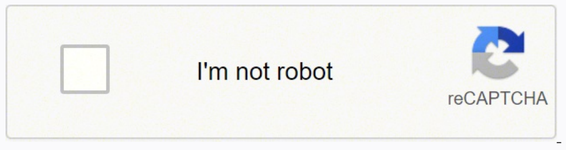

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Mcgraw hill 7th grade math workbook pdf printable worksheets pdf template

You are here: Home → Worksheets → Grade 7 This is a comprehensive collection of free printable math worksheets for grade 7 and for pre-algebra, organized by topics such as expressions, integers, one-step equations, rational numbers, multi-step equations, inequalities, speed, time & distance, graphing, slope, ratios, proportions, percent, geometry, and pi. They are randomly generated, printable from your browser, and include the answer key. The worksheets support any seventh grade math program, but go especially well with IXL's 7th grade math curriculum. The worksheets are randomly generated each time you click on the links below. You can also get a new, different one just by refreshing the page in your browser (press F5). You can print them directly from your browser window, but first check how it looks like in the "Print Preview". If the worksheet does not fit the page, adjust the margins, header, and footer in the Page Setup settings of your browser. Another option is to adjust the "scale" to 95% or 90% in the Print Preview. Some browsers and printers have "Print to fit" option, which will automatically scale the worksheet to fit the printable area. All worksheets come with an answer key placed on the 2nd page of the file. In seventh grade, students will study pre-algebra topics, such as integer arithmetic, simplifying expressions, the distributive property, and solving equations & inequalities. They continue studying ratio and percent and learn about proportions. Please note that these free worksheets do not cover all 7th grade topics; most notably, they do not include problem solving. Introduction to algebra The worksheets in this introductory section correspond with Math Mammoth Grade 7, Chapter 1, and don't involve negative numbers. Order of operations Expressions Equations One-step equations with whole numbers (no negative numbers involved) Integers Number line graphs and simple inequalities involving integers Addition and subtraction Multiplication & Division A good book on problem solving with very varied word problems and strategies on how to solve problems. Includes chapters on: Sequences, Problem-solving, Money, Percents, Algebraic Thinking, Negative Numbers, Logic, Ratios, Probability, Measurements, Fractions, Division. Each chapter’s questions are broken down into four levels: easy, somewhat challenging, challenging, and very challenging. Many operations etc. One-step equations Rational numbers Convert decimals to fractions and vice versa Decimal Addition and Subtraction Decimal Multiplication and division This is a workbook series by Key Curriculum Press that begins with basic concepts and operations on decimals. Then the books cover real-world uses of decimals in pricing, sports, metrics, calculators, and science. The set includes books 1-4. => Learn more Fraction addition and subtraction Fraction multiplication and division These workbooks by Key Curriculum Press feature a number of exercises to help your child learn about fractions. Book 1 teaches fraction concepts, Book 2 teaches multiplying and dividing, Book 3 teaches adding and subtracting, and Book 4 teaches mixed numbers. Each book has a practice test at the end. => Learn more Scientific notation Complex fractions Equations and inequalities Key to Algebra offers a unique, proven way to introduce algebra to your students. New concepts are explained in simple language, and examples are easy to follow. Word problems relate algebra to familiar situations, helping students to understand abstract concepts. Students develop understanding by solving equations and inequalities intuitively before formal solutions are introduced. Students begin their study of algebra in Books 1-4 using only integers. Books 5-7 introduce rational numbers and expressions. Books 8-10 extend coverage to the real number system. => Learn more Algebra is often taught abstractly with little or no emphasis on what algebra is or how it can be used to solve real problems. Just as English can be translated into other languages, word problems can be "translated" into the math language of algebra and easily solved. Real World Algebra explains this process in an easy to understand format using cartoons and drawings. This makes self-learning easy for both the student and any teacher who never did quite understand algebra. Includes chapters on algebra and money, algebra and geometry, algebra and physics, algebra and levers and many more. Designed for children in grades 4-9 with higher math ability and interest but could be used by older students and adults as well. Contains 22 chapters with instruction and problems at three levels of difficulty. => Learn more Write a ratio and simplify it Ratio word problems Key to Percents first emphasizes mental computation and estimation skills--since most work with percents is done without pencil and paper. Then students are taught to solve percent problems using equal fractions and decimal multiplication. Finally, percents are used to solve word problems in a variety of applications. Key to Percents assumes only a knowledge of fraction and decimal computation. Book 1 covers Percent Concepts. Book 2 covers Percents and Fractions. Book 3 covers Percents and Decimals. => Learn more Area - these worksheets are done in the coordinate grid. Volume & surface area Since these worksheets below contain images of variable sizes, please first check how the worksheet looks like in print preview before printing. If it doesn't fit, you can either print it scaled (such as at 90%), or make another one by refreshing the worksheet page (F5) until you get one that fits. Here is a non-intimidating way to prepare students for formal geometry. Key to Geometry workbooks introduce students to a wide range of geometric discoveries as they do step-by-step constructions. Using only a pencil, compass, and straightedge, students begin by drawing lines, bisecting angles, and reproducing segments. Later they do sophisticated constructions involving over a dozen steps-and are prompted to form their own generalizations. When they finish, students will have been introduced to 134 geometric terms and will be ready to tackle formal proofs. => Learn more If you wish to have more control on the options such as number of problems or font size or spacing of problems, or range of numbers, just click on these links to use the worksheet generators yourself: Materials do not assess topics before the grade level in which the topic should be introduced. The instructional materials for McGraw-Hill Illustrative Mathematics 6-8 Math, Grade 7 meet the expectation for not assessing topics before the grade level in which the topic should be introduced. The materials do not include any assessment questions that were above grade level. The instructional material assesses the grade-level content and, if applicable, content from earlier grades. Content from future grades may be introduced but students should not be held accountable on assessments for future expectations. The instructional materials reviewed for McGraw-Hill Illustrative Mathematics 6-8 Math Grade 7 meet expectations for assessing grade-level content. The assessments are aligned to grade-level standards, and examples include: In Unit 3, End-of-Unit Assessment, Problem 4, students decide if circumference and radius (7.G.4) are proportional based on the given graph and ordered pairs (7.RP.2): “A class measured the radius and circumference of various circular objects. The results are plotted on the graph. 1) Does there appear to be a proportional relationship between the radius and circumference of a circle? Explain or show your reasoning. 2) Why might the measured radii and circumferences not be exactly proportional?” In Unit 5, End-of-Unit Assessment, Problem 6 assesses student understanding of adding and subtracting rational numbers (7.NS.1,3) by presenting a scenario that describes a bank account in which students must calculate the balances and transaction amounts. Problems are presented with a relevant context for standards that require a real-world context. In Unit 8, Mid-Unit Assessment, Problem 7 assesses 7.SP.8b by presenting a game using a special deck of cards with 40 cards numbered from 1 to 40. Students find the probability for three different situations, drawing a card divisible by 2, 5, and 10, and explain their reasoning. Assessments are located on each Unit Page for each of the first eight units. Unit 9 is an optional, culminating unit and has no assessments. Assessments are limited to seven problems, but these are often broken into multiple prompts, assessing numerous standards. Units 6 and 8 also contain Mid-Unit Assessments for a total of 10 summative assessments. Indicator {{'1a' | indicatorName}} Students and teachers using the materials as designed devote the large majority of class time in each grade K-8 to the major work of the grade. The instructional materials for McGraw-Hill Illustrative Mathematics 6-8 Math, Grade 7 meet the expectations for having students and teachers using the materials as designed, devoting the large majority of class time to the major work of the grade. Overall, the materials devote at least 65 percent of class time to major work. Instructional material spends the majority of class time on the major cluster of each grade. The instructional materials reviewed for McGraw-Hill Illustrative Mathematics 6-8 Math Grade 7 meet expectations for spending a majority of instructional time on major work of the grade. The approximate number of units devoted to major work of the grade, including assessments and supporting work, is 5 out of 8, which is approximately 63 percent. The number of non-optional lessons devoted to major work of the grade, including assessments and supporting work, is 82 out of 124 total non-optional lessons, or approximately 66 percent. The number of days devoted to major work, including assessments and supporting work, is 93 out of 163 days, which is approximately 57 percent. A lesson-level analysis is most representative of the instructional materials because this calculation includes all lessons with connections to major work with no additional days factored in. As a result, approximately 66 percent of the instructional materials focus on major work of the grade. An analysis of days devoted to major work includes 17 days for review and assessment, but the materials do not dedicate items to be used for the review. Indicator {{'1b' | indicatorName}} Coherence: Each grade's instructional materials are coherent and consistent with the Standards. The instructional materials for McGraw-Hill Illustrative Mathematics 6-8 Math, Grade 7 meet the expectations for being coherent and consistent with the standards. Supporting work is connected to the major work of the grade, and the amount of content for one grade level is viable for one school year and fosters coherence between the grades. Content from prior or future grades is clearly identified, and the materials explicitly relate grade-level concepts to prior knowledge from earlier grades. The objectives for the materials are shaped by the CCSSM cluster headings, and they also incorporate natural connections that will prepare a student for upcoming grades. Supporting content enhances focus and coherence simultaneously by engaging students in the major work of the grade. The instructional materials reviewed for McGraw-Hill Illustrative Mathematics 6-8 Math Grade 7 meet expectations that supporting work enhances focus and coherence simultaneously by engaging students in the major work of the grade. Supporting standards/clusters are connected to the major standards/clusters of the grade. Multiple lessons in the Grade 7 curriculum incorporate supporting standards in ways that support and/or maintain the focus on major work standards. Examples of the connections between supporting work and major work include the following: In Unit 2, Lesson 8, Activity 3, students analyze relationships between side length and total edge length, volume, and surface area (7.G.6) and determine if they are proportional or nonproportional (7.RP.2). Students also practice calculating volume and surface area of three-dimensional figures (7.G.6) while exploring, discussing, and proving whether relationships are proportional. In Unit 3, Lesson 3, Activities 1 and 2, students measure and plot the diameter and circumference of circles (7.G.4), determine if they are in a proportional relationship, and find the constant of proportionality (7.RP.2). In Activity 2, students are provided one measurement (diameter or circumference) and use the derived constant of proportionality to determine the other measure. In Unit 3, Lesson 5 (optional), 7.G.4 is connected to 7.RP.2,3. The Activities include contexts in which students use diameter and circumference relationships to calculate how far wheels (circles) can roll to reach certain distances and explore rotations per second and time traveled. In Unit 3, Lesson 7, students explore the proportionality between diameter and area to determine that they are not proportional. In Unit 7, Lesson 16, the Activities provide complex surface area and volume contexts in which students use proportional relationships in real-world problems (7.G.6, 7.RP.A). In Activity 2, students are given some dimensions and the area of a base of a hexagonal prism. Students find the total amount of bags of sand that were poured into the prism to reach a certain height. Students use concepts related to surface area, volume, and proportional reasoning to answer subsequent questions, including determining how many more bags would be necessary to fill the prism (sandbox) an additional 3 inches. In Unit 8, Lessons 4, 7, 16 and 20, statistical work with simulations and populations is used in coordination with proportional reasoning as students explore experimental probability and statistical sampling (7.SP.C, 7.RP.A). In Unit 7, Lesson 5, Activities involve students using equations to represent angle relationships and solve for unknown angles. Angle relationships involve setting up simple and multi-step equations (7.EE.4, 7.G.5). The amount of content designated for one grade level is viable for one school year in order to foster coherence between grades. The instructional materials reviewed for McGraw-Hill Illustrative Mathematics 6-8 Math Grade 7 meet expectations that the amount of content designated for one grade level is viable for one year. The suggested amount of time and expectations of the materials for teachers and students are viable for one school year as written and would not require significant modifications. As designed, the instructional materials can be completed in a school year. The provided Curriculum Pacing Guide found in the Course 1-3 Implementation Guide includes materials for 163 instructional days. There are 124 non-optional lessons, 18 assessment days (10 summative), and 21 optional lessons. 