Vmath Third Edition

VMATH THIRD EDITION, LEVELS C–I

CORRELATED TO THE COMMON CORE STATE STANDARDS

COMMON CORE State Standards

VOYAGER SOPRIS LEARNING™

Common Core State Standards for Math	*VMath, Level C*
Grade 2	
Standards for Mathematical Practice	
CCSS.MATH.PRACTICE.MP1 Make sense of problems and persevere in solving them.	Module 3: Lesson 4: 156-159 Module 4: Lesson 7: 220-223
CCSS.MATH.PRACTICE.MP2 Reason abstractly and quantitatively.	Module 1: Lesson 7: 62-65 Module 1: Lesson 10: 74-77 Module 2: Lesson PL2: 88-91
CCSS.MATH.PRACTICE.MP3 Construct viable arguments and critique the reasoning of others.	Module 3: Lesson PL2: 140-143
CCSS.MATH.PRACTICE.MP4 Model with mathematics.	Module 1: Lesson 2: 42-45 Module 1: Lesson 4: 50-53 Module 1: Lesson 5: 54-57 Module 1: Lesson 6: 58-61
CCSS.MATH.PRACTICE.MP5 Use appropriate tools strategically.	Module 4: Lesson PL1: 188-191 Module 4: Lesson PL 2: 192-195
CCSS.MATH.PRACTICE.MP6 Attend to precision.	Module 2: Lesson PL1: 84-87 Module 3: Lesson PL1: 136-139
CCSS.MATH.PRACTICE.MP7 Look for and make use of structure.	Module 1: Lesson 2: 42-45 Module 1: Lesson 10: 74-77
CCSS.MATH.PRACTICE.MP8 Look for and express regularity in repeated reasoning.	Module 1: Lesson 1: 38-41 Module 1: Lesson 3: 46-49
Operations & Algebraic Thinking	
Represent and solve problems involving addition and subtraction.	
CCSS.MATH.CONTENT.2.OA.A.1 Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.	Module 2: Lesson 5: 108-111 Module 2: Lesson 6: 112-115 Module 3: Lesson 3: 152-155 Module 3: Lesson 4: 156-159 Module 3: Lesson 6: 164-167 Module 3: Lesson 7: 168-171
Add and subtract within 20.	
CCSS.MATH.CONTENT.2.OA.B.2 Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.	Module 2: Lesson 1: 92-95 Module 2: Lesson 2: 96-99 Module 2: Lesson 3: 100-103 Module 2: Lesson 4: 104-107 Module 2: Lesson 5: 108-111 Module 2: Lesson 6: 112-115 Module 2: Lesson 9: 124-127 Module 2: Lesson 10: 128-131 Module 3: Lesson 1: 144-147 Module 3: Lesson 2: 148-151 Module 3: Lesson 4: 156-159
Work with equal groups of objects to gain foundations for multiplication.	
CCSS.MATH.CONTENT.2.OA.C.3 Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends.	Module 1: Lesson 4: 50-53

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CCSS.MATH.CONTENT.2.OA.C.4 Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends.	Module 2: Lesson 7: 116-119 Module 2: Lesson 8: 120-123 Module 7: Lesson 7: 388-391 Module 7: Lesson 8: 392-395
Number & Operations in Base Ten	
CCSS.MATH.CONTENT.2.NBT.A.1 Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following as special cases: A. 100 can be thought of as a bundle of ten tens — called a "hundred." B. The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones)	Module 1: Lesson 6: 58-61
CCSS.MATH.CONTENT.2.NBT.A.2 Count within 1000; skip count by 2s, 5s, 10s, and 100s.	Module 1: Lesson 3: 46-49
CCSS.MATH.CONTENT.1.NBT.A.3 Read and write numbers to 1000 using base-ten notation, number names, and expanded form.	Module 1: Lesson 7: 62-65
CCSS.MATH.CONTENT.2.NBT.A.4 Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using >, =, and < symbols to record the results of comparisons.	Module 1: Lesson 5: 54-57 Module 1: Lesson 6: 58-61
Use place value understanding and properties of operations to add and subtract.	
CCSS.MATH.CONTENT.2.NBT.B.5 Fluently add and subtract within 20. By end of Grade 2, know from memory sums of one-digit numbers.	Module 2: Lesson 1: 92-95 Module 2: Lesson 2: 96-99 Module 2: Lesson 3: 100-103 Module 2: Lesson 4: 104-107 Module 2: Lesson 5: 108-111 Module 2: Lesson 6: 112-115 Module 2: Lesson 9: 124-127 Module 2: Lesson 10: 128-131 Module 3: Lesson 1: 144-147 Module 3: Lesson 2: 148-151 Module 3: Lesson 3: 152-155 Module 3: Lesson 4: 156-159 Module 3: Lesson 7: 168-171
CCSS.MATH.CONTENT.2.NBT.B.6 Add up to four two-digit numbers using strategies based on place value and properties of operations.	Module 2: Lesson 1: 92-95 Module 2: Lesson 2: 96-99 Module 2: Lesson 3: 100-103 Module 2: Lesson 4: 104-107 Module 2: Lesson 5: 108-111 Module 2: Lesson 6: 112-115 Module 2: Lesson 9: 124-127 Module 2: Lesson 10: 128-131 Module 2: Lesson 10: 128-131

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	Module 3: Lesson 1: 144-147 Module 3: Lesson 2: 148-151 Module 3: Lesson 3: 152-155 Module 3: Lesson 4: 156-159
CCSS.MATH.CONTENT.2.NBT.B.7 Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.	Module 2: Lesson 1: 92-95 Module 2: Lesson 2: 96-99 Module 2: Lesson 3: 100-103 Module 2: Lesson 4: 104-107 Module 2: Lesson 5: 108-111 Module 2: Lesson 6: 112-115 Module 2: Lesson 9: 124-127 Module 2: Lesson 10: 128-131 Module 3: Lesson 1: 144-147 Module 3: Lesson 2: 148-151 Module 3: Lesson 3: 152-155 Module 3: Lesson 4: 156-159 Module 3: Lesson 9: 176-179 Module 3: Lesson 10: 180-183
CCSS.MATH.CONTENT.2.NBT.B.8 Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a given number 100–900.	Module 2: Lesson 7: 116-119 Module 3: Lesson 5: 160-163
CCSS.MATH.CONTENT.2.NBT.B.9 Explain why addition and subtraction strategies work, using place value and the properties of operations	Module 3: Lesson 1: 144-147 Module 3: Lesson 7: 168-171
Measurement and Data	
Measure and estimate lengths in standard units.	
CCSS.MATH.CONTENT.2.MD.A.1 Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.	Module 4: Lesson 1: 196-199 Module 4: Lesson 3: 204-207 Module 4: Lesson 4: 208-211
CCSS.MATH.CONTENT.2.MD.A.2 Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen.	Module 4: Lesson 5: 212-215
CCSS.MATH.CONTENT.2.MD.A.3 Estimate lengths using units of inches, feet, centimeters, and meters.	Module 4: Lesson 3: 204-207
CCSS.MATH.CONTENT.2.MD.A.4 Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.	Module 4: Lesson 2: 200-203
Relate addition and subtraction to length.	
CCSS.MATH.CONTENT.2.MD.B.5 Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.	Module 4: Lesson 7: 220-223
CCSS.MATH.CONTENT.2.MD.B.6 Represent whole	Module 4: Lesson 6: 216-219

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numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, ..., and represent whole-number sums and differences within 100 on a number line diagram.	
Word with time and money.	
CCSS.MATH.CONTENT.2.MD.C.7 Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.	Module 6: Lesson 1: 308-311 Module 6: Lesson 2: 312-315
CCSS.MATH.CONTENT.2.MD.C.8 Solve word problems involving dollar bills, quarters, dimes, nickels and pennies, using $ and ¢ symbols appropriately. Example: If you have 2 dimes and 3 pennies, how many cents do you have?	Module 5: Lesson 1: 250-253 Module 5: Lesson 2: 254-257 Module 5: Lesson 3: 258-261
Representing and interpreting data	
CCSS.MATH.CONTENT.2.MD.D.9 Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units.	Module 4: Lesson 8: 224-227 Module 4: Lesson 9: 228-231 Module 6: Lesson 10: 344-347
CCSS.MATH.CONTENT.2.MD.D.10 Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems[1] using information presented in a bar graph.	Module 4: Lesson 10: 232-235 Module 6: Lesson 3: 316-319 Module 6: Lesson 4: 320-323 Module 6: Lesson 5: 324-327 Module 6: Lesson 6: 328-331 Module 6: Lesson 7: 332-335 Module 6: Lesson 8: 336-339 Module 6: Lesson 9: 340-343
Geometry	
Reason with shapes and their attributes.	
CCSS.MATH.CONTENT.2.G.A.1. Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces.[1] Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.	Module 5: Lesson 4: 262-265 Module 5: Lesson 5: 266-269 Module 5: Lesson 6: 270-273 Module 5: Lesson 7: 274-277 Module 5: Lesson 10: 286-289
CCSS.MATH.CONTENT.2.G.A.2 Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.	Module 3: Lesson 8: 172-175 Module 5: Lesson 8: 278-281 Module 5: Lesson 9: 282-285 Module 7: Lesson 9: 396-399 Module 7: Lesson 10: 400-403
CCSS.MATH.CONTENT.2.G.A.3 Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words halves, thirds, half of, a third of, etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape.	Module 3: Lesson 8: 172-175 Module 5: Lesson 8: 278-281 Module 5: Lesson 9: 282-285 Module 7: Lesson 1: 364-367 Module 7: Lesson 2: 368-371 Module 7: Lesson 3: 372-375

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	Module 7: Lesson 4: 376-379 Module 7: Lesson 5: 380-383 Module 7: Lesson 6: 384-387 Module 7: Lesson 9: 396-399 Module 7: Lesson 10: 400-403

