

# 2017-2018 CSISD Mathematics Year At A Glance for Grade 5

## Big Ideas and Topics in Fifth Grade Mathematics

The big ideas and topics in Fifth Grade are solving problems involving all four operations with positive rational numbers, determining and generating formulas and solutions to expressions, and extending measurement to area and volume.

- Students will apply place value and identify part-to-whole relationships and equivalence.
- Students will represent and solve problems with expressions and equations, build foundations of functions through patterning, identify prime and composite numbers, and use the order of operations.
- Students will classify two-dimensional figures, connect geometric attributes to the measures of three-dimensional figures, use units of measure, and represent location using a coordinate plane.
- Students will represent and interpret data.

For additional information about the Fifth Grade mathematics standards, please visit [the Texas Education Agency \(TEA\) website](http://www.tea.state.tx.us).

## Fall Semester

1st Six Weeks August 28 – September 29	2nd Six Weeks October 2 - November 10	3rd Six Weeks November 13 - December 22
<p><b><u>Bundle 1: Operations with Whole Numbers</u></b> Students will be able to represent, compare, order, add, and subtract decimals fluently through the thousandths place and understand relationships as related to place value.</p> <ul style="list-style-type: none"> <li>• Estimate to determine solutions to mathematical and real-world problems involving addition, subtraction, multiplication, or division.</li> <li>• Multiply with fluency a three-digit number by a two-digit number using the standard algorithm.</li> <li>• Solve with proficiency for quotients of up to a four-digit dividend by a two-digit divisor using strategies and the standard algorithm.</li> <li>• Add and subtract positive rational numbers fluently.</li> <li>• Represent and solve multi-step problems involving the four operations with whole numbers using equations with a letter standing for the unknown quantity.</li> </ul> <p><b><u>Bundle 2: Numerical Expressions</u></b> Students will be able to describe and understand the meaning of parenthesis and brackets in order to simplify expressions, not including exponents.</p> <ul style="list-style-type: none"> <li>• Describe the meaning of parentheses and brackets in a</li> </ul>	<p><b><u>Bundle 3: Decimal Place Value</u></b> Students will be able to represent, compare, and order positive rational numbers as related to place value.</p> <ul style="list-style-type: none"> <li>• Represent the value of the digit in decimals through the thousandths using expanded notation and numerals.</li> <li>• Compare and order two decimals to thousandths and represent comparisons using the symbols <math>&gt;</math>, <math>&lt;</math>, or <math>=</math>.</li> <li>• Round decimals to tenths or hundredths.</li> </ul> <p><b><u>Bundle 4: Operations with Decimals</u></b> Students will be able to use decimals to solve all 4 operations (addition, subtraction, multiplication, and division).</p> <ul style="list-style-type: none"> <li>• Estimate to determine solutions to mathematical and real-world problems involving addition, subtraction, multiplication, or division.</li> <li>• Represent multiplication of decimals with products to the hundredths using objects and pictorial models, including area models.</li> <li>• Solve for products of decimals to the hundredths, including situations involving money, using strategies based on place-value understandings, properties of operations, and the relationship to the multiplication of whole numbers.</li> </ul>	<p><b><u>Bundle 6: Multiplication with Fractions</u></b> Students will represent, estimate, and solve multiplication of fractions with whole numbers using objects, pictorial models, including area models.</p> <ul style="list-style-type: none"> <li>• Estimate to determine solutions to mathematical and real-world problems involving addition, subtraction, multiplication, or division.</li> <li>• Represent and solve multiplication of a whole number and a fraction that refers to the same whole using objects and pictorial models, including area models.</li> </ul> <p><b><u>Bundle 7: Division with Fractions</u></b> Students will represent, estimate, and solve division of fractions with whole numbers using objects, pictorial models, including area models.</p> <ul style="list-style-type: none"> <li>• Estimate to determine solutions to mathematical and real-world problems involving addition, subtraction, multiplication, or division.</li> <li>• Represent division of a unit fraction by a whole number and the division of a whole number by a unit fraction such as <math>1/3 \div 7</math> and <math>7 \div 1/3</math> using objects and pictorial models, including area models.</li> </ul>

