

6th Grade Mathematics

Key Instructional Activities

In grade six, your child will learn the concept of rates and ratios and use these tools to solve word problems. Students will work on quickly and accurately dividing multi-digit whole numbers and adding, subtracting, multiplying, and dividing multi-digit decimals. Students will extend their previous work with fractions and decimals to understand the concept of rational numbers—any number that can be made by dividing one integer by another, such as $\frac{1}{2}$, 0.75, or 2. Students will also learn how to write and solve equations—mathematical statements using symbols, such as $20+x = 35$ —and apply these skills in solving multi-step word problems.

Activities in these areas will include:

- Understanding and applying the concepts of ratios and unit rates, and using the correct language to describe them (for example, the ratio of wings to beaks in a flock of birds is 2 to 1, because for every 2 wings there is 1 beak)
- Building on knowledge of multiplication and division to divide fractions by fractions
- Understanding that positive and negative numbers are located on opposite sides of 0 on a number line
- Using pairs of numbers, including negative numbers, as coordinates for locating or placing a point on a graph
- Writing and determining the value of expressions with whole-number exponents (such as $15+3^2$)
- Identifying and writing equivalent mathematical expressions by applying the properties of operations. For example, recognizing that $2(3+x)$ is the same as $6+2x$
- Understanding that solving an equation such as $2+x = 12$ means answering the question, “*What number does x have to be to make this statement true?*”
- Representing and analyzing the relationships between independent and dependent variables
- Solving problems involving area and volume



What resources
are available for
students and
parents?

<https://hcbemath.weebly.com/>



- ✓ Online Math Textbook
- ✓ Parent Portal
- ✓ Overview of Units and Pacing
- ✓ The Learn Button!



What is the Learn Button on the Weebly Site? *Link to Georgia Virtual School Modules for instructional videos, examples, and practice by unit.*

6th Math Course Overview

Unit 1: Number System Fluency

Expected Dates: Beginning of School Year to Late August

In this unit, student will; find the greatest common factor of two whole numbers less than or equal to 100, find 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. Interpret and compute quotients of fractions. Solve word problems involving division of fractions by fractions using visual fraction models and equations to represent the problem. 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.

Unit 2: Expressions

Expected Dates: September to Early October

In this unit, students understand the use of variables in mathematical expressions. They become more fluent at viewing expressions as objects in their own right versus calculations. Students write expressions that correspond to given situations, evaluate expressions, and use expressions and formulas to solve problems. Students will understand that expressions in different forms can be equivalent, and they will use the properties of operations to generate and rewrite expressions in equivalent forms. The Mathematical Practices should be evident throughout instruction of symbolic expressions and connected to the content. Students should engage in mathematical tasks that provide an opportunity to connect content and practices.

Unit 3: One-Step Equations and Inequalities

Expected Dates: Mid-October to Early November

In this unit, understand Solving and Equation or Inequality is based on understanding the important role equivalence plays in the number and operation strand of mathematics. Based on the equivalence understanding, students learn a process for solving equations (6.EE.5), and begin to see the usefulness of variables (6.EE.8). Students learn to use equations and inequalities to describe relationships in data or in patterns of numbers or shapes, and then make statements about these relationships based on the structure of mathematics. This includes processes such as: using substitution to make an equation true, and using variables to represent numbers and inequalities. Students practice using critical thinking to solve word problems using number lines and equations to model thinking.

Unit 4a: Rate, Ratio, and Proportional Reasoning Using Equivalent Fractions

Expected Dates: Early November to December

Students learn that a ratio expresses the comparison between two quantities. Special types of ratios are rates, unit rates, measurement conversions, and percentages are concepts that are applied to a variety of real world and mathematical situations. Students gain a deeper understanding of proportional reasoning through instruction and practice. They develop and use multiplicative thinking to develop a sense of proportional reasoning as they describe ratio relationships between two quantities.