121 of the non-optional lessons are designed to address grade-level standards. 3 non-optional lessons provide problem contexts and activities that prepare students for the unit. 8 of the optional lessons are present throughout the first eight units, and Unit 9 is an optional unit which includes 13 lessons. Units 1-8 are comprised of 11 to 22 lessons, and each lesson is designed for 45-50 minutes. Within each unit, lessons contain a Warm Up, two or three Activities, a Lesson Synthesis, and a Cool Down. Guidance regarding the number of minutes needed to complete each component of the lesson is provided in the Teacher Edition. Materials are consistent with the progressions in the Standards i. Materials develop according to the grade-by-grade progressions in the Standards. If there is content from prior or future grades, that content is clearly identified and related to grade-level work ii. Materials give all students extensive work with grade-level problems iii. Materials relate grade level concepts explicitly to prior knowledge from earlier grades. The instructional materials reviewed for McGraw-Hill Illustrative Mathematics 6-8 Math Grade 7 meet expectations for being consistent with the progressions in the standards. The instructional materials clearly identify content from prior and future grade levels and use it to support the progressions of the grade-level standards. The instructional materials also relate grade-level concepts explicitly to prior knowledge from earlier grades. The materials are intentionally designed to address the standards the way they are laid out in the progressions, and the Unit Overview clearly explains how the standards and progressions are connected for educators. Units begin with lessons connected to the standards from prior grades that are relevant to the current topic. Standards from the grade level and prior grades and standards that will be addressed later in the year are identified in the sections as “addressing,” “building on,” and “building towards,” respectively. For example: In the Grade 7 Curriculum Pacing Guide, Unit 1 Scale Drawings is connected to geometry and geometric measurement found in earlier grades. The tasks in the unit are built upon work “composing, decomposing, and identifying shapes” in Grades 1 and 2, “distinguishing area and perimeter” from Grade 3, “[applying] area and perimeter formulas” in Grade 4, “[extending] the formula for the area of a rectangle to include rectangles with fractional side lengths” in Grade 5, and finally, generating formulas for the area of parallelograms and triangles in Grade 6. The unit addresses Grade 7 work with scale drawings as students “reason about the scaled copies of figures” leading to work with proportions in Unit 4 and extends this knowledge in Grade 8 when they will work with transformations. In Unit 5, Lesson 5 identifies 1.OA.4 as the standard that the lesson is “building on,” the standard used in the lesson is “addressing” is 7.NS.1c, and the standard the lesson is “building toward” is 7.NS.1. The lesson builds on Grade 1 understanding of subtraction and extends it to adding and subtracting rational numbers in the first lessons in the unit. By Lesson 15, rational numbers are embedded in expressions and equations. The following explanation is provided for teachers: “The purpose of this lesson is to get students thinking about how to solve equations involving rational numbers. In Grade 6, students solved equations of the form px=q and x+p=q and saw that additive and multiplicative inverses (opposites and reciprocals) were useful for solving them. However, that work in Grade 6 did not include equations with negative values of p or q or with negative solutions. This lesson builds on the ideas of the last lesson and brings together the work on equations in Grade 6 with the work on operations on rational numbers from earlier in Grade 7.” The Warm Ups in lessons frequently work with prior-grade standards in ways that support learning of grade-level problems and make connections to progressions from previous grades. For example: The Unit 2, Lesson 7 Warm Up includes equivalent ratio context (6.RP.3) that builds to an expectation of students using proportional relationship language in context (7.RP.2). These precede two lessons where students explore the difference between proportional and nonproportional relationships. The Unit 5, Lesson 9 Warm Up uses an image of a woman in stride and asks students to estimate where the woman will be in five seconds and where she was five seconds before. This activity builds off constant speed contexts in Grade 6 (6.RP.3b) and primes students for considering negative time and velocity (7.NS.2 and 7.RP.2). The instructional materials attend to the full intent of the grade-level standards by giving all students extensive work with grade-level problems. In the Implementation Guide under Correlation to the Common Core State Standards for Mathematics, Grade 7, there is a chart which accurately reflects the mathematics in the materials. All grade-level standards are represented across the 9 units. Tasks are aligned to grade-level work and are connected to prior-grade knowledge. For example: Unit 2 introduces proportional relationships and is strategically divided into sections that explore conceptual understanding through comparing proportional and non-proportional relationships, tabular and graphic representations, as well as equations in the form of y = kx. The Lesson 1 through 3 Warm Ups explore ratios and patterns in tables and are connected to 6.RP.A. Lessons 4 through 6 focus on representing proportional relationships with equations with different contexts. In Unit 7 Angles, Triangles, and Prisms, the first five lessons focus on angle relationships. The first two lessons focus on making connections to the additive nature of angle measures found in 4.MD.6 and 4.MD.7. Lesson 1 in this unit states, “Students were introduced to angles in Grade 4, when they drew angles, measured angles, identified angles as acute, right, or obtuse, and worked with adding and subtracting angles. Earlier in Grade 7, students also studied angles briefly in their work with scale drawings. Now they begin a more detailed study of angles. In this lesson, students gain hands-on experience composing, decomposing, and measuring angles. They refresh their memory about the relationship between right angles, straight angles (180 degrees), and ‘all the way around’ angles (360 degrees), and they fit pattern blocks around a point to find out the angles at their vertices.” The lessons then explore the properties of angles including solving for unknown angles. According to the CCSS Progressions for Grade 7, students build on earlier experiences with angle measurement to solve problems that involve supplementary angles, complementary angles, vertical angles, and adjacent angles. A typical lesson has a Warm Up, one or more Activities, Synthesis, and a Cool Down. Additionally, every lesson provides practice problems that can be used as independent or group work. Some lessons also provide an “Are you ready for more?” question. These problems are an opportunity for students to explore grade-level mathematics in more depth and often make connections between the topic in the lesson and other concepts at grade level. They are intended to be used on an opt-in basis by students if they finish the main class activity early or want to do more mathematics on their own. Materials foster coherence through connections at a single grade, where appropriate and required by the Standards i. Materials include learning objectives that are visibly shaped by CCSSM cluster headings. ii. Materials include problems and activities that serve to connect two or more clusters in a domain, or two or more domains in a grade, in cases where these connections are natural and important. The instructional materials reviewed for McGraw-Hill Illustrative Mathematics 6-8 Math Grade 7 meet expectations for fostering coherence through connections at a single grade, where appropriate and required by the standards. Materials include learning objectives that are visibly shaped by CCSSM cluster headings, including: 7.RP.A Analyze proportional relationships and use them to solve real-world and mathematical problems. The Unit 2 Unit Narrative includes unit goals to understand terms and concepts related to proportionality and to recognize relationships that are proportionally aligned to 7.RP.A. Specific types of real-world situations that are used in the unit (constant speed, unit pricing, and measurement conversion) are also described. Lesson 1 begins with tasks from Grade 6 that involve analyzing differences between situations that require equivalent ratios and those that do not; in Lessons 2 and 3, students explore proportional relationships and develop formal terminology; in Lessons 7 through 9 students analyze aspects of proportional relationships as they compare to non-examples of proportional relationships; and Lessons 10 through 13 continue the work of representing and analyzing proportional relationships by comparing graphs and equations of proportional relationships. In Unit 2, Lesson 9, the Learning Targets are visibly shaped by the cluster heading and state, “I can solve all kinds of problems involving proportional relationships,” and “I can ask questions about a situation to determine whether two quantities are in a proportional relationship.” 7.EE.A Use properties of operations to generate equivalent expressions. Learning goals for Unit 6, Lessons 18 through 21 are developed from the cluster heading 7.EE.A, including: “Use a graphic organizer for work with the distributive property.” “Understand how to rewrite subtraction as adding the opposite in order to use the commutative property.” “Apply the distributive property to expand and factor linear expressions with rational coefficients.” “Apply properties of operations to generate an equivalent expression with fewer terms.” “Identify and correct errors made when applying properties of operations.” and “Generate a variety of expressions by positioning parentheses in different places in a given expression; apply properties to write the expressions with fewer terms.” 