

***Houghton Mifflin Math Expressions, Grade K-5 correlated to
Washington Mathematics Standards***

Washington Performance Expectations	<i>Houghton Mifflin Math Expressions</i>
<p>1. Core Content: Whole numbers (Numbers, Operations) Students begin to develop the concept of whole numbers and how they relate to one another. Students practice counting and using a number line. They build a foundation for addition and subtraction by putting together and taking apart simple numbers.</p>	
K.1.A Rote count by ones forward from 1 to at least 100 and backward from any number in the range of 10 to 1.	<i>These are some of the many examples:</i> 1-6, 7-10, 11, 19-22, 23, 29-32, 39-40, 49-50, 183, 196, 235, 259, 325, 486, 559, 625, 639
K.1.B Read numerals from 0 to at least 31.	<i>These are some of the many examples:</i> 1-6, 7-10, 11, 12, 15-18, 29-32, 39-40, 49-50, 161, 214, 325, 567
K.1.C Fluently compose and decompose numbers to at least 5.	SAB: 121-122, 161, 171, 198, 209-211, 217, 240, 301, 311, 326 TG: 235H, 247-249, 252, 266, 269, 282, 321, 322-323, 332, 347, 367-370, 392, 404-406, 414-417, 434-436, 472, 479, 500, 506, 525, 536-537, 543, 572-573, 574, 595 H/R: 85, 89, 95, 101, 103, 107, 115, 145, 153, 155
K.1.D Order numerals from 1 to at least 10.	SAB: 39, 68, 74, 119, 229 TG: 51, 94, 99, 157, 167, 242, 421, 461 H/R: 17, 119
K.1.E Establish how many objects are in a set of up to 20 objects and count out a specific number of (up to 20).	<i>These are some of the many examples:</i> 1-6, 7-10, 11, 19-22, 23, 29-32, 39-40, 49-50, 183, 196, 235, 259, 325, 486, 559, 625, 639
K.1.F Compare two sets of up to 10 objects each and explain why the number of objects in one set is equal to, greater than, or less than the number of objects in the other set.	SAB: 158, 201, 204, 213, 216 TG: 40-42, 51, 319, 320, 338, 343, 397-398, 410, 425, 430-431, 667 H/R: 113
K.1.G Locate numbers from 1 to at least 31 on a number line.	Number parade, 1-20 Poster and Number Pattern materials are used throughout Math Expressions to facilitate student understanding of numeric relationships on a number line. See Also MATH EXPRESSIONS TG 127, 207-208, 235, 671
K.1.H Use 5 as a benchmark for numbers from 1 to 9.	SAB: 87, 125, 135, 141, 145, 151, 153, 171 TG: 124, 128-129, 189, 262, 273, 291, 295, 299, 309, 347, 434-445, 446 H/R: 55, 71, 77, 89

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<p>2. Core Content: Patterns and operations (Operations, Algebra) Students work with patterns and explore operations to build early foundations for computation and algebraic thinking. They explore the concepts of addition and subtraction by joining and separating sets of objects. Using rules created from patterns, students make predictions about what might come next.</p>	
K.2.A Recognize, extend, and create simple repetitive patterns and identify a missing element in a pattern.	SAB: 65, 93, 95, 97-98, 107, 200, 215, 267 TG: 145-148, 149-154, 183-186, 188, 190, 201-206, 229, 389-391, 393-394, 427-430, 432, 499-500, 502, 519-522, 562, 564, 593-594, 596 H/R: 131, 159
K.2.B Translate a pattern between sounds, symbols, movements, and objects.	SAB: 93, 107, 225 TG: 185, 188, 203, 229, 390-391, 429-430, 499, 520, 562, 594
K.2.C Model addition by joining sets of objects with 10 or fewer total objects when joined; model subtraction by separating a set of 10 or fewer objects.	<i>These are some of the many examples:</i> 132-133, 212, 217-218, 224-225, 255, 266, 282, 326, 362, 377-380, 406, 446, 451, 582
K.2.D Relate a story or situation that involves the actions of joining (addition) or separating (subtraction) using words, pictures, objects, or numbers.	<i>These are some of the many examples:</i> 156, 192, 200, 212, 217, 224, 237, 254-255, 257, 272, 294, 322, 324, 364, 378, 379, 396-400, 424, 442-443, 452-453, 465-466, 494, 578, 582
<p>3. Core Content: Objects and locations in space (Geometry) Students sort objects in a variety of ways and describe how they are sorted. Students name simple two- and three-dimensional figures and recognize them in the environment. They expand their understanding of space and location by describing where people and objects are.</p>	
K.3.A Identify, name, and describe circles, triangles, rectangles, squares (as special rectangles), cubes, and spheres, regardless of size or orientation.	SAB: 21, 27, 85, 105, 175, 245, 246, 323-324 TG: 55-56, 58, 59-61, 63-64, 74, 75, 76, 80, 90, 100, 106, 114-115, 166, 170, 174-176, 184-186, 221-222, 228, 288-290, 298, 308, 355, 390, 408-409, 428, 458, 474, 475, 476, 486-488, 520, 562, 612-614
K.3.B Find circles, triangles, rectangles, squares, cubes, and spheres in a variety of contexts.	SAB: 323 TG: 55, 58, 74, 165, 221, 284-286, 458, 474, 612
K.3.C Sort shapes using a sorting rule and explain the sorting rule.	SAB: 152 TG: 288, 298, 301, 308, 310, 346, 520,

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K.3.D Describe the location of one object relative to another object using words such as in, out, over, under, above, below, between, next to, behind, in front of.	<i>These are some of the many examples:</i> 27, 153, 169, 169, 173, 217, 221, 300, 318, 327, 351, 448, 538, 600
4. Additional Key Content (Measurement) Students begin the development of basic measurement concepts that will expand in later grades	
K.4.A Identify attributes that are measurable, such as length, weight, and capacity, and use these attributes to make direct comparisons.	SAB: 353-354 TG: 277-279, 659-664
5. Core Processes: Reasoning, problem solving, and communication Students begin to build the concept that doing mathematics involves solving problems and discussing how they solved them. Problems at this level emphasize counting and activities that are precursors to addition and subtraction. The seeds for communication are developed as students respond to questions like “How did you get that?” and “Why is that true?”	
K.5.A Identify questions to be answered when solving a problem.	Math Expressions teaches problem solving through problem types (CGI). Math Talk structures in Math Expressions require students to explain their thinking and justify solutions. See also MATH EXPRESSIONS TG 510-512, 524, 526, 548
K.5.B Solve problems, choosing from a variety of problem-solving strategies such as drawing pictures, manipulating objects, using numbers, or acting out the situation.	<i>These are some of the many examples:</i> 199, 205, 229, 381, 393, 399, 467, 579, 643, 653, 663
K.5.C Determine whether a solution makes sense.	Math Talk structures in Math Expressions require students to explain their thinking and justify solutions. See also MATH EXPRESSIONS TG 199, 205, 229, 381, 398, 399, 629
K.5.D Tell what the student did to solve a problem.	Math Talk structures in Math Expressions require students to explain their thinking and justify solutions. See also MATH EXPRESSIONS TG 199, 205, 452, 510-512, 548, 578, 598

