## Understanding the Content Standards

Clicking on each of the standards below will provide a brief description of the standard along with a breakdown of the standard through its learning objectives. For more detailed information about how to help students build toward mastery of these standards and background information, review *Explanation of the Mathematics Content Standards*.

<table>
<tr><th colspan="2">Grade 5 Mathematics</th></tr>
<tr><td colspan="2">Mathematical Practice<br>5.MP</td></tr>
<tr><td>Numerical Reasoning<br>5.NR.1 5.NR.2<br>5.NR.3 5.NR.4<br>5.NR.5</td><td>Patterning & Algebraic Reasoning<br>5.PAR.6</td></tr>
<tr><td>Measurement & Data Reasoning<br>5.MDR.7</td><td>Geometric & Spatial Reasoning<br>5.GSR.8</td></tr>
</table>

## Understanding the Content Standards

| *MATHEMATICAL PRACTICES STANDARD/KEY COMPETENCY* |
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| ***MATHEMATICAL PRACTICES –*** *reasoning and explaining, modeling and using tools, seeing structure and generalizing* |
| ***5.MP: Display perseverance and patience in problem-solving. Demonstrate skills and strategies needed to succeed in mathematics, including critical thinking, reasoning, and effective collaboration and expression. Seek help and apply feedback. Set and monitor goals.***<br><br>**Understanding the Intent and Rigor of the Standard**<br>*This standard consists of a breakdown through several learning objectives. These learning objectives are not meant to be taught in isolation, but rather in clusters of related learning objectives. The Grade 5 curriculum map provides suggestions for clustering learning objectives within each unit.*<br><br>The Mathematical Practices describe the reasoning behaviors students should develop as they build an understanding of mathematics – the "habits of mind" that help students become mathematical thinkers. There are eight standards, which apply to all grade levels and conceptual categories.<br><br>These mathematical practices describe how students should engage with the mathematics content for their grade level. Developing these habits of mind builds students' capacity to become mathematical thinkers. These practices can be applied individually or together in mathematics lessons, and no particular order is required. In well-designed lessons, there are often two or more Mathematical Practices present. |
| **Breakdown of Standard/Key Competency (Expectation/Learning Objective)** |
| **5.MP.1** Make sense of problems and persevere in solving them. |
| **5.MP.2** Reason abstractly and quantitatively. |
| **5.MP.3** Construct viable arguments and critique the reasoning of others. |
| **5.MP.4** Model with mathematics. |
| **5.MP.5** Use appropriate tools strategically. |
| **5.MP.6** Attend to precision. |
| **5.MP.7** Look for and make use of structure. |
| **5.MP.8** Look for and express regularity in repeated reasoning. |

| ***STANDARD/KEY COMPETENCY 1*** |
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| ***NUMERICAL REASONING –*** *place value, multiplying by powers of 10, multiplication and division of multi-digit numbers, fractions, decimal numbers, numerical expressions* |
| ***5.NR.1: Use place value understanding to solve real-life, mathematical problems.***<br><br>**Understanding the Intent and Rigor of the Standard**<br>*This standard consists of a breakdown through several learning objectives. These learning objectives are not meant to be taught in isolation, but rather in clusters of related learning objectives. The Grade 5 curriculum map provides suggestions for clustering learning objectives within each unit.*<br><br>When learning this standard, students will build on their knowledge of patterns in the base ten place value system learned in Fourth Grade. Students will be explaining the value of digits in relation to their placement. In addition, students will explore the patterns in the placement of digits when multiplied by a power of 10. Students will use numerical reasoning to explain the placement of the digits, the values they represent, and by what factor the values have changed. |
| **Breakdown of Standard/Key Competency 1 (Expectation/Learning Objective)** |
| **5.NR.1.1** Explain 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 $\frac{1}{10}$ of what it represents in the place to its left. |
| **5.NR.1.2** Explain patterns in the placement of digits when multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10, up to $10^3$. |

| ***STANDARD/KEY COMPETENCY 2*** |
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| ***NUMERICAL REASONING –*** *place value, multiplying by powers of 10, multiplication and division of multi-digit numbers, fractions, decimal numbers, numerical expressions* |
| ***5.NR.2: Multiply and divide multi-digit whole numbers to solve relevant, mathematical problems.***<br><br>**Understanding the Intent and Rigor of the Standard**<br>*This standard consists of a breakdown through several learning objectives. These learning objectives are not meant to be taught in isolation, but rather in clusters of related learning objectives. The Grade 5 curriculum map provides suggestions for clustering learning objectives within each unit.*<br><br>When learning this standard, students will multiply and divide multi-digit whole numbers using a variety of strategies based on place value, part-whole thinking, and properties of operations. Having a variety of strategies to choose from, empowers students to become fluent and transfer their understandings and strategies to related computation problems. |
| **Breakdown of Standard/Key Competency 2 (Expectation/Learning Objective)** |
| **5.NR.2.1** Fluently multiply multi-digit (up to 3- digit by 2-digit) whole numbers to solve authentic problems. |
| **5.NR.2.2** Fluently divide multi-digit whole numbers (up to 4-digit dividends and 2-digit divisors no greater than 25) to solve practical problems. |

