

# OREGON GRADE 6 MATHEMATICS GRADE LEVEL GUIDANCE



OREGON  
DEPARTMENT OF  
EDUCATION



OREGON  
MATH PROJECT  
*Meaningful Math for Every Student*

# Oregon Math Standards

## GRADE 6



**OREGON  
MATH PROJECT**

*Meaningful Math for Every Student*

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## OREGON MATH PROJECT

The Oregon Math Project (OMP) advances mathematics education in our state by cultivating a network of educators that promotes equitable math experiences for all students through guidance and the support of policies, standards, curricula, assessments, and instructional best practices. Realizing the vision of math education in Oregon includes ensuring that all students attain mathematics proficiency by having access to high-quality instruction that includes challenging and coherent content in a learning environment where each student receives the support they need to succeed in mathematics.

Please [visit the OMP website](#) to learn more about the project and opportunities to connect with this work.

## CLARIFYING DOCUMENTS

The intent of clarifying statements is to provide additional guidance for educators to communicate the intent of the [2021 Oregon math standards](#) to support the future development of aligned curricular resources and assessments.

Clarifying statements can be in the form of succinct sentences or paragraphs that attend to one of four types of clarifications: (1) Student Experiences; (2) Examples; (3) Boundaries; and (4) Connection to Math Practices.

Please [use this form to provide suggestions](#) to the Oregon Math Standards and/or Guidance document.

Questions, comment, or suggestions can also be emailed to: [ODE.MathProject@ode.oregon.gov](mailto:ODE.MathProject@ode.oregon.gov)



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## Grade 6 Overview

### Critical Areas of Focus

In Grade 6, instructional time should focus on four critical areas:

1. Connecting ratio and rate to whole number multiplication and division and using concepts of ratio and rate to solve problems;
2. Completing understanding of division of fractions and extending the notion of number to the system of rational numbers, which includes negative numbers;
3. Writing, interpreting, and using expressions and equations; and
4. Developing understanding of statistical thinking.

Link to summary of [Grade 6 Critical Areas](#)

Students should spend the large majority<sup>a</sup> of their time on the major work of the grade (■). Supporting work (□) and, where appropriate, additional work (●) can engage students in the major work of the grade.

<sup>a</sup>At least 65% and up to approximately 85% of class time, with Grades K–2 nearer the upper end of that range, should be devoted to the major work of the grade. For more information, see the K–8 [major work of the grade developed by Student Achievement Partners](#)

### DOMAINS AND CLUSTERS

#### 6.AEE - Algebraic Reasoning: Expressions and Equations

- [6.AEE.A](#) Apply and extend previous understandings of arithmetic to algebraic expressions.
- [6.AEE.B](#) Reason about and solve one-variable equations and inequalities.
- [6.AEE.C](#) Represent and analyze quantitative relationships between dependent and independent variables.

#### 6.RP - Proportional Reasoning: Ratios and Proportions

- [6.RP.A](#) Understand ratio concepts and use ratio reasoning to solve problems.

#### 6.NS - Numeric Reasoning: Number Systems

- [6.NS.A](#) Apply and extend previous understandings of multiplication and division to divide fractions by fractions.
- [6.NS.B](#) Compute fluently with multi-digit numbers and find common factors and multiples.
- [6.NS.C](#) Apply and extend previous understandings of numbers to the system of rational numbers.

#### 6.GM - Geometric Reasoning and Measurement

- [6.GM.A](#) Solve real-world and mathematical problems involving area, surface area, and volume.

#### 6.DR - Data Reasoning

- [6.DR.A](#) Formulate Statistical Investigative Questions.
- [6.DR.B](#) Collect and Consider Data.
- [6.DR.C](#) Analyze, summarize, and describe data.
- [6.DR.D](#) Interpret data and answer investigative questions.