SAB = Student Activity Book

TG = Teacher’s Guide

H/R = Homework and Remembering

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1. Core Content: Whole number relationships (Numbers, Operations) Students continue to develop their understanding of whole numbers and how they relate to one another. Using that understanding, students start to develop critical place-value concepts of ones and tens.	
1.1.A Count by ones forward and backward starting at any number from 1 to at least 120, and count by twos, fives, and tens to at least 100.	<i>These are some of many examples:</i> 9-10, 22, 34-35, 53, 59, 77, 100, 294-295, 305, 429, 435, 441, 579, 685, 713
1.1.B Name the number before or after any number given verbally up to at least 120.	SAB: 139, 146 TG: 42, 355-356, 374
1.1.C Read aloud numerals from 0 to 1,000.	<i>These are some of the many examples:</i> 3, 5, 9-10, 14, 53-55, 59, 160-163, 203, 299-304, 305-310
1.1.D Order objects or events using ordinal numbers.	TG: 167, 632, 633-638 H/R: 201
1.1.E Write, compare, and order numbers to at least 120 using the words equal to, greater than, less than, greatest, and least when appropriate.	SAB: 204 TG: 122, 429, 503, 512
1.1.F Fluently compose and decompose numbers to at least 10.	SAB: 11-16, 19-20, 21-22, 23-24, 25-26, 29-30, 31-32, 27-28, 33-36, 115-118, 119-122, 131-132, 133-134, 135-136, 137-138 TG: 27-32, 39-44, 45-50, 51-56, 57-62, 63-68, 69-74, 75-80, 81-86, 87-92, 293-298, 299-304, 305-310, 325-330, 331-336, 337-342, 343-348, 349-352, 430-433 H/R: 9, 11, 16, 19, 21, 25, 27, 28, 29, 95-96, 97-98, 99-100, 101-102, 103-104, 105-106, 107-108, 109-110, 111-112, 113-114, 134-139
1.1.G Group numbers into tens and ones in more than one way and explain why the total remains the same.	SAB: 123, 129, 131, 133, 135 TG: 300-302, 313-315, 318-320, 326-329, 332-335, 340, 345, 349-351, 360-361 H/R: 97, 101, 102, 103, 105, 106, 109, 110-114, 116, 117-118
1.1.H Group and count objects by tens, fives, and twos.	SAB: 115 TG: 296, 388-389, 599
1.1.I Use words, objects, or pictures to show why a given whole number is odd or even.	SAB: 37-38, 40 TG: 93-98 H/R: 31-32

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<p>2. Core Content: Addition and subtraction (Operations, Algebra) Students learn about addition and subtraction, specifically, how to add and subtract, when to add and subtract, and how addition and subtraction relate to each other. Students continue to build a foundation for algebraic thinking by observing, extending, and creating a variety of patterns.</p>	
<p>1.2.A Develop concepts of addition, subtraction, and equality (including commutativity and associativity of addition) using objects, pictures, and mathematical notation (+, -, =).</p>	<p><i>These are some of the many examples:</i> 28-29, 30-31, 40-41, 53, 58-59, 64-68, 70-73, 76-79, 154-155, 160, 221, 303, 378-379, 456, 800</p>
<p>1.2.B Develop facility with moving forward and backward on the number line to represent addition and subtraction.</p>	<p>MathBoard and Number Path materials are used throughout Math Expressions to facilitate student understanding of numeric relationships on a number line. See Also MATH EXPRESSIONS TG 127-128, 343-344, 354-355, 371, 377, 455, 486-487, 705</p>
<p>1.2.C Show the inverse relationship between addition and subtraction by using physical models, diagrams, and/or acting-out situations to undo an addition problem with subtraction and vice versa.</p>	<p>TG: 40-41, 174-175, 224, 242-246, 743 SAB: 65, 95 H/R: 77-78</p>
<p>1.2.D Use the commutative and associative properties to solve a variety of addition and subtraction problems involving two or more one-digit numbers or symbols; justify the solution.</p>	<p>SAB: 11, 23, 25 TG: 28-29, 30-31, 40-41, 53, 58-59, 64-68, 800 H/R: 9, 11, 12, 15, 16, 17, 19, 21, 252</p>
<p>1.2.E Explain and use strategies for remembering basic addition facts for sums equal to at least 10, and related subtraction facts.</p>	<p><i>These are some of the many examples:</i> 78, 82, 109H, 128, 143, 172-173, 197, 203, 241-246, 251, 361</p>
<p>1.2.F Quickly recall addition facts for sums equal to at least 10 and related subtraction facts.</p>	<p><i>These are some of the many examples:</i> 235, 241, 279, 759, 765, 777, 789, 801, 805</p>

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1.2.G Create a story that matches an addition or subtraction expression or equation using objects, pictures, or words.	SAB: 51, 67, 79-82, 83-84, 85-86, 87-92, 93-94, 95-96, 97-98, 99-102, 103-104, 105-106, 107-108, 109-110, 111-114, 277-278, 279-280, 293-296, 297, 298-300, 301-302, 303-304, 305-306, 307-308, 309-310, 311-312, 313-314, 315-318 TG: 124, 128-129, 132, 142, 155, 166, 172-173, 178-179, 184-185, 189-191, 193, 209-216, 217-222, 223-228, 23, 5-240, 241-246, 247-252, 253-258, 259-264, 265-268, 269-272, 273-278, 279-282, 283-288, 319, 448, 456, 459, 464, 465, 678-681, 707-712, 713-718, 741-746, 747-752, 753-758, 759-764, 765-770, 771-776, 777-782, 783-788, 789-794, 795-800, 801-804, 805-808 H/R: 45, 55, 58, 62, 69-70, 71, 73, 75-76, 77-78, 79-80, 81-82, 83-84, 85-86, 87-88, 89-90, 91, 93-94, 103, 117, 118, 144, 145, 147, 149-150, 215, 218, 220, 223, 225-226, 233-234, 235-236, 237-238, 239-240, 241-242, 243-244, 245-246, 247-248, 249-250, 251-252, 253-254, 255-256
1.2.H Recognize, extend, and create number patterns.	SAB: 5, 7, 9, 17, 23, 25, 29, 31, 32, 56, 210, 217, 218 TG: 8-10, 15-16, 22, 34-35, 53, 59, 72, 77, 156, 418-419, 424-425, 530, 547-548, 552-553, 558-560, 576 H/R: 4, 5, 8, 12, 23, 24, 25, 175
3. Core Content: Geometric attributes (Geometry) Students expand their knowledge of geometric figures by sorting, comparing, and contrasting them according to their common characteristics, and learn important mathematical vocabulary used to name them. Students work with shapes made out of basic two-dimensional figures.	
1.3.A Compare and sort a variety of two- and three-dimensional figures according to their geometric attributes.	SAB: 10, 223, 325, 326, 331, 332 TG: 20, 23-25, 552-553, 555, 562-567, 574-575, 830-831, 842-843 H/R: 7, 177, 179
1.3.B Identify and name circles, triangles, rectangles, squares (as special rectangles), rhombi, hexagons, trapezoids, rectangular prisms (including cubes as special rectangular prisms), cones, cylinders, and pyramids—regardless of size or orientation—and find these figures in a variety of real world contexts.	SAB: 9, 10 TG: 20, 23, 551-556, 562, 565, 567, 832 H/R: 179
1.3.C Compose and decompose common two-dimensional figures and analyze the results.	SAB: 219-220, 237 TG: 551-556, 591-598 H/R: 177, 187

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<p>4. Core Content: Concepts of measurement (Measurement) Students begin to understand what it means to measure something and develop their measuring skills. They learn the difference between measuring length, weight, and capacity and use objects like toothpicks and craft sticks to measure length, marbles and a balance to measure weight, and cups filled with water or sand to measure capacity.</p>	
1.4.A Recognize that objects used to measure an attribute (length, weight, capacity) must have that attribute and must be consistent in size.	SAB: 319 TG: 535, 814-818, 820, 853-856 H/R: 257
1.4.B Use a variety of non-standard units to measure length without gaps or overlaps.	SAB: 319-322 TG: 813-818 H/R: 257
1.4.C Apply the transitive property when comparing lengths.	TG: 536, 836
1.4.D Use non-standard units to compare objects according to their capacities or weights.	TG: 854, 855
1.4.E Demonstrate understanding of the relationship between the size of the unit and the number of units needed to measure.	TG: 820-821, 823-824, 836-838, 854-855
1.4.F Name standard units of time: day, week, month.	TG: 640, 642
<p>5. Additional Key Content (Data/Statistics/Probability) Students are introduced to basic ideas of statistics by collecting and visually representing data. They reinforce their understanding of whole numbers and the operations of addition and subtraction as they ask and answer questions about the data.</p>	
1.5.A Represent data using tallies, tables, picture graphs, and bar-type graphs.	SAB: 193-196, 197-198, 199-200, 201-202, 203-204, 205-206, 207-208, 209-210, 225-228 TG: 479-484, 485-490, 491-496, 497-502, 503-508, 509-514, 515-520, 521-527 H/R: 153, 155, 157, 159-160, 161-162, 163-164, 165-166, 168, 170
1.5.B Analyze information by asking and answering questions about data.	SAB: 193-196, 197-198, 199-200, 201-202, 203-204, 205-206, 207-208, 209-210, 225-228 TG: 479-484, 485-490, 491-496, 497-502, 503-508, 509-514, 515-520, 521-527 H/R: 153, 155, 157, 159-160, 161-162, 163-164, 165-166, 168, 170