<p>numeric expression.</p> <ul style="list-style-type: none"> <li>Simplify numerical expressions that do not involve exponents, including up to two levels of grouping.</li> </ul>	<ul style="list-style-type: none"> <li>Represent quotients of decimals to the hundredths, up to four-digit dividends and two-digit whole number divisors, using objects and pictorial models, including area models.</li> <li>solve for quotients of decimals to the hundredths, up to four-digit dividends and two-digit whole number divisors, using strategies and algorithms, including the standard algorithm.</li> <li>Add and subtract positive rational numbers fluently.</li> </ul> <p><b><u>Bundle 5: Addition &amp; Subtraction with Fractions</u></b>  Students will apply their understanding of fractions (including mixed numbers and improper fractions) and fraction models to represent the addition and subtraction of fractions with unlike denominators by solving for equivalent fractions with common denominators. Students apply their knowledge of multiplication and division to identify numbers as prime or composite.</p> <ul style="list-style-type: none"> <li>Estimate to determine solutions to mathematical and real-world problems involving addition, subtraction, multiplication, or division.</li> <li>Represent and solve addition and subtraction of fractions with unequal denominators referring to the same whole using objects and pictorial models and properties of operations.</li> <li>Add and subtract positive rational numbers fluently.</li> <li>Identify prime and composite numbers.</li> </ul>	<ul style="list-style-type: none"> <li>Divide whole numbers by unit fractions and unit fractions by whole numbers.</li> </ul>
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Spring Semester		
4th Six Weeks January 8 - February 16	5th Six Weeks February 20 - April 6	6th Six Weeks April 9 - May 31
<p><b><u>Bundle 8: Data Analysis</u></b>  Students use appropriate displays to describe data based on the attributes of a particular set of numbered data and their graphical representations.</p> <ul style="list-style-type: none"> <li>Estimate to determine solutions to mathematical and real-world problems involving addition, subtraction, multiplication, or division.</li> <li>Add and subtract positive rational numbers fluently.</li> <li>Represent and solve multi-step problems involving the four operations with whole numbers using equations with a letter standing for the unknown quantity.</li> <li>Represent categorical data with bar graphs or frequency tables and numerical data, including data sets of measurements in fractions or decimals, with dot plots or stem-and-leaf plots.</li> </ul>	<p><b><u>Bundle 11: 2-D Geometry Classification &amp; Measurement (Conversions, Perimeter, Area &amp; Volume)</u></b>  Students will represent and solve problems related to volume of a rectangular prism using concrete objects, pictorial models and formulas. Students will represent and solve problems related to area and perimeter. Students will solve problems by calculating conversions within the metric and customary systems.</p> <ul style="list-style-type: none"> <li>Classify two-dimensional figures in a hierarchy of sets and subsets using graphic organizers based on their attributes and properties.</li> <li>Solve problems by calculating conversions within a measurement system, customary or metric.</li> <li>Use concrete objects and pictorial models to develop the</li> </ul>	<p><b><u>Bundle 13: Rational Number Fluency</u></b>  For students to become fluent in mathematics, students must develop a robust sense of number. The National Research Council's report, "Adding It Up," defines procedural fluency as "skill in carrying out procedures flexibly, accurately, efficiently, and appropriately." As students develop procedural fluency, they must also realize that true problem solving may take time, effort, and perseverance. (<a href="#">see Grade 5 TEKS introduction paragraph 3</a>)</p> <ul style="list-style-type: none"> <li>Compare and order two decimals to thousandths and represent comparisons using the symbols <math>&gt;</math>, <math>&lt;</math>, or <math>=</math>.</li> <li>Estimate to determine solutions to mathematical and real-world problems involving addition, subtraction, multiplication, or division.</li> </ul>

- Solve one- and two-step problems using data from a frequency table, dot plot, bar graph, stem-and-leaf plot, or scatterplot.

