

Grade 5 Mathematics

Performance Level Descriptors

Limited

A student performing at the **Limited Level** demonstrates a minimal command of Ohio's Learning Standards for Grade 5 Mathematics. A student at this level has an emerging ability to perform all four arithmetic operations with fractions, use understanding of place values to perform all four arithmetic operations with whole numbers and decimal numbers, and solve problems involving volumes of rectangular prisms with whole-number edge lengths.

A student whose performance falls within the **Limited Level** typically can:

- Carry out some routine procedures to solve straightforward one-step problems;
- Recognize solutions to some simple computation, straightforward problems;
- Compute accurately a few grade level numbers and operations;
- Recognize a few grade level mathematical concepts, terms and properties, and use previous grade level mathematical concepts, terms and properties.

A student at the **Limited Level** can:

- Solve straightforward word problems involving addition and subtraction of fractions with common unlike denominators multiples, 2, 4; 3, 6, under 12;
- Multiply a whole number by a fraction to solve straightforward problems using visual models;
- Divide a whole number by $\frac{1}{2}$ or $\frac{1}{3}$ using visual models;
- Make a line plot and display data sets involving halves, quarters, and eighths;
- Evaluate numerical expressions with one set of parentheses;
- Given a place value chart, read decimals to the thousandths place using number names;
- Represent multi-digit whole numbers in expanded form;
- Round decimals to the whole number;
- Multiply one- and two-digit whole numbers and find whole-number quotients of whole numbers with up to three-digit dividends and one-digit divisors;
- Add, subtract, and multiply decimals to tenths using concrete models or drawings;
- Complete a chart converting different-sized, standard whole-number measurement units within one measurement system: inches to feet, cups to quarts, etc.;
- Use unit cubes to find the volume of right rectangular prisms with whole number edge lengths; Count the cubes to determine the volume;
- Graph whole-number coordinate pairs in the first quadrant of a coordinate plane.

Basic

A student performing at the **Basic Level** demonstrates partial command of Ohio's Learning Standards for Grade 5 Mathematics. A student at this level has a general ability to perform all four arithmetic operations with fractions, use understanding of place values to perform all four arithmetic operations with whole numbers and decimal numbers, and solve problems involving volumes of rectangular prisms with whole-number edge lengths.

A student whose performance falls within the Basic Level typically can:

- Carry out routine procedures;
- Solve simple problems using visual representations;
- Compute accurately some grade level numbers and operations;
- Recall and recognize some grade level mathematical concepts, terms and properties, and use more previous grade level mathematical concepts, terms and properties.

A student at the **Basic Level** can:

- Find the sum or difference of common fractions with unlike denominators using visual models to solve straightforward problems;
- Multiply a whole number by a mixed number using visual models to solve straightforward problems;
- Divide a unit fraction by a whole number using visual models;
- Find a sum or difference involving information presented in a line plot;
- Evaluate numerical expressions having two non-nested sets of parentheses;
- Read and write decimals to the thousandths place using word names;
- Represent multi-digit numbers in expanded form, including decimals to the thousandths place;
- Round decimals to the hundredths place;
- Using strategies find the product of multi-digit factors;
- Use base-ten models to divide up to four digit dividends by one or two digit divisors;
- Use strategies and models to add, subtract and multiply decimals to the hundredths place;
- Convert different-sized measurement units within one measurement system;
- Understand the concept that the volume of a right rectangular prism packed with unit cubes is related to the edge lengths; determine the volume;
- Graph whole number coordinate pairs in the first quadrant of a coordinate grid to solve routine problems;
- Classify two-dimensional figures into categories by their attributes or properties.

Proficient

A student performing at the **Proficient Level** demonstrates an appropriate command of Ohio's Learning Standards for Grade 5 Mathematics. A student at this level has a consistent ability to perform all four arithmetic operations with fractions, use understanding of place values to perform all four arithmetic operations with whole numbers and decimal numbers, and solve problems involving volumes of rectangular prisms with whole-number edge lengths.

A student whose performance falls within the **Proficient Level** typically can:

- Solve most routine and straightforward problems accurately;
- Compute accurately with most grade level numbers and operations;
- Apply most grade level mathematical concepts, terms and properties, and use informal (visual representation and language) and some formal reasoning.

