

# Grade 3 Mathematics

## Performance Level Descriptors

### Limited

A student performing at the **Limited Level** demonstrates a minimal command of Ohio's Learning Standards for Grade 3 Mathematics. A student at this level has an **emerging ability** to demonstrate strategies of multiplication and division, show understanding of fractions, solve problems involving measurement and data, and recognize and distinguish between the area and perimeter of a shape.

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

- Carry out some routine procedures to solve straight forward one-step problems;
- Recognize solutions to some simple computation, straight forward problems;
- Compute a few grade level numbers and operations accurately;
- 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:

- Demonstrate some understanding of multiplication using equal-sized groups and/or arrays;
- Use multiplication fact family understanding or models to solve simple multiplication and division problems;
- Solve familiar one-step problems involving one of the four operations  $+$ ,  $-$ ,  $\times$ ,  $\div$  and basic fact calculation;
- Demonstrate minimal understanding of fractions by naming common unit fractions (denominators of 2, 3, 4, 6, 8) from visual models;
- Complete visual fraction models to represent parts of a whole (denominators of 2, 3, 4, 6, 8);
- Compare the visual fraction models of two common fractions (denominator with pairs of 2 and 4, 3 and 6, 4 and 8);
- Find the perimeter of a simple shape given all the measurements in simple whole numbers;
- Count the unit squares to find the area of a gridded shape;
- Recognize common quadrilaterals (square, rectangle, rhombus, and trapezoid) by the sides or the angles;
- Use strategies to solve straight forward one-step problems involving simple addition and subtraction within 1000;
- Solve simple linear measurement problems;
- Given models, solve straight forward problems involving liquid volume or mass;
- Complete a picture graph or bar graph that uses a unit scale;
- Answer straightforward questions about information presented in a scaled picture graph or scaled bar graph.

## Basic

A student performing at the **Basic Level** demonstrates an appropriate command of Ohio's Learning Standards for Grade 3 Mathematics. A student at this level has a **general ability** to demonstrate strategies of multiplication and division, show understanding of fractions, solve problems involving measurement and data, and recognize and distinguish between the area and perimeter of a shape.

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:

- Demonstrate an understanding of multiplication of whole numbers using equal-sized groups and arrays;
- Use multiplication fact family understanding to solve simple problems;
- Solve routine one-step problems involving any of the four operations  $+$ ,  $-$ ,  $\times$ ,  $\div$ ;
- Demonstrate a general understanding of fractions (denominators of 2, 3, 4, 6, 8) using visual fraction models;
- Place unit fractions (denominators of 2, 3, 4, 6, 8) on a number line;
- Use fractions to represent numbers less than one and equal to one;
- Compare the visual fraction models of two common fractions (with denominator pairs of 2 and 4, 2 and 8, 3 and 6, 4 and 8);
- Understand how to find perimeter;
- Solve simple problems involving perimeter;
- Measure the area of a shape by counting unit squares;
- Describe and compare sides and angles of common quadrilaterals;
- Write the fraction name for a shaded part of a rectangular whole;
- Add and subtract using strategies to solve routine one-step problems;
- Given models, solve simple problems involving liquid volume or mass;
- Round simple whole numbers to the nearest 10 or 100;
- Complete a scaled picture graph or scaled bar graph;
- Answer simple questions about information presented in a scaled bar graph.

## Proficient

A student performing at the **Proficient Level** demonstrates an appropriate command of Ohio's Learning Standards for Grade 3 Mathematics. A student at this level has a **consistent ability** to demonstrate strategies of multiplication and division, show understanding of fractions, solve problems involving measurement and data, and recognize and distinguish between the area and perimeter of a shape.

