

# Diocese of Raleigh Catholic Schools

7200 Stonehenge Drive

Raleigh, NC 27613

[www.dioceseofraleigh.org](http://www.dioceseofraleigh.org)

## K-8 Math Standards Diocese of Raleigh

May 2018

**THE DIOCESE OF RALEIGH SCHOOLS:  
MISSION OF OUR CATHOLIC SCHOOLS**

The mission of the Diocese of Raleigh is to engage our school/preschool communities in creating a quality education within a Catholic environment that fosters the current and future development of the whole child.

**DIOCESE OF RALEIGH CATHOLIC SCHOOLS: A FOUNDATION FOR LIFE**

“School is one of the educational environments where one grows by learning how to live, how to become grown- up, mature men and women...Following what St. Ignatius teaches us, the main element in school is learning to be magnanimous...This means having a big heart, having a greatness of soul. It means having grand ideals, the desire to achieve great things in response to what God asks of us and, precisely because of this, doing everyday things, all our daily actions, commitments, and meetings with people well. [It means] doing the little everyday things with a big heart that is open to God and to others.” Pope Francis *{Excerpts from Pope Francis: Speech address on June 7, 2013 on the importance of Catholic education in schools in Italy and Albania in the Paul VI Audience Hall.}*

**Math  
Philosophy**

Mathematics reflects the order and unity in God’s universe. Our society depends upon the use of Science, Technology, Religion, Engineering, Art and Math. It relies upon a mathematical knowledge which assists students in developing the ability to reason, think critically, and logically. All students will develop practical tools for daily living and the ability to discover creative ways to solve problems.

## **PREFACE**

These guidelines contain four levels of standards:

Kindergarten - Grade 2

Grade 3 - Grade 4

Grade 5 - Grade 6

Grade 7 - Grade 8

### **Standards for Mathematical Practice**

<b>1. Analyze problems critically and persevere in solving them.</b>	<b>5. Use both tactile and technological tools appropriately.</b>
<b>2. Understand relationships between real-life situations and mathematical symbols.</b>	<b>6. Attend to detail and precision.</b>
<b>3. Construct viable arguments and critique the reasoning of others.</b>	<b>7. Seek and make use of patterns and repeated reasoning.</b>
<b>4. Model with mathematics using a variety of methods.</b>	<b>8. Justify reasoning and solutions.</b>

### **INTRODUCTION**

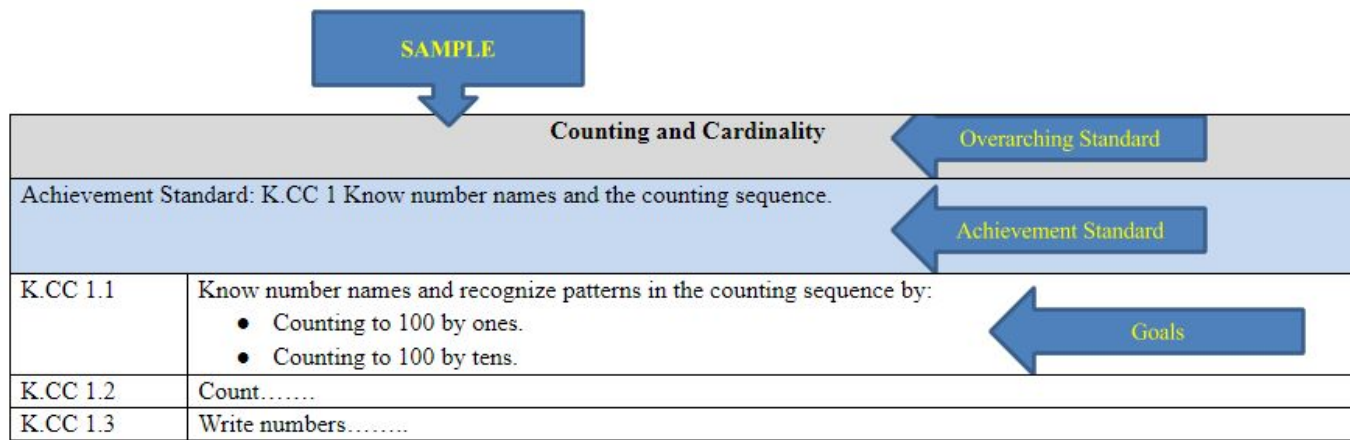
The following mathematical standards are intended for use in all Diocese of Raleigh Catholic elementary and middle schools. All students should have the opportunity and the support necessary to learn significant mathematics with depth and understanding whereby ideas are linked to and build on one another so students' understanding and knowledge deepen and their ability to apply mathematics expands. Effective mathematics teaching requires understanding what students know and need to learn and then challenging and supporting them to learn it well. They must learn mathematics with understanding, actively building new knowledge from experience and previous knowledge. Assessments should support the learning of important mathematics and furnish useful information to both teachers and students.