Unit 4b: Analyzing Quantitative Relationships

Expected Dates: January

In this unit, Student will analyze the relationship between dependent and independent variables through the use of tables, equations and graphs. Ratios and rates can be used in ratio tables and graphs to solve problems. Previously, students have used additive reasoning in tables to solve problems. Graph data that occurs as a result of relationships between varying quantities in the coordinate plane. Analyze graphs and tables to determine the relationship between varying quantities. Describe how change in one variable affects the other. Use written descriptions, tables, graphs and equations to represent relationships between varying quantities.

Unit 5: Area and Volume

Expected Dates: Late January to Late-February

In this unit students will: Find areas of right, equilateral, isosceles, and scalene triangles, and special quadrilaterals, Find areas of composite figures and polygons by composing into rectangles and decomposing into triangles and other shapes, Solve real-world and mathematical problems involving area Decipher and draw views of rectangular and triangular prisms from a variety of perspectives, Recognize and construct nets for rectangular and triangular prism, Find the surface area of rectangular and triangular prisms by using manipulatives and by constructing nets, Determine the surface area of rectangular and triangular prisms by substituting given values for their dimensions into the correct formulas; Solve real-world that require determining the surface area of rectangular and triangular prisms

Unit 6: Rational Explorations: Numbers and Their Opposites

Expected Dates: Late February to Late March

Students extend their understandings of number to the full system of rational numbers, which includes negative integers. They understand the meaning of negative numbers in real-world applications. They compare, order, and find the absolute value of rational numbers as well as graph points on number lines and in all four quadrants of the coordinate plane

Unit 7: Statistics

Expected Dates: Late March to May

Students develop a sense of statistical variability, summarizing and describing distributions. Students gain experience doing investigations, especially statistical investigations, by starting with a question. The data gathered to answer the question is interpreted in light of the variability of the data relative to the situation where the data resides, the question being asked and how the data is distributed over the data set. Whether larger numbers such as those involving populations of states or small, such as the changes in plant height over a week, the variability of the data matters. Student learn to make histogram and box plot data displays, and further their expertise with dot plots (line plots) when working with measurements or quantities that are counted. The shape of displayed data, especially symmetry, is considered in analysis of data distributions, including the identification of clusters, peaks and gaps. Measures of central tendency and spread, including median, quartiles, the interquartile range, are used.

Helpful Tips for Parents and Guardians

Believe that every child can be successful in math. It takes good teaching, coaching, encouragement and practice.

Partnering with your child's teacher

- Get to know your child's math teacher! Being hands-on does not end after 5th grade! Your child will thank you (someday) for being involved in his or her learning. Also – know about the online resources that are available!
- Don't be afraid to reach out to your child's teacher—you are an important part of your child's education. Ask to see a sample of your child's work or bring a sample with you.
- Talk with your child's teacher about difficulties he/she may be experiencing. When teachers and parents work together, children benefit.
- Ask the teacher questions like:
 - Where is my child excelling? How can I support this success?
 - What do you think is giving my child the most trouble? How can I help my child improve in this area?
 - What can I do to help my child with upcoming work?

Helping your child learn outside of school

- Talk about math in a positive way. A positive attitude about math is infectious. Encourage your child to stick with it whenever a problem seems difficult. This will help your child see that everyone can learn math.
- Encourage persistence. Some problems take time to solve. Praise your child when he or she makes an effort, and share in the excitement when he or she solves a problem or understands something for the first time
- Encourage your child to experiment with different approaches to mathematics. There is often more than one way to solve a math problem.
- Encourage your child to talk about and show a math problem in a way that makes sense
- When your child is solving math problems ask questions such as: Why did you...? What can you do next? Do you see any patterns? Does the answer make sense? How do you know? This helps to encourage thinking about mathematics.
- Connect math to everyday life and help your child understand how math influences them (i.e. shapes of traffic signs, walking distance to school, telling time).
- Play family math games together that add excitement such as checkers, junior monopoly, math bingo and uno.
- Computers + math = fun! There are great computer math games available on the internet that you can discover with your child.