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:

- Demonstrate an understanding of multiplication and division of whole numbers including using equal-sized groups, arrays, and area models;
- Calculate the product of any two single-digit whole numbers;
- Multiply and divide within 100 to solve one-step problems;
- Use the relationship between multiplication and division to solve problems;
- Use equations, models, tables or graphs to solve routine problems;
- Use the properties of multiplication and division to solve problems;
- Represent and solve routine one- and two-step problems that may involve up to two different operations: +, -,  $\times$ ,  $\div$ ;
- Develop an understanding of fractions as numbers;
- Use fractions along with visual fraction models to represent parts of a whole;
- Understand that the size of a fractional part is relative to the size of the whole;
- Use fractions to represent numbers equal to, less than, and greater than one;
- Solve problems that involve comparing fractions by using visual fraction models;
- Create line plots for measurement data with scales of wholes, halves, and fourths of an inch;
- Understand perimeter and area and their differences;
- Solve problems involving perimeter;
- Measure the area of a shape: by counting unit squares or by using the relationship of rectangular arrays and multiplication;
- Compare and classify shapes by their sides and angles;
- Relate fractions to geometry by naming the area of part of a shape as a fraction of the whole;
- Add and subtract using strategies and/or algorithms to solve multi-step problems;
- Represent data on scaled picture graphs and scaled bar graphs;
- Solve problems using information presented in a scaled bar graph;
- Round whole numbers to the nearest 10 or 100;
- Solve one-step problems involving measurement units of time, liquid volume, and mass.

## Accelerated

A student performing at the **Accelerated Level** demonstrates a strong command of Ohio's Learning Standards for Grade 3 Mathematics. A student at this level has a **superior ability** to demonstrate strategies of multiplication and division, show understanding of fractions, solve problems involving measurement and data, and recognize and distinguish between the area and perimeter of a shape.

Students whose performance falls within the **Accelerated Level** typically can:

- Accurately solve routine and straight forward 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:

- Use equal-sized groups, arrays, area models, the properties of multiplication and division, and place value to solve a variety of problems;
- Apply understanding of place value, properties, relationships among operations to solve multiplication and division problems;
- Use mental computation and estimation strategies to review thinking and results;
- Represent and solve one- and two-step problems that may involve up to two different operations: +, - ,  $\times$ ,  $\div$ ;
- Apply an understanding of fractions to solve routine problems;
- Use the understanding that the size of a fractional part is relative to the size of the whole to solve problems;
- Compare fractions using visual fraction models and  $< > =$  ;
- Solve complex problems involving perimeter and area;
- Compute the area of a shape composed of non-overlapping rectangles;
- Describe, analyze, and compare properties of quadrilaterals;
- Add and subtract using strategies and algorithms to solve multi-step problems;
- Solve one- and two-step problems involving measurement units of time, liquid volume, and mass;
- Represent data on scaled picture graphs and scaled bar graphs to solve problems;
- Solve non-routine problems using information presented in a scaled bar graph.

## Advanced

A student performing at the **Advanced Level** demonstrates a distinguished command of Ohio's Learning Standards for Grade 3 Mathematics. A student at this level has a **sophisticated ability** to demonstrate strategies of multiplication and division, show understanding of fractions, solve problems involving measurement and data, and recognize and distinguish between the area and perimeter of a shape.

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

- Solve routine and straightforward problems accurately and efficiently,
- Solve a variety of non-routine multi-step problems,
- Compute accurately and efficiently,
- Recognize, apply and justify mathematical concepts, terms and properties and their connections, and use more formal reasoning and symbolic representation (precise mathematical language).

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

- Use equations with unknowns, models and graphs to solve problems;
- Apply efficient understanding of place value, properties, relationships among operations to solve multiplication and division problems;
- Use mental computation and estimation strategies to analyze thinking and results;
- Represent and solve non-routine multi-step problems involving more than one of the four operations +, - x, ÷ ;
- Apply an understanding of fractions to solve problems unfamiliar problems;
- Explain how the size of a fractional part is relative to the size of the whole;
- Compare fractions using <, > = ;
- Solve problems that involve comparing fractions using visual fraction models and strategies based on noticing equal numerators or denominators;
- Understand perimeter and area and explain their differences;
- Analyze rectangles with the same perimeter and different areas or rectangles with the same area and different perimeters;
- Write equations to solve problems involving perimeter and/or area;
- Compute the area of a complex shape in solving real-world problems;
- Analyze the properties of two-dimensional shapes to explain classifications;
- Add and subtract using efficient strategies and/or algorithms to solve multi-step problems;
- Create scaled picture graphs and scaled bar graphs to represent data and solve problems;
- Solve multi-step problems involving measurement units of time, liquid volume and mass.