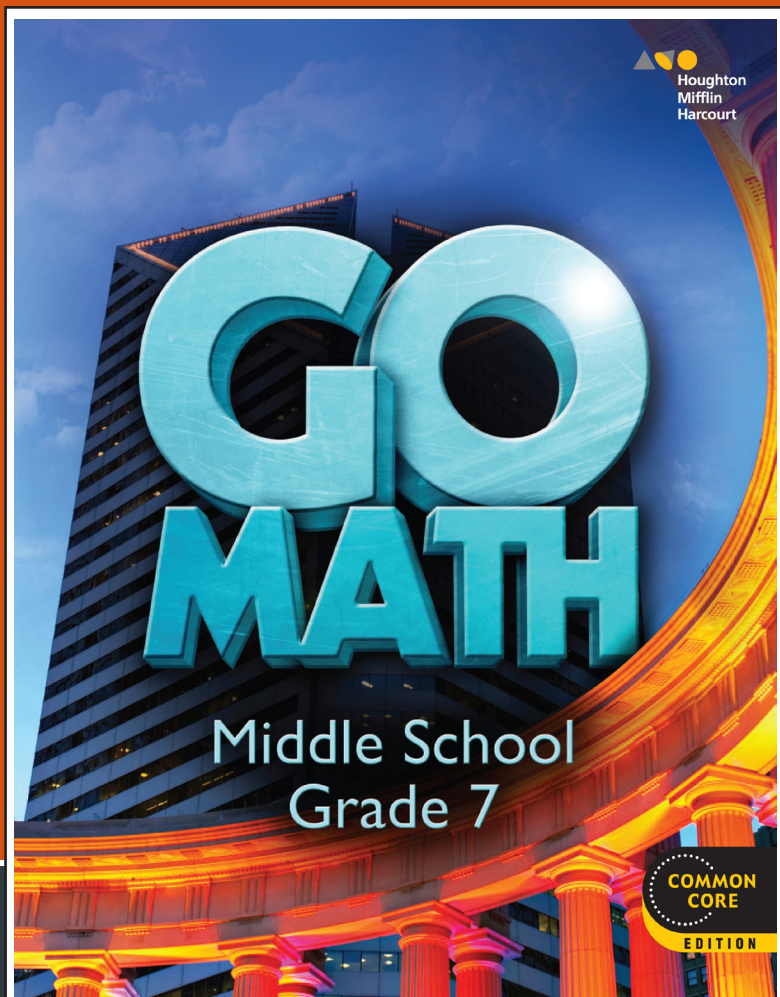Houghton Mifflin Harcourt

Correlation to the
Common Core State Standards
for Mathematics
Grade 7

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Grade 7

Standard	Descriptor	Citations
Standards for Mathematical Practice		
CC.MP.1	Make sense of problems and persevere in solving them.	*The mathematical practices standards are integrated throughout the book. See, for example, the citations below.* SE: 100, 155, 222, 282, 324, 389
CC.MP.2	Reason abstractly and quantitatively.	*The mathematical practices standards are integrated throughout the book. See, for example, the citations below.* SE: 94, 149, 218, 273, 347–348, 392
CC.MP.3	Construct viable arguments and critique the reasoning of others.	*The mathematical practices standards are integrated throughout the book. See, for example, the citations below.* SE: 18, 134, 210, 258, 340, 404
CC.MP.4	Model with mathematics.	*The mathematical practices standards are integrated throughout the book. See, for example, the citations below.* SE: 12, 122, 193, 270, 322, 386
CC.MP.5	Use appropriate tools strategically.	*The mathematical practices standards are integrated throughout the book. See, for example, the citations below.* SE: 100, 147, 191, 243–246, 323, 422
CC.MP.6	Attend to precision.	*The mathematical practices standards are integrated throughout the book. See, for example, the citations below.* SE: 62, 128, 190, 250, 346, 380

Standard	Descriptor	Citations
CC.MP.7	Look for and make use of structure.	*The mathematical practices standards are integrated throughout the book. See, for example, the citations below.* SE: 97, 146, 175, 283, 349, 410
CC.MP.8	Look for and express regularity in repeated reasoning.	*The mathematical practices standards are integrated throughout the book. See, for example, the citations below.* SE: 61, 152, 203–204, 265, 290, 407

Standards for Mathematical Content		
CC.7.RP	**Ratios and Proportional Relationships**	
Analyze proportional relationships and use them to solve real-world and mathematical problems		
CC.7.RP 1	Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units	SE: 117–120, 121–122, 135–136
CC.7.RP.2	Recognize and represent proportional relationships between quantities	SE: 123–126, 127–128, 129–132, 133–134, 135–136, 319, 321, 330
CC.7.RP.2a	Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin	SE: 123–124, 126, 127–128, 129–130, 132, 133–134, 135–136
CC.7.RP.2b	Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships	SE: 124–126, 127–128, 131–132, 133–134, 135–136
CC.7.RP.2c	Represent proportional relationships by equations	SE: 125–126, 127–128, 131–132, 133–134, 135–136, 319, 321, 330
CC.7.RP.2d	Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points $(0, 0)$ and $(1, r)$ where r is the unit rate	SE: 130–131, 133
CC.7.RP.3	Use proportional relationships to solve multistep ratio and percent problems	SE: 141–144, 145–146, 147–150, 151–152, 153–156, 157–158, 159–160