7.EE.B Solve real-life and mathematical problems using numerical and algebraic expressions and equations. In Unit 6, Lesson 11, the learning target is shaped by the cluster heading, stating, “I can solve story problems by drawing and reasoning about a tape diagram or by writing and solving an equation.” The materials consistently include problems and activities that connect two or more clusters in a domain or two or more domains in a grade, in cases where these connections are natural and important. Multiple examples of tasks connecting standards within and across clusters and domains are present. Unit 1, Lesson 6, Activities 1, 2, and Lesson Cool Down connect 7.G.A and 7.G.B when students use scale drawings to compute actual lengths and area to solve real-world problems involving geometric figures. In Unit 5, Lesson 12, Activities 1 and 2, students apply proportional reasoning when using equations including a negative constant of proportionality (7.EE.B and 7.RP.A) and solve real-world problems using all four operations which include rational values (7.NS.A) as they solve problems in the context of submarines. Lessons 14 through 17 include varying scenarios that involve interpreting rational values in the context of the given problem and operations with rational values. In Unit 6, Lesson 18, Activities 1 and 2 connect 7.NS.A and 7.EE.A. In Activity 1, students recall that subtracting a rational number or expression is the same as adding its additive inverse, and Activity 2 builds understanding of creating equivalent expressions by applying properties of operations. Rigor and Balance: Each grade's instructional materials reflect the balances in the Standards and help students meet the Standards' rigorous expectations, by helping students develop conceptual understanding, procedural skill and fluency, and application. The instructional materials for McGraw-Hill Illustrative Mathematics 6-8 Math, Grade 7 meet the expectations for rigor and balance. The materials meet the expectations for rigor as they help students develop conceptual understanding, procedural skill and fluency, and application with a balance of all three aspects of rigor. Attention to conceptual understanding: Materials develop conceptual understanding of key mathematical concepts, especially where called for in specific content standards or cluster headings. The instructional materials reviewed for McGraw-Hill Illustrative Mathematics Grade 7 meet expectations for developing conceptual understanding of key mathematical concepts, especially where called for in specific standards or cluster headings. The materials include problems and questions that develop conceptual understanding throughout the grade level, and multiple opportunities exist for students to access concepts from different perspectives and independently demonstrate conceptual understanding throughout the grade. In Unit 6, students develop conceptual understanding of equivalence through the manipulation of expressions, using the properties of operations in order to identify and generate equivalent expressions (7.EE.A). In Lessons 2 through 5, students develop an understanding of equations as they manipulate equal parts, different parts, and total parts. Students also label terms in a model to represent a given context, write their own contexts, and develop the corresponding equation. In Lesson 7, students use “hanger diagrams” to model and maintain equivalency in equations. In Lessons 20 through 22, students use multiple strategies including expanded form with variables, partitioned rectangle areas, and properties of operations to simplify expressions and identify equivalent expressions (7.EE.1). In Lesson 20 Activity 2, students “Replace each ? with an expression that will make the left side of the equation equivalent to the right side: “Set A: 6x + ? = 10x, 6x + ? = 2x, 6x + ? = -10x, 6x + ? = 0, 6x + ? = 10.” Students respond to questions: “Why didn't you combine x terms and numbers?” “How did you decide on the components of the missing term?” “Did you use the commutative property?” “Did you use the distributive property?” “What are some ways we can tell that 7x+2 is not equivalent to 9x?” “Someone is doubtful that 3b−8b is equivalent to -5b, but they do understand the distributive property. How could you convince them that these expressions are equivalent?” “What are some ways we could rearrange the terms in the expression -2x + 6y − 6x + 15y and create an equivalent expression?” In this activity, students develop and articulate their understanding of equivalent expressions. Unit 5 addresses applying and extending previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers, 7.NS.A: In Lesson 2, students add and subtract rational numbers on the number line (7.NS.1). In the first Activity, students draw number lines, write equations, and verbally explain number line movement. A thermometer applet, which students can manipulate to represent the given situation, is included in the second Activity. Arrows are applied within the applet, and the number line serves as a horizontal representation on which students add integers. In Lesson 3, conceptual understanding is extended as students apply the information from given situations to visually model elevation changes (7.NS.1). The Lesson 4 Teacher Guide, Required Preparation explains that students will use money as a way “to practice performing operations on signed values, but the emphasis is really on noticing that money can be represented with positive and negative values.” The narrative further describes conceptual understanding with: “Any situation in which we use a negative number to represent a debt (for example), we could equally well just use a positive number and distinguish it by calling it a debt. The reason we use signed numbers in this context is that it allows us to represent a whole class of problems with the same expression. For example, if a person has $50 in the bank and writes a $20 check, we can represent the balance as 50−20. If they had written an $80 check, we can still write the balance as 50−80, as long as we have adopted the convention that negative numbers represent what the person owes the bank (and assuming the bank allows overdrafts).” Lessons 8 through 12 address multiplication and division (7.NS.2). In Lesson 8, students explore multiplication of a negative and a positive value in terms of speed in a certain direction over a number of seconds. Students use a number line and a table to establish a pattern in 8.2. For example, the second row in the table states: “starting at zero” “left” “4 units per second” “6 seconds.” Students use a number line to come up with the equation. In Lesson 9, students determine the pattern for multiplying two negative values (7.NS.2). Attention to Procedural Skill and Fluency: Materials give attention throughout the year to individual standards that set an expectation of procedural skill and fluency. The instructional materials reviewed for McGraw-Hill Illustrative Mathematics Grade 7 meet expectations for attending to those standards that set an expectation of procedural skill and fluency. Materials attend to the Grade 7 expected procedural skills, particularly those related to rational numbers and solving equations. Procedural skills and fluencies develop with conceptual understanding and are built upon work students have accomplished with operations and equations from prior grades. Students practice developed procedures throughout practice problem sets that follow the units, and students use emerging fluencies in the context of solving problems. According to the Implementation Guide, “As the unit progresses, students are systematically introduced to representations, contexts, concepts, language, and notation. As their learning progresses, they make connections between different representations and strategies, consolidating their conceptual understanding, and see and understand more efficient methods of solving problems, supporting the shift towards procedural fluency. The practice problems give students ongoing practice, which also supports developing procedural proficiency.” Number Talks included in many Warm Ups often revisit fluencies developed in earlier grades and specifically relate to the Activities found in the lessons. Additionally, students demonstrate procedural skills throughout the year in a variety of practice problems. Examples of practice problems include: In Unit 6, Lesson 10, Practice Problem 5, students solve equations such as “7(x + 2) = 91” (7.EE.4a). In Unit 5, students perform computations with rational numbers in Lessons 2 through 12 and rational numbers within expressions and equations in Lessons 13 through 17 (7.NS.A): Lesson 5 introduces subtracting integers with number lines, the coordinate plane, tables, and the relationship between addition and subtraction of integers, and students solve expressions with rational numbers. In Lesson 7, students apply their knowledge of operations with integers to real-world problems. Multiplying integers is introduced in Lesson 8 with additional opportunities to build procedural skill in Lessons 9 through 11. In Lesson 11, Items 1-4 provide practice with multiplication and division with rational numbers. The Lesson 13 Warm Up includes true/false reasoning with signed numbers. The first Activity, a Card Sort, states: “In this activity students continue to build fluency operating with signed numbers as they match different expressions that have the same value.” The cards include both integers and fractions. In Unit 6, procedural fluency with grade-level operations are revisited in the Lesson 18 and 19 Warm Ups in preparation for working with equations including rational numbers. In Lessons 18 through 22, students work with rational numbers and negative terms (7.EE.1) in ways that continue to build fluency when computing with signed numbers. In Unit 6, students use properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients (7.EE.1). In Lesson 19, the first activity, students factor and expand expressions with signed numbers in the given table. The following Cool-Down Activity includes two more opportunities to expand and factor equations with rational values. In Lesson 20, the first Activity, students use properties of operations to justify equivalence of expressions. In the second Activity , students fill in missing terms to balance equations and are provided questions such as, “How did you decide on the missing components of the term?” to develop the procedures of combining like terms. Attention to Applications: Materials are designed so that teachers and students spend sufficient time working with engaging applications of the mathematics, without losing focus on the major work of each grade The instructional materials reviewed for McGraw-Hill Illustrative Mathematics Grade 7 meet expectations for being designed so that teachers and students spend sufficient time working with engaging applications of the mathematics. Engaging applications include single and multi-step problems, both routine and non-routine, presented in a context in which the mathematics is applied. Applications occur throughout the materials and are used throughout the curriculum to build conceptual understanding. The Course 1-3 Implementation Guide states: “Students have opportunities to make connections to real-world contexts throughout the materials. Frequently, carefully-chosen anchor contexts are used to motivate new mathematical concepts, and students have many opportunities to make connections between contexts and the concepts they are learning. Additionally, most units include a real-world application lesson at the end. In some cases, students spend more time developing mathematical concepts before tackling more complex application problems, and the focus is on mathematical contexts.” In several Units, students work with speed and water filling/draining contexts in increasingly complex ways and also use proportional reasoning skills (7.RP.A) in more complex and non-routine ways alongside work with surface area/volume and later with probability. Examples include: In Unit 2, Lesson 5, students are given a rate of water filling an object, find multiple equations that model the situation, and identify and interpret the rates in context. The Lesson Narrative states: “Students are expected to use methods developed earlier: organize data in a table, write and solve an equation to determine the constant of proportionality, and generalize from repeated calculations to arrive at an equation.” In Unit 2, Lesson 6, students determine the constant of proportionality in the context of concert ticket sales, recipes, and recycling. In Lesson 7, students make adjustments to quantities used in recipes, compare costs for various group sizes to enter a state park, and determine if several runners are moving at a constant pace. In the last context, students reason about making determinations about proportionality in a discrete context (7.RP.2a) and their inability to establish proportionality given a continuous relationship when considering the limitations of intervals in the table. In Unit 4, Lesson 10, students apply percentage to taxes and tips. The first Activity provides students with two tables giving the sales tax charges on the same items in two different cities. Students complete the table, find the tax rate in each city, and compare them. The second Activity adds another city to the problem, and students realize through their calculations that the tax amount must be rounded. In Unit 4, Lesson 16, students sort actual newspaper clippings, decide if they are percents of increase or decrease, choose a clipping that is interesting to them, and “create a visual display that includes: a title that describes the situation, the news clipping, your diagram of the situation, the two questions you asked about the situation, the answers to each of your questions, [and] an explanation of how you calculated each answer.” In Unit 5, Lesson 8 Warm Up, three problem scenarios are given in which students apply understanding of proportional relationships in a constant speed context. Students first find the total distance a plane travels; then the speed of a train; and finally the time a car traveled. This work prepares students for thinking about contexts involving negative numbers in context of velocity, time, and position. In Unit 7, Lesson 16, students apply understanding of proportional relationships to find surface area and volume and the total cost of constructing a ramp in a non-routine problem context. The second Activity presents another non-routine problem involving surface area and volume using proportional relationships: “The daycare has two sandboxes that are both prisms with regular hexagons as their bases. The smaller