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Grade 3	
Standards for Mathematical Practice	
CCSS.MATH.PRACTICE.MP1 Make Sense of problems and persevere in solving them.	Module 2: Lesson PL1: 86-89 Module 5: Lesson PL1: 264-267 Module 3: Lesson 15: 192-195 Module 5: Lesson 10: 304-307
CCSS.MATH.PRACTICE.MP2 Reason abstractly and quantitatively.	Module 5: Lesson PL2: 268-270 Module 7: Lesson PL1: 360-363 Module 7: Lesson PL2: 364-367
CCSS.MATH.PRACTICE.MP3 Construct viable arguments and critique the reasoning of others.	Module 6: Lesson PL2: 316-319
CCSS.MATH.PRACTICE.MP4 Model with mathematics.	Module 1: Lesson 2: 42-45 Module 2: Lesson PL2: 90-93 Module 3: Lesson 13: 184-187 Module 5: Lesson PL2: 268-270 Module 6: Lesson PL1: 312-315
CCSS.MATH.PRACTICE.MP5 Use appropriate tools strategically.	Module 4: Lesson PL1: 200-203 Module 4: Lesson PL2: 204-206
CCSS.MATH.PRACTICE.MP6 Attend to precision.	Module 3: Lesson PL1: 134-137 Module 3: Lesson PL2: 138-141
CCSS.MATH.PRACTICE.MP7 Look for and make use of structure.	Module 1: Lesson 7: 62-65 Module 1: Lesson 8: 66-69
CCSS.MATH.PRACTICE.MP8 Look for and express regularity in repeated reasoning.	Module 1: Lesson 1: 38-41 Module 1: Lesson 3: 46-49 Module 4: Lesson 4: 216-219
Operations & Algebraic Thinking	
Represent and solve problems involving multiplication and division	
CCSS.Math.Content.3.OA.A.1 Interpret products of whole numbers, e.g., interpret 5 × 7 as the total number of objects in 5 groups of 7 objects each. *For example, describe a context in which a total number of objects can be expressed as 5 × 7.*	Module 4: Lesson 1: 207 Module 4: Lesson 2: 208-211 Module 4: Lesson 5: 220-223 Module 4: Lesson 6: 224-227 Module 4: Lesson 7: 228-231 Module 4: Lesson 8: 232-235 Module 4: Lesson 9: 236-239 Module 4: Lesson 10: 240-241
CCSS.Math.Content.3.OA.A.2 Interpret whole-number quotients of whole numbers, e.g., interpret 56 ÷ 8 as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each. *For example, describe a context in which a number of shares or a number of groups can be expressed as 56 ÷ 8.*	Module 5: Lesson 1: 271 Module 5: Lesson 2: 272-275 Module 5: Lesson 3: 276-279 Module 5: Lesson 4: 280-283 Module 5: Lesson 5: 284-287 Module 5: Lesson 7: 292-295
CCSS.Math.Content.3.OA.A.3 Use multiplication and division within 100 to solve word problems in	Module 4: Lesson 1: 207 Module 4: Lesson 2: 208-211

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situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.[1]	Module 4: Lesson 5: 220-223 Module 4: Lesson 6: 224-227 Module 4: Lesson 7: 228-231 Module 4: Lesson 8: 232-235 Module 4: Lesson 9: 236-239 Module 4: Lesson 10: 240-241 Module 5: Lesson 1: 271 Module 5: Lesson 2: 272-275 Module 5: Lesson 3: 276-279 Module 5: Lesson 4: 280-283 Module 5: Lesson 5: 284-287 Module 5: Lesson 7: 292-295 Module 5: Lesson 9: 300-303 Module 5: Lesson 10: 304-307
CCSS.Math.Content.3.OA.A.4 Determine the unknown whole number in a multiplication or division equation relating three whole numbers. *For example, determine the unknown number that makes the equation true in each of the equations 8 × ? = 48, 5 = _ ÷ 3, 6 × 6 = ?*	Module 4: Lesson 11: 242-246 Module 5: Lesson 8: 296-299 Module 5: Lesson 9: 300-303 Module 5: Lesson 10: 304-307
Understand properties of multiplication and the relationship between multiplication and division.	
CCSS.Math.Content.3.OA.B.5 Apply properties of operations as strategies to multiply and divide.[2] *Examples: If 6 × 4 = 24 is known, then 4 × 6 = 24 is also known. (Commutative property of multiplication.) 3 × 5 × 2 can be found by 3 × 5 = 15, then 15 × 2 = 30, or by 5 × 2 = 10, then 3 × 10 = 30. (Associative property of multiplication.) Knowing that 8 × 5 = 40 and 8 × 2 = 16, one can find 8 × 7 as 8 × (5 + 2) = (8 × 5) + (8 × 2) = 40 + 16 = 56. (Distributive property.)*	Module 4: Lesson 11: 242-246 Module 4: Lesson 12: 247
CCSS.Math.Content.3.OA.B.6 Understand division as an unknown-factor problem. *For example, find 32 ÷ 8 by finding the number that makes 32 when multiplied by 8*.	Module 5: Lesson 1: 271 Module 5: Lesson 2: 272-275 Module 5: Lesson 3: 276-279 Module 5: Lesson 4: 280-283 Module 5: Lesson 5: 284-287 Module 5: Lesson 7: 292-295
Multiply and divide within 100.	
CCSS.Math.Content.3.OA.C.7 Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8 × 5 = 40, one knows 40 ÷ 5 = 8) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.	Module 4: Lesson 1: 207 Module 4: Lesson 2: 208-211 Module 4: Lesson 5: 220-223 Module 4: Lesson 6: 224-227 Module 4: Lesson 7: 228-231 Module 4: Lesson 8: 232-235 Module 4: Lesson 9: 236-239 Module 4: Lesson 10: 240-241 Module 4: Lesson 11: 242-246 Module 4: Lesson 14: 252-255

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	Module 4: Lesson 15: 256-259 Module 5: Lesson 1: 271 Module 5: Lesson 2: 272-275 Module 5: Lesson 3: 276-279 Module 5: Lesson 4: 280-283 Module 5: Lesson 5: 284-287 Module 5: Lesson 7: 292-295 Module 5: Lesson 9: 300-303 Module 5: Lesson 10: 304-307
Solve problems involving the four operations, and identify and explain patterns in arithmetic.	
CCSS.Math.Content.3.OA.D.8 Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.[3]	Module 3: Lesson 15: 192-195
CCSS.Math.Content.3.OA.D.9 Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. *For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends*.	Module 4: Lesson 2: 208-211 Module 4: Lesson 3: 212-215 Module 4: Lesson 4: 216-219 Module 5: Lesson 6: 288-291
Number & Operations in Base Ten	
Use place value understanding and properties of operations to perform multi-digit arithmetic.1	
CCSS.Math.Content.3.NBT.A.1 Use place value understanding to round whole numbers to the nearest 10 or 100.	Module 2: Lesson 1: 94-97 Module 2: Lesson 2: 98-101 Module 2: Lesson 3: 102-105 Module 2: Lesson 4: 106-109 Module 2: Lesson 5: 110-113 Module 2: Lesson 6: 114-117 Module 2: Lesson 7: 118-121 Module 2: Lesson 8: 122-123 Module 2: Lesson 9: 124-128 Module 2: Lesson 10: 129-132 Module 3: Lesson 7: 164-167 Module 3: Lesson 14: 188-191
CCSS.Math.Content.3.NBT.A.2 Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.	Module 3: Lesson 1: 142-145 Module 3: Lesson 2: 146-147 Module 3: Lesson 3: 148-151 Module 3: Lesson 4: 152-155 Module 3: Lesson 5: 156-159 Module 3: Lesson 6: 160-163 Module 3: Lesson 8: 168-169 Module 3: Lesson 9: 170-173

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	Module 3: Lesson 10: 174-175 Module 3: Lesson 11: 176-179 Module 3: Lesson 12: 180-183 Module 3: Lesson 13: 184-187
CCSS.Math.Content.3.NBT.A.3 Multiply one-digit whole numbers by multiples of 10 in the range 10–90 (e.g., 9 × 80, 5 × 60) using strategies based on place value and properties of operations.	Module 4: Lesson 13: 248-251
Number & Operations—Fractions	
Develop understanding of fractions as numbers.	
CCSS.Math.Content.3.NF.A.1 Understand a fraction 1/*b* as the quantity formed by 1 part when *a* whole is partitioned into *b* equal parts; understand a fraction *a*/*b* as the quantity formed by a parts of size 1/*b*.	Module 6: Lesson 1: 320-323 Module 6: Lesson 2: 324-325 Module 6: Lesson 3: 326-329 Module 6: Lesson 4: 330-333
CCSS.Math.Content.3.NF.A.2 Understand a fraction as a number on the number line; represent fractions on a number line diagram.	Module 6: Lesson 9: 348-351 Module 6: Lesson 10: 352-355
CCSS.Math.Content.3.NF.A.2a Represent a fraction 1/*b* on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into *b* equal parts. Recognize that each part has size 1/*b* and that the endpoint of the part based at 0 locates the number 1/*b* on the number line.	Module 6: Lesson 8: 244-247
CCSS.Math.Content.3.NF.A.2b Represent a fraction *a*/*b* on a number line diagram by marking off a lengths 1/*b* from 0. Recognize that the resulting interval has size *a*/*b* and that its endpoint locates the number *a*/*b* on the number line.	Module 6: Lesson 8: 244-247
CCSS.Math.Content.3.NF.A.3 Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.	Module 6: Lesson 5: 334-335
CCSS.Math.Content.3.NF.A.3a Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line.	Module 6: Lesson 5: 334-335 Module 6: Lesson 6: 336-339 Module 6: Lesson 7: 340-343
CCSS.Math.Content.3.NF.A.3b Recognize and generate simple equivalent fractions, e.g., 1/2 = 2/4, 4/6 = 2/3. Explain why the fractions are equivalent, e.g., by using a visual fraction model.	Module 6: Lesson 5: 334-335 Module 6: Lesson 6: 336-339 Module 6: Lesson 7: 340-343
CCSS.Math.Content.3.NF.A.3c Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. *Examples: Express 3 in the form 3 = 3/1; recognize that 6/1 = 6; locate 4/4 and 1 at the same point of a number line diagram*.	Module 6: Lesson 1: 320-323 Module 6: Lesson 8: 244-247
CCSS.Math.Content.3.NF.A.3d Compare two fractions with the same numerator or the same denominator by reasoning about their size.	Module 6: Lesson 6: 336-339

