

Grade 5 Unit Overviews



How much frosting for each cupcake? How can I divide 2 cups into 5 equal groups? The answer will be less than a whole number. If there were 4 cupcakes, each cupcake would get $\frac{1}{2}$ cup frosting. Since there are 5 cupcakes, each will get a little less than $\frac{1}{2}$ cup.



Unit 1: Populations and Samples

11 Days

This unit provides a review of the TIMS laboratory method, a simplified version of the scientific method. Using the context of populations and samples, students explore the relationship between variables. They represent these relationships using tables, graphs, and averages (mean, median, and mode). Students analyze data making generalizations and predictions.

Focus on Major Work ⁱ	
5.NBT.B	Perform operations with multi-digit whole numbers and with decimals to hundredths.
Supporting Work	
5.MD.A	Convert like measurement units within a given measurement system.
Additional Work	
5.OA.B	Analyze patterns and relationships.
Mathematical Practices	
MP1, 2, 3, 4, 5, 6, 7	

Unit 2: Fractions

22–31 Days

Students use multiple representations and real-world contexts to support their development of the concepts related to fractions. Students represent fractions with area models, including circle pieces and number lines. Students make connections and translate between these representations to compare, order, and find equivalent fractions. Students decompose fractions into the sums of smaller fractions. They develop strategies for adding and subtracting fractions that include finding common denominators.

Focus on Major Work	
5.NF.A	Use equivalent fractions as a strategy to add and subtract fractions.
5.NF.B	Apply and extend previous understandings of multiplication and division to multiply and divide fractions.
Mathematical Practices	
MP1, 2, 3, 4, 5, 7, 8	

Unit 3: Big Numbers

12–15 Days

Students read, write, and compare large numbers in this unit. Students compose and decompose large numbers, writing number sentences to represent different partitions. Students review multiplication of multiples of ten as they explore the role of place value and the commutative property to find these products. Students use convenient numbers to estimate products. Students use convenient numbers to estimate products. Students continue to develop understanding about volume as an attribute of three-dimensional space.

Focus on Major Work	
5.NBT.A	Understand the place value system.
Mathematical Practices	
MP1, 2, 3, 4, 5, 6, 7	

Unit 4: Estimation and Efficient Computation

12–16 Days

Students further develop strategies for multidigit addition, subtraction, and two-digit by two-digit multiplication. They explore both mental math and paper-and-pencil methods, solving problems that require exact answers as well as those where estimation is appropriate. Students use computational strategies to develop formulas for finding the area of rectangles, triangles, and rectangular prisms. Students understand that a 1-unit by 1-unit by 1-unit cube is the standard unit for measuring volume and use multiplication and division strategies to find the volume of rectangular prisms. Students select appropriate units, strategies, and tools for solving multistep problems involving volume. They decompose three-dimensional shapes and find volumes of right rectangular prisms by viewing them as decomposed into layers of arrays of cubes.

Focus on Major Work	
5.NBT.B	Perform operations with multi-digit whole numbers and with decimals to hundredths.
5.MD.C	Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.
Mathematical Practices	
MP1, 2, 3, 4, 5, 6, 7	

Unit 5: Fractions and Ratios

12–17 Days

Students find and represent fractions in simplest terms. They explore division strategies to find the simplest form of fractions. Students are introduced to ratios as they use fractions to express the relationship between two quantities. Students express ratios in words, tables, graphs, and fractions as they investigate the walking speed of a fifth grader. Using a story about George Washington Carver, students then use ratios as they convert the ingredients in a recipe to the appropriate size.

Focus on Major Work	
5.NF.A	Use equivalent fractions as a strategy to add and subtract fractions.
5.NF.B	Apply and extend previous understandings of multiplication and division to multiply and divide fractions.
Supporting Work	
5.MD.A	Convert like measurement units within a given measurement system.
5.MD.B	Represent and interpret data.
Additional Work	
5.OA.B	Analyze patterns and relationships.
5.G.A	Graph points on the coordinate plane to solve real-world and mathematical problems.
Mathematical Practices	
MP1, 2, 3, 4, 5, 6	

Unit 6: Locations and Shapes

9–12 Days

Students begin this unit exploring negative numbers. They then use this understanding as they plot points in all four quadrants of a grid. Students describe locations on a grid using ordered pairs that include negative numbers. They construct 2-dimensional shapes by plotting points on a grid and then classify shapes using their characteristics.

