

**Unit A: Whole Numbers, Expressions, Multiplication, and Division**  
**Grade Level: 5<sup>th</sup> Grade**

<b>MACC.5.NBT.1.1</b>	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.
<b>MACC.5.NBT.1.2</b>	Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, <del>and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10.</del> Use whole-number exponents to denote powers of 10.
<b>MACC.5.NBT.2.5</b>	Fluently multiply multi-digit whole numbers using the standard algorithm.
<b>MACC.5.NBT.2.6</b>	Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.
<b>MA.5.A.1.3*</b>	Interpret solutions to division situations including those with remainders depending on the context of the problem.
<b>MA.5.A.2.4*</b>	Determine the prime factorization of numbers.
<b>MA.5.A.6.1*</b>	Identify and relate prime and composite numbers, factors, and multiples within the context of fractions.
<b>MA.5.A.1.4*</b>	Divide multi-digit whole numbers fluently, including solving real-world problems, demonstrating understanding of the standard algorithm and checking the reasonableness of results.
<b>MACC.5.OA.1.2</b>	Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. <i>For example, express the calculation “add 8 and 7, then multiply by 2” as <math>2 \times (8 + 7)</math>. Recognize that <math>3 \times (18932 + 921)</math> is three times as large as <math>18932 + 921</math>, without having to calculate the indicated sum or product.</i>
<b>MACC.5.OA.1.1</b>	Use parentheses, <i>brackets, or braces*</i> in numerical expressions, and evaluate expressions with these symbols. <i>*Specific to CCSS; not tested on FCAT 2013-14</i>
<b>MA.5.A.6.2*</b>	Use the order of operations to simplify expressions which include exponents and parentheses.

**Unit B: Understanding and Adding and Subtracting Decimals**

Grade Level: 5<sup>th</sup> Grade

<b>MACC.5.NBT.1.1</b>	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.
<b>MACC.5.NBT.1.4</b>	Use place value understanding to round decimals to any place.
<b>MACC.5.NBT.1.3</b>	Read, write, and compare decimals to thousandths. <ol style="list-style-type: none"> <li>a. Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., <math>347.392 = 3 \times 100 + 4 \times 10 + 7 \times 1 + 3 \times (1/10) + 9 \times (1/100) + 2 \times (1/1000)</math>.</li> <li>b. Compare two decimals to thousandths based on meanings of the digits in each place, using <math>&gt;</math>, <math>=</math>, and <math>&lt;</math> symbols to record the results of comparisons.</li> </ol>
<b>MACC.5.NBT.2.7</b>	Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

**Unit C: Adding and Subtracting Fractions**

Grade Level: 5<sup>th</sup> Grade

**C1 Building understanding for Adding and Subtracting Fractions**

<b>MA.3.A.2.1*</b>	Represent fractions, including fractions greater than one, using area, set and linear models.
<b>MA.3.A.2.2*</b>	Describe how the size of the fractional part is related to the number of equal sized pieces in the whole.
<b>MA.3.A.2.3*</b>	Compare and order fractions, including fractions greater than one, using models and strategies.
<b>MA.3.A.2.4*</b>	Use models to represent equivalent fractions, including fractions greater than one, and identify representations of equivalence.
<b>MACC.3.NF.1.1</b>	Understand a fraction $1/b$ as the quantity formed by 1 part when a whole is partitioned into $b$ equal parts; understand a fraction $a/b$ as the quantity formed by $a$ parts of size $1/b$ .
<b>MACC.3.NF.1.2</b>	Understand a fraction as a number on the number line; represent fractions on a number line diagram. <ol style="list-style-type: none"> <li>a. Represent a fraction <math>1/b</math> on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into <math>b</math> equal parts. Recognize that each part has size <math>1/b</math> and that the endpoint of the part based at 0 locates the number <math>1/b</math> on the number line.</li> <li>b. Represent a fraction <math>a/b</math> on a number line diagram by marking off <math>a</math> lengths <math>1/b</math> from 0. Recognize that the resulting interval has size <math>a/b</math> and that its endpoint locates the number <math>a/b</math> on the number line.</li> </ol>
<b>MA.4.A.2.3*</b>	Relate equivalent fractions and decimals with and without models, including locations on a number line.
<b>MA.4.A.6.3*</b>	Generate equivalent fractions and simplify fractions.
<b>MACC.4.NF.1.1</b>	Explain why a fraction $a/b$ is equivalent to a fraction $(n \times a)/(n \times b)$ by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.