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Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.	
Measurement & Data	
Solve problems involving measurement and estimation.	
CCSS.Math.Content.3.MD.A.1 Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.	Module 7: Lesson 5: 384-387 Module 7: Lesson 6: 388-391
CCSS.Math.Content.3.MD.A.2 Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l).[1] Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.[2]	Module 7: Lesson 7: 392-395 Module 7: Lesson 8: 396-399
Represent and interpret data.	
CCSS.Math.Content.3.MD.B.3 Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs. *For example, draw a bar graph in which each square in the bar graph might represent 5 pets*.	Module 7: Lesson 1: 368-371 Module 7: Lesson 2: 372-375 Module 7: Lesson 3: 376-379 Module 7: Lesson 4: 380-383
CCSS.Math.Content.3.MD.B.4 Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units—whole numbers, halves, or quarters.	Module 7: Lesson 9: 400-403 Module 7: Lesson 10: 404-407
Geometric measurement: understand concepts of area and relate area to multiplication and to addition.	
CCSS.Math.Content.3.MD.C.5 Recognize area as an attribute of plane figures and understand concepts of area measurement.	provides opportunities: Module 7: Lesson 15: 422-425
CCSS.Math.Content.3.MD.C.5a A square with side length 1 unit, called "a unit square," is said to have "one square unit" of area, and can be used to measure area.	Module 7: Lesson 15: 422-425
CCSS.Math.Content.3.MD.C.5b A plane figure which can be covered without gaps or overlaps by *n* unit squares is said to have an area of *n* square units.	Module 7: Lesson 15: 422-425
CCSS.Math.Content.3.MD.C.6 Measure areas by counting unit squares (square cm, square m, square in, square ft, and improvised units).	Module 7: Lesson 15: 422-425

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CCSS.Math.Content.3.MD.C.7 Relate area to the operations of multiplication and addition.	
CCSS.Math.Content.3.MD.C.7a Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths.	Module 7: Lesson 15: 422-425
CCSS.Math.Content.3.MD.C.7b Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning.	Module 7: Lesson 15: 422-425
CCSS.Math.Content.3.MD.C.7c Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths a and $b + c$ is the sum of $a \times b$ and $a \times c$. Use area models to represent the distributive property in mathematical reasoning.	
CCSS.Math.Content.3.MD.C.7d Recognize area as additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real world problems.	Module 7: Lesson 15: 422-425
Geometric measurement: recognize perimeter.	
CCSS.Math.Content.3.MD.D.8 Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.	Module 7: Lesson 14: 418-421
Geometry	
Reason with shapes and their attributes.	
CCSS.Math.Content.3.G.A.1 Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.	Module 7: Lesson 11: 408-409 Module 7: Lesson 12: 410-413 Module 7: Lesson 13: 414-417
CCSS.Math.Content.3.G.A.2 Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. *For example, partition a shape into 4 parts with equal area, and describe the area of each part as 1/4 of the area of the shape*.	Module 6: Lesson 1: 320-323

Common Core State Standards for Math	*Vmath, Level E*
Grade 4	
Standards for Mathematical Practice	
CCSS.MATH.PRACTICE.MP1 Make Sense of problems and persevere in solving them.	Module 3: Lesson 15: 178-181 Working Backward to Solve Problems
CCSS.MATH.PRACTICE.MP2 Reason abstractly and quantitatively.	Module 1: Lesson 6: 56-57 Module 2: Lesson LP2: 78-81
CCSS.MATH.PRACTICE.MP3 Construct viable arguments and critique the reasoning of others.	Module 3: Lesson PL1: 120-123 Module 4: Lesson PL2: 190-193
CCSS.MATH.PRACTICE.MP4 Model with mathematics.	Module 1: Lesson 6: 56-57 Module 1: Lesson 9: 66-67 Module 2: Lesson 1: 82-83 Module 2: Lesson 8: 104-107
CCSS.MATH.PRACTICE.MP5 Use appropriate tools strategically.	Module 5: Lesson PL1: 230 Module 5: Lesson PL2: 231
CCSS.MATH.PRACTICE.MP6 Attend to precision.	Module 6: Lesson PL1: 292-295 Module 6: Lesson PL2: 296-300 Module 7: Lesson PL1: 342-345 Module 7: Lesson PL2: 346-349
CCSS.MATH.PRACTICE.MP7 Look for and make use of structure.	Module 2: Lesson LP1: 77 Module 7: Lesson 11: 388-391
CCSS.MATH.PRACTICE.MP8 Look for and express regularity in repeated reasoning.	Module 4: Lesson 5: 210-211 Module 3: Lesson 3: 136-139
Operations & Algebraic Thinking	
Use the four operations with whole numbers to solve problems.	
CCSS.Math.Content.4.OA.A.1 Interpret a multiplication equation as a comparison, e.g., interpret 35 = 5 × 7 as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations.	Module 4: Lesson 2: 198-201 Module 4: Lesson 3: 202-205
CCSS.Math.Content.4.OA.A.2 Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.[1]	Module 3: Lesson 1: 128-131 Module 3: Lesson 2: 132-135 Module 3: Lesson 3: 136-139 Module 3: Lesson 15: 178-181 Module 4: Lesson 2: 198-201 Module 4: Lesson 3: 202-205
CCSS.Math.Content.4.OA.A.3 Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies	Module 2: Lesson 8: 104-107 Module 3: Lesson 14: 174-177 Module 5: Lesson 14: 280-283

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including rounding.	
Gain familiarity with factors and multiples.	
CCSS.Math.Content.4.OA.B.4 Find all factor pairs for a whole number in the range 1–100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1–100 is prime or composite.	Module 4: Lesson 1: 194-197 Module 4: Lesson 2: 198-201 Module 4: Lesson 1: 194-197 Module 4: Lesson 4: 206-209
Generate and analyze patterns.	
CCSS.Math.Content.4.OA.C.5 Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. *For example, given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way*.	Module 7: Lesson 10: 384-387 Module 7: Lesson 11: 388-391
Number & Operations in Base Ten	
Generalize place value understanding for multi-digit whole numbers.	
CCSS.Math.Content.4.NBT.A.1 Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. *For example, recognize that 700 ÷ 70 = 10 by applying concepts of place value and division*.	Module 1: Lesson 1: 38-41
CCSS.Math.Content.4.NBT.A.2 Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.	Module 1: Lesson 1: 38-41 Module 1: Lesson 2: 42-45 Module 1: Lesson 5: 54-55
CCSS.Math.Content.4.NBT.A.3 Use place value understanding to round multi-digit whole numbers to any place.	Module 1: Lesson 9: 66-67 Module 2: Lesson 9: 108-111 Module 2: Lesson 10: 112-115
Use place value understanding and properties of operations to perform multi-digit arithmetic.	
CCSS.Math.Content.4.NBT.B.4 Fluently add and subtract multi-digit whole numbers using the standard algorithm.	Module 2: Lesson 1: 82-83 Module 2: Lesson 2: 84-87 Module 2: Lesson 3: 88-91 Module 2: Lesson 4: 92-93 Module 2: Lesson 5: 94-95 Module 2: Lesson 6: 96-99 Module 2: Lesson 7: 100-103 Module 2: Lesson 9: 108-111 Module 2: Lesson 10: 112-115 Module 5: Lesson 4: 244-247 Module 5: Lesson 5: 248-251

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	Module 5: Lesson 6: 252-255 Module 5: Lesson 7: 256-259 Module 5: Lesson 8: 260-263
CCSS.Math.Content.4.NBT.B.5 Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.	Module 3: Lesson 1: 128-131 Module 3: Lesson 2: 132-135 Module 3: Lesson 3: 136-139 Module 3: Lesson 4: 140-143 Module 3: Lesson 5: 144-147 Module 3: Lesson 6: 148-151 Module 3: Lesson 7: 152-155 Module 3: Lesson 14: 174-177
CCSS.Math.Content.4.NBT.B.6 Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.	Module 3: Lesson 8: 156-159 Module 3: Lesson 9: 160-163 Module 3: Lesson 10: 164-165 Module 3: Lesson 11: 166-167 Module 3: Lesson 12: 168-169 Module 3: Lesson 13: 170-173
Number & Operations—Fractions	
Extend understanding of fraction equivalence and ordering.	
CCSS.Math.Content.4.NF.A.1 Explain why a fraction a/b is equivalent to a fraction $(n \times a)/(n \times b)$ by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.	Module 4: Lesson 3: 202-205 Module 4: Lesson 4: 206-209 Module 4: Lesson 6: 214-215 Module 4: Lesson 7: 216-219 Module 4: Lesson 8: 220-221
CCSS.Math.Content.4.NF.A.2 Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as 1/2. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.	Module 4: Lesson 9: 222-223 Module 4: Lesson 10: 224-227
Build fractions from unit fractions	
CCSS.Math.Content.4.NF.B.3 Understand a fraction a/b with $a > 1$ as a sum of fractions $1/b$.	
CCSS.Math.Content.4.NF.B.3a Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.	Module 5: Lesson 9: 264-265 Module 5: Lesson 10: 266-269 Module 5: Lesson 11: 270-271 Module 5: Lesson 12: 272-275
CCSS.Math.Content.4.NF.B.3b Decompose a fraction into a sum of fractions with the same denominator	Module 4: Lesson 5: 210-213

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in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model. *Examples: 3/8 = 1/8 + 1/8 + 1/8 ; 3/8 = 1/8 + 2/8 ; 2 1/8 = 1 + 1 + 1/8 = 8/8 + 8/8 + 1/8*.	
CCSS.Math.Content.4.NF.B.3c Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction.	
CCSS.Math.Content.4.NF.B.3d Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.	Module 5: Lesson 9: 264-265 Module 5: Lesson 10: 266-269 Module 5: Lesson 11: 270-271 Module 5: Lesson 12: 272-275
CCSS.Math.Content.4.NF.B.4 Apply and extend previous understandings of multiplication to multiply a fraction by a whole number.	
CCSS.Math.Content.4.NF.B.4a Understand a fraction *a*/*b* as a multiple of 1/*b*. *For example, use a visual fraction model to represent 5/4 as the product 5 × (1/4), recording the conclusion by the equation 5/4 = 5 × (1/4)*.	Module 5: Lesson 15: 284-287
CCSS.Math.Content.4.NF.B.4b Understand a multiple of a/b as a multiple of 1/b, and use this understanding to multiply a fraction by a whole number. *For example, use a visual fraction model to express 3 × (2/5) as 6 × (1/5), recognizing this product as 6/5. (In general, n × (a/b) = (n × a)/b.)*	Module 5: Lesson 15: 284-287
CCSS.Math.Content.4.NF.B.4c Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem. *For example, if each person at a party will eat 3/8 of a pound of roast beef, and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie?*	Module 5: Lesson 15: 284-287
Understand decimal notation for fractions, and compare decimal fractions.	
CCSS.Math.Content.4.NF.C.5 Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100.[2] *For example, express 3/10 as 30/100, and add 3/10 + 4/100 = 34/100*.	Module 5: Lesson 1: 232-235 Module 5: Lesson 4: 244-247 Module 5: Lesson 5: 248-251
CCSS.Math.Content.4.NF.C.6 Use decimal notation for fractions with denominators 10 or 100. *For example, rewrite 0.62 as 62/100; describe a length as 0.62 meters; locate 0.62 on a number line*	Module 5: Lesson 1: 232-235 Module 5: Lesson 13: 276-279

