performance Indicator	Assessment
2.3.8A	M6.B.2.2	Solve problems involving length, perimeter, area and volume of geometric figures.	**Formative Assessments:** • Observation • Evaluate written work • Performance assessment • Tests/quizzes • Problem-solving journal/activity • Create an illustration • Develop a model using manipulatives • Evaluate oral response • Homework • Interview **Summative Assessments:** • Test • Performance assessment
2.3.8B	M6.B.1.1.1	Determine and compare elapsed time.	
2.3.8C	M6.B.2.1.3 M6.B.2.3.1	• Select and use an appropriate tool to measure angles and line segments. • Draw, label and name angles as acute, right, obtuse, straight utilizing protraction.	
2.3.8D		• Apply appropriate conversion to measurement in real life situations. • Solve area, perimeter, and volume problems making sure to use the correct units with the answers.	
2.3.8E			
2.3.8F	M6.B.2.1.2	• Choose the more precise measurement of an object. • Find actual and scale measurements using the scale for a map or a diagram.	
2.3.8G			

2.4 Mathematical Reasoning and Connection
Mathematics – Grade 6

	Eligible Content	Performance Indicator	Assessment
2.4.8A		Estimate, predict, solve problems and use logical reasoning.	**Formative Assessments:** • Observation • Performance assessment • Problem-solving journal/activity • Develop a model using manipulatives • Hands on representation • Evaluate oral response • Homework **Summative Assessments:** • Test
2.4.8B		Create and solve word problems which represent characteristics of learned concepts.	
2.4.8C		Predict possible outcomes using the five-step problem solving process with given information.	
2.4.8D		Estimate and solve problems by adding, subtraction, multiplying and dividing whole numbers, fractions, decimals and mixed numbers.	
2.4.8E			
2.4.8F			

2.5 Mathematical Problem Solving and Communication
Mathematics – Grade 6

	Eligible Content	Performance Indicator	Assessment
2.5.8A		Select one of the following methods to solve problems guess and check, use a formula, determining a method of computation, make a list, eliminate possibilities, and draw a picture, and justify your choice.	**Formative Assessments:** • Observation • Evaluate written work • Performance assessment • Problem-solving journal/activity • Hands on representation • Evaluate oral response
2.5.8B		Create a visual representation to solve a problem.	
2.5.8C		Explain why a strategy was chosen.	
2.5.8D			

2.6 Statistics and Data Analysis
Mathematics – Grade 6

	Eligible Content	Performance Indicator	Assessment
2.6.8A	M6.E.2.1.1	Calculate mean, median, mode and range.	**Formative Assessments:** • Observation • Evaluate written work • Performance assessment • Problem-solving journal/activity • Venn diagram • Evaluate oral response **Summative Assessments:** • Test • PSSA
2.6.8B	M6.E.1.1.1	Interpret data using pictures, tallies, tables, charts, bar graphs and circle graphs.	
2.6.8C			
2.6.8D		Conduct a survey to collect data.	
2.6.8E			
2.6.8F		Use a calculator to compute fractions and decimal data.	
2.6.8G		Collect and analyze data to make predictions.	

2.7 Probability and Predictions
Mathematics – Grade 6

	Eligible Content	Performance Indicator	Assessment
2.7.8A	M6.E.3.1.2	Determine and show all possible combinations of a given set of arrangements.	**Formative Assessments:** • Evaluate written work • Problem-solving journal/activity • Create an illustration • Develop a model using manipulatives **Summative Assessments:** • Test
2.7.8B	M6.E.1.1.2 M6.E.1.1.3	Present the results of an experiment in a chart, table, bar graph, circle graph or line plot.	
2.7.8C		Use guess & check to analyze predictions.	
2.7.8D			
2.7.8E	M6.E.3.1.1	Determine the probability of an event.	