## STRUCTURE

Overarching Standards  
Achievement Standards  
Grade Level Goals

### Overarching Standards

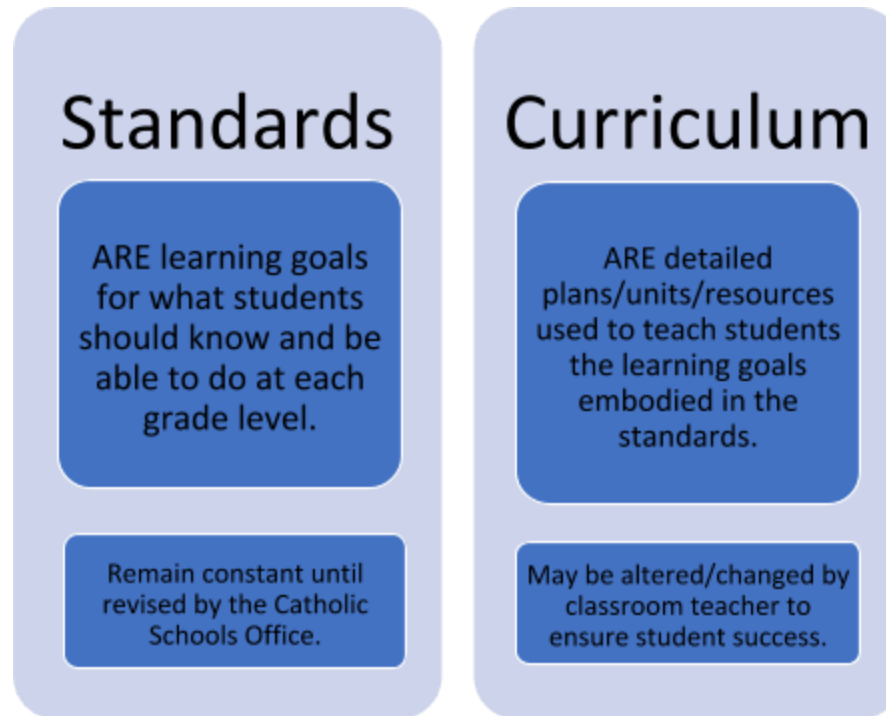
Counting and Cardinality [CC]  
Operations and Algebraic Thinking [OA]  
Number and Operations in Base Ten [NBT]  
Number and Operations - Fractions [NF]  
Measurement and Data [MD]  
Geometry [G]  
Ratio and Proportional Relationships [RP]  
The Number System [NS]  
Expressions and Equations [EE]  
Statistics and probability [SP]  
Functions [F]