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diagram.	
CCSS.Math.Content.4.NF.C.7 Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual model.	Module 5: Lesson 2: 236-239 Module 5: Lesson 3: 240-243
Measurement & Data	
Solve problems involving measurement and conversion of measurements.	
CCSS.Math.Content.4.MD.A.1 Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table. *For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36), ...*	Module 7: Lesson 1: 350-353 Module 7: Lesson 4: 362-365 Module 7: Lesson 5: 366-369 Module 7: Lesson 6: 370-373
CCSS.Math.Content.4.MD.A.2 Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.	Module 7: Lesson 1: 350-353 Module 7: Lesson 2: 354-357 Module 7: Lesson 3: 358-361 Module 7: Lesson 4: 362-365 Module 7: Lesson 5: 366-369 Module 7: Lesson 6: 370-373 Module 7: Lesson 7: 374-377
CCSS.Math.Content.4.MD.A.3 Apply the area and perimeter formulas for rectangles in real world and mathematical problems. *For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor*.	Module 7: Lesson 8: 378-379 Module 7: Lesson 9: 380-383 Module 7: Lesson 15: 402-405
Represent and interpret data.	
CCSS.Math.Content.4.MD.B.4 Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Solve problems involving addition and subtraction of fractions by using information presented in line plots. *For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection*.	Module 7: Lesson 12: 392-395 Module 7: Lesson 13: 396-400 Module 7: Lesson 14: 401
Geometric measurement: understand concepts of angle and measure angles.	
CCSS.Math.Content.4.MD.C.5 Recognize angles as geometric shapes that are formed wherever two	Module 6: Lesson PL2: 296-300

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rays share a common endpoint, and understand concepts of angle measurement:	
CCSS.Math.Content.4.MD.C.5a An angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through 1/360 of a circle is called a "one-degree angle," and can be used to measure angles.	Module 6: Lesson 1: 301 Module 6: Lesson 7: 322-325
CCSS.Math.Content.4.MD.C.5b An angle that turns through *n* one-degree angles is said to have an angle measure of *n* degrees.	Module 6: Lesson 1: 301 Module 6: Lesson 7: 322-325
CCSS.Math.Content.4.MD.C.6 Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.	Module 6: Lesson 1: 301
CCSS.Math.Content.4.MD.C.7 Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure.	Module 6: Lesson 1: 301 Module 6: Lesson 6: 318-321 Module 6: Lesson 8: 326-329
Geometry	
Draw and identify lines and angles, and classify shapes by properties of their lines and angles.	
CCSS.Math.Content.4.G.A.1 Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.	Module 6: Lesson 7: 322-325
CCSS.Math.Content.4.G.A.2 Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles.	Module 6: Lesson 2: 302-305 Module 6: Lesson 3: 306-309 Module 6: Lesson 4: 310-313 Module 6: Lesson 5: 314-317
CCSS.Math.Content.4.G.A.3 Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.	Module 6: Lesson 9: 330-331 Module 6: Lesson 10: 332-335

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Standards for Mathematical Practice	
CCSS.MATH.PRACTICE.MP1 Make Sense of problems and persevere in solving them.	Module 5: Lesson PL2: 257 Module 6: Lesson 3: 308-311
CCSS.MATH.PRACTICE.MP2 Reason abstractly and quantitatively.	Module 1: Lesson 10: 75-78 Module 4: Lesson PL1: 186-189 Module 4: Lesson PL2: 190-193 Module 3: Lesson 15: 176-179
CCSS.MATH.PRACTICE.MP3 Construct viable arguments and critique the reasoning of others.	Module 5: Lesson 9: 284-287
CCSS.MATH.PRACTICE.MP4 Model with mathematics.	Module 1: Lesson 1: 38-41 Module 6: Lesson PL2: 297-299 Module 7: Lesson PL1: 342-343 Module 4: Lesson 12: 235
CCSS.MATH.PRACTICE.MP5 Use appropriate tools strategically.	Module 6: Lesson PL1: 296
CCSS.MATH.PRACTICE.MP6 Attend to precision.	Module 3: Lesson PL2: 126-127 Module 7: Lesson PL2: 344-347 Module 6: Lesson 10: 334-337
CCSS.MATH.PRACTICE.MP7 Look for and make use of structure.	Module 3: Lesson PL1: 122-125
CCSS.MATH.PRACTICE.MP8 Look for and express regularity in repeated reasoning.	Module 5: Lesson 1: 258-261
Operations & Algebraic Thinking	
Write and interpret numerical expressions.	
CCSS.Math.Content.5.OA.A.1 Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.	Module 5: Lesson 2: 262-265 Module 5: Lesson 3: 266-268 Module 5: Lesson 6: 274-275
CCSS.Math.Content.5.OA.A.2 Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. *For example, express the calculation "add 8 and 7, then multiply by 2" as 2 × (8 + 7). Recognize that 3 × (18932 + 921) is three times as large as 18932 + 921, without having to calculate the indicated sum or product*.	Module 5: Lesson 2: 262-265 Module 5: Lesson 3: 266-268 Module 5: Lesson 4: 269 Module 5: Lesson 6: 274-275 Module 5: Lesson 7: 276-279 Module 5: Lesson 8: 280-283 Module 5: Lesson 9: 284-287
Analyze patterns and relationships.	
CCSS.Math.Content.5.OA.B.3 Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane. *For example, given the rule "Add 3" and the starting number 0, and given the rule "Add 6" and the starting number 0, generate terms in the resulting sequences, and observe that the terms in one*	Module 5: Lesson 5: 270-273 Module 5: Lesson 10: 288-291

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sequence are twice the corresponding terms in the other sequence. Explain informally why this is so.	
Number & Operations in Base Ten	
Understand the place value system.	
CCSS.Math.Content.5.NBT.A.1 Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.	Module 2: Lesson 3: 92-95 Module 2: Lesson 4: 96-99 Module 2: Lesson 5: 100-103
CCSS.Math.Content.5.NBT.A.2 Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.	Module 2: Lesson 3: 92-95 Module 2: Lesson 4: 96-99 Module 2: Lesson 5: 100-103 Module 3: Lesson 6: 146-149
CCSS.Math.Content.5.NBT.A.3 Read, write, and compare decimals to thousandths.	Module 1: Lesson 8: 66-69 Module 2: Lesson 3: 92-95 Module 2: Lesson 4: 96-99
CCSS.Math.Content.5.NBT.A.3a Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., 347.392 = 3 × 100 + 4 × 10 + 7 × 1 + 3 × (1/10) + 9 × (1/100) + 2 × (1/1000).	Module 2: Lesson 4: 96-99
CCSS.Math.Content.5.NBT.A.3b Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.	Module 2: Lesson 1: 86-89 Module 2: Lesson 6: 104-105 Module 2: Lesson 7: 106-107 Module 2: Lesson 8: 108-111
CCSS.Math.Content.5.NBT.A.4 Use place value understanding to round decimals to any place.	Module 2: Lesson 2: 90-91 Module 2: Lesson 9: 112-116 Module 2: Lesson 10: 117-120 Module 3: Lesson 13: 170-174 Module 3: Lesson 14: 175 Module 3: Lesson 15: 176-179
Perform operations with multi-digit whole numbers and with decimals to hundredths.	
CCSS.Math.Content.5.NBT.B.5 Fluently multiply multi-digit whole numbers using the standard algorithm.	Module 3: Lesson 7: 150-153
CCSS.Math.Content.5.NBT.B.6 Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.	Module 3: Lesson 10: 160-163
CCSS.Math.Content.5.NBT.B.7 Add, subtract,	Module 3: Lesson 1: 128-131

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multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.	Module 3: Lesson 2: 132-135 Module 3: Lesson 3: 136-137 Module 3: Lesson 4: 138-141 Module 3: Lesson 5: 142-145 Module 3: Lesson 8: 154-155 Module 3: Lesson 9: 156-159 Module 3: Lesson 11: 164-165 Module 3: Lesson 12: 166-169
Number & Operations—Fractions	
Use equivalent fractions as a strategy to add and subtract fractions.	
CCSS.Math.Content.5.NF.A.1 Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. *For example, 2/3 + 5/4 = 8/12 + 15/12 = 23/12. (In general, a/b + c/d = (ad + bc)/bd.)*	Module 3: Lesson 1: 128-131 Module 3: Lesson 2: 132-135 Module 3: Lesson 3: 136-137 Module 3: Lesson 4: 138-141 Module 3: Lesson 5: 142-145 Module 3: Lesson 6: 146-149 Module 3: Lesson 7: 150-153 Module 3: Lesson 8: 154-155 Module 3: Lesson 9: 156-159 Module 4: Lesson 1: 194-197 Module 4: Lesson 2: 198-201 Module 4: Lesson 3: 202-205 Module 4: Lesson 4: 206-209 Module 4: Lesson 5: 210-211 Module 4: Lesson 6: 212-215 Module 4: Lesson 7: 216-219 Module 4: Lesson 8: 220-223 Module 4: Lesson 9: 224-228
CCSS.Math.Content.5.NF.A.2 Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. *For example, recognize an incorrect result 2/5 + 1/2 = 3/7, by observing that 3/7 < 1/2*.	Module 3: Lesson 1: 128-131 Module 3: Lesson 2: 132-135 Module 3: Lesson 6: 146-149 Module 3: Lesson 7: 150-153 Module 3: Lesson 8: 154-155 Module 3: Lesson 9: 156-159 Module 4: Lesson 1: 194-197 Module 4: Lesson 2: 198-201 Module 4: Lesson 6: 212-215 Module 4: Lesson 7: 216-219 Module 4: Lesson 8: 220-223 Module 4: Lesson 9: 224-228
Apply and extend previous understandings of multiplication and division.	
CCSS.Math.Content.5.NF.B.3 Interpret a fraction as division of the numerator by the denominator (*a*/*b* =	Module 4: Lesson 12: 235