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<p>6. Core Processes: Reasoning, problem solving, and communication Students further develop the concept that doing mathematics involves solving problems and discussing what they did to solve them. Problems in first grade emphasize addition, subtraction, and solidifying number concepts, and sometimes include precursors to multiplication. Students communicate by participating in mathematical discussions involving questions like, “How did you get that?”, “Why did you do that?”, and “How do you know that?” Students also learn to use mathematical language appropriate to their grade level.</p>	
<p>1.6.A Identify questions to be answered when solving a problem.</p>	<p>Math Expressions teaches problem solving through problem types (CGI). Students show understanding of the problem through situation equations and then solve them with solution equations. See also MATH EXPRESSIONS TG 129, 219, 276, 284, 464, 795-804</p>
<p>1.6.B Solve problems, choosing from a variety of problem-solving strategies such as drawing pictures, manipulating objects, using numbers, or acting out the situation.</p>	<p>Math Expressions teaches problem solving through problem types (CGI). Students show understanding of the problem through situation equations and then solve them with solution equations. See also MATH EXPRESSIONS TG 185-186, 276, 284, 319, 464, 530-532</p>
<p>1.6.C Tell what they did to solve a problem, using drawings or models if necessary.</p>	<p>Math Expressions teaches problem solving through problem types (CGI). Students show understanding of the problem through situation equations and then solve them with solution equations. See also MATH EXPRESSIONS TG 219, 522-523, 772-723 Math Talk structures in Math Expressions require students to explain their thinking and justify solutions, including through the use of proof pictures. See also MATH EXPRESSIONS TG 8, 40, 52, 58, 64, 94</p>
<p>1.6.D Identify what is known and unknown in a problem and recognize when information is missing.</p>	<p>Math Expressions teaches problem solving through problem types (CGI). Students show understanding of the problem through situation equations and then solve them with solution equations. See also MATH EXPRESSIONS TG 218-222, 223-228, 229-231, 234, 794, 796-804</p>
<p>1.6.E Determine whether a solution makes sense.</p>	<p>Math Expressions teaches problem solving through problem types (CGI). Students show understanding of the problem through situation equations and then solve them with solution equations. See also MATH EXPRESSIONS TG 129-130, 175, 191</p>

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<p>1. Core Content: Place value and the base ten system (Numbers) Students refine their understanding of the base ten number system and use place value concepts of ones, tens, and hundreds to understand number relationships. They demonstrate this understanding by writing and modeling numbers in a variety of ways.</p>	
2.1.A Count by tens or hundreds forward and backward starting at any number from 1 through 1,000.	SAB: 321 TG: 715, 715, 717, 718 H/R: 203, 208, 212, 222
2.1.B Represent numbers to at least 1,000 in different ways using written words, numerals, or models, and translate among representations.	<i>These are some of the many examples:</i> 33-34, 60-61, 84, 298-302, 306-309, 317-319, 710-711, 716
2.1.C Identify relationships between digits and their place values in numbers up to 1,000.	SAB: 137-140, 141-142, 143, 173-176 TG: 297-304, 305-312, 314-317, 369, 624, 710-711, 740 H/R: 85-86, 87-88, 113-114
2.1.D Connect the place of a digit with its value in a number and determine the value represented by a digit based on its position in a number.	SAB: 137-140, 141-142, 143, 173-176 TG: 297-304, 305-312, 314-317, 369, 624, 710-711, 740 H/R: 85-86, 87-88, 113-114
2.1.E Compose and decompose two- and three digit numbers based on the values of the digits used to write the number.	SAB: 11-16, 137-140, 141-142, 143 TG: 28-35, 37, 297-304, 305-311, 316, 357, 338, 597, 705-712 H/R: 9, 89, 201
2.1.F Compare and order numbers from 0 to at least 1,000 using the words equal to, greater than, less than, greatest, or least when appropriate.	SAB: 209, 211, 215 TG: 144-148, 463, 470-472, 480-482, 484, 703, 831 H/R: 41-42, 131-132
<p>2. Core Content: Addition and subtraction (Operations, Measurement, Algebra) Students apply their understanding of number relationships and the operations of addition and subtraction as they learn their addition and subtraction facts. They extend this knowledge by adding and subtracting two-digit numbers. Students begin to use estimation to determine whether a sum or difference is reasonable.</p>	
2.2.A Explain and use strategies for remembering addition and subtraction facts to 20.	<i>These are some of the many examples:</i> 14-15, 41, 53-54, 69, 70, 96, 112-115, 133-135, 138-141, 150, 254, 361, 371, 613
2.2.B Quickly recall addition facts to 20 and related subtraction facts.	<i>These are some of the many examples:</i> 67, 75, 123, 189, 321, 337, 361, 371, 473, 495, 519, 563, 605, 613, 765, 827

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2.2.C Determine whether the computed answer to an addition or subtraction problem is reasonable.	Math Talk structures in Math Expressions require students to explain their thinking and justify solutions, including through the use of proof pictures. See Also MATH EXPRESSIONS TE 16, 656, 723, 759, 764
2.2.D Solve a variety of addition and subtraction problems and justify the solutions.	<i>These are some of the many examples:</i> 1-6, 37-44, 137-142, 149-158, 227-232, 267-574, 371-376, 589-598, 637-342, 659-664
2.2.E Compute two-digit sums and differences efficiently and accurately using a method that can be generalized, including the standard algorithms, and explain why the procedure works.	SAB: 145-148, 153-156, 157-158, 159-160, 161-162, 163-164, 165-166, 261-262, 263-264, 265-270, 271-272, 273-274, 275-276, 277-278, 281-282, 283-284, 285-286, 289-290, 291-292 TG: 321-328, 347-352, 353-360, 361-366, 367-370, 371-376, 377-382, 589-598, 599-604, 605-612, 613-618, 619-624, 625-630, 631-636, 637-642, 643-646, 653-658, 659-664 H/R: 91-92, 97-98, 99-100, 101-102, 103-104, 105-106, 107-108, 165-166, 167-168, 169-170, 171-172, 173-174, 175-176, 177-178, 181-182, 183-184, 185-186, 189-190, 191-192
2.2.F Add and subtract two-digit numbers mentally and explain the strategies used.	SAB: 116 TG: 84-87, 90-93, 106-109, 133-135, 138-141, 256, 258, 323, 365, 369, 641, 455, 461, 467, 479, 485, 489, 765, 822
2.2.G Extend and create additive patterns, including growing patterns, and explain the rule used to extend/create the pattern.	SAB: 173, 174, 202 TG: 19, 87, 396-399, 401-402, 448-449, 577, 717, 731 H/R: 113, 114
2.2.H Solve equations in which the unknown and the equal sign appear in a variety of positions.	<i>These are some of the many examples:</i> 106-109, 404-405, 531, 535, 579-577, 640-641, 788, 821, 833
2.2.I Name the standard United States coins and their values and equivalents, and write their values using the \$ or ¢ sign.	Math Expressions reinforces fundamental money concepts using the Money Routine throughout the year. Coins and their values are used in this daily routine as well as throughout the text. <i>These are some of many examples:</i> 22-23, 32, 324-325, 390, 564-567, 782-783, 795, 801, 807, 841, 868-869, 945
2.2.J Determine the value of a collection of coins with a total value less than \$1.00.	<i>These are some of the many examples:</i> 22-24, 25, 76-77, 384-387, 390-393, 564-567, 569-573, 734-735, 737, 740, 743, 795, 801, 807