A student at the **Proficient Level** can:

- Solve routine word problems by finding the sum or difference of fractions and mixed numbers with unlike denominators;
- Multiply a proper fraction by a mixed number to solve routine real-world problems;
- Solve a routine real-world problem involving multiplying two fractions by using visual models;
- Know the effect that a fraction has on another fraction when multiplied (both fractions less than 1 and both fractions greater than 1);
- Solve problems involving information presented in line plots;
- Write and evaluate numerical expressions having any number of non-nested sets of parentheses;
- Determine the value of a digit when multiplied or divided by 10 and powers of 10;
- Read, write, and compare two decimals, to the thousandths, based on the meaning of the digits in each place, record using the symbols $>$, $=$, $<$ and supported with place value charts and/or decimal models;
- Use strategies to multiply multi-digit numbers to solve mathematical and routine real-world problems;
- Use a variety of strategies based on place value, properties of operations, and the relationship of multiplication to division to divide up to four-digit dividends by one- or two-digit divisors;
- Perform the four operations on decimals to the hundredths place and demonstrate a partial explanation of reasoning;
- Convert and apply measurement units within a given measurement system to solve routine problems;
- Use the formulas $v = l \times w \times h$ and $v = b \times h$ to find the volume of right rectangular prisms;
- Compare and analyze two related numerical patterns within sequences of ordered pairs, and graph the ordered pairs on the coordinate plane.

Accelerated

A student performing at the **Accelerated Level** demonstrates a strong command of Ohio's Learning Standards for Grade 5 Mathematics. A student at this level has a superior ability to perform all four arithmetic operations with fractions, use understanding of place values to perform all four arithmetic operations with whole numbers and decimal numbers, and solve problems involving volumes of rectangular prisms with whole-number edge lengths.

A student whose performance falls within the **Accelerated Level** typically can:

- Accurately solve routine and straightforward problems;
- Solve a variety of routine and multi-step problems;
- Compute accurately and efficiently with familiar numbers;
- Recognize connections between mathematical concepts, terms and properties, and use informal and some formal reasoning with symbolic representation.

A student at the **Accelerated Level** can:

- Create contexts for multiplying two fractions, solve with visual models;
- Interpret and perform division of a unit fraction by a whole number in solving real-world problems;
- Multiply a mixed number by a mixed number and use to solve real-world problems;
- Understand and use the fact that a fraction multiplied by 1 in the form of a/a is equivalent to the original fraction;
- Use visual models when multiplying two fractions that are larger than 1;
- Draw conclusions from line plots;
- Write and evaluate numerical expressions with non-nested parentheses, use to solve problems;
- Recognize the place value relationships between digits in multi-digit numbers and use them to read, write and compare decimals to the thousandths place and record with $<$, $>$, $=$;
- Use efficient strategies to multiply multi-digit numbers to solve mathematical and routine real-world problems;
- Use a variety of strategies based on place value, properties of operations, and the relationship of multiplication to division to divide up to four-digit dividends by two-digit divisors;
- Explain calculations of whole number quotients of whole numbers with up to four-digit dividends and two-digit divisors;
- Use efficient and accurate strategies to perform the four operations on decimals to the hundredths place and explain the reasoning;
- Use measurement conversions within a measurement system in solving real-world problems;
- Find the volume of figures composed of two or more non-overlapping right rectangular prisms in routine real-world problems;
- Solve routine real-world and mathematical problems by graphing points in the first quadrant of a coordinate grid;
- Classify two-dimensional figures into multiple categories and subcategories by their attributes or properties.

Advanced

A student performing at the **Advanced Level** demonstrates a distinguished command of Ohio's Learning Standards for Grade 5 Mathematics. A student at this level has a sophisticated ability to perform all four arithmetic operations with fractions, use understanding of place values to perform all four arithmetic operations with whole numbers and decimal numbers, and solve problems involving volumes of rectangular prisms with whole-number edge lengths.

A student whose performance falls within the **Advanced Level** typically can:

- Accurately solve routine and straightforward problems;
- Solve a variety of routine and multi-step problems;
- Compute accurately and efficiently with familiar numbers;
- Recognize connections between mathematical concepts, terms and properties, and use informal and some formal reasoning with symbolic representation.

A student at the **Advanced Level** can:

- Create contexts for multiplying two fractions, solve without visual models;
- Represent the sum or difference of fractions and mixed numbers in a form that is appropriate for the real-world situation;
- Create visual models when multiplying two fractions that are larger than 1;
- Write, evaluate, and interpret complex numerical expressions having any number of non-nested sets of parentheses, brackets, or braces, also use to solve problems;
- Explain the relationship of exponents to the number of zeroes when multiplying by powers of 10;
- Use measurement conversions within a measurement system in solving multi-step, real-world problems;
- Find the volume of figures composed of two or more non-overlapping right rectangular prisms in routine and non-routine real-world problems;
- Solve non-routine real-world and mathematical problems by graphing points in the first quadrant of a coordinate grid.