sandbox has a base area of 1,146 square inches and is filled 10 inches deep with sand.” The following prompts accompany the given real-world scenario: “It took 14 bags of sand to fill the small sandbox to this depth. What volume of sand comes in one bag? (Round to the nearest whole cubic inch.); The daycare manager wants to add three more inches to the depth of the sand in the small sandbox. How many bags of sand will they need to buy?; The daycare manager also wants to add three more inches to the depth of the sand in the large sandbox. The base of the large sandbox is a scaled copy of the base of the small sandbox, with a scale factor of 1.5. How many bags of sand will they need to buy for the large sandbox?; A lawn and garden store is selling six bags of sand for $19.50. How much will they spend to buy all the new sand for both sandboxes?” In Unit 6, students solve multi-step real-life and mathematical problems with rational numbers in various forms (7.EE.3). Examples include: In Lesson 2, students encounter many routine problems that require algebraic thinking to solve: “Noah’s family bought some fruit bars to put in the gift bags. They bought one box each of four flavors: apple, strawberry, blueberry, and peach. The boxes all had the same number of bars. Noah wanted to taste the flavors and ate one bar from each box. There were 28 bars left for the gift bags.” Students use tape diagrams to develop equations in the forms p(x+q)=r and px+q=r. In Lesson 12, the first Activity, students use the given tape diagram and sample student responses to make connections between the context such as change in temperature over three days and equations that model percent increase. In the second Activity, students solve four multi-step real-world problems. In the Cool-Down, students write and solve an equation for this problem: “The track team is trying to reduce their time for a relay race. First, they reduce their time by 2.1 minutes. Then, they are able to reduce that time by 1/10. If their final time is 3.96 minutes, what was their beginning time? Show or explain your reasoning.” Balance: The three aspects of rigor are not always treated together and are not always treated separately. There is a balance of the 3 aspects of rigor within the grade. The instructional materials reviewed for McGraw-Hill Illustrative Mathematics Grade 7 meet expectations that the three aspects of rigor are not always treated together and are not always treated separately. The materials address aspects of rigor independently, and there are instances when multiple aspects of rigor are used to support student learning and mastery of the standards. There are multiple lessons where one aspect of rigor is emphasized. Examples of conceptual understanding include: In Unit 6, Lessons 7 and 8 intentionally isolate the conceptual understanding related to solving equations in the form of px + q = r and p(x+q) = r by using hanger diagram models to visualize balance between the sides of an equality (7.EE.4a). In Unit 6, Lesson 18, Activity 2, students use area models to develop conceptual understanding of how the distributive property works with both positive and negative terms. In the Lesson Synthesis, students develop a conceptual understanding on how the commutative property works with addition but not subtraction. Examples of procedural skills and fluency include: In Unit 6, Lesson 10, students develop procedural skills in solving equations, 7.EE.4, by sharing their solution strategies. The Warm Up involves an Algebra Talk where students have 30 seconds to think about methods of solving and solutions to five different problems in p(x+q) = r form. In the first Activity, students perform an error analysis of given students’ methods. In the second Activity, students solve five problems using two different methods and compare them. This task also prompts students to evaluate more inefficient methods and explain why they are not effective. In Unit 6, Lesson 22 Lesson Narrative states that “students have an opportunity to demonstrate fluency in combining like terms and look for and make use of structure (MP7) to apply the distributive property in more sophisticated ways.” In the first Activity, students match equivalent expressions which include negative terms with a partner. Examples of application include: In Unit 2, Lesson 15, students answer whether baths or showers use more water (7.RP.2). Students determine what information they would need to solve the problem, gather the data/information they need, and make assumptions using what they find. In Unit 5, Lesson 17, students apply their understanding of percent increase and decrease and work with rational numbers to calculate changes in stock value and total value of investment portfolios in non-routine stock market situations (7.RP.3). Examples of lessons where two or three aspects of rigor are connected include: In Unit 2, Lesson 14, students apply conceptual understanding of proportional relationships. Students use lists of items (creatures, length units, time units, volume units, body parts, area units, etc.) to create a situation that shows a proportional relationship between two different things in the list, describe a situation where two things are not proportional, and create a table, graph, and equation that represent the proportional/non-proportional relationship. In Unit 5, Lessons 1 and 2 build upon the conceptual development of negative numbers in Grade 6, including placing them on the number line, comparing and ordering them, and interpreting them in the contexts of temperature and elevation. Procedural skill is integrated with conceptual understanding and application when students draw diagrams to represent temperature changes, write equations to represent the context, and solve by adding and/or subtracting integers. In Lesson 3, students represent quantities on number lines, identify opposites, and add integers. In Lesson 4, students apply their knowledge of integers to real-world scenarios with banking. Students “understand that when representing a debt with a negative number, the additive inverse tells how much money is needed to pay off the debt.” Practice-Content Connections: Materials meaningfully connect the Standards for Mathematical Content and the Standards for Mathematical Practice The instructional materials for McGraw-Hill Illustrative Mathematics 6-8 Math, Grade 7 meet the expectations for practice–content connections. The materials identify and use the MPs to enrich the content, attend to the full meaning of each MP, support the Standards' emphasis on mathematical reasoning, and attend to the specialized language of mathematics. The Standards for Mathematical Practice are identified and used to enrich mathematics content within and throughout each applicable grade. The instructional materials reviewed for McGraw-Hill Illustrative Mathematics Grade 7 meet expectations that the Standards for Mathematical Practice are identified and used to enrich mathematics content within and throughout the grade level. All eight MPs are clearly identified throughout the materials. The MPs are initially identified in the narrative for each unit described within the course information, for example: In Unit 4, the Unit Narrative states, “In small groups, students identify important quantities in a situation described in a news item, use diagrams to map the relationship of the quantities, and reason mathematically to draw conclusions (MP4).” In Unit 7, an excerpt from the Unit Narrative states, “[Students] understand and use the formula for the volume of a right rectangular prism, and solve problems involving area, surface area, and volume (MP1, MP4). Students should have access to their geometry toolkits so that they have an opportunity to select and use appropriate tools strategically (MP5).” Within a lesson, the MPs are identified in the Teacher Guide, Lesson Narrative. Lesson Narratives often highlight when an MP is particularly important for a concept or when a task may exemplify the identified Practice, for example: In Unit 2, Lesson 4, the Lesson Narrative states, “In this lesson, students build on their work with tables and represent proportional relationships using equations of the form y = kx. The activities revisit contexts from the previous two lessons, presenting values in tables and focusing on the idea that for each table, there is a number k, so that all values in the table satisfy the equation y = kx. Students express the regularity of repeated calculations of values in the table with the equations.” (MP8) In Unit 3, Lesson 4, the Lesson Narrative connects the application of the circumference formula to two math practices, “Students think strategically about how to decompose and recompose complex shapes (MP7) and need to choose an appropriate level of precision for π and for their final calculations (MP6).” In Unit 8, Lesson 5, the narrative for the first Activity states, “Students have a chance to construct arguments (MP3) about why probability estimates based on carrying out the experiment many times might differ from the expected probability.” The MPs are used to enrich the mathematical content and are not treated separately from the content in stand-alone lessons. MPs are highlighted and discussed throughout the lesson narratives to support a teacher’s understanding of the MP itself as the teacher is provided direction regarding how the content is connected to the MP, for example: In Unit 5, Lesson 11, the narrative for the first Activity states, “The purpose of this activity is to understand that the division facts for rational numbers are simply a consequence of the multiplication done previously. Students work several numerical examples relating multiplication to division and then articulate a rule for the sign of a quotient based on the signs of the dividend and divisor (MP8).” In Unit 2, Lesson 7, the first Activity, students use a table to explore the cost of parking and admission per person. “These diagrams may be helpful in illustrating to them that their resulting prices are including more than one vehicle. This gives them an opportunity to make sense of problems and persevere in solving them (MP1).” The MPs are not identified in the student materials, however, there are questions posed with activities that engage students with MPs. For example, in Unit 2, Lesson 7, the first Activity, the prompt includes, “How might you determine the entrance cost for a bus with 50 people? Is the relationship between the number of people and the total entrance cost a proportional relationship? Explain how you know.” (MP1) Materials carefully attend to the full meaning of each practice standard The instructional materials reviewed for McGraw-Hill Illustrative Mathematics Grade 7 meet expectations for carefully attending to the full meaning of each practice standard. The materials attend to the full meaning of each of the 8 MPs. The MPs are discussed in both the Unit and Lesson Narratives, as appropriate, when they relate to the overall work. They are also explained within individual activities, when necessary. Over the course of the year, students have ample opportunity to engage with the full meaning of every MP. Examples include: MP1 - Make sense of problems and persevere in solving them. In Unit 2, Lesson 2, students build on their understanding of scale and try to find the scale factor. The Teacher Notes for the second Activity states, “Students grapple with finding missing values for ratios of whole numbers presented in a table where identifying a usable scale factor.” Students must make sense of new terms and apply them to their learning specifically the constant of proportionality and proportional relationship. MP2 - Reason abstractly and quantitatively. In Unit 2, Lesson 3, the Teacher Notes for the second Activity states: “Students need opportunities to make the connection to proportional relationships; students who successfully make this connection are reasoning abstractly about contexts with constant speed.” Students make connections between constant speed and proportional relationships, with special attention to the constant of proportionality. In Unit 4, Lesson 2, students are given the following optional problem: “In real life, the Mona Lisa measures $2\frac{1}{2}$ feet by $1\frac{3}{4}$ feet. A company that makes office supplies wants to print a scaled copy of the Mona Lisa on the cover of a notebook that measures 11 inches by 9 inches. Students are asked, “1. What size should they use for the scaled copy of the Mona Lisa on the notebook cover? 2. What is the scale factor from the real painting to its copy on the notebook cover? 