<b>MACC.4.NF.1.2</b>	Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as $\frac{1}{2}$ . Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols $>$ , $=$ , or $<$ , and justify the conclusions, e.g., by using a visual fraction model.
----------------------	---

## C2: Adding and Subtracting Fractions

<b>MACC.5.NF.2.3</b>	Interpret a fraction as division of the numerator by the denominator ( $a/b = a \div b$ ). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. <i>For example, interpret <math>\frac{3}{4}</math> as the result of dividing 3 by 4, noting that <math>\frac{3}{4}</math> multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size <math>\frac{3}{4}</math>. If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie?</i>
<b>MACC.5.NF.1.1</b>	Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. <i>For example, <math>\frac{2}{3} + \frac{5}{4} = \frac{8}{12} + \frac{15}{12} = \frac{23}{12}</math>. (In general, <math>\frac{a}{b} + \frac{c}{d} = \frac{ad + bc}{bd}</math>.)</i>
<b>MACC.5.NF.1.2</b>	Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. <i>For example, recognize an incorrect result <math>\frac{2}{5} + \frac{1}{2} = \frac{3}{7}</math>, by observing that <math>\frac{3}{7} &lt; \frac{1}{2}</math>.</i>
<b>MA.5.A.6.1*</b>	Identify and relate prime and composite numbers, factors, and multiples within the context of fractions.
<b>MA.5.A.2.4*</b>	Determine the prime factorization of numbers.

## Unit D: Geo-Measurement Grade Level: 5<sup>th</sup> Grade

<b>MACC.5.G.2.3</b>	Understand that attributes belonging to a category of two dimensional figures also belong to all subcategories of that category. <i>For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles.</i>
<b>MACC.5.G.2.4</b>	Classify two-dimensional figures in a hierarchy based on properties.
<b>MA.5.G.3.1*</b>	Analyze and compare the properties of two-dimensional figures and three-dimensional solids (polyhedra), including the number of edges, faces, vertices, and types of faces.

<b>MA.5.G.5.4*</b>	Derive and apply formulas for areas of parallelograms, triangles, and trapezoids from the area of a rectangle.
<b>MA.5.G.3.2*</b>	Describe, define, and determine surface area and volume of prisms by using appropriate units and selecting strategies and tools.
<b>MACC.5.MD.3.4</b>	Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.
<b>MACC.5.MD.3.3</b>	Recognize volume as an attribute of solid figures and understand concepts of volume measurement. <ul style="list-style-type: none"> <li>a. A cube with side length 1 unit, called a “unit cube,” is said to have “one cubic unit” of volume, and can be used to measure volume.</li> <li>b. A solid figure which can be packed without gaps or overlaps using <math>n</math> unit cubes is said to have a volume of <math>n</math> cubic units.</li> </ul>
<b>MACC.5.MD.3.5</b>	Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume. <ul style="list-style-type: none"> <li>a. Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent threefold whole-number products as volumes, e.g., to represent the associative property of multiplication.</li> <li>b. Apply the formulas <math>V = l \times w \times h</math> and <math>V = B \times h</math> for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real world and mathematical problems.</li> <li>c. Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems.</li> </ul>
<b>MACC.5.NBT.2.5</b>	Fluently multiply multi-digit whole numbers using the standard algorithm.

**Unit E: Measurement**  
**Grade Level: 5<sup>th</sup> Grade**

<b>MA.5.G.5.3*</b>	Solve problems requiring attention to approximation, selection of appropriate measuring tools, and precision of measurement.
<b>MACC.5.MD.1.1</b>	Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.
<b>MACC.5.NBT.2.5</b>	Fluently multiply multi-digit whole numbers using the standard algorithm.