| *STANDARD/KEY COMPETENCY 3* |
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| ***NUMERICAL REASONING –*** *place value, multiplying by powers of 10, multiplication and division of multi-digit numbers, fractions, decimal numbers, numerical expressions* |
| ***5.NR.3: Describe fractions and perform operations with fractions to solve relevant, mathematical problems using part-whole strategies and visual models.***<br><br>**Understanding the Intent and Rigor of the Standard**<br>*This standard consists of a breakdown through several learning objectives. These learning objectives are not meant to be taught in isolation, but rather in clusters of related learning objectives. The Grade 5 curriculum map provides suggestions for clustering learning objectives within each unit.*<br><br>When learning this standard, students will explain the meaning of fractions as division and compare and order up to three fractions with different denominators using a variety of tools and strategies. Also, students will model and solve real-world problems involving the addition and subtraction of fractions and mixed numbers with unlike denominators. Students will also explore multiplication of fractions and whole numbers and use numerical reasoning to explain what happens when multiplying by a fraction greater than one or multiplying by a fraction less than one. Students will use their understanding of division to model and solve problems involving the division of a unit fraction by a whole number and a whole number by a unit fraction. |
| **Breakdown of Standard/Key Competency 3<br>(Expectation/Learning Objective)** |
| **5.NR.3.1** Explain the meaning of a fraction as division of the numerator by the denominator ($a\ b$ = a ÷ b). Solve problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers. |
| **5.NR.3.2** Compare and order up to three fractions with different numerators and/or different denominators by flexibly using a variety of tools and strategies. |
| **5.NR.3.3** Model and solve problems involving addition and subtraction of fractions and mixed numbers with unlike denominators. |
| **5.NR.3.4** Model and solve problems involving multiplication of a fraction and a whole number. |
| **5.NR.3.5** Explain why multiplying a whole number by a fraction greater than one results in a product greater than the whole number, and why multiplying a whole number by a fraction less than one results in a product less than the whole number and multiplying a whole number by a fraction equal to one results in a product equal to the whole number. |
| **5.NR.3.6** Model and solve problems involving division of a unit fraction by a whole number and a whole number by a unit fraction. |

| ***STANDARD/KEY COMPETENCY 4*** |
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| ***NUMERICAL REASONING –*** *place value, multiplying by powers of 10, multiplication and division of multi-digit numbers, fractions, decimal numbers, numerical expressions* |
| ***5.NR.4: Read, write, and compare decimal numbers to the thousandths place, and round and perform operations with decimal numbers to the hundredths place to solve relevant, mathematical problems.***<br><br>**Understanding the Intent and Rigor of the Standard**<br>*This standard consists of a breakdown through several learning objectives. These learning objectives are not meant to be taught in isolation, but rather in clusters of related learning objectives. The Grade 5 curriculum map provides suggestions for clustering learning objectives within each unit.*<br><br>When learning this standard, students read and write decimal numbers using base ten numerals written in standard and expanded form . This standard extends the work in fourth grade with the addition of the thousandths place. Students also represent, compare, and order decimal numbers based on the meanings of the digits in each place. This standard also extends students' work with rounding to round decimal numbers. Students will also solve problems involving the addition and subtraction of decimal numbers using a variety of strategies. |
| **Breakdown of Standard/Key Competency 4 (Expectation/Learning Objective)** |
| **5.NR.4.1** Read and write decimal numbers to the thousandths place using base ten numerals written in standard form and expanded form. |
| **5.NR.4.2** Represent, compare, and order decimal numbers to the thousandths place based on the meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons. |
| **5.NR.4.3** Use place value understanding to round decimal numbers to the hundredths place. |
| **5.NR.4.4** Solve problems involving addition and subtraction of decimal numbers to the hundredths place using a variety of strategies. |

