

FIFTH GRADE MATHEMATICS

Priority Standard#1: Represent and Understand Multiplication and Division

Fluently multiply multi-digit whole numbers using the standard algorithm (5.NBT.5). Divide whole numbers up to four-digit dividends and two-digit divisors (5.NBT.6). Multiply and divide decimals to hundredths. Dividing decimals is limited to a whole number dividend with a decimal divisor or a decimal dividend with a whole number divisor (5.NBT.7).

0	Not Covered
1	<ul style="list-style-type: none"> • Use repeated addition as a strategy to multiply • Use the standard algorithm to multiply, without understanding why it works • Use base-ten blocks to add and subtract decimals to hundredths • Understand division is partitioning into equal groups • Compute single-digit multiplication and division problems
2	<ul style="list-style-type: none"> • Multiply multi-digit whole numbers using any strategy with 60% accuracy (area model, etc.) • Divide whole numbers with up to four-digit dividends and one-digit divisors • Represent multiplication and division problems with drawings and hundredth grids • Use base-ten blocks to add, subtract, multiply, and divide decimals to hundredths • Recognize remainders, but cannot decompose and repartition
3	<ul style="list-style-type: none"> • Fluently multiply multi-digit whole numbers using a standard algorithm with 85% accuracy (i.e., partial products). • Understand and justify connections between various multiplication strategies and a standard algorithm. • Explain properties of operation and place value when using a multiplication standard algorithm. • Understand how to compute quotients of two-digit divisors and up to four-digit dividends using strategies based on place value. • Understand how to compute quotients in a variety of situations, including with zeros. • Accurately and efficiently solve and explain multiplication and division problems using visual representations (drawings). • Fluently multiply and divide decimals to hundredths using place value understanding. Dividing decimals is limited to a whole number dividend with a decimal divisor or a decimal dividend with a whole number divisor. • Explain how remainders can be decomposed and repartitioned.



Priority Standard#2: Develop Understanding of Fractions

Students use equivalent fractions as a strategy to add and subtract fractions with unlike denominators including mixed numbers (5.NF.1-2). Fractions are interpreted as division of the numerator by the denominator (5.NF.3). Multiply a fraction or whole number by a fraction including real-world problems (5.NF.4,6). Interpret multiplication as scaling (5.NF.5). Divide unit fractions by whole numbers and whole numbers by unit fractions using reasoning about the relationship between multiplication and division (5.NF.7).

0 Not Covered

- 1**
- Little to no understanding of why fractions and mixed numbers must have common denominators to be added or subtracted
 - Use visual representations and manipulatives to show the value of fractions
 - Add and subtract fractions with like denominators
 - Find common denominators with help.

- 2**
- Understand why fractions and mixed numbers must have common denominators to be added or subtracted (must have same size pieces to combine or separate)
 - Use visual representations to add or subtract fractions
 - Recognize benchmark fractions
 - Find equivalent fractions
 - Determine common denominators to add fractions including mixed numbers
 - Determine common denominators to subtract mixed numbers with help
 - Multiply a fraction or whole number by a fraction
 - Recognize multiplication as scaling
 - Divide unit fractions by whole numbers and whole numbers by unit fractions with minimal help

- 3**
- Explain why fractions and mixed numbers must have common denominators to be added or subtracted; use visual representations to justify.
 - Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers and explain how the estimation shows reasonableness.
 - Apply multiple strategies to determine common denominators to add or subtract fractions including mixed numbers (equivalent fractions, etc.)
 - Understand and explain that fractions are interpreted as division of the numerator by the denominator ($a/b = a \div b$)
 - Accurately multiply a fraction or whole number by a fraction, including real-world problems; use visual representations to explain and justify.
 - Understand and explain relationships between the size of factors and products.
 - Explain multiplication as scaling.
 - Consistently divide unit fractions by whole numbers and whole numbers by unit fractions using visual representations to explain and justify.
 - Reason about the relationship between multiplication and division of fractions.



Priority Standard#3: Generalize and Use Place Value Understanding

Students understand patterns in place value including decimals and powers of ten (5.NBT.1-3). Add, subtract, multiply and divide decimals to hundredths (5.NBT.7).

0	Not Covered
1	<ul style="list-style-type: none"> Recognize patterns in place value Understand the value of whole numbers in the base 10 system Perform some operations with help
2	<ul style="list-style-type: none"> Understand patterns in place value Understand the value of most digits in the base 10 system Recognize the strategies to increase and decrease by powers of 10 (understand procedure, but not concept) Add, subtract, multiply, and divide decimals to hundredths using a variety of strategies including concrete models or drawings with 60% accuracy
3	<ul style="list-style-type: none"> Read, write, and explain the value of each digit in the base 10 system including decimals to the thousandths Show and explain that in a multi-digit number a digit in one place represents 10 times as much as it represents in the place to the right Show and explain that in a multi-digit number a digit in one place represents $\frac{1}{10}$ as much as it represents in the place to the left Explain why multiplying and dividing multi-digit numbers by powers of 10 shifts the digits or decimal to the right or left Explain why the value of a digit within a number increases or decreases when multiplied or divided by 10 Accurately use place value understanding to round decimals to any place Compare two decimals to the thousandths and explain using the meaning of the digits in each place Consistently add, subtract, multiply, and divide decimals to hundredths using a variety of strategies including concrete models or drawings with 85% accuracy and explain reasoning



Priority Standard#4: Understand Concepts of Volume

Students recognize volume as an attribute of three-dimensional space. Students understand concepts of geometric measurement and volume as well as how multiplication and addition relate to volume (5.MD.3-5).

0	Not Covered
1	<ul style="list-style-type: none"> Identify the base of a rectangular prism Does not recognize volume as measured in cubic units Count the cubic units and construct rectangular prisms Little to no understanding of the relationship between area and volume Applies formulas with help using a calculator ($V = l \times w \times h$ and $V = b \times h$)
2	<ul style="list-style-type: none"> Understands area (two-dimensions), but does not recognize volume as an attribute of a three-dimensional figure measured in cubic units Count and construct rectangular prisms to determine volume, but cannot transfer knowledge without a concrete model Uses volume to solve real-world mathematical problems with help Applies the formulas when given the dimensions of rectangular prisms
3	<ul style="list-style-type: none"> Explain how volume is an attribute of a three-dimensional figure measured in cubic units Count and construct rectangular prisms to determine volume; explain why the figure is packed without gaps and overlaps Explain how volume relates to the operations of multiplication and addition and solve real-world mathematical problems When given a volume, can determine the possible dimensions of a rectangular prism (length, width, and height) Understand and apply the formulas, including the relationship between the formulas $V = l \times w \times h$ and $V = b \times h$ Explain how to decompose solid figures made of two rectangular prisms to calculate volume