3. Discuss your thinking with your partner. Did you use the same scale factor? If not, is one more reasonable than the other?” An applet is provided for students to experiment and understand the problem by changing the size of the Mona Lisa (abstract). The applet will display the new dimensions of the picture, but the information given for the picture cannot be scaled to the exact size of the notebook. Further investigation with equivalent ratios will lead students to one of the many possible dimensions and scale factors appropriate for the picture (quantitative). MP4 - Model with mathematics. In Unit 1, Lesson 9, students apply the mathematics they know to solve problems arising in everyday life. They create their own scale drawing of a floor plan, two different scale drawings of the state of Utah, noticing how the scale impacts the drawing, and make a scale drawing of a swimming pool. In Unit 4, Lesson 16, students work in groups to collect news clippings that mention percentages and sort them according to whether they are about percent increase or percent decrease, formulate questions about them, and then share their questions with other groups in a gallery walk. The purpose is for students to apply percentages in a real-world context. MP5 - Use appropriate tools strategically. In Unit 1, Lesson 3, the optional Activity, students use a digital platform to create scaled copies of an original figure by increasing or shrinking the dimensions with the use of a fractional scale factor. In the Activity, “Students continue to work with scaled copies of simple geometric figures, this time on a grid. When trying to scale non-horizontal and non-vertical segments, students may think of using tracing paper or a ruler to measure lengths and a protractor to measure angles.” In Units 1 and 3, the lesson preparation suggests that each student has access to a geometry toolkit. These contain tracing paper, graph paper, colored pencils, scissors, centimeter ruler, protractor, and an index card to use as a straightedge or to mark right angles. “Providing students with these toolkits gives opportunities for students to select appropriate tools and use them strategically to solve problems.” MP7 - Look for and make use of structure. In Unit 1, Lesson 2, Warm Up Number Talk, students review multiplication strategies and develop the idea that multiplying by a unit fraction is the same as dividing by its whole number reciprocal. Students find 7.2 x $\frac{1}{9}$ mentally. Students are guided to think about 72 * 1/9 (72 $\div$ 9) and then consider what happens to the decimal. Students are encouraged to use the structure of base ten numbers and the properties of operations. In Unit 4, Lesson 4, students work with the distributive property. It is noted in the lesson that when students look for opportunities to use the distributive property to write equations in a simpler way, they are looking for and making use of structure. MP8 - Look for and express regularity in repeated reasoning. In Unit 1, Lesson 2, students continue their work with corresponding parts to develop the understanding and use of scale factors. The narrative for the second Activity states, “Students see that there is a single factor that relates each length in the original triangle to its corresponding length in a copy (MP8). They learn that this number is called a scale factor.” Emphasis on Mathematical Reasoning: Materials support the Standards' emphasis on mathematical reasoning by: Materials prompt students to construct viable arguments and analyze the arguments of others concerning key grade-level mathematics detailed in the content standards. The instructional materials reviewed for McGraw-Hill Illustrative Mathematics Grade 7 meet expectations for prompting students to construct viable arguments and/or analyze the arguments of others concerning key grade-level mathematics. The student materials consistently prompt students to both construct viable arguments and analyze the arguments of others. Students explain their reasoning and compare their strategies for solving in small group and whole class settings, and examples include: In Unit 5, Lesson 3, the third Activity, which is optional, students work with a partner to analyze a number line using variable expressions in order to compare two expressions with an inequality or equal sign. They also give an explanation to support their answer. For example, “-a ___ -b” based on their given locations on the number line. In Unit 5, Lesson 5, the first Activity, students find the length of the missing arrow on a number line and analyze two equations (both are correct) written to represent the situation. Students write equations in the same form as the original two and explain their solutions. In Unit 4, Lesson 16, students work in groups to collect news clippings that mention percentages and sort them according to whether they reflect percent increase or percent decrease. They formulate questions about them and share their questions with other groups in a gallery walk. During the gallery walk, students use sticky notes to ask questions about the information presented on each poster. Materials assist teachers in engaging students in constructing viable arguments and analyzing the arguments of others concerning key grade-level mathematics detailed in the content standards. The instructional materials reviewed for McGraw-Hill Illustrative Mathematics Grade 7 meet expectations for assisting teachers in engaging students to construct viable arguments and analyze the arguments of others concerning key grade-level mathematics. The teacher materials assist teachers in engaging students in both constructing viable arguments and analyzing the arguments of others throughout the program. The Unit 2, Lesson 1 Warm Up provides teacher guidance as students complete a double number line and invent a situation. Teachers are instructed, “As students discuss their answers with their partner, select students to share their answers during the whole-class discussion...Invite selected students to explain how they reasoned about possible labels for each of the number lines and the units of each. After each student shares, invite others to agree, disagree, or question the reasonableness of the number line descriptions.” The Unit 5, Lesson 6 Warm Up Activity Synthesis provides teachers with questions to encourage constructing viable arguments. This strategy is used repeatedly throughout the series. “To involve more students in the conversation, use some of the following questions: Who can restate ___’s reasoning in a different way? Did anyone find the value of n the same way, but would explain it differently? Did anyone find the value of n in a different way? Does anyone want to add on to ____’s strategy? Do you agree or disagree? Why?” In Unit 2, Lesson 4 Warm Up states, “This Number Talk encourages students to think about the numbers in division problems and how they can use the result of one division problem to find the answer to a similar problem with a different, but related, divisor...Each problem is chosen to elicit a slightly different reasoning, so, as students explain their strategies, ask how the factors impacted their product.” Materials explicitly attend to the specialized language of mathematics. The instructional materials reviewed for McGraw-Hill Illustrative Mathematics Grade 7 meet expectations for attending to the specialized language of mathematics. The materials provide explicit instruction on communicating mathematical thinking using words, diagrams, and symbols. The materials use precise and accurate terminology and definitions when describing mathematics and support students in using them. In the teacher materials, the Grade 7 Glossary is located in the Course Guide. Lesson-specific vocabulary can be found in bold within the lesson, and is listed and defined at the end of the student lesson. Both the unit and lesson narratives contain specific guidance for the teacher on methods to support students to communicate mathematically. Within the lesson narratives, new terms are in bold print and explained as related to the context of the material. In Unit 4, Lesson 11 introduces students to a variety of percentage contexts: markups, markdowns, tax, tip, and commission. In the Optional Activity provided in this lesson, students are paired and given the task of completing a “card sort.” Taking turns, the students match the term with the percentage scenario and explain their reasoning for the match. If the other student disagrees, they must explain why, and the pair must work to an agreement. The focus is on explaining the definition of these terms and relating them to specific scenarios. Unit 3 builds on students' understanding of a circle. In Lesson 2, the formal definition of a circle (the set of points that are equally distant from the center, enclosing a circular region) is developed. Also in this lesson, students develop the idea that the size of a circle can be measured by its diameter, radius, circumference, or the enclosed area, depending on the context. No examples of incorrect use of vocabulary, symbols, or numbers were found within the materials. Use and design facilitate student learning: Materials are well designed and take into account effective lesson structure and pacing. The instructional materials for McGraw-Hill Illustrative Mathematics 6-8 Math, Grade 7 meet the expectations for being well-designed and taking into account effective lesson structure and pacing. The instructional materials distinguish between problems and exercises, have exercises that are given in intentional sequences, have a variety in what students are asked to produce, and include manipulatives that are faithful representations of the mathematical objects they represent. The underlying design of the materials distinguishes between problems and exercises. In essence, the difference is that in solving problems, students learn new mathematics, whereas in working exercises, students apply what they have already learned to build mastery. Each problem or exercise has a purpose. The instructional materials reviewed for McGraw-Hill Illustrative Mathematics Grade 7 meet expectations that the underlying design of the materials distinguish between lesson problems and student exercises for each lesson. It is clear when students solve problems to learn and when they apply skills. Lessons include a Warm Up, Activities, Synthesis, and Cool Down. Practice Problems are in a separate section of the instructional materials, distinguishing between problems students complete and exercises in the lessons. Warm Ups serve to either activate prior learning or engage students for learning new material in the lesson. Students learn and practice new mathematics in lesson Activities. In the Activity Synthesis, students build on their understanding of the new concept. Each activity lesson ends with a Cool Down where students apply what they learned in the activities or are introduced to skills they may need in the next lesson. Practice problems are consistently found in the “Practice Problem” sets that accompany each lesson. These sets of problems include questions that support students in developing mastery of the current lesson and unit concepts, in addition to review of material from previous units. When practice problems contain content from previous lessons, students apply their skills and understandings in different ways that enhance understanding or application (e.g., increased expectations for fluency, more abstract application, or a non-routine problem). Design of assignments is not haphazard: exercises are given in intentional sequences. The instructional materials reviewed for McGraw-Hill Illustrative Mathematics Grade 7 meet expectations for not being haphazard; exercises are given in intentional sequences. Overall, clusters of lessons within units and activities within lessons, are intentionally sequenced so students develop understanding. The structure of a lesson provides students with the opportunity to activate prior learning, build procedural skill and fluency, and engage with multiple activities that are sequenced from concrete to abstract or increase in complexity. Lessons end with a Cool Down which is aligned to the daily lesson objective. Unit sequences consistently follow the progressions outlined in the CCSSM Standards to support students' development of conceptual understanding and procedural skills. There is variety in what students are asked to produce. For example, students are asked to produce answers and solutions, but also, in a grade-appropriate way, arguments and explanations, diagrams, mathematical models, etc. The instructional materials reviewed for McGraw-Hill Illustrative Mathematics Grade 7 meet expectations for having variety in what students are asked to produce. The instructional materials prompt students to produce products in a variety of ways. Students produce solutions within Activities and Practice Problems, as well as participating in class, group, and partner discussions. Students construct viable arguments and critique the reasoning of their peers. Students use both a digital platform and paper-pencil to conduct and present their work. The materials consistently prompt students for solutions that represent the language and intent of the standards. Students use representations such as tables, number lines, double number lines, tape diagrams, and graphs, as well as strategically choose tools to complete their work (MP5). Lesson activities and tasks are varied within and across lessons. Manipulatives are faithful representations of the mathematical objects they represent and when appropriate are connected to written methods. The instructional materials reviewed for McGraw-Hill Illustrative Mathematics Grade 7 meet expectations for having manipulatives that are faithful representations of the mathematical objects they represent and, when appropriate, are connected to written methods. The series includes a variety of virtual manipulatives and integrates hands-on activities that allow the use of physical manipulatives, for example: Manipulatives and other mathematical representations are consistently aligned to the expectations and concepts in the standards. The majority of manipulatives used are commonly accessible measurement and geometry tools. The materials provide digital applets for manipulating geometric shapes, tailored to the lesson content and tasks. When physical, pictorial, or virtual manipulatives are used, they are aligned to the mathematical concepts they represent. For example, in Unit 6, Lesson 7, hanger diagrams are used to represent and support the conceptual development of balance as it relates to equality in the virtual applet practice. Examples of manipulatives for Grade 7 include: Tangram kits (or digital Tangram applets); Geometry toolkits containing tracing paper, graph