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a ÷ *b*). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. *For example, interpret 3/4 as the result of dividing 3 by 4, noting that 3/4 multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size 3/4. If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie?*	
CCSS.Math.Content.5.NF.B.4 Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.	Module 4: Lesson 10: 229 Module 4: Lesson 11: 230-234
CCSS.Math.Content.5.NF.B.4a Interpret the product (*a*/*b*) × *q* as a parts of a partition of *q* into *b* equal parts; equivalently, as the result of a sequence of operations *a* × *q* ÷ *b*. *For example, use a visual fraction model to show (2/3) × 4 = 8/3, and create a story context for this equation. Do the same with (2/3) × (4/5) = 8/15. (In general, (a/b) × (c/d) = ac/bd.)*	Module 4: Lesson 10: 229 Module 4: Lesson 15: 245-248
CCSS.Math.Content.5.NF.B.4b Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.	Supports standard: Module 7: Lesson 8: 372-375
CCSS.Math.Content.5.NF.B.5 Interpret multiplication as scaling (resizing), by:	
CCSS.Math.Content.5.NF.B.5a Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication.	Module 4: Lesson 10: 229 Module 4: Lesson 11: 230-234
CCSS.Math.Content.5.NF.B.5b Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence *a*/*b* = (*n* × *a*)/(*n* × *b*) to the effect of multiplying *a*/*b* by 1.	Module 4: Lesson 10: 229 Module 4: Lesson 11: 230-234
CCSS.Math.Content.5.NF.B.6 Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.	Module 4: Lesson 15: 245-248

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CCSS.Math.Content.5.NF.B.7 Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.[1]	Module 4: Lesson 14: 240-244
CCSS.Math.Content.5.NF.B.7a Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. *For example, create a story context for (1/3) ÷ 4, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that (1/3) ÷ 4 = 1/12 because (1/12) × 4 = 1/3*.	Module 4: Lesson 13: 236-239 Module 4: Lesson 14: 240-244
CCSS.Math.Content.5.NF.B.7b Interpret division of a whole number by a unit fraction, and compute such quotients. *For example, create a story context for 4 ÷ (1/5), and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that 4 ÷ (1/5) = 20 because 20 × (1/5) = 4*.	Module 3: Lesson 13: 170-174 Module 3: Lesson 14: 175 Module 4: Lesson 13: 236-239 Module 4: Lesson 14: 240-244
CCSS.Math.Content.5.NF.B.7c Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem. *For example, how much chocolate will each person get if 3 people share 1/2 lb of chocolate equally? How many 1/3-cup servings are in 2 cups of raisins?*	Module 3: Lesson 13: 170-174 Module 3: Lesson 14: 175 Module 4: Lesson 13: 236-239 Module 4: Lesson 14: 240-244
Measurement and Data	
Convert like measurement units within a given measurement system.	
CCSS.Math.Content.5.MD.A.1 Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.	Module 7: Lesson 3: 356-359 Module 7: Lesson 4: 360-363
Represent and interpret data.	
CCSS.Math.Content.5.MD.B.2 Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots. *For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally*.	Module 6: Lesson 1: 300-303 Module 6: Lesson 2: 304-307 Module 6: Lesson 3: 308-311 Module 6: Lesson 4: 312-315 Module 6: Lesson 5: 316-319 Module 6: Lesson 6: 320-323 Module 6: Lesson 7: 324-327 Module 6: Lesson 8: 328-332 Module 6: Lesson 9: 333 Module 6: Lesson 10: 334-337
Geometric measurement: understand concepts of volume.	
CCSS.Math.Content.5.MD.C.3 Recognize volume as an attribute of solid figures and understand	Module 7: Lesson 5: 364-365

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concepts of volume measurement.	
CCSS.Math.Content.5.MD.C.3a A cube with side length 1 unit, called a "unit cube," is said to have "one cubic unit" of volume, and can be used to measure volume.	Module 7: Lesson 5: 364-365
CCSS.Math.Content.5.MD.C.3b A solid figure which can be packed without gaps or overlaps using *n* unit cubes is said to have a volume of *n* cubic units.	Module 7: Lesson 5: 364-365
CCSS.Math.Content.5.MD.C.4 Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.	Module 7: Lesson 5: 364-365
CCSS.Math.Content.5.MD.C.5 Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume.	Module 7: Lesson 5: 364-365 Module 7: Lesson 6: 366-370 Module 7: Lesson 7: 371
CCSS.Math.Content.5.MD.C.5a Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent threefold whole-number products as volumes, e.g., to represent the associative property of multiplication.	Module 7: Lesson 5: 364-365 Module 7: Lesson 7: 371
CCSS.Math.Content.5.MD.C.5b Apply the formulas $V = l \times w \times h$ and $V = b \times h$ for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real world and mathematical problems.	Module 7: Lesson 5: 364-365 Module 7: Lesson 6: 366-370 Module 7: Lesson 7: 371 Module 7: Lesson 8: 372-375
CCSS.Math.Content.5.MD.C.5c Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems.	Module 7: Lesson 5: 364-365 Module 7: Lesson 6: 366-370 Module 7: Lesson 7: 371
Geometry	
Graph points on the coordinate plane to solve real-world and mathematical problems.	
CCSS.Math.Content.5.G.A.1 Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., *x*-axis and *x*-coordinate, *y*-axis and *y*-coordinate).	Module 7: Lesson 9: 376-379

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CCSS.Math.Content.5.G.A.2 Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.	Module 7: Lesson 9: 376-379 Module 7: Lesson 10: 380-383
Classify two-dimensional figures into categories based on their properties.	
CCSS.Math.Content.5.G.B.3 Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles.	Module 7: Lesson 1: 348-351 Module 7: Lesson 2: 352-355 Module 7: Lesson 5: 364-365 Module 7: Lesson 6: 366-370 Module 7: Lesson 7: 371
CCSS.Math.Content.5.G.B.4 Classify two-dimensional figures in a hierarchy based on properties.	Module 7: Lesson 1: 348-351 Module 7: Lesson 2: 352-355 Module 7: Lesson 5: 364-365 Module 7: Lesson 6: 366-370 Module 7: Lesson 7: 371

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Standards for Mathematical Practice	
CCSS.MATH.PRACTICE.MP1 Make Sense of problems and persevere in solving them.	Module 2: Lesson PL1: 80-83 Module 5: Lesson 5: 264-267
CCSS.MATH.PRACTICE.MP2 Reason abstractly and quantitatively.	Module 1: Lesson 4: 50-53 Module 3: Lesson PL1: 134-137
CCSS.MATH.PRACTICE.MP3 Construct viable arguments and critique the reasoning of others.	Module 1: Lesson 6: 58-61
CCSS.MATH.PRACTICE.MP4 Model with mathematics.	Module 1: Lesson 8: 66-67 Module 2: Lesson PL2: 84-87 Module 3: Lesson PL2: 138-139 Module 5: Lesson PL1: 245
CCSS.MATH.PRACTICE.MP5 Use appropriate tools strategically.	Module 6: Lesson PL1: 290-291 Module 6: Lesson PL2: 292-295 Module 7: Lesson PL2: 292-295
CCSS.MATH.PRACTICE.MP6 Attend to precision.	Module 4: Lesson PL1: 182-186
CCSS.MATH.PRACTICE.MP7 Look for and make use of structure.	Module 1: Lesson 10: 72-75 Module 4: Lesson PL1: 182-186 Module 4: Lesson PL2: 187 Module 7: Lesson PL1: 290-291
CCSS.MATH.PRACTICE.MP8 Look for and express regularity in repeated reasoning.	Module 1: Lesson 2: 42-45
Ratios & Proportional Relationships	
Understand ratio concepts and use ratio reasoning to solve problems.	
CCSS.Math.Content.6.RP.A.1 Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. *For example, "The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak." "For every vote candidate A received, candidate C received nearly three votes."*	Module 5: Lesson 1: 250-251 Module 5: Lesson 2: 252-255
CCSS.Math.Content.6.RP.A.2 Understand the concept of a unit rate a/b associated with a ratio a:b with b ≠ 0, and use rate language in the context of a ratio relationship. *For example, "This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is 3/4 cup of flour for each cup of sugar." "We paid $75 for 15 hamburgers, which is a rate of $5 per hamburger."*[1]	Module 5: Lesson 2: 252-255 Module 5: Lesson 3: 256-259
CCSS.Math.Content.6.RP.A.3 Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.	Module 5: Lesson 2: 252-255 Module 5: Lesson 3: 256-259
CCSS.Math.Content.6.RP.A.3a Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the	Module 5: Lesson 4: 260-263 Module 7: Lesson 10: 328-331

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tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.	
CCSS.Math.Content.6.RP.A.3b Solve unit rate problems including those involving unit pricing and constant speed. *For example, if it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed?*	Module 5: Lesson 3: 256-259 Module 5: Lesson 5: 264-267
CCSS.Math.Content.6.RP.A.3c Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent.	Module 5: Lesson 6: 268-271 Module 5: Lesson 7: 272-275 Module 5: Lesson 8: 276-279 Module 5: Lesson 9: 280-284
CCSS.Math.Content.6.RP.A.3d Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.	Module 5: Lesson 10: 285-288
The Number System	
Apply and extend previous understandings of multiplication and division to divide fractions by fractions.	
CCSS.Math.Content.6.NS.A.1 Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem. *For example, create a story context for (2/3) ÷ (3/4) and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that (2/3) ÷ (3/4) = 8/9 because 3/4 of 8/9 is 2/3. (In general, (a/b) ÷ (c/d) = ad/bc.) How much chocolate will each person get if 3 people share 1/2 lb of chocolate equally? How many 3/4-cup servings are in 2/3 of a cup of yogurt? How wide is a rectangular strip of land with length 3/4 mi and area 1/2 square mi?*.	Module 3: Lesson 6: 160-163 Module 3: Lesson 7: 164-167 Module 3: Lesson 8: 168-171 Module 3: Lesson 9: 172-175 Module 3: Lesson 10: 176-179
Compute fluently with multi-digit numbers and find common factors and multiples.	
CCSS.Math.Content.6.NS.B.2 Fluently divide multi-digit numbers using the standard algorithm.	Module 2: Lesson 3: 96-99
CCSS.Math.Content.6.NS.B.3 Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.	Module 2: Lesson 1: 88-91 Module 2: Lesson 2: 92-95 Module 2: Lesson 3: 96-99
CCSS.Math.Content.6.NS.B.4 Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common	Module 2: Lesson 4: 100-104 Module 2: Lesson 5: 105-107 Module 2: Lesson 6: 108-111