**Unit F: Graphing**  
**Grade Level: 5<sup>th</sup> Grade**

<b>MACC.5.G.1.1</b>	Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate).
<b>MACC.5.G.1.2</b>	Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.
<b>MACC.5.OA.2.3</b>	Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane. <i>For example, given the rule "Add 3" and the starting number 0, and given the rule "Add 6" and the starting number 0, generate terms in the resulting sequences, and observe that the terms in one sequence are twice the corresponding terms in the other sequence. Explain informally why this is so.</i>
<b>MA.5.A.6.4*</b>	Compare, order, and graph integers, including integers shown on a number line.
<b>MA.5.A.6.3*</b>	Describe real-world situations using positive and negative numbers.
<b>MA.5.A.4.2 *</b>	Construct and describe a graph showing continuous data, such as a graph of a quantity that changes over time.
<b>MA.5.S.7.2*</b>	Differentiate between continuous and discrete data and determine ways to represent those using graphs and diagrams.
<b>MA.5.S.7.1*</b>	Construct and analyze line graphs and double bar graphs.
<b>MACC.5.MD.2.2</b>	*Make a line plot to display a data set of measurements in fractions of a unit ( $\frac{1}{2}$ , $\frac{1}{4}$ , $\frac{1}{8}$ ). Use operations on fractions for this grade to solve problems involving information presented in line plots. <i>For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally.</i> *Specific to CCSS; not tested on FCAT 2013-14

**Unit G: Multiplying and Dividing Decimals (After FCAT)**

**Grade Level: 5<sup>th</sup> Grade**

<b>MACC.5.NBT.2.7</b>	Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.
<b>MACC.5.NBT.1.2</b>	Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.
<b>MACC.5.NF.2.5</b>	Interpret multiplication as scaling (resizing), by: <ul style="list-style-type: none"> <li>a. Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication.</li> <li>b. <del>Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence <math>a/b = (n \times a)/(n \times b)</math> to the effect of multiplying <math>a/b</math> by 1.</del></li> </ul>
<b>MACC.5.NBT.2.5</b>	Fluently multiply multi-digit whole numbers using the standard algorithm.

**Unit H: Multiplying and Dividing Fractions (After FCAT)**

**Grade Level: 5<sup>th</sup> Grade**

<b>MACC.5.NF.2.4</b>	Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction. <ul style="list-style-type: none"> <li>a. Interpret the product <math>(a/b) \times q</math> as a parts of a partition of <math>q</math> into <math>b</math> equal parts; equivalently, as the result of a sequence of operations <math>a \times q \div b</math>. For example, use a visual fraction model to show <math>(2/3) \times 4 = 8/3</math>, and create a story context for this equation. Do the same with <math>(2/3) \times (4/5) = 8/15</math>. (In general, <math>(a/b) \times (c/d) = ac/bd</math>.)</li> <li>b. Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.</li> </ul>
<b>MACC.5.NF.2.5</b>	Interpret multiplication as scaling (resizing), by: <ul style="list-style-type: none"> <li>a. Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication.</li> <li>b. Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence <math>a/b = (n \times a)/(n \times b)</math> to the effect of multiplying <math>a/b</math> by 1.</li> </ul>

<b>MACC.5.NF.2.6</b>	Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.
<b>MACC.5.NF.2.7</b>	<p>Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.</p> <ol style="list-style-type: none"> <li>Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. <i>For example, create a story context for <math>(1/3) \div 4</math>, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that <math>(1/3) \div 4 = 1/12</math> because <math>(1/12) \times 4 = 1/3</math>.</i></li> <li>Interpret division of a whole number by a unit fraction, and compute such quotients. <i>For example, create a story context for <math>4 \div (1/5)</math>, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that <math>4 \div (1/5) = 20</math> because <math>20 \times (1/5) = 4</math>.</i></li> <li>Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem. <i>For example, how much chocolate will each person get if 3 people share <math>1/2</math> lb of chocolate equally? How many <math>1/3</math>-cup servings are in 2 cups of raisins?</i></li> </ol>
<b>MACC.5.NBT.2.5</b>	Fluently multiply multi-digit whole numbers using the standard algorithm.