

Fifth Grade Mathematics

Key Instructional Activities

In fifth grade, students focus on three critical areas: (1) developing fluency with addition and subtraction of fractions, and developing understanding of the multiplication of fractions and of division of fractions in limited cases (unit fractions divided by whole numbers and whole numbers divided by unit fractions); (2) extending division to 2-digit divisors, integrating decimal fractions into the place value system and developing understanding of operations with decimals to hundredths, and developing fluency with whole number and decimal operations; and (3) developing understanding of volume. Activities in these areas will include:

- Quickly and accurately multiplying multi-digit whole numbers
- Dividing numbers with up to four digits by two digit numbers
- Using exponents to express powers of 10 (in 10^2 , 2 is the exponent)
- Reading, writing, and comparing decimals to the thousandths place
- Adding, subtracting, multiplying, and dividing decimals to the hundredths place
- Writing and interpreting mathematical expressions using symbols such as parentheses. For example, “add 8 and 7, then multiply by 2” can be written as $2 \times (8+7)$.
- Adding and subtracting fractions with unlike denominators (bottom numbers) by converting them to fractions with matching denominators
- Multiplying fractions by whole numbers and other fractions
- Dividing unit fractions by whole numbers and whole numbers by unit fractions
- Analyzing and determining relationships between numerical patterns
- Measuring volume using multiplication and addition



What resources are available for students and parents?

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



Elementary Math Wakelet
Additional Online Resources



Helping Your Student in Fifth Grade Mathematics

Learning does not end in the classroom. Students need help and support at home to succeed in their studies. Try to create a quiet place for your student to study, and carve out time every day when your student can concentrate uninterrupted by distractions. Sit down with your student at least once a week for 15 to 30 minutes while he or she works on homework. This will keep you informed about what your student is working on, and it will help you be the first to know if your student needs help with specific topics. By taking these small steps, you will be helping your student become successful both in and outside the classroom.

Partnering with your child's teacher

- Get to know your child's math teacher! 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.
- Use everyday objects to allow your child to explore the concept of fractions. For example, have your child divide a candy bar (or a healthy snack) between three people. Ask, "How much does each person receive?" (Each person would receive $\frac{1}{3}$). Suppose there are three candy bars that you plan to share with two friends. Have your child describe the amount that each person will receive.
- 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 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).
- Computers + math = fun! There are great computer math games available on the internet that you can discover with your child.

Fifth Grade Mathematics System Pacing Overview



This guide provides an overview of what your student will learn in his or her Fifth Grade Mathematics course. It focuses on the key skills your student will learn, which will build a strong foundation for success. This guide is based on the state-adopted Georgia Standards of Excellence.

August - September

Unit 1: Applying Order of Operations to Whole Numbers

During Unit 1, students will build on their work from previous grade levels to refine their strategies for multiplication and division in order to reach fluency in multiplication by the end of the year. Students continue to develop more sophisticated strategies for division to become flexible and efficient with the standard algorithm introduced in Grade 6. Students will begin to find quotients with two-digit divisors early in the year to build strategies for accurate computations. Students will also expand their understanding of geometric measurement and spatial structuring to include volume as an attribute of three-dimensional space.

- Apply the rules for order of operations to solve problems involving whole numbers.
- Solve word problems involving the multiplication of 3-digit multiplicand by a 2-digit multiplier.
- Solve problems involving the division of 3-digit or 4-digit dividends by 2-digit divisors.
- Estimate and determine the volume of right rectangular prisms.
- Understand volume can be determined by finding the product of the area of the base times the height $V = Bh$ and $V = lwh$.
- Understand that volume is measured in cubic units.

September - October

Unit 2: Adding and Subtracting Decimal Numbers

During Unit 2, students will extend their previous understanding of place value to include decimal numbers. During this unit students will add and subtract decimal numbers.

- Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and $1/10$ of what it represents in the place to its left.
- Read, write and compare decimals.
- Add and subtract decimals using concrete models.
- Use exponents to denote powers of 10

October - November

Unit 3 Multiplying and Dividing Decimals

During Unit 3, students will use their understanding of concrete or visual models and place value to reason about decimal quantities and operations including multiplication and division of decimals. Students will continue to expand their understanding of place value. Measurement is used as a context for operations with decimals.

- Model multiplication and division of decimals using concrete and pictorial models.
- Apply place value strategies when estimating to find products and quotients.
- Multiply and divide decimals with fluency.
- Use whole numbers and decimals to solve multi-step word problems.
- Use whole number exponents to denote powers of 10.
- Apply the rules for order of operations to solve problems involving whole numbers and numbers with decimals.

November - January

Unit 4: Adding and Subtracting Fractions

During Unit 4, students will apply their understanding of fractions and fraction models to represent the addition and subtraction of fractions with unlike denominators as equivalent calculations with like denominators.

- Add and subtract fractions with unlike denominators (including mixed numbers).
- Solve word problems involving addition and subtraction of fractions using visual fraction models or equations to represent the problem.
- Estimate mentally and assess the reasonableness of answers.
- Evaluate expressions involving fractions using the order of operations.
- Write simple expressions involving fractions.

January - February

Unit 5: Multiplying and Dividing Fractions

During Unit 5, students will extend their understanding of multiplying a fraction by a whole number to multiplying fractions by fractions. In previous grades, students have developed an understanding of fractions as numbers. Students will use this knowledge to understand the connection between fractions and division.

- Interpret a fraction as division of the numerator by the denominator.

- Solve word problems involving multiplication of fractions and mixed numbers by using visual fraction models or equations to represent the problem.
- Solve word problems involving division of unit fractions by non-zero whole numbers and whole numbers by unit fractions using visual models and equations to represent the problem.
- Explain why multiplying a given number by a fraction greater than one results in a product greater than the given number; and explain why multiplying a given number by a fraction less than one results in a product smaller than the given number; and relating the principle of fraction equivalence $a/b = (n \times a)/(n \times b)$ to the effect of multiplying a/b by one.

February

Unit 6: Geometry and the Coordinate Plane

During Unit 6, students will be introduced to the coordinate plane. They will apply their knowledge of the number line to understand the relationship of the two dimensions of a point in the coordinate plane. Students will connect their work with numerical patterns to form ordered pairs and graph these ordered pairs in the first quadrant. Students will also use this model to make sense of and explain the relationships within the numerical patterns they generate.

- Recognize that any point in the plane can be described in terms of its location using an ordered pair in which the first number corresponds to the x-coordinate and the second number corresponds to the y-coordinate.
- Locate the point on a coordinate plane that corresponds to a given ordered pair.
- Interpret the location of a point on a coordinate plane by writing its corresponding ordered pair.

March

Unit 7: Two-Dimensional Figures and Additive Volume

During Unit 7, students will focus on the hierarchical relationship among two-dimensional geometric figures. Recognize volume as additive. Students will find the volume of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts.

- Describe properties of a variety of shapes including but not limited to triangles, quadrilaterals (parallelograms, trapezoids, rectangles, rhombi, squares), pentagons, hexagons, and octagons.
- Identify whether a shape has a specified property.
- Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category.
- Organize a hierarchy of polygons.
- Reason about attributes of shapes to determine whether or not they belong in given categories.
- Classify two-dimensional figures based on properties.
- Understand volume can be determined by finding the product of the area of the base times the height. $V = Bh$ and $V=lwh$.
- Estimate and determine the volume of cubes and rectangular prisms.
- Compare the volume of different objects with and without formula.
- Measure solid cubes and rectangular prisms using standard customary and metric measures.
- Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, and applying this technique to solve real world problems.

April - May

Unit 8: Skills to Maintain and Review

During Unit 8, students are reviewing, mastering and/or extending their understanding of 5th grade standards.