| ***STANDARD/KEY COMPETENCY 5*** |
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| ***NUMERICAL REASONING –*** *place value, multiplying by powers of 10, multiplication and division of multi-digit numbers, fractions, decimal numbers, numerical expressions* |
| ***5.NR.5: Write, interpret, and evaluate numerical expressions within authentic problems.***<br><br>**Understanding the Intent and Rigor of the Standard**<br>*This standard consists of a breakdown through one learning objective. This learning objective might best be taught in clusters of related learning objectives that may be tied to another standard. The Grade 5 curriculum map provides suggestions for clustering learning objectives within each unit.*<br><br>When learning this standard, students will write, interpret, and evaluate simple, numerical expressions involving whole numbers and should be derived from authentic situations or problems. The expressions students in 5th grade work with should be no more complex than the expressions found in a simple application of the associative and distributive properties. Nested grouping symbols should not be used within expressions at this grade level. |
| **Breakdown of Standard/Key Competency 5**<br>**(Expectation/Learning Objective)** |
| **5.NR.5.1** Write, interpret, and evaluate simple numerical expressions involving whole numbers with or without grouping symbols to represent actual situations. |

| *STANDARD/KEY COMPETENCY 6* |
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| ***PATTERNING & ALGEBRAIC REASONING –*** *generating patterns, plotting ordered pairs in the first quadrant* |
| ***5.PAR.6: Solve relevant problems by creating and analyzing numerical patterns using the given rule(s).***<br><br>**Understanding the Intent and Rigor of the Standard**<br>*This standard consists of a breakdown through several learning objectives. These learning objectives are not meant to be taught in isolation, but rather in clusters of related learning objectives. The Grade 5 curriculum map provides suggestions for clustering learning objectives within each unit.*<br><br>When learning this standard, students will generate two numerical patterns and identify apparent relationships between corresponding terms. In addition, students will represent problems by plotting ordered pairs and explain the values of the coordinates using the first quadrant of the coordinate plane. Students will also learn to ask statistical questions, and collect, display and analyze data to answer these questions. |
| **Breakdown of Standard/Key Competency 6**<br>**(Expectation/Learning Objective)** |
| **5.PAR.6.1** Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms by completing a table. |
| **5.PAR.6.2** Represent problems by plotting ordered pairs and explain coordinate values of points in the first quadrant of the coordinate plane. |

| ***STANDARD/KEY COMPETENCY 7*** |
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| ***MEASUREMENT & DATA REASONING –*** *measurements within the metric system, measurement conversions and time as a unit of measurement* |
| ***5.MDR.7: Solve problems involving customary measurements, metric measurements, and time and analyze graphical displays of data to answer relevant questions.***<br><br>**Understanding the Intent and Rigor of the Standard**<br>*This standard consists of a breakdown through several learning objectives. These learning objectives are not meant to be taught in isolation, but rather in clusters of related learning objectives. The Grade 5 curriculum map provides suggestions for clustering learning objectives within each unit.*<br><br>When learning this standard, students explore realistic problems involving different units of measurement such as, distance, mass, weight, volume, and time. Students convert among units within the metric system and within the customary systems of measurement to solve multi-step, practical problems. Also, students ask statistical questions and answer them based on gathered information, observations, and the creation and analysis of appropriate graphical displays. |
| **Breakdown of Standard/Key Competency 7**<br>**(Expectation/Learning Objective)** |
| **5.MDR.7.1** Explore realistic problems involving different units of measurement, including distance, mass, weight, volume, and time. |
| **5.MDR.7.2** Ask questions and answer them based on gathered information, observations, and appropriate graphical displays to solve problems relevant to everyday life. |
| **5.MDR.7.3** Convert among units within the metric system and then apply these conversions to solve multistep, practical problems. |
| **5.MDR.7.4** Convert among units within relative sizes of measurement units within the customary measurement system. |

| ***STANDARD/KEY COMPETENCY 8*** |
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| ***GEOMETRIC & SPATIAL REASONING –*** *Properties of polygons and rectangular prisms, classify polygons* |
| ***5.GSR.8: Examine properties of polygons and rectangular prisms, classify polygons by their properties, and discover volume of right rectangular prisms.***<br><br>**Understanding the Intent and Rigor of the Standard**<br>*This standard consists of a breakdown through several learning objectives. These learning objectives are not meant to be taught in isolation, but rather in clusters of related learning objectives. The Grade 5 curriculum map provides suggestions for clustering learning objectives within each unit.*<br><br>When learning this standard, students draw geometric objects, understanding that they may be classified using different characteristics such as, parallel or perpendicular lines or by angle measurement. In addition, students develop an understanding of volume and begin to compute volume by building from the concept of area from previous grades and applying it rectangular prisms. |
| **Breakdown of Standard/Key Competency 8 (Expectation/Learning Objective)** |
| **5.GSR.8.1** Classify, compare, and contrast polygons based on properties. |
| **5.GSR.8.2** Determine, through exploration and investigation, that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category |
| **5.GSR.8.3** Investigate volume of right rectangular prisms by packing them with unit cubes without gaps or overlaps. Then, determine the total volume to solve problems. |
| **5.GSR.8.4** Discover and explain how the volume of a right rectangular prism can be found by multiplying the area of the base times the height to solve authentic, mathematical problems. |