Focus on Major Work	
5.NF.B	Apply and extend previous understandings of multiplication and division to multiply and divide fractions.
Additional Work	
5.G.A	Graph points on the coordinate plane to solve real-world and mathematical problems.
5.G.B	Classify two-dimensional figures into categories based on their properties.
Mathematical Practices	
MP1, 2, 3, 4, 5, 6, 7	

Unit 7: Division and Data

15–22 Days

Students use models to divide multidigit numbers by one- and two-digit divisors. They develop strategies for estimation, mental math, and paper-and-pencil methods to divide multidigit numbers. Students complete an investigation in which they find the area of shapes with curved sides. They organize their data in a table and on a graph and then solve problems and make generalizations about their data using these tools. Students also deepen their understanding of the use of variables and standard units of measurement such as volume in mathematics and scientific investigation.

Focus on Major Work	
5.NBT.A	Understand the place value system.
5.NBT.B	Perform operations with multi-digit whole numbers and with decimals to hundredths.
5.NF.B	Apply and extend previous understandings of multiplication and division to multiply and divide fractions.
Additional Work	
5.OA.A	Write and interpret numerical expressions.
5.OA.B	Analyze patterns and relationships.
5.G.A	Graph points on the coordinate plane to solve real-world and mathematical problems.
Mathematical Practices	
MP1, 2, 3, 4, 5, 6, 7, 8	

Unit 8: Decimals

15–22 Days

Students represent and identify numbers to the thousandths place using area models, number lines, words, symbols, and expanded form number sentences. They make connections and translate among these representations. Students connect representations of fractions and decimals and use them to represent the same quantity. Students use their understanding of place value to compare and order decimals to the thousandths place. They extend their understanding of place value and operations to develop strategies to add, subtract, multiply and divide decimals.

Focus on Major Work	
5.NBT.A	Understand the place value system.
5.NBT.B	Perform operations with multi-digit whole numbers and with decimals to hundredths.
Additional Work	
5.OA.B	Analyze patterns and relationships.
5.G.A	Graph points on the coordinate plane to solve real-world and mathematical problems.
Mathematical Practices	
MP1, 2, 3, 4, 5, 6, 7, 8	

Unit 9: Factors and Multiples

11–15 Days

In this unit, students identify and categorize numbers as prime, composite, and square number. They identify and find multiples and factors of a number. Students find the prime factorization of a number. They identify, describe, and represent number patterns. Students use order of operations to make calculations that involve exponents and the use of parentheses.

Focus on Major Work	
5.NF.A	Use equivalent fractions as a strategy to add and subtract fractions.
Additional Work	
5.OA.A	Write and interpret numerical expressions.
5.OA.B	Analyze patterns and relationships.
Mathematical Practices	
MP1, 2, 3, 4, 5, 6, 7, 8	

Unit 10: Operations with Fractions

20–25 Days

Students solve problems that involve adding and subtracting fractions and mixed numbers using models. They develop and use strategies that include finding a common denominator. Students develop procedures for multiplying a fraction times a whole number. Students use patterns to multiply fractions. They use multiplication to bridge division of fractions.

Focus on Major Work	
5.NF.A	Use equivalent fractions as a strategy to add and subtract fractions.
5.NF.B	Apply and extend previous understandings of multiplication and division to multiply and divide fractions.
Mathematical Practices	
MP1, 2, 3, 4, 5, 6, 7, 8	

Unit 11: Equivalent Fractions using Proportions

20–25 Days

Students use ratios and strategies for finding equivalent fractions to solve problems and make comparisons. Students convert recipes, determine the ratio between the circumference and diameter of a circle, and use ratios to compare the density of objects. They also use ratios to describe a population using a sample of the population. Students measure the mass and volume of different amounts of clay and different-sized steel spheres to solve real world and mathematical problems. Students use their knowledge of mass, volume, and density as they complete several extension activities, and learn how Archimedes used displacement to find the volume of a gold crown.

Focus on Major Work	
5.NBT.A	Understand the place value system.
5.NF.A	Use equivalent fractions as a strategy to add and subtract fractions.
5.MD.C	Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.
Additional Work	
5.OA.B	Analyze patterns and relationships.
Mathematical Practices	
MP1, 2, 3, 4, 5, 6, 7, 8	

¹ The *K–8 Publisher’s Criteria for the Common Core State Standards for Mathematics* identifies every cluster of standards as being either major work, supporting work, or additional work for its respective grade level. It calls for at least 65% of time to be devoted to the major work of the grade with supporting work and additional work engaging students in the major work of the grade where appropriate. See <http://achievethecore.org/shifts-mathematics> for more information.