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<p>3. Core Content: Measurement (Measurement) Students understand the process of measuring length, and progress from measuring length with objects such as toothpicks or craft sticks to using standard tools such as rulers or meter sticks. They also tell time on different types of clocks.</p>	
2.3.A Identify objects that represent standard units and use them to measure length.	SAB: 71-76, 433, 437 TG: 160-165, 850, 966-967, 983 H/R: 45-46, 277
2.3.B Estimate length using customary and metric units.	SAB: 372, 440 TG: 851, 965E, 972-973, 978 H/R: 243, 279
2.3.C Use standard units (customary and metric) and tools to measure length.	SAB: 71-76, 369-374, 375-378, 437-444 TG: 160-165, 849-854, 855-860, 862-863, 872, 971-978, 983 H/R: 45-46, 243, 245, 279
2.3.D Use a measurement tool iteratively to measure the length of an object longer than the tool.	SAB: 71 TG: 161, 165, 857, 983
2.3.E Describe the relationship between standard units of time: minutes, hours, days, weeks, months, and years.	SAB: 200 TG: 423, 425, 436-441, 444-449, 968
2.3.F Use both analog and digital clocks to tell time to the minute.	SAB: 183-190, 191-192, 193-194 TG: 413-420, 421-426, 427-434 H/R: 117, 119, 121
<p>4. Additional Key Content (Geometry, Data/Statistics/Probability, Numbers, and Operations) Students solve problems involving two- and three-dimensional geometric figures. They use graphs and their understanding of numbers, addition, and subtraction to make predictions, answer questions, and pose new questions about data. Students build a foundation for understanding multiplication and division.</p>	
2.4.A Use the attributes of geometric figures to solve spatial problems.	SAB: 77-80, 126-126, 127-130, 131-134, 135-136, 299, 381-384, 385-388 TG: 167-172, 275-280, 281-286, 287-292, 672, 871-878, 879-884 H/R: 47-48, 79-80, 81-82, 83-84, 251-252, 253-254

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2.4.B Collect, organize, represent, and interpret data in bar-type graphs or picture graphs, make observations about data, draw conclusions, and make predictions.	SAB: 106, 209, 210, 211, 214, 215-216, 217-218, 219-220, 221-222, 223-224, 225-226, 227, 233, 234, 235, 236, 341, 372 TG: 109, 230, 455-460, 461-466, 468-469, 471, 474-478, 479-484, 485-488, 489-494, 495-500, 501-506, 507-512, 514-515, 517, 525-530, 531-536, 604, 618, 768, 852, 922 H/R: 127-128, 129, 131, 132, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 151, 153, 192
2.4.C Model, create, and describe multiplication situations in which sets of equal size are joined.	SAB: 391-396, 402, 403 TG: 889-891, 892-893, 895, 896, 901, 902, 903-905, 912 H/R: 255, 257, 259, 261
2.4.D Model, create, and describe division situations in which sets are separated into equal parts.	SAB: 408, 409 TG: 900, 918, 924 H/R: 265
2.4.E Interpret a fraction as a number of equal parts of a whole or a set.	SAB: 415-418, 419-424 TG: 934-940, 941-948 H/R: 269, 271, 276
<p>5. Core Processes: Reasoning, problem solving, and communication</p> <p>Students further develop the concept that doing mathematics involves solving problems and talking about what they did to solve them. Problems in second grade emphasize addition and subtraction with increasingly large numbers, measurement, and sometimes early concepts of multiplication and division. Students communicate their mathematical thinking and make increasingly more convincing mathematical arguments. Students participate in mathematical discussions involving questions like “How did you get that?”, “Why did you use that strategy?”, and “Why is that true?” They use grade-appropriate mathematical language as they discuss and refine solutions to problems.</p>	
2.5.A Identify questions to be answered when solving a problem.	Math Expressions teaches problem solving through problem types (CGI). Students show understanding of the problem through situation equations and then solve them with solution equations. See Also MATH EXPRESSIONS TE 198, 242, 269, 787–788, 828–830, 835
2.5.B Recognize when information is missing from a problem.	Math Expressions teaches problem solving through problem types (CGI). Students show understanding of the problem through situation equations and then solve them with solution equations. See Also MATH EXPRESSIONS TE 234-235, 239, 242-243, 262

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Washington Performance Expectations	<i>Houghton Mifflin Math Expressions</i>
2.5.C Identify what is known and unknown in a problem.	Math Expressions teaches problem solving through problem types (CGI). Students show understanding of the problem through situation equations and then solve them with solution equations. See Also MATH EXPRESSIONS TE 138-139, 242-243, 585-587, 654-655, 828-829
2.5.D Solve problems, choosing from a variety of problem-solving strategies such as drawing pictures, manipulating objects, using numbers, looking for a pattern, or making a list.	Math Expressions teaches problem solving through problem types (CGI). Students show understanding of the problem through situation equations and then solve them with solution equations. See Also MATH EXPRESSIONS TE 9, 53, 72, 81, 165, 224, 243, 332-333, 657, 890-891
2.5.E Tell what they did to solve a problem, using drawings or models if necessary.	Math Talk structures in Math Expressions require students to explain their thinking and justify solutions, including through the use of proof pictures. See Also MATH EXPRESSIONS TE 119–121, 242, 264, 587
2.5.F Determine whether a solution makes sense.	Math Expressions teaches problem solving through problem types (CGI). Students show understanding of the problem through situation equations and then solve them with solution equations. See Also MATH EXPRESSIONS TE 250, 373–374, 656 Math Talk structures in Math Expressions require students to explain their thinking and justify solutions, including through the use of proof pictures. See Also MATH EXPRESSIONS TE 119–121, 150, 182, 206, 242, 256, 259, 264, 587, 601, 891

SAB = Student Activity Book

TG = Teacher's Guide

H/R = Homework and Remembering

***Houghton Mifflin Math Expressions, Grade K-5 correlated to
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Washington Performance Expectations	<i>Houghton Mifflin Math Expressions</i>
<p>1. Core Content: Concepts of multiplication and division (Operations, Algebra) Students learn about multiplication and division and their relationship to each other, as well as how these operations relate to addition and subtraction. As they solve problems involving multiplication and division, students extend their work with simple equations and lay the foundation for later work with fractions.</p>	
3.1.A Represent multiplication as joining equal groups using words, numbers, pictures, physical materials, or equations, and translate among representations.	<p>SAB: 193-198, 199-202, 209, 210, 219/220, 223-226, 227-230, 237-242, 273-276, 303, 337 TG: 419-428, 429-436, 442-446, 459-465, 469-476, 477-486, 495-504, 513-526 H/R: 105, 104, 111, 121, 125, 131, 135, 139, 177, 179, 187, 191, 201, 211</p>
3.1.B Represent division as equal sharing or forming equal groups using words, numbers, pictures, physical materials, or equations, and translate among representations.	<p>SAB: 215-218, 220, 223-226, 227-230, 237-242, 273-276, 303 TG: 450-458, 464-465, 469-476, 477-486, 495-504, 513-526 H/R: 115, 121, 125, 131, 135, 139, 177, 187, 191, 201, 223, 227</p>
3.1.C Represent and use the inverse relationship between multiplication and division.	<p>SAB: 215-218 TG: 449-458, 591 H/R: 113-115</p>
3.1.D Explain and use strategies for learning basic multiplication and division facts.	<p>SAB: 193-198, 231-236, 283-286, 287-288, 289-296, 303, 304, 323-326, 331-334, 339-340, 359-368 TG: 419-428, 443-446, 466, 469-473, 487-494, 505-508, 527-534, 535-544, 545-550, 551-556, 587-592, 594, 605-614, 621-630, 650, 654, 655, 657-662 H/R: 105, 179, 183, 209, 215</p>
3.1.E Demonstrate mastery of multiplication and related division facts for at least the factors 0, 1, 2, 5, and 10, and determine the products and related quotients of other factors through at least 10 x 10.	<p>SAB: 193-198, 219-222, 223-226, 227-230, 231-236, 237-242, 277-282, 287-288, 293-304, 323-326, 331-334, 339-340, 359-368, TG: 419-428, 459-468, 469-476, 477-486, 487-494, 495-504, 519-526, 535-544, 551-560, 587-596, 605-614, 621-630, 657-662 H/R: 103-106, 117-122, 123-126, 127-132, 133-136, 137-140, 173-178, 181-184, 189-192, 199-202, 207-210, 213-216</p>
3.1.F Create a problem situation that corresponds to a given multiplication or division equation.	<p>SAB: 216, 273-276 TG: 429, 440, 455, 513-518 H/R: 171</p>

