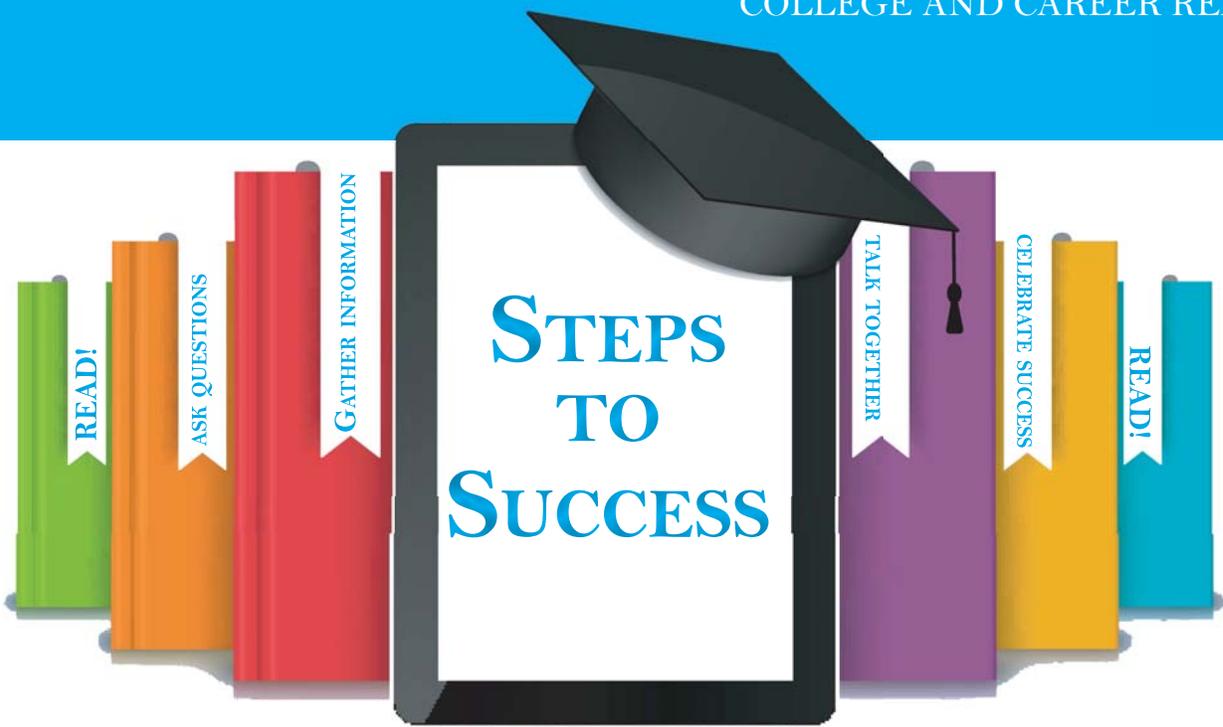


SOUTH CAROLINA STANDARDS

COLLEGE AND CAREER READY



Family-Friendly Guide for Fifth Grade Mathematics

In the fifth grade, the focus of *South Carolina College- and Career-Ready Standards* in mathematics shifts from working with whole numbers to working with fractions and decimals. Students will now use grouping symbols when solving equations. Fifth graders also build on the work done in previous grades with number patterns and begin to compare two number patterns and determine how those number patterns can be graphed. By the end of fifth grade, students will use formulas to determine area, perimeter, and volume of basic geometric shapes.



STEPS TO SUCCESS

This document is designed to:

- Provide examples of the standards, skills, and knowledge your child will learn in mathematics and should be able to do upon exiting fifth grade
- Suggest activities on how you can help your child at home
- Offer additional resources for information and help



Log on to the SC Department of Education website, <http://ed.sc.gov/instruction/standards-learning/>, for the complete standards.

LEARN ABOUT THE STANDARDS

The *South Carolina College- and Career-Ready Standards for Mathematics*:

- Outline the knowledge and skills students must master so that, as high school graduates, they have the expertise needed to be successful in college or careers.
- Provide a set of grade-level standards, “stair steps,” based on the previous grade’s standards which serve as the foundation for the next grade.
- Ensure that no matter where a student lives in South Carolina, the expectations for learning are the same.

Human knowledge now doubles about every three years. Therefore, revision of South Carolina’s standards occurs periodically to respond to this growth of knowledge and increase of needed skills so our students will be ready for college or jobs. *The Col-*

lege- and Career-Ready Standards prepare students for dealing with the growing mass of information by not only emphasizing content knowledge but by also stressing the skills of reasoning, analyzing data, and applying information to examine and solve situations.

South Carolinians developed these academic standards for South Carolina’s children. The Mathematics standards are aligned with the *Profile of the South Carolina Graduate*, which summarizes the knowledge, skills, and habits employers expect. (See http://sc-competes.org/wp-content/uploads/2016/01/Profile-of-the-South-Carolina-Graduate_Updated.pdf) Developed by business leaders, the *Profile* is approved by the South Carolina Chamber of Commerce and endorsed by the Superintendents’ Roundtable as well as South Carolina’s colleges and universities. The *Profile* demands world-class knowledge and skills, and emphasizes critical thinking and problem solving, communication, and interpersonal skills.