Standard	Descriptor	Citations
CC.7.NS	**The Number System**	
Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers		
CC.7.NS.1	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	SE: 7–10, 11–12, 13–16, 17–18, 19–22, 23–24, 25, 26, 29, 30, 31–32, 67–70, 71-72, 73–74, 75–79, 80–82, 101–102
CC.7.NS 1a	Describe situations in which opposite quantities combine to make 0	SE: 13, 15, 16, 17, 70, 72, 74
CC.7.NS.1b	Understand $p + q$ as the number located a distance $|q|$ from p, in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts	SE: 8, 11–12, 13–16, 17–18, 31–32, 67–70, 72, 73–74, 102
CC.7.NS.1c	Understand subtraction of rational numbers as adding the additive inverse, $p - q = p + (-q)$. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts	SE: 20–22, 23–24, 31–32, 77–79, 80–82, 101–102
CC.7.NS.1d	Apply properties of operations as strategies to add and subtract rational numbers	SE: 9, 12, 26, 29, 70–72, 73–74

Standard	Descriptor	Citations
CC.7.NS.2	Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers	SE: 36, 37–40, 41–42, 43–46, 47–48, 49, 52, 53–54, 55–56, 61-64, 65-66, 83–86, 87–88, 89-90, 91-92, 93–94, 101–102
CC.7.NS.2a	Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as (–1)(–1) = 1 and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts	SE: 101 36, 37–38, 42, 49, 52, 53–54, 55–56, 83–84, 86, 87–88,
CC.7.NS.2b	Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then $–(p/q) = (–p)/q = p/(–q)$. Interpret quotients of rational numbers by describing real world contexts	SE: 44, 46, 48, 61, 64, 66, 89–90, 92, 93–94, 101
CC.7.NS.2c	Apply properties of operations as strategies to multiply and divide rational numbers	SE: 49, 52, 53, 55–56, 85–86, 87–88, 91–92, 93–94, 101–102
CC.7.NS.2d	Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats	SE: 61–64, 65–66, 101–102
CC.7.NS.3	Solve real-world and mathematical problems involving the four operations with rational numbers	SE: 25–28, 29–30, 31–32, 43–46, 47–48, 50–52, 53–54, 55–56, 71–72, 73–74, 95–98, 99–100, 101–102

Standard	Descriptor	Citations
CC.7.EE	**Expressions and Equations**	
Use properties of operations to generate equivalent expressions		
CC.7.EE.1	Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients	SE: 173–176, 177–178, 197–198
CC.7.EE.2	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	SE: 147–150, 151–152, 159–160, 173–176, 177–178, 197–198
Solve real-life and mathematical problems using numerical and algebraic expressions and equations		
CC.7.EE.3	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	SE: 26–28, 29–30, 31–32, 50–52, 53–54, 55–56, 95–98, 99–100, 101–102, 153–156, 157–158
CC.7.EE.4	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	SE: 179–182, 183–184, 185–188, 189–190, 191-194, 195–196, 197–198, 203–208, 209–210, 211–214, 215–216, 217–220, 221–222, 223–224
CC.7.EE.4a	Solve word problems leading to equations of the form px + q = r and p(x + q) = r, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach	SE: 191–194, 195–196, 197–198

Standard	Descriptor	Citations
CC.7.EE.4b	Solve word problems leading to inequalities of the form px + q > r or px + q < r, where p, q, and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem.	SE: 203–208, 209–210, 217–220, 221–222, 223–224
CC.7.G	**Geometry**	
Draw, construct, and describe geometrical figures and describe the relationships between them		
CC.7.G.1	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	SE: 237–240, 241–242, 259–260
CC.7.G.2	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	SE: 243–246, 259–260
CC.7.G.3	Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids	SE: 247–250, 259–260

Standard	Descriptor	Citations
Solve real-life and mathematical problems involving angle measure, area, surface area, and volume		
CC.7.G.4	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	SE: 265–268, 269–270, 271–274, 275–276, 295–296
CC.7.G.5	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	SE: 251–256, 257–258, 259–260
CC.7.G.6	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.	SE: 277–280, 281–282, 283–286, 287–288, 289–292, 293–294, 295–296
CC.7.SP	**Statistics and Probability**	
Use random sampling to draw inferences about a population		
CC.7.SP.1	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	SE: 311–314, 315–316, 317–320, 329–330, 321–322, 329–330
CC.7.SP.2	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	SE: 317–320, 321–322, 323–326, 327–328, 329–330

Standard	Descriptor	Citations
Draw informal comparative inferences about two populations		
CC.7.SP.3	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	SE: 336, 338, 339–340, 342, 344, 345–346, 347–348, 350, 351–352, 353–354
CC.7.SP.4	Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations	SE: 335, 337–338, 339–340, 341, 343–344, 345–346, 349–350, 351–352, 353–354
Investigate chance processes and develop, use, and evaluate probability models		
CC.7.SP.5	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	SE: 367–369, 371–372, 373–374
CC.7.SP.6	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	SE: 375, 377–378, 379–380, 387–390, 391–392, 401–402, 411–414, 415–416

Standard	Descriptor	Citations
CC.7.SP.7	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	SE: 369–372, 373–374, 375–377, 378, 379–380, 393–394, 399–400, 401–402, 403–404, 413–414, 415–416, 423–424
CC.7.SP.7a	Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events	SE: 369–372, 373–374, 393–394, 399–400, 403–404, 413–414, 415–416, 423–424
CC.7.SP.7b	Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process	SE: 375–377, 378, 379–380, 393–394
CC.7.SP.8	Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation	SE: 381–384, 385–386, 393–394, 405–408, 409–410, 417–420, 421–422, 423–424
CC.7.SP.8a	Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs	SE: 381–384, 385–386, 393–394, 405, 408, 409–410, 423–424
CC.7.SP.8b	Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. For an event described in everyday language (e.g., "rolling double sixes"), identify the outcomes in the sample space which compose the event	SE: 381–384, 385–386, 393–394, 406–408, 409–410
CC.7.SP.8c	Design and use a simulation to generate frequencies for compound events	SE: 383–384, 386, 417–420, 421–422, 423–424