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Washington Performance Expectations	<i>Houghton Mifflin Math Expressions</i>
3.1.G Solve word problems that involve multiplication or division in a variety of contexts and explain solutions using words, numbers, pictures, physical materials, or equations.	SAB: 200, 201, 209, 210, 215, 217, 220, 225, 232, 233, 273-276, 280, 303, 330, 336, 337, 341-346, 349-352, 369-374, 375-378, 379-384, 389 TG: 431-432, 433, 442, 465, 474, 490-491, 513-518, 523, 553, 602, 617-618, 631-640, 641-648, 663-672, 673-680, 681-686, 689, 693-696 H/R: 111, 115, 121, 125, 131, 135, 139, 171, 177, 179, 183, 187, 191, 201, 205, 209, 211, 215, 217, 219, 223, 227, 229, 231, 233, 235
3.1.H Multiply the numbers from 11 to 19 by single digit numbers using place value and the distributive property.	SAB: 367, 378 TG: 66/, 678
2. Core Content: Fraction concepts (Numbers, Algebra) Students learn about fractions and how they are used. They begin to understand that fractions are special kinds of numbers so they will be ready to use them with operations and in problems in later grades.	
3.2.A Represent fractions with physical materials, pictures, numbers, or words, and translate among representations.	SAB: 417-422, 423-424, 425-426, 431-434 TG: 727-736, 737-742, 743-748, 761-768, 773 H/R: 243, 245, 247, 253, 254
3.2.B Compare and order fractions using physical materials, pictures, numbers, or number lines.	SAB: 462, 463, 464, 465 TG: 828-829, 830, 832, 834, 838, 839, 840 H/R: 269, 271
3.2.C Represent equivalent fractions using physical materials, pictures, numbers, or number lines, and translate among representations.	SAB: 437-440, 441-446, 447-450, 451-452, 453-454 TG: 781-788, 789-794, 795-802, 803-808, 809-813 H/R: 257, 259, 261, 263, 265
3.2.D Solve word problems that involve comparing fractions in a variety of contexts and explain solutions using physical materials, pictures, numbers, equations, or words.	SAB: 464 TG: 828, 830 H/R: 269
3. Core Content: Perimeter, symmetry, and right angles (Geometry, Measurement, Algebra) Students continue to work with two-dimensional figures, identifying special characteristics of lines, angles, triangles, and quadrilaterals. They begin to connect numbers, operations, and geometry by measuring and calculating perimeters.	
3.3.A Sketch and identify right angles.	SAB: 111, 112, 114, 117, 118 TG: 244, 245-246, 248, 251, 254-256 H/R: 61, 63
3.3.B Sketch and identify parallel, intersecting, and perpendicular lines.	SAB: 54, 56 TG: 133-138, 230 H/R: 33

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Washington Performance Expectations	<i>Houghton Mifflin Math Expressions</i>
3.3.C Use side length and concepts of parallel and perpendicular segments to identify and describe quadrilaterals, including squares, rectangles, rhombi, parallelograms, trapezoids, and kites.	SAB: 55-56, 57-64, 65-66, 67-68 TG: 136, 137, 139-146, 147-152, 153-158 H/R: 31, 33, 35, 37, 39
3.3.D Classify triangles as equilateral, isosceles, or scalene based on the number of congruent sides.	SAB: 113, 114 TG: 247-248, 251 H/R: 61, 102
3.3.E Determine the number and location of one or more lines of symmetry in a given figure.	SAB: 100-102, 103 TG: 231-232, 233, 236, 240 H/R: 57
3.3.F Use geometric motions, such as reflections (flips), rotations (turns), and translations (slides), to compare figures and determine congruence.	SAB: 179-184, 186 TG: 395-400, 404, 405, 406 H/R: 97, 99
3.3.G Estimate, measure, and calculate perimeters of two-dimensional figures, including figures in contextual situations.	SAB: 49, 50, 59, 307, 309, 313, 314, 317, 318 TG: 129-132, 142, 150, 562, 564, 566-567, 570-574, 578-582 H/R: 31, 193, 195, 197
3.3.H Solve problems that involve attributes of two-dimensional figures and justify solutions using words, numbers, pictures, physical materials, or equations.	SAB: 55-56, 57-64, 65-66, 67-68, 99, 112, 113, 114, 115, 120 TG: 136, 137, 139-146, 147-152, 153-158, 230, 245-252, 257-258 H/R: 31, 33, 35, 37, 39, 61, 63
4. Additional Key Content (Numbers, Operations, Algebra, Measurement, Data/Statistics/Probability) Students strengthen their understanding of numbers in preparation for algebra by using number sentences and equations to connect different mathematical expressions for the same value. Students continue to work with addition and subtraction, using large numbers and applying them in new contexts. Students formalize their work with measurement to include standard units for temperature, weight, and capacity.	
3.4.A Use place value to read, write, compare, and order numbers to at least 10,000 using numbers, words, and symbols.	<i>These are some of the many examples:</i> 8, 18, 24, 30, 116, 278, 281-288, 428, 485, 514, 612, 851
3.4.B Round whole numbers through 10,000 to the nearest ten, hundred, and thousand.	SAB: 123-126, 127-130 TG: 265-272, 273-280 H/R: 65, 67
3.4.C Determine whether two expressions are equal and use “=” to denote equality.	<i>These are some of the many examples:</i> 78, 164-168, 285-286, 288, 363-364, 784

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Washington Performance Expectations	<i>Houghton Mifflin Math Expressions</i>
3.4.D Add and subtract whole numbers efficiently using the standard algorithms and solve addition and subtraction word problems.	SAB: 19-22, 23-24, 25-26, 27-28, 29-30, 31-32, 33-36, 37-38, 39-40, 41-742, 43-44, 45-46, 71-76, 77-78, 79-80, 81-82, 85-88, 89-92, 93-96, 97-98, 163-166, 167-170, 171-174 TG: 37-44, 45-52, 53-58, 59-64, 65-70, 71-80, 81-90, 91-98, 99-108, 109-114, 115-120, 163-172, 173-178, 179-184, 185-194, 201-208, 209-216, 217-224, 353-360, 361-368 H/R: 9-10, 11-12, 13-14, 15-16, 17-18, 19-20, 21-22, 23-24, 25-26, 27-28, 29-30, 41-42, 43-44, 45-46, 47-48, 51-52, 53-54, 55-56, 91-92, 93-94, 95-96
3.4.E Estimate sums and differences to predict results or determine reasonableness of answers.	SAB: 124, 129, 130 TG: 270-272, 277-280 H/R: 65, 67
3.4.F Determine the amount of money needed to make change up to a dollar and record amounts in dollar-and-cents notation.	SAB: 139, 140 TG: 303-305, 306, 307, 308 H/R: 75
3.4.G Measure temperature in degrees Fahrenheit or degrees Celsius using a thermometer.	SAB: 533, 534 TG: 973-975, 975-976, 977, 978 H/R: 309
3.4.H Estimate, measure, compare, and choose appropriate-size units to communicate weight or mass using customary or metric units.	SAB: 529-530, 531-532 TG: 965-968, 969-970, 971, 972, 982 H/R: 307, 310
3.4.I Estimate, measure, compare, and choose appropriate-size units to express capacity using customary or metric units.	SAB: 519, 520, 521, 523, 524, 527 TG: 939-941, 942, 943-944, 945, 946, 947-949, 950, 951, 952, 960-962, 963, 982 H/R: 299, 301, 305, 310
3.4.J Construct and analyze pictographs in which a picture represents more than one piece of data, frequency tables, line plots, and bar graphs.	SAB: 167-170, 171-174, 351, 427 TG: 369-376, 377-384, 386-390, 467, 475, 517, 645, 647, 695, 751, 776, 778, 779 H/R: 93, 94, 95
<p>5. Core Processes: Reasoning, problem solving, and communication</p> <p>Students in grade three solve problems that extend their understanding of the core concepts of multiplication, division, fractions, and two-dimensional figures. Students make strategic decisions that bring them to reasonable solutions. They use pictures, symbols, and mathematical language to explain the reasoning behind their decisions and solutions. They further develop their problem-solving skills by making generalizations about the processes used and applying these generalizations in similar problem situations.</p>	