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factor. *For example, express 36 + 8 as 4 (9 + 2).*.	
Apply and extend previous understandings of numbers to the system of rational numbers.	
CCSS.Math.Content.6.NS.C.5 Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.	Module 2: Lesson 10: 124-127 Module 3: Lesson 1: 140-143 Module 3: Lesson 2: 144-147 Module 3: Lesson 3: 148-151 Module 3: Lesson 4: 152-155 Module 3: Lesson 5: 156-159
CCSS.Math.Content.6.NS.C.6 Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.	Module 2: Lesson 8: 116-119
CCSS.Math.Content.6.NS.C.6a Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g., –(–3) = 3, and that 0 is its own opposite.	Module 2: Lesson 8: 116-119
CCSS.Math.Content.6.NS.C.6b Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.	Module 7: Lesson 10: 328-331
CCSS.Math.Content.6.NS.C.6c Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.	Module 2: Lesson 10: 124-127
CCSS.Math.Content.6.NS.C.7 Understand ordering and absolute value of rational numbers.	Module 2: Lesson 9: 120-123
CCSS.Math.Content.6.NS.C.7a Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. *For example, interpret –3 > –7 as a statement that –3 is located to the right of –7 on a number line oriented from left to right*.	Module 2: Lesson 10: 124-127
CCSS.Math.Content.6.NS.C.7b Write, interpret, and explain statements of order for rational numbers in real-world contexts. *For example, write –3 °C > –7 °C to express the fact that –3 °C is warmer than –7 °C.*	
CCSS.Math.Content.6.NS.C.7c Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation. *For example, for an account balance of –30 dollars, write |–30| = 30 to describe*	Module 2: Lesson 7: 112-115 Module 2: Lesson 8: 116-119

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the size of the debt in dollars.	
CCSS.Math.Content.6.NS.C.7d Distinguish comparisons of absolute value from statements about order. *For example, recognize that an account balance less than –30 dollars represents a debt greater than 30 dollars*.	Module 2: Lesson 9: 120-123
CCSS.Math.Content.6.NS.C.8 Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.	Module 7: Lesson 10: 328-331
Expressions & Equations	
Apply and extend previous understandings of arithmetic to algebraic expressions.	
CCSS.Math.Content.6.EE.A.1 Write and evaluate numerical expressions involving whole-number exponents.	Module 4: Lesson 1: 188-189
CCSS.Math.Content.6.EE.A.2 Write, read, and evaluate expressions in which letters stand for numbers.	Module 4: Lesson 2: 190-193 Module 4: Lesson 4: 198
CCSS.Math.Content.6.EE.A.2a Write expressions that record operations with numbers and with letters standing for numbers. *For example, express the calculation "Subtract y from 5" as 5 – y*.	Module 4: Lesson 3: 194-197
CCSS.Math.Content.6.EE.A.2b Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity. *For example, describe the expression 2 (8 + 7) as a product of two factors; view (8 + 7) as both a single entity and a sum of two terms*.	Module 4: Lesson 2: 190-193
CCSS.Math.Content.6.EE.A.2c Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations). *For example, use the formulas $V = s^3$ and $A = 6 s^2$ to find the volume and surface area of a cube with sides of length s = 1/2*.	Module 4: Lesson 2: 190-193 Module 4: Lesson 3: 194-197
CCSS.Math.Content.6.EE.A.3 Apply the properties of operations to generate equivalent expressions. *For example, apply the distributive property to the expression 3 (2 + x) to produce the equivalent expression 6 + 3x; apply the distributive property to the expression 24x + 18y to produce the equivalent expression 6 (4x + 3y); apply properties of operations to y + y + y to produce the equivalent expression 3y*.	Module 4: Lesson 4: 198 Module 4: Lesson 5: 199
CCSS.Math.Content.6.EE.A.4 Identify when two	Module 4: Lesson 3: 194-197

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expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them). *For example, the expressions y + y + y and 3y are equivalent because they name the same number regardless of which number y stands for.*.	
Reason about and solve one-variable equations and inequalities.	
CCSS.Math.Content.6.EE.B.5 Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.	Module 4: Lesson 5: 199 Module 4: Lesson 11: 218-221
CCSS.Math.Content.6.EE.B.6 Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.	Module 4: Lesson 2: 190-193 Module 4: Lesson 3: 194-197 Module 4: Lesson 6: 200-201 Module 4: Lesson 10: 214-217
CCSS.Math.Content.6.EE.B.7 Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p, q and x are all nonnegative rational numbers.	Module 4: Lesson 7: 202-205 Module 4: Lesson 8: 206-209 Module 4: Lesson 10: 214-217 Module 4: Lesson 13: 226-229 Module 4: Lesson 14: 230-233 Module 4: Lesson 15: 234-237
CCSS.Math.Content.6.EE.B.8 Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form $x > c$ or $x <$ c have infinitely many solutions; represent solutions of such inequalities on number line diagrams.	Module 4: Lesson 11: 218-221 Module 4: Lesson 12: 222-225
Represent and analyze quantitative relationships between dependent and independent variables.	
CCSS.Math.Content.6.EE.C.9 Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation d = 65t to represent the relationship between distance and time.	Module 4: Lesson 9: 210-213
Geometry	
Solve real-world and mathematical problems	

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involving area, surface area, and volume.	
CCSS.Math.Content.6.G.A.1 Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.	Module 6: Lesson 1: 296-299 Module 6: Lesson 2: 300-303 Module 6: Lesson 3: 304-307 Module 6: Lesson 5: 312-315 Module 6: Lesson 6: 316-317 Module 6: Lesson 7: 318-321
CCSS.Math.Content.6.G.A.2 Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas *V = l w h* and *V = b h* to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.	Module 6: Lesson 8: 322-323
CCSS.Math.Content.6.G.A.3 Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.	Module 6: Lesson 1: 296-299 Module 6: Lesson 2: 300-303 Module 6: Lesson 3: 304-307 Module 6: Lesson 4: 308-311 Module 6: Lesson 5: 312-315 Module 6: Lesson 8: 322-323 Module 6: Lesson 9: 324-327 Module 7: Lesson 10: 328-331
CCSS.Math.Content.6.G.A.4 Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.	Module 6: Lesson 10: 328-331
Statistics & Probability	
Develop understanding of statistical variability.	
CCSS.Math.Content.6.SP.A.1 Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. *For example, "How old am I?" is not a statistical question, but "How old are the students in my school?" is a statistical question because one anticipates variability in students' ages*.	Module 7: Lesson 4: 308-311 Module 7: Lesson 9: 324-327
CCSS.Math.Content.6.SP.A.2 Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.	Module 7: Lesson 3: 3-4-307
CCSS.Math.Content.6.SP.A.3 Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.	Module 7: Lesson 6: 316-317 Module 7: Lesson 7: 318-321 Module 7: Lesson 10: 328-331

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Summarize and describe distributions.	
CCSS.Math.Content.6.SP.B.4 Display numerical data in plots on a number line, including dot plots, histograms, and box plots.	Module 7: Lesson 4: 308-311 Module 7: Lesson 5: 312-315 Module 7: Lesson 8: 322-323 Module 7: Lesson 9: 324-327
CCSS.Math.Content.6.SP.B.5 Summarize numerical data sets in relation to their context, such as by:	
CCSS.Math.Content.6.SP.B.5a Reporting the number of observations.	Module 7: Lesson 1: 296-299
CCSS.Math.Content.6.SP.B.5b Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.	
CCSS.Math.Content.6.SP.B.5c Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.	Module 7: Lesson 1: 296-299 Module 7: Lesson 2: 300-303 Module 7: Lesson 6: 316-317 Module 7: Lesson 7: 318-321 Module 7: Lesson 8: 322-323
CCSS.Math.Content.6.SP.B.5d Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.	Module 7: Lesson 6: 316-317 Module 7: Lesson 7: 318-321 Module 7: Lesson 8: 322-323

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Standards for Mathematical Practice	
CCSS.MATH.PRACTICE.MP1 Make Sense of problems and persevere in solving them.	Module 4: Lesson PL1: 166-169 Module 4: Lesson PL2: 170-173 Module 6: Lesson 15: 309
CCSS.MATH.PRACTICE.MP2 Reason abstractly and quantitatively.	Module 1: Lesson 8: 62-65 Module 3: Lesson PL1: 122-126 Module 3: Lesson PL2: 127 Module 7: Lesson PL1: 316-320
CCSS.MATH.PRACTICE.MP3 Construct viable arguments and critique the reasoning of others.	Module 7: Lesson 9: 352-355 Module 7: Lesson 10: 356-359
CCSS.MATH.PRACTICE.MP4 Model with mathematics.	Module 1: Lesson 1: 38-39 Module 1: Lesson 4: 48-49
CCSS.MATH.PRACTICE.MP5 Use appropriate tools strategically.	Module 6: Lesson PL1: 252-255 Module 6: Lesson PL2: 256-259
CCSS.MATH.PRACTICE.MP6 Attend to precision.	Module 5: Lesson PL1: 212-215 Module 5: Lesson PL2: 216-219
CCSS.MATH.PRACTICE.MP7 Look for and make use of structure.	Module 2: Lesson PL2: 80-83
CCSS.MATH.PRACTICE.MP8 Look for and express regularity in repeated reasoning.	Module 5: Lesson 10: 244-247
Ratios & Proportional Relationships	
Analyze proportional relationships and use them to solve real-world and mathematical problems.	
CCSS.Math.Content.7.RP.A.1 Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. *For example, if a person walks 1/2 mile in each 1/4 hour, compute the unit rate as the complex fraction $^{1/2}/_{1/4}$ miles per hour, equivalently 2 miles per hour*.	Module 5: Lesson3: 228 Module 5: Lesson 5: 230 Module 5: Lesson 6: 231 Module 5: Lesson 9: 240-243
CCSS.Math.Content.7.RP.A.2 Recognize and represent proportional relationships between quantities.	Module 5: Lesson 3: 228 Module 5: Lesson 5: 230
CCSS.Math.Content.7.RP.A.2a Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.	Module 5: Lesson 10: 244-247
CCSS.Math.Content.7.RP.A.2b Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.	Module 5: Lesson 4: 229 Module 5: Lesson 5: 230 Module 5: Lesson 6: 231 Module 5: Lesson 9: 240-243
CCSS.Math.Content.7.RP.A.2c Represent proportional relationships by equations. *For example, if total cost t is proportional to the number n of items purchased at a constant price p, the*	Module 5: Lesson 10: 244-247