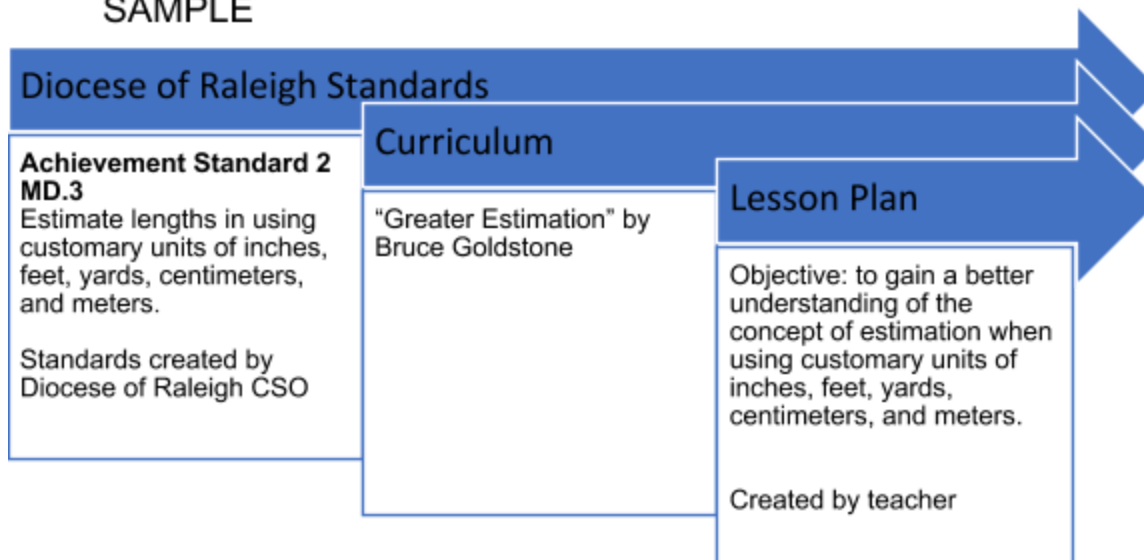
**DOR Standards aligned with the North Carolina Standard Course of Study K-8 Mathematics adopted June 2017**

**Curriculum Revision Team**

Melissa Ellis, Cathedral School	Kathleen Weeks, Immaculata Catholic School
Susan Kirkpatrick, Our Lady of Lourdes Catholic School	Kristine Fiala, St. Catherine of Siena Catholic School
Kyla Elmore, St. Mark Catholic School	Dee Schmid, St. Mark Catholic School
Carmen Boyd, St. Mary Magdalene Catholic School	Marianne Bohinski, St. Michael the Archangel Catholic School
Cindy Gay, St. Michael the Archangel Catholic School	Kylie Sciba, St. Paul Catholic School
Patty Angolia, St. Peter Catholic School	Maria Faison, St. Thomas More Catholic School
Fran Franks, The Franciscan School	Tom Harmon, The Franciscan School
Claire Wittmeier, The Franciscan School	Kimberly Browning, Assistant Superintendent
Linda Riley, St. Catherine of Siena Catholic School	



**SAMPLE**



# Second Grade

<b>Operations and Algebraic Thinking</b>	
<b>Achievement Standard: 2.OA.1 Represent and solve problems involving addition and subtraction.</b>	
2.OA.1.1	Represent and solve addition and subtraction word problems, within 100, with unknowns in all positions, by using representations and equations with a symbol for the unknown number to represent the problem, when solving: <ul style="list-style-type: none"> <li>• One-Step problems:               <ul style="list-style-type: none"> <li>o Add to/take from-start unknown</li> <li>o Compare-greater and lesser unknowns</li> </ul> </li> <li>• Two-Step problems involving single digits:               <ul style="list-style-type: none"> <li>o Add to/take from- operation unknown</li> <li>o Add to/take from- result unknown</li> </ul> </li> </ul>
<b>Achievement Standard: 2.OA.2 Add and subtract within 20.</b>	
2.OA.2.1	Demonstrate fluency with addition and subtraction, within 20, using mental strategies.
<b>Achievement Standard: 2.OA.3 Work with equal groups.</b>	
2.OA.3.1	Determine whether a group of objects, within 20, has an odd or even number of members by: <ul style="list-style-type: none"> <li>• Pairing objects, then counting them by 2s.</li> <li>• Determining whether objects can be placed into two equal groups.</li> <li>• Writing an equation to express an even number as a sum of two equal addends.</li> </ul>
2.OA.3.2	Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends.