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Washington Performance Expectations	<i>Houghton Mifflin Math Expressions</i>
3.5.A Analyze a problem to determine the question(s) to be answered.	Math Expressions teaches problem solving through problem types (CGI). Students show understanding of the problem through situation equations and then solve them with solution equations. See also MATH EXPRESSIONS TG 346–348, 354–355, 366, 693–695
3.5.B Identify information that is essential, missing, or extraneous in order to solve a problem.	Math Expressions teaches problem solving through problem types (CGI). Students show understanding of the problem through situation equations and then solve them with solution equations. See also MATH EXPRESSIONS TG 340-341, 342, 343, 346-351
3.5.C Select and use strategies and procedures to find solutions to problems.	Math Expressions teaches problem solving through problem types (CGI). Students show understanding of the problem through situation equations and then solve them with solution equations. See also MATH EXPRESSIONS TG 60, 118, 340–341, 354–358, 693–695
3.5.D Represent a problem using physical objects, pictures, words, or symbols.	<i>These are some of the many examples:</i> 116-117, 142, 145, 191-192, 300, 490, 601-602, 694, 766
3.5.E Analyze and evaluate whether a solution is reasonable, is mathematically correct, and answers the question.	Math Expressions teaches problem solving through problem types (CGI). Students show understanding of the problem through situation equations and then solve them with solution equations. See also MATH EXPRESSIONS TG 270, 277, 693 –695 Math Talk structures in Math Expressions require students to explain their thinking and justify solutions, including through the use of proof pictures. See also MATH EXPRESSIONS TG 8, 42, 46, 62, 67, 151, 277, 685
3.5.F Recognize when a previously used solution process can be applied in a new context.	Math Expressions teaches problem solving through problem types (CGI). Students show understanding of the problem through situation equations and then solve them with solution equations. See also MATH EXPRESSIONS TG 222, 508-509, 554, 665-667

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Washington Performance Expectations	<i>Houghton Mifflin Math Expressions</i>
3.5.G Use informal and mathematical language to explain why certain strategies or procedures were used to find a solution.	Math Talk structures in Math Expressions require students to explain their thinking and justify solutions, including through the use of proof pictures. See also MATH EXPRESSIONS TG 8, 62, 75, 151, 207, 247, 330, 685

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***Houghton Mifflin Math Expressions, Grade K-5 correlated to
Washington Mathematics Standards***

Washington Performance Expectations	<i>Houghton Mifflin Math Expressions</i>
1. Core Content: Multi-digit multiplication (Numbers, Operations, Algebra) Students master multiplication and related division facts. They apply these facts as they learn efficient procedures for multiplying large numbers and prepare to learn efficient procedures for division. They apply these procedures, along with mental computation and estimation, to solve problems.	
4.1.A Demonstrate mastery of multiplication and related division facts through 10 x 10 and use them to solve problems.	SAB: 1-4, 5-8, 9-14, 15-16, 17, 18, 19-22, 23-26, 35-38, 39-40, 47-54, 61-66 TG: 1-10, 11-20, 21-26, 27-34, 35-42, 43-50, 51-56, 71-78, 79-88, 105-112, 127-132 H/R: 1, 2, 3, 4, 5-10, 11, 12, 13, 14, 15, 16, 18, 29, 30, 31, 32, 38, 49-54
4.1.B Identify factors and multiples of a number.	SAB: 36, 81-84 TG: 4-5, 9, 28-30, 36-37, 72-73, 76-77, 80-81, 83, 85, 88, 165-172, 623, 631 H/R: 65, 76
4.1.C Represent multiplication of up to three-digit by two-digit numbers using words, numbers, pictures, physical materials, or equations.	SAB: 205-210, 212-212, 213-216, 219-220, 221-224, 225-226, 227-230, 233-234, 235-236, 237-238, 239-240, 241-242, 247-248 TG: 439H-439J, 439-446, 447-452, 453-460, 469-474, 475-482, 483-490, 491-502, 509-514, 515-520, 521-530, 539-546 H/R: 129, 131, 133, 137, 139, 141, 143, 147, 149, 151, 153, 155, 208
4.1.D Apply knowledge of place value and properties of addition and multiplication to find products for multiples of 10 and 100.	SAB: 205-210, 211-212, 217-218, 229, 243 TG: 439-446, 447-452, 461, 462-468, 491, 497-499, 515, 548, 550, 551, 552 H/R: 129, 131, 135, 143, 157
4.1.E Multiply up to three-digit by two-digit numbers using the standard algorithms.	SAB: 205-210, 212-212, 213-216, 219-220, 221-224, 225-226, 227-230, 233-234, 235-236, 237-238, 239-240, 241-242, 244, 247-248 TG: 439H-439J, 439-446, 447-452, 453-460, 469-474, 475-482, 483-490, 491-502, 509-514, 515-520, 521-530, 539-546, 547-552 H/R: 129, 131, 133, 137, 139, 141, 143, 147, 149, 151, 153, 155, 157, 208
4.1.F Estimate products of factors less than 100 in order to predict results or determine reasonableness of answers.	SAB: 217-218, 239-240 TG: 461-468, 497-499, 501, 533-537, 543, 546, 936, 946 H/R: 135, 143, 155
4.1.G Solve word problems involving multiplication of up to three-digit by two-digit numbers, and explain solutions using numbers, words, or equations.	<i>These are some of the many examples:</i> 12, 16, 31, 86, 123, 454, 465-466, 502, 543, 574, 657-662

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Washington Performance Expectations	<i>Houghton Mifflin Math Expressions</i>
4.1.H Solve word problems involving division with one-digit divisors and up to three-digit dividends using numbers, pictures, physical materials, or inverse relationships.	<i>These are some of the many examples:</i> 31, 86, 140, 608-609, 624, 626-628, 644, 654, 657-662
2. Core Content: Fractions, decimals, and mixed numbers (Numbers, Algebra) Students solidify their understanding of fractions and decimals and the relationship between them. Students will later use this knowledge when they learn how to add, subtract, multiply, and divide both fractions and decimals.	
4.2.A Represent decimals through hundredths with physical materials, pictures, numbers, or words, and translate among representations.	SAB: 383-386, 387-388, 389-390, 389-390, 391-392, 393-396, 397-398 TG: 879-880, 885-890, 891-898, 899-904, 905-912 H/R: 237, 239, 241, 243, 245, 247, 250
4.2.B Use place value to read, write, compare, and order decimals through hundredths.	SAB: 383-386, 387-388, 389-390, 389-390, 391-392, 393-396, 397-398 TG: 879-880, 885-890, 891-898, 899-904, 905-912, 913-916 H/R: 237, 239, 241, 243, 245, 247, 250
4.2.C Convert between mixed numbers and improper fractions using words,	SAB: 331-330 TG: 754-760 H/R: 205
4.2.D Convert between decimals and fractions that are equivalent to fractions with denominators of 10 or 100, using words, numbers, pictures, or physical materials.	SAB: 383, 384, 385-386, 389 TG: 879, 880-881, 882, 883, 884, 886, 892-894, 897, 898 H/R: 237, 241, 245
4.2.E Compare mixed numbers, fractions, and decimals.	SAB: 319-322, 334, 335, 349, 350, 353, 367, 394, 395 TG: 729-738, 761, 766, 769, 770, 771, 773, 783, 793, 794-795, 796, 797, 798, 799, 811-812, 817, 823, 844, 908, 909-912, 915 H/R: 199, 209, 215, 245
4.2.F Use common factors to find equivalent fractions or to simplify fractions.	SAB: 343-346, 347, 348, 349-350, 353-354 TG: 783-792, 793-798, 811-813, 815-816, 829-836 H/R: 213, 215, 219, 222, 224, 240, 242, 252
4.2.G Solve problems that involve fractions, decimals, and mixed numbers in a variety of contexts, and explain solutions using words, numbers, pictures, physical materials, or equations.	<i>These are some of the many examples:</i> 644, 652, 728, 738, 741, 753, 774, 796, 813, 846, 882, 888, 914, 921, 924-925, 952