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relationship between the total cost and the number of items can be expressed as t = pn.	
CCSS.Math.Content.7.RP.A.2d Explain what a point (*x*, *y*) on the graph of a proportional relationship means in terms of the situation, with special attention to the points (0, 0) and (1, *r*) where r is the unit rate.	Module 5: Lesson 10: 244-247
CCSS.Math.Content.7.RP.A.3 Use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.	Module 5: Lesson 7: 232-235 Module 5: Lesson 8: 236-239
The Number System	
Apply and extend previous understandings of operations with fractions.	
CCSS.Math.Content.7.NS.A.1 Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.	Module 2: Lesson 1: 84-87
CCSS.Math.Content.7.NS.A.1a Describe situations in which opposite quantities combine to make 0. *For example, a hydrogen atom has 0 charge because its two constituents are oppositely charged*.	Module 2: Lesson 2: 88-91
CCSS.Math.Content.7.NS.A.1b Understand $p + q$ as the number located a distance $\|q\|$ from p, in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts.	Module 2: Lesson 2: 88-91
CCSS.Math.Content.7.NS.A.1c Understand subtraction of rational numbers as adding the additive inverse, $p – q = p + (–q)$. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.	Module 2: Lesson 3: 92-95 Module 2: Lesson 8: 106-109 Module 2: Lesson 9: 110-113 Module 2: Lesson 10: 114-117
CCSS.Math.Content.7.NS.A.1d Apply properties of operations as strategies to add and subtract rational numbers.	Module 2: Lesson 3: 92-95 Module 2: Lesson 4: 96-99 Module 2: Lesson 5: 100 Module 2: Lesson 6: 101-104 Module 2: Lesson 7: 105 Module 2: Lesson 8: 106-109 Module 2: Lesson 9: 110-113 Module 2: Lesson 10: 114-117
CCSS.Math.Content.7.NS.A.2 Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.	Module 3: Lesson 9: 154-157

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CCSS.Math.Content.7.NS.A.2a Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as (–1)(–1) = 1 and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.	Module 3: Lesson 1: 128-131 Module 3: Lesson 2: 132-135 Module 3: Lesson 3: 136-139 Module 3: Lesson 9: 154-157 Module 3: Lesson 10: 158-161
CCSS.Math.Content.7.NS.A.2b Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If *p* and *q* are integers, then –(*p*/*q*) = (–*p*)/*q* = *p*/(–*q*). Interpret quotients of rational numbers by describing real-world contexts.	Module 3: Lesson 4: 140-143 Module 3: Lesson 5: 144-147 Module 3: Lesson 6: 148 Module 3: Lesson 7: 149 Module 3: Lesson 8: 150-153
CCSS.Math.Content.7.NS.A.2c Apply properties of operations as strategies to multiply and divide rational numbers.	Module 3: Lesson 1: 128-131 Module 3: Lesson 2: 132-135 Module 3: Lesson 3: 136-139 Module 3: Lesson 4: 140-143 Module 3: Lesson 5: 144-147 Module 3: Lesson 6: 148 Module 3: Lesson 7: 149 Module 3: Lesson 8: 150-153 Module 3: Lesson 9: 154-157 Module 3: Lesson 10: 158-161
CCSS.Math.Content.7.NS.A.2d Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.	Module 3: Lesson 1: 128-131 Module 3: Lesson 2: 132-135 Module 3: Lesson 10: 158-161
CCSS.Math.Content.7.NS.A.3 Solve real-world and mathematical problems involving the four operations with rational numbers.	Module 2: Lesson 4: 96-99 Module 2: Lesson 5: 100 Module 2: Lesson 6: 101-104 Module 2: Lesson 9: 110-113 Module 2: Lesson 10: 114-117 Module 3: Lesson 9: 154-157
Expressions & Equations	
Use properties of operations to generate equivalent expressions.	
CCSS.Math.Content.7.EE.A.1 Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.	Module 4: Lesson 1: 174-177 Module 4: Lesson 2: 178-181
CCSS.Math.Content.7.EE.A.2 Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. *For example, a + 0.05a = 1.05a means that "increase by 5%" is the same as "multiply by 1.05."*	Module 4: Lesson 2: 178-181

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Solve real-life and mathematical problems using numerical and algebraic expressions and equations.	
CCSS.Math.Content.7.EE.B.3 Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. *For example: If a woman making $25 an hour gets a 10% raise, she will make an additional 1/10 of her salary an hour, or $2.50, for a new salary of $27.50. If you want to place a towel bar 9 3/4 inches long in the center of a door that is 27 1/2 inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation*.	Module 4: Lesson 3: 182-183 Module 4: Lesson 4: 184-187 Module 4: Lesson 5: 188-191 Module 4: Lesson 6: 192-193 Module 4: Lesson 7: 194-197
CCSS.Math.Content.7.EE.B.4 Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.	
CCSS.Math.Content.7.EE.B.4a Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. *For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?*	Module 4: Lesson 3: 182-183 Module 4: Lesson 4: 184-187 Module 4: Lesson 5: 188-191 Module 4: Lesson 6: 192-193 Module 4: Lesson 7: 194-197 Module 4: Lesson 8: 198-201
CCSS.Math.Content.7.EE.B.4b Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where p, q, and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem. *For example: As a salesperson, you are paid $50 per week plus $3 per sale. This week you want your pay to be at least $100. Write an inequality for the number of sales you need to make, and describe the solutions*.	Module 4: Lesson 9: 202-206 Module 4: Lesson 10: 207-210
Geometry	
Draw construct, and describe geometrical figures and describe the relationships between them.	
CCSS.Math.Content.7.G.A.1 Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.	Module 5: Lesson 1: 220-223 Module 5: Lesson 2: 224-227
CCSS.Math.Content.7.G.A.2 Draw (freehand, with	Module 5: Lesson 1: 220-223

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ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.	Module 5: Lesson 2: 224-227
CCSS.Math.Content.7.G.A.3 Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.	
Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.	
CCSS.Math.Content.7.G.B.4 Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.	Module 6: Lesson 1: 260-263 Module 6: Lesson 2: 264-267 Module 6: Lesson 3: 268-271
CCSS.Math.Content.7.G.B.5 Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure.	Module 6: Lesson 13: 307 Module 6: Lesson 14: 308
CCSS.Math.Content.7.G.B.6 Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.	Module 6: Lesson 4: 272-275 Module 6: Lesson 5: 276-280 Module 6: Lesson 6: 281 Module 6: Lesson 7: 282-285 Module 6: Lesson 8: 286-289 Module 6: Lesson 9: 290-293 Module 6: Lesson 10: 294-297 Module 6: Lesson 11: 298-301 Module 6: Lesson 12: 302-326
Statistics & Probability	
Use random sampling to draw inferences about a population.	
CCSS.Math.Content.7.SP.A.1 Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences.	Module 7: Lesson 10: 356-359
CCSS.Math.Content.7.SP.A.2 Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions. *For example, estimate the mean word length in a book by randomly sampling words from the book; predict the winner of a school election based on randomly sampled survey data.*	Module 7: Lesson 10: 356-359

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Gauge how far off the estimate or prediction might be.	
Draw informal comparative inferences about two populations.	
CCSS.Math.Content.7.SP.B.3 Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability. *For example, the mean height of players on the basketball team is 10 cm greater than the mean height of players on the soccer team, about twice the variability (mean absolute deviation) on either team; on a dot plot, the separation between the two distributions of heights is noticeable*.	Module 7: Lesson 1: 322-325 Module 7: Lesson 2: 326-329 Module 7: Lesson 3: 330-333
CCSS.Math.Content.7.SP.B.4 Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations. *For example, decide whether the words in a chapter of a seventh-grade science book are generally longer than the words in a chapter of a fourth-grade science book*.	Module 7: Lesson 1: 322-325 Module 7: Lesson 2: 326-329 Module 7: Lesson 3: 330-333
Investigate chance processes and develop, use, and evaluate probability models.	
CCSS.Math.Content.7.SP.C.5 Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.	Module 7: Lesson 5: 338-341 Module 7: Lesson 7: 344-347 Module 7: Lesson 9: 352-355
CCSS.Math.Content.7.SP.C.6 Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability. *For example, when rolling a number cube 600 times, predict that a 3 or 6 would be rolled roughly 200 times, but probably not exactly 200 times*.	Module 7: Lesson 6: 342-343
CCSS.Math.Content.7.SP.C.7 Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy.	
CCSS.Math.Content.7.SP.C.7a Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events. *For example, if a student is selected at random from a class, find the probability*	Module 7: Lesson 8: 348-351

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that Jane will be selected and the probability that a girl will be selected.	
CCSS.Math.Content.7.SP.C.7b Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process. *For example, find the approximate probability that a spinning penny will land heads up or that a tossed paper cup will land open-end down. Do the outcomes for the spinning penny appear to be equally likely based on the observed frequencies?*	Module 7: Lesson 8: 348-351
CCSS.Math.Content.7.SP.C.8 Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.	Module 7: Lesson 8: 348-351
CCSS.Math.Content.7.SP.C.8a Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs.	Module 7: Lesson 5: 338-341 Module 7: Lesson 8: 348-351
CCSS.Math.Content.7.SP.C.8b Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. For an event described in everyday language (e.g., "rolling double sixes"), identify the outcomes in the sample space which compose the event.	Module 7: Lesson 7: 344-347 Module 7: Lesson 8: 348-351
CCSS.Math.Content.7.SP.C.8c Design and use a simulation to generate frequencies for compound events. *For example, use random digits as a simulation tool to approximate the answer to the question: If 40% of donors have type A blood, what is the probability that it will take at least 4 donors to find one with type A blood?*	Module 7: Lesson 4: 334-337 Module 7: Lesson 8: 348-351

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Standards for Mathematical Practice	
CCSS.MATH.PRACTICE.MP1 Make Sense of problems and persevere in solving them.	Module 2: Lesson PL2: 93-97 Module 3: Lesson PL1: 136-139 Module 5: Lesson PL1: 240-243 Module 5: Lesson PL2: 244-247
CCSS.MATH.PRACTICE.MP2 Reason abstractly and quantitatively.	Module 1: Lesson 9: 70-73 Module 3: Lesson PL2: 140-143 Module 4: Lesson 5: 200
CCSS.MATH.PRACTICE.MP3 Construct viable arguments and critique the reasoning of others.	Module 5: Lesson PL1: 240-243
CCSS.MATH.PRACTICE.MP4 Model with mathematics.	Module 4: Lesson PL2: 186-189 Module 7: Lesson 8: 370-372 Module 7: Lesson 4: 354-357
CCSS.MATH.PRACTICE.MP5 Use appropriate tools strategically.	Module 4: Lesson PL1: 182-185 Module 6: Lesson PL1: 280-283 Module 6: Lesson PL2: 284-287
CCSS.MATH.PRACTICE.MP6 Attend to precision.	Module 3: Lesson 3: 152-155 Module 3: Lesson 4: 156-159
CCSS.MATH.PRACTICE.MP7 Look for and make use of structure.	Module 6: Lesson 2: 292-295 Module 5: Lesson 10: 275-278
CCSS.MATH.PRACTICE.MP8 Look for and express regularity in repeated reasoning.	Module 4: Lesson 8: 206-209 Module 4: Lesson 3: 198
The Number System	
Know that there are numbers that are not rational, and approximate them by rational numbers.	
CCSS.Math.Content.8.NS.A.1 Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats eventually into a rational number.	Module 2: Lesson 7: 120-123 Module 2: Lesson 8: 124-127
CCSS.Math.Content.8.NS.A.2 Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g., π^2). *For example, by truncating the decimal expansion of √2, show that √2 is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations*.	Module 2: Lesson 6: 119
Expressions & Equations	
Expressions and Equations Work with radicals and integer exponents.	
CCSS.Math.Content.8.EE.A.1 Know and apply the properties of integer exponents to generate equivalent numerical expressions. For example, $3^2 \times 3^{-5} = 3^{-3} = 1/3^3 = 1/27$.	Module 2: Lesson 1: 98-101 Module 2: Lesson 2: 102-105 Module 2: Lesson 3: 106-109 Module 2: Lesson 4: 110-113