2.8 Algebra and Functions
Mathematics – Grade 6

	Eligible Content	Performance Indicator	Assessment
2.8.8A			**Formative Assessments:** • Observation • Evaluate written work • Performance assessment • Tests/quizzes • Problem-solving journal/activity • Create an illustration • Develop a model using manipulatives • Hands on representation • Evaluate oral response • Self-evaluation • Homework • Interview **Summative Assessments:** • Test
2.8.8B	M6.D.1.1.1 M6.D.1.2.1	• Create, extend, or find a missing element in a pattern displayed in a chart, table or graph. • Determine a rule based on a pattern or illustrate a pattern based on a given rule.	
2.8.8C	M6.d.2.2.1	• Solve problems with variable expressions or equations.	
2.8.8D			
2.8.8E	M6.D.2.1.1 M6.D.2.1.2	• Identify the inverse operation needed to solve a one-step equation. • Solve a one-step equation using the inverse operation.	
2.8.8F			
2.8.8G			
2.8.8H	M6.C.2.1.1	Plot, locate and identify points in Quadrant 1 and on the x and y axes.	
2.8.8I			
2.8.8J			

2.9 Geometry
Mathematics – Grade 6

	Eligible Content	Performance Indicator	Assessment

2.9.8A	M6. C.1.2.1	Identify, describe and label parallel, perpendicular and intersecting lines.	**Formative Assessments:** • Observation • Evaluate written work • Performance assessment • Tests/quizzes • Problem-solving journal/activity • Create an illustration • Develop a model using manipulatives • Hands on representation • Evaluate oral response • Homework **Summative Assessments:** • Test • Performance assessment
2.9.8B	M6.C.1.1.4	Identify and use the total number of degrees in a triangle, quadrilateral and circle.	
2.9.8C	M6.C.1.1.1	Identify, classify and compare polygons.	
2.9.8D	M6.C.1.1.2 M6.C.1.1.3	• Identify and describe properties of all types of triangles (e.g., scalene, equilateral, isosceles, right, acute and obtuse). • Identify and determine the measure of the diameter and radius of a circle.	
2.9.8E			
2.9.8F			
2.9.8G			
2.9.8H			
2.9.8I			
2.9.8J			
2.9.8K			

2.10 Trigonometry
Mathematics – Grade 6

	Eligible Content	Performance Indicator	Assessment
2.10.8A			**Formative Assessments:** • Observation • Evaluate written work • Performance assessment
2.10.8B			

2.11 Concepts of Calculus
Mathematics – Grade 6

	Eligible Content	Performance Indicator	Assessment
2.11.8A			**Formative Assessments:** • Evaluate written work • Performance assessment **Summative Assessments:** • Test
2.11.8B			
2.11.8C	M6.D.1.1.1	Create, extend, or find a missing element in a pattern displayed in a chart, table or graph.	

ASSESSMENTS

PSSA Assessment Anchors Addressed: The teacher must be knowledgeable of the PDE Assessment Anchors and/or Eligible Content and incorporate them into this planned instruction. Current assessment anchors can be found at pde@state.pa.us.

Formative Assessments: The teacher will develop and use standards-based assessments

throughout the course.

Portfolio Assessment: ____ Yes _X_ No

Placement Test for Seventh Grade _X_ Yes ____ No

District-wide Final Examination Required: ____ Yes _X_ No

Course Challenge Assessment: N/A

Appendix A:

Mathematics | Grade 6

In Grade 6, instructional time should focus on four critical areas: (1) connecting ratio and rate to whole number multiplication and division and using concepts of ratio and rate to solve problems; (2) completing understanding of division of fractions and extending the notion of number to the system of rational numbers, which includes negative numbers; (3) writing, interpreting, and using expressions and equations; and (4) developing understanding of statistical thinking.

(1) Students use reasoning about multiplication and division to solve ratio and rate problems about quantities. By viewing equivalent ratios and rates as deriving from, and extending, pairs of rows (or columns) in the multiplication table, and by analyzing simple drawings that indicate the relative size of quantities, students connect their understanding of multiplication and division with ratios and rates. Thus students expand the scope of problems for which they can use multiplication and division to solve problems, and they connect ratios and fractions. Students solve a wide variety of problems involving ratios and rates.