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Washington Performance Expectations	<i>Houghton Mifflin Math Expressions</i>
<p>3. Core Content: Concept of area (Geometry, Measurement, Algebra) Students learn how to measure and calculate areas of rectangles as a basis for later work with areas of other two- and three-dimensional figures. They select appropriate units, tools, and strategies, including formulas, to solve problems involving perimeter or area.</p>	
4.3.A Find the approximate area of a two-dimensional figure using square units.	SAB: 100-104, 105-108, 109-112, 200, 201, 202, 255, 256, 259, 417 TG: 199-204, 208-212, 212, 219, 220, 307, 423-428, 572- 574, 577-578, 955-956 H/R: 73, 75, 77, 127, 163, 259
4.3.B Differentiate between problem situations that require linear measurement and those that require area measurement.	SAB: 255, 417 TG: 572-573, 577, 956
4.3.C Develop and use formulas for finding the perimeters and areas of squares and other rectangles.	SAB: 99-104, 255, 256, 259 TG: 197-204, 210, 212, 219, 220, 307, 572, 574, 577-578, 955-956, 959 H/R: 73, 75, 77, 163, 259
4.3.D Solve problems that involve perimeters and areas of rectangular shapes and explain solutions using words, numbers, pictures, physical materials, or equations.	SAB: 100-104, 106-108, 255-258, 417 TG: 199-204, 208-210, 212, 572-575, 578, 828, 955-956, 959 H/R: 73, 75, 162, 163, 259
4.3.E Find the areas of nonrectangular shapes that can be composed or decomposed into rectangles.	SAB: 109, 110, 111-112 TG: 213-215, 216, 217, 218, 219-220 H/R: 77
4.3.F Demonstrate that rectangles with the same area can have different perimeters, and that rectangles with the same perimeter can have different areas.	SAB: 108, 417 TG: 210, 307, 956
<p>4. Additional Key Content (Geometry, Measurement, Algebra, Data/Statistics/Probability) Students apply their work with numbers and operations to convert measurements and they use algebraic notation to describe solutions to problems. Students use coordinate graphs to connect early foundations of algebra and geometry. They explore new uses of whole numbers and fractions to describe sets of data and probabilities.</p>	
4.4.A Use letters, boxes, or other symbols to represent an unknown quantity in simple expressions, equations, or inequalities.	<i>These are some of the many examples:</i> 25, 131, 157, 243, 245, 253, 256, 273, 281, 444, 447, 489, 513

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Washington Performance Expectations	<i>Houghton Mifflin Math Expressions</i>
4.4.B Solve problems involving simple unit conversions within a measurement system—such as centimeters to meters, hours to minutes, or inches to feet—and explain solutions using tools, pictures, numbers, or words.	SAB: 257, 260, 261, 306, 307, 419, 420, 421, 422 TG: 563E-563F, 569, 575, 577, 584, 585, 586, 588, 591, 592, 632, 697- 699, 701, 890, 948, 953, 962-963, 965, 968-971, 974 H/R: 165, 167, 193
4.4.C Estimate or find elapsed time using a calendar, or a digital or analog clock.	SAB: 306, 307, 423 TG: 353, 697-699, 701, 974, 977-978 H/R: 193, 265
4.4.D Locate and name points in the first quadrant of a coordinate grid using ordered pairs of whole numbers.	TG: 706, 707, 708
4.4.E Given a set of data or a line plot, describe the distribution of the data using median, mode, and range.	SAB: 76, 287-290 TG: 150, 663-670, 674 H/R: 185
4.4.F Describe the chance of an event occurring as being certain, impossible, likely, or unlikely, and compare two events as equally likely or not equally likely.	SAB: 351 TG: 800-802, 805, 808
4.4.G Determine a simple probability from a context that includes a picture.	SAB: 351, 352 TG: 801-802, 803, 804, 808-809 H/R: 217
4.4.H Display the results of probability experiments in a clear and organized way, and interpret the results.	SAB: 351, 352 TG: 801-802, 803, 805, 806, 807-810
5. Core Processes: Reasoning, problem solving, and communication Students in grade four solve problems that extend their understanding of core mathematical concepts—such as multiplication of multi-digit numbers, area, and the relationships between fractions and decimals—as they make strategic decisions that bring them to reasonable solutions. Students use pictures, symbols, or mathematical language to explain the reasoning behind their decisions and solutions. They further develop their problem-solving skills by making generalizations about the processes used and applying these generalizations in similar problem situations.	
4.5.A Analyze a problem to determine the question(s) to be answered.	Math Expressions teaches problem solving through problem types (CGI). Students show understanding of the problem through situation equations and then solve them with solution equations. See also MATH EXPRESSIONS TG 156, 246 – 249, 263, 576, 658

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Washington Performance Expectations	<i>Houghton Mifflin Math Expressions</i>
4.5.B Identify information that is essential, missing, or extraneous in order to solve a problem.	Math Expressions teaches problem solving through problem types (CGI). Students show understanding of the problem through situation equations and then solve them with solution equations. See also MATH EXPRESSIONS TG 125, 503-507, 510-514
4.5.C Select and use strategies and procedures to find solutions to problems.	Math Expressions teaches problem solving through problem types (CGI). Students show understanding of the problem through situation equations and then solve them with solution equations. See also MATH EXPRESSIONS TG 156, 246 – 249, 576, 659
4.5.D Represent a problem using words, numbers, pictures, physical objects, or symbols.	<i>These are some of the many examples:</i> 66-67, 76, 99, 163-164, 243, 260, 324, 432, 470-471, 661, 705
4.5.E Analyze and evaluate whether a solution is reasonable, is mathematically correct, and answers the question.	Math Expressions teaches problem solving through problem types (CGI). Students show understanding of the problem through situation equations and then solve them with solution equations. See also MATH EXPRESSIONS TG 156, 360, 376, 511 Math Talk structures in Math Expressions require students to explain their thinking and justify solutions, including through the use of proof pictures. See also MATH EXPRESSIONS TG 476-477, 481, 511
4.5.F Recognize when a previously used solution process can be applied in a new context.	Math Expressions teaches problem solving through problem types (CGI). Students show understanding of the problem through situation equations and then solve them with solution equations. See also MATH EXPRESSIONS TG 73, 170, 306, 324, 778-779, 894
4.5.G Use informal and mathematical language to explain why certain strategies or procedures were used to find a solution.	Math Talk structures in Math Expressions require students to explain their thinking and justify solutions, including through the use of proof pictures. See also MATH EXPRESSIONS TG 46, 160, 186, 242, 262, 732

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Washington Performance Expectations	<i>Houghton Mifflin Math Expressions</i>
<p>1. Core Content: Multi-digit division (Operations, Algebra) Students learn efficient procedures for division. Students apply estimation and mental computation skills to justify whether a quotient is reasonable. They apply these procedures to solve problems.</p>	
5.1.A Represent multi-digit division, with and without a remainder, using words, numbers, pictures, physical materials, or equations.	SAB: 277, 278, 287, 288, 289, 290 TG: 590–594, 595, 614–615, 616–617, 620–621, 622–623 H/R: 161, 167, 169
5.1.B Find quotients for multiples of 10 and 100 by applying knowledge of place value and properties of operations.	TG: 533, 539, 551, 559, 597
5.1.C Divide three- or four-digit numbers by two digit numbers, with and without remainders, using the standard algorithms.	SAB: 287, 288, 289, 290, 291, 292, 293 TG: 614–617, 620–626, 626–629 H/R: 167, 169
5.1.D Estimate quotients in problems involving up to two-digit divisors to predict results or determine reasonableness of answers.	SAB: 256, 287, 288 TG: 548, 614–615, 616–617, 620–621, 622–623
5.1.E Solve problems requiring multi-digit division, and interpret and communicate solutions.	SAB: 278, 290, 302, 304, 307, 308, 309 TG: 594–595, 648–650 H/R: 167, 169
<p>2. Core Content: Addition and subtraction of fractions and decimals (Numbers, Operations, Algebra) Students use what they know about adding and subtracting whole numbers and build on a strong understanding of fractions and decimals as they begin to learn procedures for adding and subtracting fractions and decimals. Students apply these procedures, along with mental computation and estimation, to solve problems.</p>	
5.2.A Represent addition and subtraction of fractions and mixed numbers using words, numbers, pictures, or physical materials, and translate among representations.	SAB: 184, 189, 192 TG: 345G, 342–349, 363–365, 367, 371–372, 392–394, 396–400, 410–414, 452–455, 459, 467–468, 473 H/R: 97, 101, 103, 109, 111, 113, 115, 124, 125, 127, 128, 129
5.2.B Represent addition and subtraction of decimals using words, numbers, pictures, or physical materials, and translate among representations.	SAB: 116, 118 TG: 176–177, 199–200, 207, 296 H/R: 49, 57, 59
5.2.C Given a pair of fractions, rewrite them with common denominators.	SAB: 215, 216 TG: 454–457