## Number and Operations in Base Ten

**Achievement Standard: 2.NBT.1 Understand place value up to hundredths place.**

2.NBT.1.1	<p>Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones.</p> <ul style="list-style-type: none"> <li>• Unitize by making a ‘hundred’ from a collection of ten tens.</li> <li>• Demonstrate that the numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds, with 0 tens and 0 ones.</li> <li>• Compose and decompose numbers using various groupings of hundreds, tens, and ones.</li> </ul>
2.NBT.1.2	<p>Count within 1,000; skip-count by 2s, 3s, 4s, 5s, 10s, and 100s.</p> <ul style="list-style-type: none"> <li>• Identify and create number patterns within 1,000.</li> </ul>
2.NBT.1.3	<p>Read and write numbers, within 1,000, using base-ten numerals, number names, and expanded form.</p>
2.NBT.1.4	<p>Compare two three-digit numbers based on the value of the hundreds, tens, and ones digits, using <math>&gt;</math>, <math>=</math>, and <math>&lt;</math> symbols to record the results of comparisons.</p>

**Achievement Standard: 2.NBT.2 Use place value to add and subtract and identify properties of operations.**

2.NBT.2.1	<p>Demonstrate fluency with addition and subtraction, within 100, by:</p> <ul style="list-style-type: none"> <li>• Flexibly using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.</li> <li>• Comparing addition and subtraction strategies, and explaining why they work.</li> <li>• Selecting an appropriate strategy in order to efficiently compute sums and differences.</li> </ul>
2.NBT.2.2	<p>Add up to three two-digit numbers using strategies based on place value and properties of operations.</p>
2.NBT.2.3	<p>Add and subtract, within 1,000, relating the strategy to a written method, using:</p> <ul style="list-style-type: none"> <li>• Concrete models or illustrations</li> <li>• Strategies based on place value</li> <li>• Properties of operations</li> <li>• Relationship between addition and subtraction</li> </ul>
2.NBT.2.4	<p>Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a given number 100–900.</p>



## Measurement and Data

Achievement Standard: 2.MD.1 Measure and estimate lengths in customary and metric units.

2.MD.1.1	Measure the length of an object in customary units by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.
2.MD.1.2	Measure the length of an object twice, using customary and metric units; describe how the two measurements relate to the size of the unit chosen.
2.MD.1.3	Estimate lengths using customary units of inches, feet, yards, centimeters, and meters.
2.MD.1.4	Measure to determine how much longer one object is than another, expressing the length difference in terms of a customary length unit.

Achievement Standard: 2.MD.2 Relate addition and subtraction to length.

2.MD.2.1	Use addition and subtraction, within 100, to solve word problems involving lengths that are given in the same units, using equations with a symbol for the unknown number to represent the problem.
2.MD.2.2	Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points and represent whole-number sums and differences, within 100, on a number line.

Achievement Standard: 2.MD.3 Build understanding of time and money.

2.MD.3.1	Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.
2.MD.3.2	Solve word problems involving: <ul style="list-style-type: none"><li>• Quarters, dimes, nickels, and pennies within 100 cents, using ¢ symbols appropriately.</li><li>• Whole dollar amounts, using the \$ symbol appropriately.</li></ul>

Achievement Standard: 2.MD.4 Represent and interpret data.

2.MD.4.1	Organize, represent, and interpret data with up to four categories. <ul style="list-style-type: none"><li>• Illustrate a pictograph, bar graph, and circle graph with a single-unit scale to represent a data set.</li><li>• Solve simple addition, subtraction, and comparison problems using information presented in a pictograph, bar graph, and circle graph.</li></ul>
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## Geometry

Achievement Standard: 2.G.1 Reason with shapes and their attributes.

2.G.1.1

Recognize and illustrate plane figures: triangles, quadrilaterals, pentagons, and hexagons, having specified attributes.

Recognize and describe attributes of solid figures: rectangular prisms and cubes. Introduce the terms: vertex, vertices, edge, and face.

2.G.1.2

Partition circles and rectangles into two, three, or four equal parts.

- Describe the parts using the words halves, thirds, half of, a third of, fourths, fourth of, and quarter of.
- Describe the whole as two halves, three thirds, and four fourths.
- Explain that equal parts of identical wholes do not need to have the same shape.