

Grade 6 Mathematics

Full-Year Pacing Guide

11 units · 32 instructional weeks · all 29 Common Core standards. Every standard is scheduled after the standards it depends on.

WEEKS 1-3

Unit 1: Ratios & Rates

Build ratio language and the unit rate a/b — the for-every reasoning the whole middle school arc stands on.

6.RP.A.1

Ratio concepts & language

Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. For example, “The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak.” “For every vote candidate A received, candidate C received nearly three votes.”

6.RP.A.2

Unit rates from ratios

Understand the concept of a unit rate a/b associated with a ratio $a:b$ with $b \neq 0$, and use rate language in the context of a ratio relationship. For example, “This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is $3/4$ cup of flour for each cup of sugar.” “We paid \$75 for 15 hamburgers, which is a rate of \$5 per hamburger.”

WEEKS 4-6

Unit 2: Ratio Problem Solving & Percent

Put ratio reasoning to work: equivalent-ratio tables, double number lines, unit pricing, percent as a rate per 100, and unit conversion.

6.RP.A.3

Ratio & rate problem solving

Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.

WEEKS 7-8

Unit 3: Dividing Fractions by Fractions

Interpret and compute fraction-by-fraction quotients with models and the how-many-fit question.

6.NS.A.1

Dividing fractions by fractions

Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem. For example, create a story context for $(2/3) \div (3/4)$ and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that $(2/3) \div (3/4) = 8/9$ because $3/4$ of $8/9$ is $2/3$. How much chocolate will each person get if 3 people share $1/2$ lb of chocolate equally? How many $3/4$ -cup servings are in $2/3$ of a cup of yogurt? How wide is a rectangular strip of land with length $3/4$ mi and area $1/2$ square mi?

WEEKS 9-11

Unit 4: Decimals, Factors & Multiples

Fluency with multi-digit division and decimal operations, plus GCF, LCM, and the distributive property on numbers.

6.NS.B.2

Multi-digit division

Fluently divide multi-digit numbers using the standard algorithm.

6.NS.B.3

Decimal operations

Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.

6.NS.B.4

GCF, LCM & the distributive property

Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use 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. For example, express $36 + 8$ as $4(9 + 2)$.

WEEKS 12-14

Unit 5: Rational Numbers & the Number Line

Extend the number system below zero: opposites, ordering, absolute value, and what 0 means in each context.

6.NS.C.5 Positive & negative numbers in context

Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.

6.NS.C.6 Rational numbers on the number line & plane

Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.

6.NS.C.7 Ordering & absolute value

Understand ordering and absolute value of rational numbers.

WEEKS 15-16

Unit 6: The Coordinate Plane

All four quadrants: plotting, reflections across axes, and distances along gridlines with absolute value.

6.NS.C.8 Graphing points in all four quadrants

Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.

WEEKS 17-20

Unit 7: Expressions

Exponents, variables, and the properties of operations — writing, reading, evaluating, and proving expressions equivalent.

6.EE.A.1 Whole-number exponents

Write and evaluate numerical expressions involving whole-number exponents.

6.EE.A.2 Expressions with variables

Write, read, and evaluate expressions in which letters stand for numbers.

6.EE.A.3 Equivalent expressions via properties

Apply the properties of operations to generate equivalent expressions. For example, apply the distributive property to the expression $3(2 + x)$ to produce the equivalent expression $6 + 3x$; apply the distributive property to the expression $24x + 18y$ to produce the equivalent expression $6(4x + 3y)$; apply properties of operations to $y + y + y$ to produce the equivalent expression $3y$.

6.EE.A.4 Identifying equivalent expressions

Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them). For example, the expressions $y + y + y$ and $3y$ are equivalent because they name the same number regardless of which number y stands for.

WEEKS 21-23

Unit 8: Equations & Inequalities

Solutions as truth-makers, variables as unknowns, solving $x + p = q$ and $px = q$, and inequalities with infinitely many solutions.

6.EE.B.5 Solutions as truth-makers

Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.

6.EE.B.6 Variables for unknowns

Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.

6.EE.B.7 Solving $x + p = q$ and $px = q$

Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p , q and x are all nonnegative rational numbers.

6.EE.B.8**Inequalities as conditions**

Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form $x > c$ or $x < c$ have infinitely many solutions; represent solutions of such inequalities on number line diagrams.

WEEKS 24–25**Unit 9: Two Variables Together**

Dependent and independent variables linked by equations, tables, and graphs — $d = 65t$ and its relatives.

6.EE.C.9**Dependent & independent variables**

Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation $d = 65t$ to represent the relationship between distance and time.

WEEKS 26–29**Unit 10: Area, Volume & Nets**

Areas by composing and decomposing, prisms with fractional edges, polygons on the coordinate plane, and surface area from nets.

6.G.A.1**Areas by composing & decomposing**

Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.

6.G.A.2**Volume with fractional edges**

Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas $V = lwh$ and $V = bh$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.

6.G.A.3**Polygons in the coordinate plane**

Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.

6.G.A.4**Nets & surface area**

Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.

WEEKS 30–32**Unit 11: Statistics**

Statistical questions anticipate variability: distributions, dot plots, histograms and box plots, and summaries chosen by shape.

6.SPA.1**Statistical questions**

Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. For example, “How old am I?” is not a statistical question, but “How old are the students in my school?” is a statistical question because one anticipates variability in students’ ages.

6.SPA.2**Distributions: center, spread, shape**

Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.

6.SPA.3**Center vs. variation**

Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.

6.SP.B.4**Dot plots, histograms & box plots**

Display numerical data in plots on a number line, including dot plots, histograms, and box plots.

6.SP.B.5**Summarizing distributions**

Summarize numerical data sets in relation to their context.