paper, colored pencils, scissors, and an index card to use as a straightedge or to mark right angles; and applets are used for both investigating the characteristics of shapes and area/perimeter as well as exploring coordinate and isometric grids. The visual design (whether in print or online) is not distracting or chaotic, but supports students in engaging thoughtfully with the subject. The visual design in McGraw-Hill Illustrative Mathematics Grade 7 is not distracting or chaotic and supports students in engaging thoughtfully with the subject. The digital lesson materials for teachers follow a consistent format for each lesson. Teaching Notes with Supports for English Language Learners and Supports for Students with Disabilities are placed within the activity they support and are specific to the activity. Unit overviews follow a consistent format. The format of course overviews, units, and individual lessons are consistent across the Course 2 materials. Student-facing printable materials follow a consistent format. Tasks within a lesson are numbered to match the teacher-facing guidance. The print and visuals on the materials are clear without any distracting visuals or overabundance of text features. Teachers can assign lessons and activities to students through the platform, enabling students to access digital manipulatives, practice problems, unit assessments and lesson visuals. Printable student practice problem pages frequently include enough space for students to write their answers and demonstrate their thinking. Teacher Planning and Learning for Success with CCSS: Materials support teacher learning and understanding of the Standards. The instructional materials for McGraw-Hill Illustrative Mathematics 6-8 Math, Grade 7 meet the expectations for supporting teacher learning and understanding of the standards. The instructional materials: support planning and providing learning experiences with quality questions; contain ample and useful notations and suggestions on how to present the content; contain full, adult-level explanations and examples of the more advanced mathematics concepts; and contain explanations of the grade-level mathematics in the context of the overall mathematics curriculum. Materials support teachers in planning and providing effective learning experiences by providing quality questions to help guide students' mathematical development. The instructional materials reviewed for McGraw-Hill Illustrative Mathematics Grade 7 meet the expectations for supporting teachers in planning and providing effective learning experiences by providing quality questions to help guide students' mathematical development. Each lesson consists of a detailed lesson plan accompanied by teaching notes. Included in these teaching notes are the objectives of the lesson, suggested questions for discussion, and guiding questions designed to increase classroom discourse and foster understanding of the concepts. For example, in Unit 2, Lesson 3, the following questions are included: “Which quantities are in a proportional relationship? How do you know?” The teaching notes and questions for discussion support the teachers in planning and implementing lessons effectively. Materials contain a teacher's edition with ample and useful annotations and suggestions on how to present the content in the student edition and in the ancillary materials. Where applicable, materials include teacher guidance for the use of embedded technology to support and enhance student learning. The instructional materials reviewed for McGraw-Hill Illustrative Mathematics Grade 7 meet expectations for providing teacher support with ample and useful annotations and suggestions on how to present the content in the student edition and in the ancillary materials. Also, where applicable, materials include teacher guidance for the use of embedded technology to support and enhance student learning. Each lesson includes the Goals written for teachers, Student Learning Goals and Targets written for students, a list of Word/PDF documents that can be downloaded, CCSSM Standards that are “built upon” or “addressed” for the lesson, and any instructional routines to be implemented. Within the technology, there are expandable links to standards and instructional routines. Lessons include detailed guidance for teachers for the Warm Up, Activities, and the Lesson Synthesis. Each lesson activity contains an overview and narrative, guidance for teachers and student-facing materials, anticipated misconceptions, “Are you ready for more?”, and an Activity Synthesis. Included within these narratives are guiding questions and additional support for students. The teacher materials that correspond to the student lessons provide annotations and suggestions on how to present the content. “Launch” explains how to set up the activity and what to tell students. After the activity is complete, there is often “Anticipated Misconceptions” in the teaching notes, which describes how students may incorrectly interpret or misunderstand concepts and includes suggestions for addressing those misconceptions. The materials are available in both print and digital forms. The digital format has embedded applets. Guidance is provided to both the teacher and the student on how to manipulate the applet. For example, in Unit 7, Lesson 6, teachers and students are provided with these directions on how to build a polygon: “1. Use the segments in the applet to build several polygons, including at least one triangle and one quadrilateral. 2. After you finish building several polygons, select one triangle and one quadrilateral that you have made. a.) Measure all the angles in the two shapes you selected. Note: select points in order counterclockwise, like a protractor. b.) Using these measurements along with the side lengths as marked, draw your triangle and quadrilateral as accurately as possible on separate paper.” Materials contain a teacher's edition (in print or clearly distinguished/accessible as a teacher's edition in digital materials) that contains full, adult-level explanations and examples of the more advanced mathematics concepts in the lessons so that teachers can improve their own knowledge of the subject, as necessary. The instructional materials reviewed for the McGraw-Hill Illustrative Mathematics Grade 7 meet expectations for the teacher edition containing full, adult-level explanations and examples of the more advanced mathematics concepts in the lessons so that teachers can improve their own knowledge. The narratives provided for each unit include information about the mathematical connections of concepts being taught. Previous and future grade levels are also referenced to show the progression of mathematics over time. Important vocabulary is included when it relates to the “big picture” of the unit. Lesson narratives provide specific information about the mathematical content within the lesson and are presented in adult language. These narratives contextualize the mathematics of the lesson to build teacher understanding, and give guidance on what to expect from students and important vocabulary. The Narrative for Unit 2 states, “A unit rate is the numerical part of a rate per 1 unit, e.g., the 6 in 6 miles per hour. The fractions a/b and b/a are never called ratios. The fractions a/b and b/a are identified as ‘unit rates’ for the ratio a:b. In high school—after their study of ratios, rates, and proportional relationships—students discard the term ‘unit rate’, referring to a to b, a:b, and a/b as ‘ratios’.” Materials contain a teacher's edition (in print or clearly distinguished/accessible as a teacher's edition in digital materials) that explains the role of the specific grade-level mathematics in the context of the overall mathematics curriculum for kindergarten through grade twelve. The instructional materials reviewed for McGraw-Hill Illustrative Mathematics Grade 7 meet expectations for explaining the role of the specific grade-level mathematics in the context of the overall mathematics curriculum. The Course Guide and Narratives describe how mathematical concepts are built from previous grade-level and lesson material. For example, the Unit 5 narrative states, “In Grade 6, students learned that the rational numbers comprise positive and negative fractions.” For some units, there are explanations given for how the grade-level concepts fit into future grade-level work. For example, the Unit 5 Narrative concludes with a note that states: “In these materials, an expression is built from numbers, variables, operation symbols (+, -, *, ÷), parentheses, and exponents. (Exponents—in particular, negative exponents—are not a focus of this unit. Students work with integer exponents in Grade 8 and non-integer exponents in high school.)” Materials provide a list of lessons in the teacher's edition (in print or clearly distinguished/accessible as a teacher's edition in digital materials), cross-referencing the standards covered and providing an estimated instructional time for each lesson, chapter and unit (i.e., pacing guide). The instructional materials reviewed for McGraw-Hill Illustrative Mathematics Grade 7 provide a list of concepts in the Course Guide that cross-references the standards addressed and an estimated instructional time for each unit and lesson. The Implementation Guide includes a Scope and Sequence document that provides pacing information. A table, spanning 36 weeks of instruction, shows the unit that is taught each week, as well as the total number of days the unit should take to complete. In each lesson, the time an activity will take is included in the lesson's narrative. About These Materials in the Teacher Guide states, “Each lesson plan is designed to fit within a 45–50 minute period.” In the Implementation Guide under Correlation to the Common Core State Standards for Mathematics, there is a table that lists which standard each lesson addresses and another table to show where a standard is found in the materials. Materials contain strategies for informing parents or caregivers about the mathematics program and suggestions for how they can help support student progress and achievement. The instructional materials reviewed for the McGraw-Hill Illustrative Mathematics Grade 7 contain strategies for informing parents or caregivers about the mathematics program and suggestions for how they can help support student progress and achievement. In Teacher Resources, Family Materials for each Unit include an explanation to family and caregivers on what their student will be learning over the course of the week. The Family Materials provide an overview of what the student will be learning in accessible language. For example, Unit 3 begins with: “This week your student will learn why circles are different from other shapes, such as triangles and squares. Circles are perfectly round because they are made up of all the points that are the same distance away from a center.” In addition to the explanation of the current concepts and big ideas from the unit, there are diagrams and problems/tasks for families to discuss and solve. Materials contain explanations of the instructional approaches of the program and identification of the research-based strategies. The instructional materials reviewed for the McGraw-Hill Illustrative Mathematics Grade 7 contain explanations of the program's instructional approaches and identification of the research-based strategies. The materials draw on research to explain and contextualize instructional routines and lesson activities. The Implementation Guide includes specific links to research, for example: “Selected activities are structured using Five Practices for Orchestrating Productive Mathematical Discussions (Smith & Stein, 2011), also described in Principles to Actions: Ensuring Mathematical Success for All (NCTM, 2014), and Intentional Talk: How to Structure and Lead Productive Mathematical Discussions (Kazemi & Hintz, 2014).” How to Use These Materials: “Some of the instructional routines, known as Mathematical Language Routines (MLR), were developed by the Stanford University UL/SCALE team.” In the Implementation Guide, all of the “Instructional Routines” are fully explained. Algebra Talks found in the Warm-Ups set a routine for collecting different strategies. “Algebra Talks build algebraic thinking by encouraging students to think about the numbers and variables in an expression and rely on what they know about structure, patterns, and properties of operations