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Washington Performance Expectations	<i>Houghton Mifflin Math Expressions</i>
5.2.D Add and subtract fractions, decimals, and mixed numbers using the standard algorithms.	SAB: 116, 118, 184, 189, 192 TG: 176–177, 199–200, 207, 296, 342–349, 363–365, 367, 371–372, 392–394, 396–400, 410–414, 452–455, 459, 467–468, 473 H/R: 49, 57, 59, 97, 101, 103, 109, 111, 113, 115, 124, 125, 127, 128, 129
5.2.E Estimate sums and differences of fractions, decimals, and mixed numbers to predict results or determine reasonableness of answers.	TG: 459, 467
5.2.F Solve word problems involving addition and subtraction of fractions, mixed numbers, and decimals and explain solutions using words, numbers, pictures, physical materials, or equations.	SAB: 113, 109, 192, 197 TG: 199–200, 372, 398, 412, 490 H/R: 111, 113, 114, 115, 127
3. Core Content: Concepts of volume and surface area (Geometry, Measurement, Algebra) Students learn how to measure volume and calculate volumes of rectangular prisms. They apply their knowledge of area measurement to measure and determine surface areas of rectangular prisms. Students select appropriate units, tools, and strategies, including formulas, to solve problems that involve length, area, and volume.	
5.3.A Differentiate between problem situations that require linear measurement, those that require area measurement, and those that require volume measurement.	SAB: 67, 71, 72, 223, 227, 228 TG: 118, 120, 124, 162, 480–481, 486, 494
5.3.B Represent the relationship of the surface area of a rectangular prism to the areas of its faces using words, numbers, pictures, or physical objects.	SAB: 374 TG: 810–813
5.3.C Find the approximate volume of rectangular prisms using cubic units.	SAB: 223, 224, 235 TG: 481–484 H/R: 131
5.3.D Develop and use formulas for finding the volumes of cubes and other rectangular prisms.	SAB: 224 TG: 482
5.3.E Solve word problems that involve surface area or volume and explain solutions using words, numbers, pictures, physical materials, or equations	SAB: 224, 230, 376 TG: 482, 812, 832 H/R: 131, 133

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Washington Performance Expectations	<i>Houghton Mifflin Math Expressions</i>
<p>4. Core Content: Representations of algebraic relationships (Operations, Geometry, Algebra) Students use variables to write simple algebraic expressions describing patterns or solutions to problems. They use what they have learned about numbers and operations to evaluate algebraic expressions and to solve simple equations. Students make tables and graphs from simple linear equations to strengthen their understanding of algebraic relationships and to see the mathematical connections between algebra and geometry.</p>	
5.4.A Write a rule to describe a given pattern and the relationship between two sets of data.	SAB: 27, 28, 65 TG: 52–55, 116 H/R: 15
5.4.B Use a variable to represent an unknown number.	SAB: 14, 18, 21, 22 TG: 12, 27, 40, 49, 55 H/R: 7, 8, 9, 10, 11, 12, 13, 14, 15, 16
5.4.C Write simple algebraic expressions and evaluate them using substitution.	SAB: 9, 49, 50 TG: 12, 29, 76–79 H/R: 23
5.4.D Describe, extend, and create numeric patterns related by one or two operations.	SAB: 27, 28, 331, 332, 333, 334 TG: 51–56, 285, 680–686, 694, 697 H/R: 15, 185
5.4.E Graph ordered pairs on a coordinate grid for two sets of data related by a linear rule and draw the line they determine.	SAB: 331, 332, 333, 334 TG: 680–685 H/R: 185
5.4.F Use parentheses to write and evaluate expressions.	SAB: 49, 50, 51, 62 TG: 76–80, 82 H/R: 23, 31
<p>5. Additional Key Content (Numbers, Geometry, Data/Statistics/Probability) Students work with common factors, common multiples, and prime numbers as preparation for learning fraction operations. They extend their use of numbers, operations, and graphing to describe and compare data sets. Students learn more about angles and triangles as a foundation for future work in geometry.</p>	
5.5.A Use divisibility concepts to classify numbers as prime or composite.	SAB: 15 TG: 28, 438 H/R: 7
5.5.B Use prior knowledge of common factors and multiples to find the greatest common factor and least common multiple of two or more whole numbers.	SAB: 215, 216, 220 TG: 438, 454–457, 458, 461, 469, 471
5.5.C Sketch and identify acute, right, and obtuse angles.	SAB: 75, 169 TG: 130, 318

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Washington Performance Expectations	<i>Houghton Mifflin Math Expressions</i>
5.5.D Classify triangles as acute, right, or obtuse based on their angle measures.	SAB: 75 TG: 130
5.5.E Find and interpret the whole-number mean of a small-sized data set of whole numbers.	SAB: 279, 286 TG: 596, 610
5.5.F Construct and analyze line graphs.	SAB: 133, 134, 135, 137 TG: 252–255, 258, 261–262 H/R: 71, 73, 94
<p>6. Core Processes: Reasoning, problem solving, and communication</p> <p>Students in grade five solve problems that extend their understanding of core mathematical concepts—such as division of multi-digit numbers, surface area and volume of rectangular prisms, addition and subtraction of fractions and decimals, and use of variables in expressions and equations—as they make strategic decisions that bring them to reasonable solutions. Students use pictures, symbols, or mathematical language to explain the reasoning behind their decisions and solutions. They further develop their problem-solving skills by making generalizations about the processes used and applying these generalizations in similar problem situations.</p>	
5.6.A Analyze a problem to determine the question(s) to be answered.	Math Expressions teaches problem solving through problem types (CGI). Students show understanding of the problem through situation equations and then solve them with solution equations. See also MATH EXPRESSIONS TG 6, 48, 144, 145, 464 – 465
5.6.B Identify information that is essential, missing, or extraneous in order to solve a problem.	Math Expressions teaches problem solving through problem types (CGI). Students show understanding of the problem through situation equations and then solve them with solution equations. See also MATH EXPRESSIONS TG 6, 48, 144, 145, 464 – 465
5.6.C Select and use strategies and procedures to find solutions to problems.	Math Expressions teaches problem solving through problem types (CGI). Students show understanding of the problem through situation equations and then solve them with solution equations. See also MATH EXPRESSIONS TG 11, 13, 39–40, 60, 82–83, 84–85, 100–101, 264–267, 280–282, 376–379, 381, 465, 503, 530, 648
5.6.D Represent a problem using words, numbers, pictures, physical objects, or symbols.	<i>These are some of the many examples:</i> 27, 38, 84–85, 98, 166, 239, 275, 366, 376, 445, 550, 553, 737

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Washington Performance Expectations	<i>Houghton Mifflin Math Expressions</i>
5.6.E Analyze and evaluate whether a solution is reasonable, is mathematically correct, and answers the question.	Math Expressions teaches problem solving through problem types (CGI). Students show understanding of the problem through situation equations and then solve them with solution equations. See also MATH EXPRESSIONS TG 47, 119, 125, 280–282, 393 Math Talk structures in Math Expressions require students to explain their thinking and justify solutions, including through the use of proof pictures. See also MATH EXPRESSIONS TG 125, 356–357, 398
5.6.F Recognize when a previously used solution process can be applied in a new context.	Math Expressions teaches problem solving through problem types (CGI). Students show understanding of the problem through situation equations and then solve them with solution equations. See also MATH EXPRESSIONS TG 8, 214, 640–641, 642, 737, 784
5.6.G Use informal and mathematical language to explain why certain strategies or procedures were used to find a solution.	Math Talk structures in Math Expressions require students to explain their thinking and justify solutions, including through the use of proof pictures. See also MATH EXPRESSIONS TG 210–212, 212–214, 358–359

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