MATHEMATICS IN FIFTH GRADE

NUMBER SENSE AND FRACTIONS

Fifth-grade students deepen their knowledge of fractions, learning to solve problems involving multiplying, dividing of fractions, and with whole numbers. They understand what decimals represent to the tenths, hundredths, and thousandths place. These **Steps to Success** include:

Fourth Grade	Fifth Grade	Middle School
<ul style="list-style-type: none"> • Read and write numbers up to 1,000,000 • Use rounding in order to estimate • Compare fractions and use the symbols > (greater than), = (equal to), < (less than) • Add and subtract fractions with the same denominator (bottom number) • Solve real-world problems involving multiplication of a whole number by a fraction • Write a fraction with a denominator of 10 or 100 as a decimal ($45/100=.45$) 	<ul style="list-style-type: none"> • Understand “place value” using decimals up to a thousandth • Add, subtract, multiply, and divide decimals to hundredths using models and drawings • Add and subtract fractions with unlike denominators (bottom number) to solve real-world problems • Extend knowledge of multiplying fractions to include multiplying fractions by fractions • Solve division problems using unit fractions (1 is the numerator) and whole numbers 	<ul style="list-style-type: none"> • Recognize rational numbers (numbers that can be written as fractions) and irrational numbers (numbers that as a decimal are infinite, such as pi, 3.14159...) • Understand the different ways of representing rational numbers (fractions, decimals, or percentages) • Add, subtract, multiply, and divide negative numbers in real-world situations • Solve real-world percent problems (e.g., tax, tips, markups, and markdowns)

MATHEMATICS IN FIFTH GRADE

THINKING AND OPERATIONS

Fifth-grade students expand their ability to put equations into verbal form and to put word problems into equations -- a skill that is the foundation of Algebra. Their knowledge of graphing and charting involves the use of more complex data and presentation methods. These **Steps to Success** include:

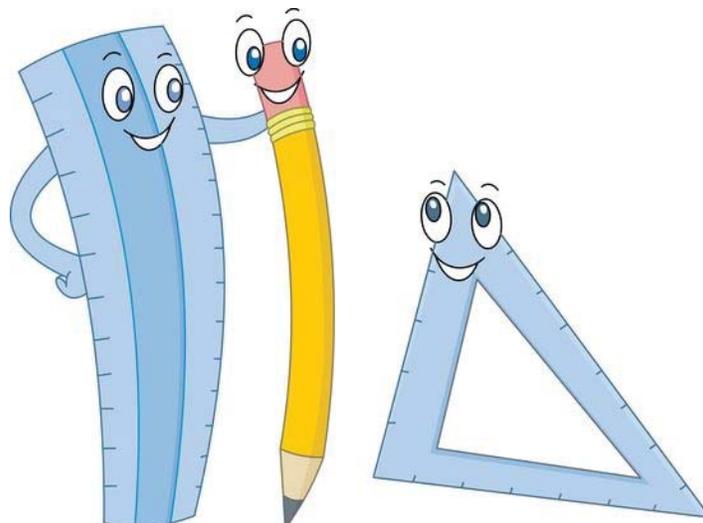
Fourth Grade	Fifth Grade	Middle School
<ul style="list-style-type: none"> • Translate multiplication equations into verbal statements (e.g. interpret $35=5 \times 7$ as 35 is 5 times as many as 7 and 7 times as many as 5) • Solve multi-step, real-world problems using the four operations • Break a number down into its factors (1, 2, and 3 are factors of 6 because $1 \times 6=6$, $2 \times 3=6$) • Determine whether a number is a prime number (numbers divisible only by itself or 1) or a composite number (numbers divisible by more numbers than itself or 1) • Examine a pattern/sequence of shapes or numbers and determine what should appear next 	<ul style="list-style-type: none"> • Understand grouping of numbers using parentheses and brackets $4(3+2)=$__ • Translate the groupings into verbal statements (four groups of $3+2$ equal ?) • Understand and graph ordered pairs: (14,5) means fourteen units to the right on the horizontal axis and five units up on the vertical axis of a coordinate grid • Investigate the relationship between two numerical patterns 	<ul style="list-style-type: none"> • Write and solve equations and inequalities for real-world situations (e.g., the distance (D) traveled by a train in time (t) might be expressed by an equation $D=85t$, where D is in miles and t is in hours) • Understand ratios and rates, and solving problems involving proportional relationships (e.g., 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?) • Analyze relationships in tables, graphs, and equations of independent and dependent variables • Explore positive and negative exponents, square roots, cube roots, and scientific notation (e.g., evaluating $\sqrt{36}$ or $\sqrt{27}$; estimating world population as 7×10^9) • Add, subtract, and multiply polynomials with math expressions such as $(9r^3 + 5r^2 + 11r) + (-2r^3 + 9r - 8r^2)$

MATHEMATICS IN FIFTH GRADE

GEOMETRY

Fifth-graders continue the study of geometry. Working with lines and shapes in the first and second dimensions, they examine quadrilaterals, parallelograms, trapezoids, and rhombi. These **Steps to Success** include:

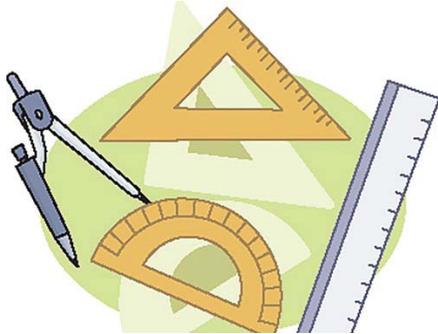
Fourth Grade	Fifth Grade	Middle School
<ul style="list-style-type: none">• Identify points, line segments, rays, angles, and parallel lines in 2-dimensional shapes• Classify quadrilaterals based on whether they have parallel or perpendicular lines• Recognize symmetry in a 2-dimensional figure, identify symmetrical figures, and draw lines of symmetry	<ul style="list-style-type: none">• Understand ordered pairs and their relationship to the x and y axes of a coordinate grid like longitude and latitude lines on a map• Plot and interpret points on a coordinate grid to illustrate a real-world situation• Classify two-dimensional shapes into a hierarchy. All rectangles are parallelograms but not all parallelograms are rectangles.	<ul style="list-style-type: none">• Reason about relationships between shapes to determine area, surface area, and volume• Solve real-world problems involving scale drawings• Understand congruence and similarity using physical models, transparencies, or Geometry software (e.g., given two congruent figures, show how to obtain one from the other by a sequence of rotations, translations, and/or reflections)• Understand and apply the Pythagorean Theorem ($a^2+b^2=c^2$) to solve problems



MATHEMATICS IN FIFTH GRADE

MEASUREMENT AND DATA ANALYSIS

Fifth-grade students work with measures of volume, distance, size, and weight. The emphasis is on understanding how to convert these measures and learning the appropriate tool for conversion. These **Steps to Success** include:

Fourth Grade	Fifth Grade	Middle School
<ul style="list-style-type: none"> • Convert measurement from a larger unit to a smaller unit (for example, feet into inches or meters into centimeters) • Solve real-world problems using up to four operations involving length, time, mass, and money • Create a line plot to present data and explain what it shows • Use a protractor to draw and measure angles • Find unknown angles using addition and subtraction 	<ul style="list-style-type: none"> • Convert measurement into a larger or a smaller unit (for example, inches into feet or feet into inches, centimeters into meters, or meters into centimeters) • Create a line with fraction units (such as $\frac{1}{8}$ units.) Use the line units to solve problems. • Understand how to measure volume using unit cubes • Determine the difference between perimeter, area, and volume. Know which is appropriate for a given situation. 	<ul style="list-style-type: none"> • Create graphs (dotplots, boxplots, histograms); describe data by examining the center (averages); and spread (variability) of a distribution • Use statistics to draw inferences and make comparisons (e.g., deciding which candidate is likely to win an election based on a survey) • Find the probability of an event and connect probability to sampling (e.g., calculating the probability of getting a heads when flipping a coin or getting the sum of seven when tossing number cubes) • Analyzing statistical relationships by using a line of best fit or “trend” line (a straight line that models an association between two quantities) • Organize data using a matrix to solve real-world problems

LEARNING AT HOME

As your fifth-grade child moves in the world of Geometry and Algebra, he needs help with specific skills. Remember, a positive attitude is important to her. Here are some suggestions for things to do at home to help your child learn:

- Go “shopping” with clothing ads, catalogs, or take-out menus to practice decimals. Have your child pick out a wardrobe, school supplies, or a dinner for the family, for example. Write down the cost of each item. Get your student to add, subtract, or multiply the cost of the items. Check the total with a calculator and discuss how the location of the decimal in the answer relates to the location of the decimal in the items added, subtracted, or multiplied.
- Play games, such as *Battleship*, that requires locating points on a grid.
- Get in the kitchen and bake cookies or a cake, watching your child use your measuring cups and spoons. While it bakes, use equations to double the amounts in the recipe or divide them in half.
- Use apples, grapes, or candy bars, real or drawn, to practice dividing them among friends (such as, two bars among 3 friends, or 15 grapes between two friends). Focus on what remains and how it relates to the fractional parts to be shared.



ADDITIONAL INFORMATION

- For math games and activities, see www.gameclassroom.com.
- *Scholastic* provides “parent refreshers” of the skills your child is expected to learn in each grade in school: <http://www.scholastic.com/parents/resources/collection/subject-refreshers/parent-primers>.
- There are many math games and worksheets at http://www.softschools.com/grades/5th_grade/math/.
- *The Kahn Academy* at <https://www.khanacademy.org/> offers on-line tutoring in all aspects of fifth-grade math. When you sign up your child, the site keeps track of the skills mastered and automatically moves the student through the skill levels.
- For games to help with angles, measurement, and fractions, as well as other skills, try <http://mrmussbaum.com/fifth-grade-math/>.
- *Math Fact Café* offers thousands of pre-made and custom worksheets on fifth-grade math skills: <http://www.mathfactcafe.com/home>.



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