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	Module 2: Lesson 5: 114-118 Module 2: Lesson 7: 120-123
CCSS.Math.Content.8.EE.A.2 Use square root and cube root symbols to represent solutions to equations of the form $x^2 = p$ and $x^3 = p$, where p is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that √2 is irrational.	Module 2: Lesson 8: 124-127 Module 2: Lesson 9: 128-130 Module 7: Lesson 9: 372-375 Module 7: Lesson 10: 376-379
CCSS.Math.Content.8.EE.A.3 Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other. *For example, estimate the population of the United States as 3 times 10^8 and the population of the world as 7 times 10^9, and determine that the world population is more than 20 times larger*.	Module 2: Lesson 1: 98-101 Module 2: Lesson 3: 106-109
CCSS.Math.Content.8.EE.A.4 Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology	Module 2: Lesson 5: 114-118
Understand the connections between proportional relationships, lines, and linear equations.	
CCSS.Math.Content.8.EE.B.5 Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.	Module 4: Lesson 7: 202-205 Module 4: Lesson 8: 206-209 Module 4: Lesson 9: 210-213 Module 4: Lesson 10: 214-217 Module 4: Lesson 11: 218-221 Module 4: Lesson 12: 222-223 Module 4: Lesson 14: 226-229 Module 5: Lesson 7: 268
CCSS.Math.Content.8.EE.B.6 Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation y = mx for a line through the origin and the equation $y = mx + b$ for a line intercepting the vertical axis at b.	Module 4: Lesson 13: 224-225 Module 5: Lesson 3: 254-255
Analyze and solve linear equations and pairs of simultaneous linear equations.	
CCSS.Math.Content.8.EE.C.7 Solve linear equations in one variable.	Module 4: Lesson 10: 214-217 Module 4: Lesson 11: 218-221
CCSS.Math.Content.8.EE.C.7a Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show	Module 2: Lesson 2: 102-105 Module 3: Lesson 1: 144-147 Module 3: Lesson 2: 148-151

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which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form $x = a$, $a = a$, or $a = b$ results (where a and b are different numbers).	Module 3: Lesson 3: 152-155 Module 3: Lesson 4: 156-159 Module 3: Lesson 5: 160-161 Module 3: Lesson 6: 162-165 Module 3: Lesson 7: 166-169
CCSS.Math.Content.8.EE.C.7b Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.	Module 3: Lesson 1: 144-147 Module 3: Lesson 2: 148-151 Module 3: Lesson 3: 152-155 Module 3: Lesson 4: 156-159 Module 3: Lesson 5: 160-161 Module 3: Lesson 6: 162-165 Module 3: Lesson 7: 166-169 Module 3: Lesson 8: 170-171 Module 3: Lesson 9: 172-173 Module 3: Lesson 10: 174-177
CCSS.Math.Content.8.EE.C.8 Analyze and solve pairs of simultaneous linear equations.	supports standard: Module 5: Lesson 10: 275-278
CCSS.Math.Content.8.EE.C.8a Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously.	Module 5: Lesson 9: 270-274 Module 5: Lesson 10: 275-278
CCSS.Math.Content.8.EE.C.8b Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection. *For example, 3x + 2y = 5 and 3x + 2y = 6 have no solution because 3x + 2y cannot simultaneously be 5 and 6*.	Module 5: Lesson 8: 269 Module 5: Lesson 9: 270-274 Module 5: Lesson 10: 275-278
CCSS.Math.Content.8.EE.C.8c Solve real-world and mathematical problems leading to two linear equations in two variables. *For example, given coordinates for two pairs of points, determine whether the line through the first pair of points intersects the line through the second pair*.	Module 3: Lesson 4: 156-159
Functions	
Define, evaluate, and compare functions.	
CCSS.Math.Content.8.F.A.1 Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output.[1]	Module 4: Lesson 3: 198 Module 4: Lesson 4: 199 Module 4: Lesson 5: 200 Module 4: Lesson 6: 201 Module 4: Lesson 7: 202-205 Module 4: Lesson 8: 206-209 Module 4: Lesson 9: 210-213
CCSS.Math.Content.8.F.A.2 Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or	Module 4: Lesson 7: 202-205 Module 4: Lesson 8: 206-209 Module 4: Lesson 9: 210-213

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by verbal descriptions). *For example, given a linear function represented by a table of values and a linear function represented by an algebraic expression, determine which function has the greater rate of change*.	Module 5: Lesson 1: 248-249
CCSS.Math.Content.8.F.A.3 Interpret the equation *y = mx + b* as defining a linear function, whose graph is a straight line; give examples of functions that are not linear. *For example, the function A = s^2 giving the area of a square as a function of its side length is not linear because its graph contains the points (1,1), (2,4) and (3,9), which are not on a straight line*.	Module 4: Lesson 7: 202-205 Module 4: Lesson 8: 206-209 Module 4: Lesson 9: 210-213 Module 4: Lesson 10: 214-217 Module 4: Lesson 11: 218-221 Module 4: Lesson 15: 230-233 Module 5: Lesson 1: 248-249 Module 5: Lesson 2: 250-253 Module 5: Lesson 3: 254-255
Use functions to model relationships between quantities.	
CCSS.Math.Content.8.F.B.4 Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (*x, y*) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.	Module 4: Lesson 7: 202-205 Module 4: Lesson 8: 206-209 Module 4: Lesson 9: 210-213 Module 4: Lesson 10: 214-217 Module 4: Lesson 11: 218-221 Module 4: Lesson 12: 222-223 Module 4: Lesson 14: 226-229
CCSS.Math.Content.8.F.B.5 Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.	Module 4: Lesson 2: 194-197 Module 4: Lesson 7: 202-205 Module 4: Lesson 8: 206-209 Module 4: Lesson 9: 210-213 Module 4: Lesson 10: 214-217 Module 4: Lesson 11: 218-221 Module 4: Lesson 12: 222-223 Module 4: Lesson 14: 226-229 Module 4: Lesson 15: 230-233 Module 5: Lesson 2: 250-253
Geometry	
Understand congruence and similarity using physical models, transparencies, or geometry software.	
CCSS.Math.Content.8.G.A.1 Verify experimentally the properties of rotations, reflections, and translations:	Module 6: Lesson 7: 312-315 Module 6: Lesson 8: 316-319 Module 6: Lesson 9: 320-323
CCSS.Math.Content.8.G.A.1a Lines are taken to lines, and line segments to line segments of the same length.	Module 6: Lesson 7: 312-315 Module 6: Lesson 8: 316-319 Module 6: Lesson 9: 320-323
CCSS.Math.Content.8.G.A.1b Angles are taken to	Module 6: Lesson 8: 316-319

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angles of the same measure.	Module 6: Lesson 9: 320-323
CCSS.Math.Content.8.G.A.1c Parallel lines are taken to parallel lines.	
CCSS.Math.Content.8.G.A.2 Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them.	Module 6: Lesson 5: 304-307
CCSS.Math.Content.8.G.A.3 Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.	Module 6: Lesson 8: 316-319 Module 6: Lesson 9: 320-323
CCSS.Math.Content.8.G.A.4 Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them.	Module 6: Lesson 1: 288-291 Module 6: Lesson 2: 292-295 Module 6: Lesson 10: 324-327
CCSS.Math.Content.8.G.A.5 Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles. *For example, arrange three copies of the same triangle so that the sum of the three angles appears to form a line, and give an argument in terms of transversals why this is so*.	Module 6: Lesson 3: 296-299 Module 6: Lesson 4: 230-303 Module 6: Lesson 6: 308-311
Understand and apply the Pythagorean Theorem.	
CCSS.Math.Content.8.G.B.6 Explain a proof of the Pythagorean Theorem and its converse.	Module 7: Lesson 8: 370-372 Module 7: Lesson 9: 372-375 Module 7: Lesson 10: 376-379
CCSS.Math.Content.8.G.B.7 Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.	Module 2: Lesson 10: 131-134 Module 7: Lesson 9: 372-375 Module 7: Lesson 10: 376-379
CCSS.Math.Content.8.G.B.8 Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.	supports standard: Module 7: Lesson 9: 372-375
Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres.	
CCSS.Math.Content.8.G.C.9 Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.	Module 7: Lesson 1: 342-345 Module 7: Lesson 2: 346-349 Module 7: Lesson 3: 350-353 Module 7: Lesson 4: 354-357 Module 7: Lesson 5: 358-362 Module 7: Lesson 6: 362-365 Module 7: Lesson 7: 366-369

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Statistics & Probability	
Investigate patterns of association in bivariate data.	
CCSS.Math.Content.8.SP.A.1 Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.	Module 4: Lesson 1: 190-193 Module 4: Lesson 2: 194-197 Module 5: Lesson 4: 256-259
CCSS.Math.Content.8.SP.A.2 Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line.	Module 4: Lesson 2: 194-197
CCSS.Math.Content.8.SP.A.3 Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept. *For example, in a linear model for a biology experiment, interpret a slope of 1.5 cm/hr as meaning that an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height*.	Module 5: Lesson 5: 260-263 Module 5: Lesson 6: 264-267
CCSS.Math.Content.8.SP.A.4 Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables. *For example, collect data from students in your class on whether or not they have a curfew on school nights and whether or not they have assigned chores at home. Is there evidence that those who have a curfew also tend to have chores?*	Module 5: Lesson 7: 268