to mentally solve a problem. Algebra Talks promote seeing structure in expressions and thinking about how changing one number affects others in an equation. While participating in these activities, students need to be precise in their word choice and use of language (MP6).” Think-Pair-Share routines found in the Lesson Activities provide structure for engaging students in collaboration. “This is a teaching routine useful in many contexts whose purpose is to give all students enough time to think about a prompt and form a response before they are expected to try to verbalize their thinking. First they have an opportunity to share their thinking in a low-stakes way with one partner, so that when they share with the class they can feel calm and confident, as well as say something meaningful that might advance everyone’s understanding. Additionally, the teacher has an opportunity to eavesdrop on the partner conversations so that she can purposefully select students to share with the class.” Assessment: Materials offer teachers resources and tools to collect ongoing data about student progress on the Standards. The instructional materials for McGraw-Hill Illustrative Mathematics 6-8 Math, Grade 7 meet the expectations for offering teachers resources and tools to collect ongoing data about student progress on the standards. The instructional materials provide strategies for gathering information about students' prior knowledge, opportunities for identifying and addressing common student errors and misconceptions, ongoing review and practice with feedback, assessments with standards clearly denoted, and guidance to teachers for interpreting student performance and suggestions for follow-up. Materials provide strategies for gathering information about students' prior knowledge within and across grade levels. The instructional materials reviewed for McGraw-Hill Illustrative Mathematics Grade 7 meet expectations for providing strategies for gathering information about students' prior knowledge within and across grade levels. Prior grade-level standards are indicated in the instructional materials. The lesson Warm Up is designed to engage students' thinking about the upcoming lesson and/or to revisit previous grades' concepts or skills. Prior knowledge is gathered about students through the pre-unit assessments. In these assessments, prerequisite skills necessary for understanding the topics in the unit are assessed. Commentary for each question as to why the question is relevant to the topics in the unit and exactly which standards are assessed is provided for the teacher. For example, the Unit 5 Check Your Readiness Problem 6 states: “Graphing in the coordinate plane requires a different kind of visual interpretation of signed numbers: right or left as well as up or down. Students learned to graph signed numbers on the coordinate plane in Grade 6.” (6.NS.C.8 6.NS.C.6.b) Materials provide strategies for teachers to identify and address common student errors and misconceptions. The instructional materials reviewed for McGraw-Hill Illustrative Mathematics Grade 7 meet expectations for providing strategies for teachers to identify and address common student errors and misconceptions. Lesson Activities include teaching notes that identify where students may make a mistake or struggle. There is a rationale that explains why the mistake could have been made, suggestions for teachers to make instructional adjustments for students, and steps teachers can take to help clear up the misconceptions. For example, in Unit 2, Lesson 6, Anticipating Misconceptions give the following guidance: “If students have trouble getting started, encourage them to create representations of the relationships, like a diagram or a table. If they are still stuck, suggest that they first find the weight and dollar value of 1 can.” Materials provide opportunities for ongoing review and practice, with feedback, for students in learning both concepts and skills. The instructional materials reviewed for McGraw-Hill Illustrative Mathematics Grade 7 meet expectations for providing opportunities for ongoing review and practice, with feedback, for students in learning both concepts and skills. The lesson structure consisting of a Warm Up, Activities, Lesson Synthesis, and Cool Down provide students with opportunities to connect prior knowledge to new learning, engage with content, and synthesize their learning. Throughout the lesson, students have opportunities to work independently, with partners, and in groups where review, practice, and feedback are embedded into the instructional routine. Practice Problems for each lesson activity reinforce learning concepts and skills and enable students to engage with the content and receive timely feedback. In addition, discussion prompts provide opportunities for students to engage in timely discussion on the mathematics of the lesson. Materials offer ongoing formative and summative assessments: Assessments clearly denote which standards are being emphasized. The instructional materials reviewed for McGraw-Hill Illustrative Mathematics Grade 7 meet expectations for assessments clearly denoting which standards are being emphasized. Assessments are located on the Assessment tab for each unit and are also available in print. For each unit, there is a Check Your Readiness and an End-of-Unit Assessment. Assessments begin with guidance for teachers on each problem, followed by the student-facing problem, solution(s), and the standard targeted. Units 6 and 8 also include a Mid-Unit Assessment. Assessments include aligned rubrics and scoring guidelines that provide sufficient guidance to teachers for interpreting student performance and suggestions for follow-up. The instructional materials reviewed for McGraw-Hill Illustrative Mathematics Grade 7 meet expectations for assessments including aligned rubrics and scoring guidelines that provide sufficient guidance to teachers for interpreting student performance and suggestions for follow-up. Assessments include an answer key, and when applicable, a rubric consisting of three to four tiers, ranging from Tier 1 (work is complete, acceptable errors) to Tiers 3 and 4 (significant errors, conceptual mistakes). Assessments include multiple choice, multiple response, short answer, restricted constructed response, and extended response. Restricted constructed response and extended response items have rubrics that are provided to evaluate the level of student responses. The restricted constructed response includes a 3-tier rubric, and the extended constructed response includes a 4-tier rubric. For these types of questions, the teacher materials provide guidance as to what is needed for each tier as well as some sample responses. The End of Unit Assessment Teacher Guide includes Item Analysis to describe what may have caused an incorrect response. For example, in Unit 8, End of Unit Assessment, Problem 2, the End of Unit Assessment Teacher Guide states, “Students selecting A noticed the overall shape of the distribution but did not take into account the large peak of data at 5 minutes. Students selecting B noticed the overall shape of the distribution but did not notice a shift in the data. Students selecting C may believe that samples must have a symmetric distribution, which is not true.” Materials encourage students to monitor their own progress. The instructional materials reviewed for McGraw-Hill Illustrative Mathematics Grade 7 include opportunities for students to monitor their own progress. For every unit, there is a Lesson Synthesis that offers suggestions for self-monitoring such as, “... asking students to respond to prompts in a written journal, asking students to add on to a graphic organizer or concept map, or adding a new component to a persistent display like a word wall.” In the Lesson Synthesis, students have the opportunity to express their own thinking and understanding of the lesson content. For example, Unit 5, Lesson 9, Lesson Synthesis has students respond to questions such as, “How can we represent a time that came before a specific zero point? What kind of number do you get when you multiply a negative number by a positive number? Use a context from the lesson to explain why this makes sense.” Differentiated instruction: Materials support teachers in differentiating instruction for diverse learners within and across grades. The instructional materials for McGraw-Hill Illustrative Mathematics 6-8 Math, Grade 7 meet the expectations for supporting teachers in differentiating instruction for diverse learners within and across grades. The instructional materials provide a balanced portrayal of various demographic and personal characteristics. The instructional materials also consistently provide: strategies to help teachers sequence or scaffold lessons; strategies for meeting the needs of a range of learners; tasks with multiple entry-points; support, accommodations, and modifications for English Language Learners and other special populations; and opportunities for advanced students to investigate mathematics content at greater depth. Materials provide strategies to help teachers sequence or scaffold lessons so that the content is accessible to all learners. The instructional materials reviewed for McGraw-Hill Illustrative Mathematics Grade 7 meet expectations for providing strategies to help teachers sequence or scaffold lessons so that the content is accessible to all learners. Each lesson is designed with a Warm Up that reviews prior knowledge and/or prepares all students for the activities that follow. The Cool Down following lesson activities reviews the concepts of the lesson. Within a lesson, narratives provide explicit instructional support for the teacher, including the Activity Launch , Anticipated Misconceptions, and Lesson Synthesis. This information assists teachers in making the content accessible to all learners. The Lesson Narrative often includes guidance on where to focus questions in Activities or the Lesson Synthesis. Optional activities are often included that can be used for additional practice or support before moving to the next activity or lesson. Materials provide teachers with strategies for meeting the needs of a range of learners. The instructional materials reviewed for McGraw-Hill Illustrative Mathematics Grade 7 meet expectations for providing teachers with strategies for meeting the needs of a range of learners. The lesson structure—Warm Up, Activities, Lesson Synthesis, and Cool Down—includes guidance for the teacher on the mathematics of the lesson, possible misconceptions, and specific strategies to address the needs of a range of learners. Embedded supports include: Mathematical Language Routines to support a range of learners to be successful are provided for the teacher throughout lessons to maximize output and cultivate conversation. For example: MLR1: Stronger and Clearer Each Time, in which “students think or write individually about a response, use a structured pairing strategy to have multiple opportunities to refine and clarify the response through conversation, and then finally revise their original written response. MLR4: Information Gap, which “allows teachers to facilitate meaningful interactions by giving partners or team members different pieces of necessary information that must be used together to solve a problem or play a game...