### **Bundle 9: Coordinate Planes & Data Analysis**

Students use or generate expressions and equations to solve and graph problems involving the four operations with positive whole numbers. Students use appropriate displays to describe data based on the attributes of a particular set of whole numbered data. Students will explore additive and multiplicative relationships in both tables and graphs.

- Describe the key attributes of the coordinate plane, including perpendicular number lines (axes) where the intersection (origin) of the two lines coincides with zero on each number line and the given point (0, 0); the *x*-coordinate, the first number in an ordered pair, indicates movement parallel to the *x*-axis starting at the origin; and the *y*-coordinate, the second number, indicates movement parallel to the *y*-axis starting at the origin.
- Describe the process for graphing ordered pairs of numbers in the first quadrant of the coordinate plane.
- Graph in the first quadrant of the coordinate plane ordered pairs of numbers arising from mathematical and real-world problems, including those generated by number patterns or found in an input-output table.
- Represent discrete paired data on a scatterplot.
- solve one- and two-step problems using data from a frequency table, dot plot, bar graph, stem-and-leaf plot, or scatterplot.

### **Bundle 10: Additive & Multiplicative Relationships**

Students use or generate expressions and equations to solve and graph problems involving the four operations with positive whole numbers. Students use appropriate displays to describe data based on the attributes of a particular set of whole numbered data. Students will explore additive and multiplicative relationships in both tables and graphs.

- Generate a numerical pattern when given a rule in the form  $y = ax$  or  $y = x + a$  and graph.
- Recognize the difference between additive and multiplicative numerical patterns given in a table or graph.
- Describe the process for graphing ordered pairs of numbers in the first quadrant of the coordinate plane.
- Graph in the first quadrant of the coordinate plane ordered pairs of numbers arising from mathematical and real-world problems, including those generated by number patterns or found in an input-output table.

formulas for the volume of a rectangular prism, including the special form for a cube ( $V = l \times w \times h$ ,  $V = s \times s \times s$ , and  $V = Bh$ ).

- Represent and solve problems related to perimeter and/or area and related to volume.
- Recognize a cube with side length of one unit as a unit cube having one cubic unit of volume and the volume of a three-dimensional figure as the number of unit cubes ( $n$  cubic units) needed to fill it with no gaps or overlaps if possible.
- Determine the volume of a rectangular prism with whole number side lengths in problems related to the number of layers times the number of unit cubes in the area of the base.

### **Bundle 12: Personal Financial Literacy**

Students apply fluency of addition, subtraction, multiplication, and division with whole numbers to personal financial literacy skills. Students deepen their understanding of personal financial literacy concepts.

- Define income tax, payroll tax, sales tax, and property tax.
- Explain the difference between gross income and net income.
- Identify the advantages and disadvantages of different methods of payment, including check, credit card, debit card, and electronic payments.
- Develop a system for keeping and using financial records.
- Describe actions that might be taken to balance a budget when expenses exceed income.
- Balance a simple budget.

- Multiply with fluency a three-digit number by a two-digit number using the standard algorithm.
- Solve with proficiency for quotients of up to a four-digit dividend by a two-digit divisor using strategies and the standard algorithm.
- Solve for products of decimals to the hundredths, including situations involving money, using strategies based on place-value understandings, properties of operations, and the relationship to the multiplication of whole numbers.
- Solve for quotients of decimals to the hundredths, up to four-digit dividends and two-digit whole number divisors, using strategies and algorithms, including the standard algorithm.
- Add and subtract positive rational numbers fluently.
- Divide whole numbers by unit fractions and unit fractions by whole numbers.
- Represent and solve multi-step problems involving the four operations with whole numbers using equations with a letter standing for the unknown quantity.
- Simplify numerical expressions that do not involve exponents, including up to two levels of grouping.

### **Bundle 14: Project Based Learning**

Students will be able to apply Grade 5 mathematics to solve problems connected to everyday experiences and activities in and outside of school.

- Students will be asked to demonstrate their level of understanding of the Fifth Grade TEKS through a project that will incorporate: Choice, Creativity, Customization, Rigor, Relevance, Relationships.