

Grade 7 Mathematics

Full-Year Pacing Guide

11 units · 32 instructional weeks · all 24 Common Core standards. Every standard is scheduled after the standards it depends on.

WEEKS 1-3

Unit 1: Adding & Subtracting Rational Numbers

Extend addition and subtraction to negative numbers on the number line: opposites make zero, and subtracting is adding the inverse.

7.NS.A.1 Adding & subtracting rationals

Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.

WEEKS 4-6

Unit 2: Multiplying & Dividing Rational Numbers

Extend multiplication and division to signed numbers, convert rationals to decimals, and put all four operations to work on real problems.

7.NS.A.2 Multiplying & dividing rationals

Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.

7.NS.A.3 Problem solving with rationals

Solve real-world and mathematical problems involving the four operations with rational numbers.

WEEKS 7-9

Unit 3: Equivalent Expressions

Add, subtract, factor, and expand linear expressions — and see how rewriting an expression can reveal what a problem is really saying.

7.EE.A.1 Equivalent linear expressions

Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.

7.EE.A.2 Rewriting sheds light

Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. For example, $a + 0.05a = 1.05a$ means that “increase by 5%” is the same as “multiply by 1.05.”

WEEKS 10-12

Unit 4: Equations & Inequalities

Turn word problems into $px + q = r$ equations and $px + q > r$ inequalities, solve them fluently, and interpret solution sets in context.

7.EE.B.3 Multi-step problems, any form

Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. For example: If a woman making \$25 an hour gets a 10% raise, she will make an additional $\frac{1}{10}$ of her salary an hour, or \$2.50, for a new salary of \$27.50. If you want to place a towel bar $9\frac{3}{4}$ inches long in the center of a door that is $27\frac{1}{2}$ inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation.

7.EE.B.4 Equations & inequalities from problems

Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.

WEEKS 13-15

Unit 5: Unit Rates & Proportional Relationships

Compute unit rates from ratios of fractions, then recognize and represent proportional relationships in tables, graphs, and equations.

7.R.P.A.1

Unit rates with fractions

Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. For example, if a person walks $\frac{1}{2}$ mile in each $\frac{1}{4}$ hour, compute the unit rate as the complex fraction $(\frac{1}{2})/(\frac{1}{4})$ miles per hour, equivalently 2 miles per hour.

7.R.P.A.2

Proportional relationships

Recognize and represent proportional relationships between quantities.

WEEKS 16-18

Unit 6: Percent & Proportional Applications

Apply proportional reasoning to the money problems of real life: tax, tips, markups, discounts, interest, and percent change.

7.R.P.A.3

Multistep ratio & percent problems

Use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.

WEEKS 19-21

Unit 7: Scale Drawings & Constructions

Use proportional reasoning on scale drawings, construct triangles from given conditions, and slice solids to discover their cross-sections.

7.G.A.1

Scale drawings

Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.

7.G.A.2

Constructing triangles

Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.

7.G.A.3

Cross-sections of solids

Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.

WEEKS 22-24

Unit 8: Angles & Circles

Write equations from angle relationships, and establish the circle formulas with an informal derivation connecting circumference to area.

7.G.B.4

Circles: area & circumference

Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.

7.G.B.5

Angle relationships

Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure.

WEEKS 25-26

Unit 9: Area, Surface Area & Volume

Solve real problems about composed two- and three-dimensional figures built from triangles, quadrilaterals, and right prisms.

7.G.B.6

Area, surface area & volume

Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.

WEEKS 27-29

Unit 10: Sampling & Statistical Inference

Draw inferences about populations from random samples, and compare two populations using centers measured against variability.

7.SP.A.1 **Sampling & representativeness**

Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences.

7.SP.A.2 **Inferences from random samples**

Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions. For example, estimate the mean word length in a book by randomly sampling words from the book; predict the winner of a school election based on randomly sampled survey data. Gauge how far off the estimate or prediction might be.

7.SP.B.3 **Comparing distributions visually**

Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability. For example, the mean height of players on the basketball team is 10 cm greater than the mean height of players on the soccer team, about twice the variability (mean absolute deviation) on either team; on a dot plot, the separation between the two distributions of heights is noticeable.

7.SP.B.4 **Comparing two populations**

Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations. For example, decide whether the words in a chapter of a seventh-grade science book are generally longer than the words in a chapter of a fourth-grade science book.

WEEKS 30-32

Unit 11: Probability

Quantify chance from 0 to 1, build uniform and observed-frequency models, and find compound probabilities with lists, tables, trees, and simulation.

7.SP.C.5 **Probability as a number 0 to 1**

Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around $1/2$ indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.

7.SP.C.6 **Long-run relative frequency**

Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability. For example, when rolling a number cube 600 times, predict that a 3 or 6 would be rolled roughly 200 times, but probably not exactly 200 times.

7.SP.C.7 **Probability models**

Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy.

7.SP.C.8 **Compound events**

Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.