(2) Students use the meaning of fractions, the meanings of multiplication and division, and the relationship between multiplication and division to understand and explain why the procedures for dividing fractions make sense. Students use these operations to solve problems. Students extend their previous understandings of number and the ordering of numbers to the full system of rational numbers, which includes negative rational numbers, and in particular negative integers. They reason about the order and absolute value of rational numbers and about the location of points in all four quadrants of the coordinate plane.

(3) Students understand the use of variables in mathematical expressions. They write expressions and equations that correspond to given situations, evaluate expressions, and use expressions and formulas to solve problems. Students understand that expressions in different forms can be equivalent, and they use the properties of operations to rewrite expressions in equivalent forms. Students know that the solutions of an equation are the values of the variables that make the equation true. Students use properties of operations and the idea of maintaining the equality of both sides of an equation to solve simple one-step equations. Students construct

and analyze tables, such as tables of quantities that are in equivalent ratios, and they use equations (such as $3x = y$) to describe relationships between quantities.

(4) Building on and reinforcing their understanding of number, students begin to develop their ability to think statistically. Students recognize that a data distribution may not have a definite center and that different ways to measure center yield different values. The median measures center in the sense that it is roughly the middle value. The mean measures center in the sense that it is the value that each data point would take on if the total of the data values were redistributed equally, and also in the sense that it is a balance point. Students recognize that a measure of variability (interquartile range or mean absolute deviation) can also be useful for summarizing data because two very different sets of data can have the same mean and median yet be distinguished by their variability. Students learn to describe and summarize numerical data sets, identifying clusters, peaks, gaps, and symmetry, considering the context in which the data were collected. Students in Grade 6 also build on their work with area in elementary school by reasoning about relationships among shapes to determine area, surface area, and volume. They find areas of right triangles, other triangles, and special quadrilaterals by decomposing these shapes, rearranging or removing pieces, and relating the shapes to rectangles. Using these methods, students discuss, develop, and justify formulas for areas of triangles and parallelograms. Students find areas of polygons and surface areas of prisms and pyramids by decomposing them into pieces whose area they can determine. They reason about right rectangular prisms with fractional side lengths to extend formulas for the volume of a right rectangular prism to fractional side lengths. They prepare for work on scale drawings and constructions in Grade 7 by drawing polygons in the coordinate plane.

Common Core State Standards for MATHEMATICS
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.

Grade 6 Overview

Ratios and Proportional Relationships 6.RP

Understand ratio concepts and use ratio reasoning to solve problems.

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."*
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."*1
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.

The Number System 6.NS

Apply and extend previous understandings of multiplication and division to divide fractions by fractions.

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?*

Compute fluently with multi-digit numbers and find common factors and multiples.

2. Fluently divide multi-digit numbers using the standard algorithm.
3. Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.
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).*1Expectations for unit rates in this grade are limited to non-complex fractions.

Apply and extend previous understandings of numbers to the system of rational numbers.

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. 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.
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 oC > –7 oC to express the fact that –3 oC is warmer than –7 oC.*
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.*
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.

Expressions and Equations 6.EE

Apply and extend previous understandings of arithmetic to algebraic expressions.

1. Write and evaluate numerical expressions involving whole-number exponents.
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 = s3 and A = 6 s2 to find the volume and surface area of a cube with sides of length s = 1/2.*
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 propertyto 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.*
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.*

Reason about and solve one-variable equations and inequalities.

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. 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.
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.
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.

Represent and analyze quantitative relationships between dependent and independent variables.

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.*

Geometry 6.G

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

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.
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 the prism. Apply the formulas $V = l\ w\ h$ and $V = b\ h$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.
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.
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.

Statistics and Probability 6.SP

Develop understanding of statistical variability.

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.*
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.
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.

Summarize and describe distributions.

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