[S]tudents need to orally (and/or visually) share their ideas and information in order to bridge the gap.” MLR6: Three Reads, in order to "ensure that students know what they are being asked to do, and to create an opportunity for students to reflect on the ways mathematical questions are presented. This routine supports reading comprehension of problems and meta-awareness of mathematical language. It also supports negotiating information in a text with a partner in mathematical conversation.” Teaching notes appear frequently in lessons to provide additional guidance for teachers on how to adapt lessons for all learners. These teaching notes state specific needs addressed in a recommended strategy that are relevant to the given task and include supports for Conceptual Processing, Expressive & Receptive Language, Visual-Spatial Processing, Executive Functioning, Memory, Social-Emotional Functioning, and Fine-motor Skills. For each support, there are multiple strategies teachers can employ, for example: Conceptual Processing includes strategies to Eliminate Barriers, Processing Time, Peer Tutors, Assistive Technology, Visual Aids, Graphic Organizers, and Brain Breaks. Materials embed tasks with multiple entry-points that can be solved using a variety of solution strategies or representations. The instructional materials reviewed for McGraw-Hill Illustrative Mathematics Grade 7 meet expectations for embedding tasks with multiple entry points that can be solved using a variety of solution strategies or representations. The problem-based curriculum design engages students with complex tasks multiple times each lesson. The Warm Up, Activities, Lesson Synthesis, and Cool Down provide opportunities for students to apply mathematics from multiple entry points. Specific examples of strategies found in the materials include “Notice and Wonder” and “Which One Doesn’t Belong?” The lesson and task narratives provided for teachers offer possible solution paths and presentation strategies from various levels, for example: In Unit 2, Lesson 2, students are involved in a “Notice and Wonder” activity involving a table that shows the paper towels a store receives when they order different amounts of cases. The teacher is provided different examples of noticings and wonderings students may have with guidance on how to focus the conversation on the relationship between the cases ordered and paper towels received if it does not come from student responses. Materials suggest support, accommodations, and modifications for English Language Learners and other special populations that will support their regular and active participation in learning mathematics (e.g., modifying vocabulary words within word problems). The instructional materials reviewed for McGraw-Hill Illustrative Mathematics Grade 7 meet expectations for including support, accommodations, and modifications for English Language Learners and other special populations that will support their regular and active participation in learning mathematics. The ELL Design is highlighted in the IM Implementation Guide, Courses 1-3, and embodies the Understanding Language/SCALE Framework from the Stanford University Graduate School of Education, which consists of four principles: Support Sense-Making, Optimize Outputs, Cultivate Conversation, and Maximize Meta-Awareness. In addition, there are eight Mathematical Language Routines (MLR) that were included “because they are the most effective and practical for simultaneously learning mathematical practices, content, and language.” "A Mathematical Language Routine refers to a structured but adaptable format for amplifying, accessing, and developing students’ language." “ELL Enhanced Lessons” are identified in the Teacher Guide. These lessons highlight specific strategies for students who have a language barrier which affects their ability to participate in a given task. Throughout lessons, a variety of instructional routines are designed to assist students in developing full understanding of math concepts and terminology. These Mathematical Language Routines include: MLR2, Collect and Display, in which “The teacher listens for, and scribes, the student output using written words, diagrams and pictures; this collected output can be organized, revoiced, or explicitly connected to other language in a display for all students to use.” MLR5, Co-Craft Questions and Problems, which “[allows] students to get inside of a context before feeling pressure to produce answers, and to create space for students to produce the language of mathematical questions themselves.” MLR7, Compare and Connect, which “[fosters] students’ meta-awareness as they identify, compare, and contrast different mathematical approaches, representations, and language.” Lesson narratives include strategies designed to assist other special populations of students in completing specific tasks. Examples of these supports for students with disabilities include: Social-Emotional Functioning: Peer Tutors. Pair students with their previously identified peer tutors. Conceptual Processing: Eliminate Barriers. Assist students in seeing the connections between new problems and prior work. Students may benefit from a review of different representations to activate prior knowledge. Conceptual Processing: Processing Time. Check in with individual students as needed to assess for comprehension during each step of the activity. Executive Functioning: Graphic Organizers. Provide a t-chart for students to record what they notice and wonder prior to being expected to share these ideas with others. Memory: Processing Time. Provide students with a number line that includes rational numbers. Visual-Spatial Processing: Visual Aids. Provide handouts of the representations for students to draw on or highlight. Materials provide opportunities for advanced students to investigate mathematics content at greater depth. The instructional materials reviewed for McGraw-Hill Illustrative Mathematics Grade 7 meet expectations for providing opportunities for advanced students to investigate mathematics content at greater depth. All students complete the same lessons and activities; however, there are some optional lessons and activities that a teacher may choose to implement with students. In addition, Unit 9 Putting It All Together is an optional unit. Lessons in this unit tend to be multi-day, complex applications of the mathematics addressed over the year. “Are you ready for more?” is included in some lessons to provide students additional interactions with the key concepts of the lesson. Some of these tasks would be considered investigations at greater depth, while others are additional practice. There is no clear guidance for the teacher on how to specifically engage advanced students in investigating the mathematics content at greater depth. Materials provide a balanced portrayal of various demographic and personal characteristics. The instructional materials reviewed for McGraw-Hill Illustrative Mathematics Grade 7 meet expectations for providing a balanced portrayal of various demographic and personal characteristics. The lessons contain a variety of tasks that interest students of various demographic and personal characteristics. All names and wording are chosen with diversity in mind, and the materials do not contain gender biases. The Grade 7 materials include a set number of names used throughout the problems and examples (e.g., Elena, Tyler, Lin, Noah, Diego, Kiran, Mia, Priya, Han, Jada, Andre, Clare). These names are presented repeatedly and in a way that does not appear to stereotype characters by gender, race, or ethnicity. Characters are often presented in pairs with different solution strategies. There does not appear to be a pattern in one character using more/less sophisticated strategies. When multiple characters are involved in a scenario they are often doing similar tasks or jobs in a way that does not express gender, race, or ethnic bias. For example, in Unit 2, Lesson 7, Activity 7.3, Han and Clare are running laps and are timed by their coach. The times in the table do not suggest any gendered stereotypes around athletic ability. Materials provide opportunities for teachers to use a variety of grouping strategies. The instructional materials reviewed for McGraw-Hill Illustrative Mathematics Grade 7 provide opportunities for teachers to use a variety of grouping strategies. The materials offer multiple opportunities to implement grouping strategies to complete the tasks of a daily lesson. Explicit instructions are found in the activity narratives. Grouping strategies range from partner to small group. For example, the narrative in Unit 6, Lesson 6, states, “Arrange students in groups of 2–4. Display the equations for all to see.” In addition, the Instructional Routines implemented in many lessons offer opportunities for students to interact with the mathematics with a partner or in a small group. These routines include: Take Turns, in which students engage in sorting and categories given sets of cards; Think-Pair-Share, where students think about and test ideas as well as exchange feedback before sharing their ideas with the class; and Group Presentations, in which students generate visual displays of a mathematical problem, and students from different groups interpret the work and find connections to their own work. Materials encourage teachers to draw upon home language and culture to facilitate learning. The instructional materials reviewed for McGraw-Hill Illustrative Mathematics Grade 7 encourage teachers to draw upon home language and culture to facilitate learning. The IM Implementation Guide, Courses 1-3, includes Supporting English Language Learners from the Understanding Language/SCALE (UL/SCALE) at Stanford University’s Graduate School of Education. Promoting Language and Content Development explains the purpose of the document, the goal, and introduces the framework. The section acknowledges the importance of the framework: “Therefore, while the framework can and should be used to support all students learning mathematics, it is particularly well-suited to meet the needs of linguistically and culturally diverse students who are simultaneously learning mathematics while acquiring English.” Effective technology use: Materials support effective use of technology to enhance student learning. Digital materials are accessible and available in multiple platforms. The instructional materials for McGraw-Hill Illustrative Mathematics 6-8 Math, Grade 7 integrate technology in ways that engage students in the Mathematical Practices. The digital materials are web-based and compatible with multiple internet browsers, and they include opportunities to assess students' mathematical understandings and knowledge of procedural skills. The instructional materials include opportunities for teachers to personalize learning for all students, and the materials offer opportunities for customized, local use. The instructional materials also include opportunities for teachers and/or students to collaborate. Digital materials (either included as supplementary to a textbook or as part of a digital curriculum) are web-based and compatible with multiple internet browsers (e.g., Internet Explorer, Firefox, Google Chrome, etc.). In addition, materials are "platform neutral" (i.e., are compatible with multiple operating systems such as Windows and Apple and are not proprietary to any single platform) and allow the use of tablets and mobile devices. The instructional materials reviewed for McGraw-Hill Illustrative Mathematics Grade 7 are web-based and compatible with multiple internet browsers. The materials are platform-neutral and compatible with Chrome, ChromeOS, Safari, and Mozilla Firefox. Materials are compatible with various devices including iPads, laptops, Chromebooks, and other devices that connect to the internet with an applicable browser. Common Cartridge and LTI integration allows for materials to be integrated into all major Learning Management Systems. Materials include opportunities to assess student mathematical understandings and knowledge of procedural skills using technology. The instructional materials reviewed for McGraw-Hill Illustrative Mathematics Grade 7 do not include opportunities to assess students' mathematical understanding and knowledge of procedural skills using technology. Assessments are found under the Assessment tab. Assessments are available in PDF and editable Word documents. They may also be assigned digitally. Materials can be easily customized for individual learners. i. Digital materials include opportunities for teachers to personalize learning for all students, using adaptive or other technological innovations. ii. Materials can be easily customized for local use. For example, materials may provide a range of lessons to draw from on a topic. The instructional materials reviewed for McGraw-Hill Illustrative Mathematics Grade 7 include opportunities for teachers to personalize learning for all students. The online platform supports professional learning communities by being collaborative and allowing districts to customize the material. Lessons have been separated into components; Warm Ups, Activities, Cool Downs, and practice problems can all be assigned to small groups and individual students, depending on the needs of a particular teacher. Common Cartridge and LTI integration allows for materials to be integrated into all major Learning Management Systems. The instructional materials reviewed for McGraw-Hill Illustrative Mathematics Grade 7 can be adapted for local use. Assessments are available in PDF and editable documents. Materials include or reference technology that provides opportunities for teachers and/or students to collaborate with each other (e.g. websites, discussion groups, webinars, etc.). The instructional materials reviewed for McGraw-Hill Illustrative Mathematics Grade 7 incorporate technology that provides opportunities for teachers and/or students to collaborate with each other. Students and teachers have the opportunity to collaborate using the applets that are integrated into some of the lessons during activities. The Warm Ups, Activities, Cool Downs, and practice problems can be assigned to small groups to support student collaboration. Materials integrate technology such as interactive tools, virtual manipulatives/objects, and/or dynamic mathematics software in ways that engage students in the Mathematical Practices. The instructional materials reviewed for McGraw-Hill Illustrative Mathematics Grade 7 integrate technology including interactive tools, virtual manipulatives/objects, and dynamic mathematics software in ways that engage students in the MPs. Warm Ups, Activities, Cool Downs, and practice problems can be assigned to small groups or individuals. These sections consistently combine MPs and content. Teachers and students have access to math tools and virtual manipulatives within a given activity or task, when appropriate. Examples of lessons with applets are: In Unit 1, Lesson 3, students use an applet to draw scaled copies of given figures. (MP4) In Unit 3, Lesson 3, students use an applet to find the diameter and the circumference to the nearest tenth. (MP6) >

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