## Grade 6 Math Standards (2021)

### ALGEBRAIC REASONING: EXPRESSIONS AND EQUATIONS (6.AEE)

- 6.AEE.A** *Apply and extend previous understandings of arithmetic to algebraic expressions.*
- 6.AEE.A.1** Write and evaluate numerical expressions involving whole-number bases and exponents.
- 6.AEE.A.2** Write, read, and evaluate expressions in which letters stand for numbers. Apply knowledge of common mathematical terms to move between the verbal and mathematical forms of an expression including expressions that arise from authentic contexts.
- 6.AEE.A.3** Apply the properties of operations to generate equivalent expressions and to determine when two expressions are equivalent.
- 6.AEE.B** *Reason about and solve one-variable equations and inequalities.*
- 6.AEE.B.4** Understand solving an equation or inequality as a process of answering which values from a specified set, if any, make the equation or inequality true. Use substitution to determine which number(s) in a given set make an equation or inequality true.
- 6.AEE.B.5** Use variables to represent numbers and write expressions when solving problems in authentic contexts.
- 6.AEE.B.6** Write and solve equations of the form  $x + p = q$  and  $px = q$  in problems that arise from authentic contexts for cases in which  $p$ ,  $q$  and  $x$  are all nonnegative rational numbers.
- 6.AEE.B.7** Write inequalities of the form  $x > c$  and  $x < c$  to represent constraints or conditions to solve problems in authentic contexts. Describe and graph on a number line solutions of inequalities of the form  $x > c$  and  $x < c$ .
- 6.AEE.C** *Represent and analyze quantitative relationships between dependent and independent variables.*
- 6.AEE.C.8** Use variables to represent and analyze two quantities to solve problems in authentic contexts. Including those that change in relationship to one another; write an equation to express one quantity in terms of the other quantity.

### PROPORTIONAL REASONING: RATIOS AND PROPORTIONS (6.RP)

- 6.RP.A** *Understand ratio concepts and use ratio reasoning to solve problems.*
- 6.RP.A.1** Understand the concept of a ratio in authentic contexts, and use ratio language to describe a ratio relationship between two quantities.
- 6.RP.A.2** Understand the concept of a unit rate in authentic contexts and use rate language in the context of a ratio relationship.
- 6.RP.A.3** Use ratio and rate reasoning to solve problems in authentic contexts that use equivalent ratios, unit rates, percents, and/or measurement units.





## NUMERIC REASONING: NUMBER SYSTEMS (6.NS)

**6.NS.A** *Apply and extend previous understandings of multiplication and division to divide fractions by fractions.*

**6.NS.A.1** Represent, interpret, and compute quotients of fractions to solve problems in authentic contexts involving division of fractions by fractions.

**6.NS.B** *Compute fluently with multi-digit numbers and find common factors and multiples.*

**6.NS.B.2** Fluently divide multi-digit numbers using accurate, efficient, and flexible strategies and algorithms based on place value and properties of operations.

**6.NS.B.3** Fluently add, subtract, multiply, and divide positive rational numbers using accurate, efficient, and flexible strategies and algorithms.

**6.NS.B.4** Determine greatest common factors and least common multiples using a variety of strategies. Apply the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor.

**6.NS.C** *Apply and extend previous understandings of numbers to the system of rational numbers.*

**6.NS.C.5** Understand that positive and negative numbers are used together to describe quantities having opposite directions or values. Use positive and negative numbers to represent quantities in authentic contexts, explaining the meaning of zero in each situation.

**6.NS.C.6** Represent a rational number as a point on the number line. Extend number line diagrams and coordinate axes to represent points on the line and in the coordinate plane with negative number coordinates.

**6.NS.C.7** Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. Write, interpret, and explain statements of order for rational numbers and absolute value in authentic applications.

**6.NS.C.8** Graph points in all four quadrants of the coordinate plane to solve problems in authentic contexts. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.

## GEOMETRIC REASONING AND MEASUREMENT (6.GM)

**6.GM.A** *Solve real-world and mathematical problems involving area, surface area, and volume.*

**6.GM.A.1** Find the area of triangles, quadrilaterals, and other polygons by composing into rectangles or decomposing into triangles and other shapes. Apply these techniques to solve problems in authentic contexts.

**6.GM.A.2** Find the volume of a right rectangular prism with fractional edge lengths by filling it with unit cubes of appropriate unit fraction edge lengths. Connect and apply to the formulas  $V = l w h$  and  $V = b h$  to find volumes of right rectangular prisms with fractional edge lengths to solve problems in authentic contexts.







6.GM.A.3 Draw polygons in the four quadrant coordinate plane given coordinates for the vertices and find the length of a side. Apply these techniques to solve problems in authentic contexts.

6.GM.A.4 Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures, including those from authentic contexts.

### DATA REASONING (6.DR)

6.DR.A *Formulate Statistical Investigative Questions.*

6.DR.A.1 Formulate and recognize statistical investigative questions as those that anticipate changes in descriptive data related to the question and account for it in the answers.

6.DR.B *Collect and Consider Data.*

6.DR.B.2 Collect and record data with technology to identify and describe the characteristics of numerical data sets using quantitative measures of center and variability.

6.DR.C *Analyze, summarize, and describe data.*

6.DR.C.3 Analyze data representations and describe measures of center and variability of quantitative data using appropriate displays.

6.DR.D *Interpret data and answer investigative questions.*

6.DR.D.4 Interpret quantitative measures of center to describe differences between groups from data collected to answer investigative questions.

