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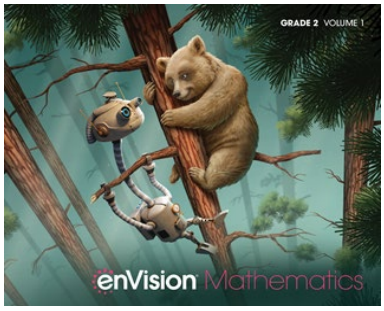

To the

2016 Mississippi College- and Career-Readiness Standards for Mathematics
Kindergarten – Grade 5

Prepared by Savvas Learning Company, formerly Pearson K12 Learning

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to the 2016 Mississippi College- and Career-Readiness Standards for Mathematics

Introduction

enVision® Mathematics ©2020 is one of the latest offering of the nationally recognized Grades K-12 series, created for print, digital, and blended instruction. Problem-Based Learning connects with Visual Learning to deep conceptual understanding. Interactive multimedia experiences engage learners in student choice and solving rich problems. Extensive customization and differentiation options empower every teacher and student.

UNDERSTANDING
A simple lesson design provides a clear, intentional pathway. Starting on a firm foundation of conceptual understanding, students can connect and apply math ideas in amazing ways. High-interest math projects invite all students to be active participants.

A simple lesson design provides a clear, intentional pathway.

STEP 1 Problem-Based Learning
STEP 2 Visual Learning
STEP 3 Assess and Differentiate

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The enVision Assessment Suite offers options to move students toward mastery of state standards while driving instructional differentiation.

DIAGNOSTIC Assessment
Reading Test, Diagnostic Test (Math Diagnosis and Intervention System), Review What You Know
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Math background for every Topic and Lesson serves as an easy-to-access math methods course.

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Kids See the Math. Teachers See Results.

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Counting and Cardinality (CC)	
Know the number names and the count sequence.	
K.CC.1 Count to 100 by ones and by tens.	**SE: 433–436, 437–440, 441–444**, 445–448, 449–452, 465–468, 469–472, 473–476, 477–480 **TE: 433A–436B, 437A–440B, 441A–444B,** 445A–448B, 449A–452B, 465A–468B, 469A–472B, 473A–476B, 477A–480B
K.CC.2 Count forward beginning from a given number within the known sequence (instead of having to begin at 1).	**SE: 117–120, 149–152, 157–160, 365–368, 373–376,** 433–436, 437–440, 441–444, **445–448, 449–452** **TE:117A–120B, 149A–152B, 157A–160B, 365A–368B, 373A–376B,** 433A–436B, 437A–440B, 441A–444B, **445A–448B, 449A–452B**
K.CC.3 Write numbers from 0 to 20. Represent a number of objects with a written numeral 0–20 (with 0 representing a count of no objects).	**SE: 13–16, 25–28, 33–36,** 73–76, 77–80, **97–100, 105–108, 113–116,** 121–124, 201–204, 205–208, 209–212, 213–216, 249–252, 253–256, 257–260, 261–264, 317–320, 325–328, 329–332, **349–352, 353–356, 357–360, 361–364** **TE: 13A–16B, 25A–28B, 33A–36B,** 73A–76B, 77A–80B, **97A–100B, 105A–108B, 113A–116B,** 121A–124B, 201A–204B, 205A–208B, 209A–212B, 213A–216B, 249A–252B, 253A–256B, 257A–260B, 261A–264B, 317A–320B, 325A–328B, 329A–332B, **349A–352B, 353A–356B, 357A–360B, 361A–364B**
Count to tell the number of objects	
K.CC.4 Understand the relationship between numbers and quantities; connect counting to cardinality.	**SE:** 369-372 **TE:** 369A-372B
a. When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object.	**SE: 5-8, 17-20, 29-32,** 37-40, **41-44, 93-96, 101-104, 109-112** **TE: 5A-8B, 17A-20B, 29A-32B,** 37A-40B, **41A-44B, 93A-96B, 101A-104B, 109A-112B**
b. Understand that the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted.	**SE: 9-12, 21-24,** 41-44, 109-112, **121-124** **TE: 9A-12B, 21A-24B,** 41A-44B, 109A-112B, **121A-124B**

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c. Understand that each successive number name refers to a quantity that is one larger.	**SE: 37-40,** 117-120, 157-160, 365-368 **TE: 37A-40B,** 117A-120B, 157A-160B, 365A-368B
K.CC.5 Count to answer "how many?" questions about as many as 20 things arranged in a line, a rectangular array, or circle, or as many as 10 things in a scattered configuration; given a number from 1-20, count out that many objects.	**SE:** 5–8, 9–12, 13–16, 17–20, 21–24, 25–28, 29–32, 33–36, 41–44, 61–64, 65–68, 69–72, 73–76, 93–96, 97–100, 101–104, 105–108, 113–116, 141–144, 173–176, 177–180, 201–204, 249–252, 349–352, 353–356, 357–360, 361–364, **369–372,** 373–376, 389–392, 393–396, 397–400, 401–404, 405–408, 409–412, 413-416, 513–516, 525–528, 529–532, 533–536 **TE:** 5A–8B, 9A–12B, 13A–16B, 17A–20B, 21A–24B, 25A–28B, 29A–32B, 33A–36B, 41A–44B, 61A–64B, 65A–68B, 69A–72B, 73A–76B, 93A–96B, 97A–100B, 101A–104B, 105A–108B, 113A–116B, 141A–144B, 173A–176B, 177A–180B, 201A–204B, 249A–252B, 349A–352B, 353A–356B, 357A–360B, 361A–364B, **369A–372B,** 373A–376B, 389A–392B, 393A–396B, 397A–400B, 401A–404B, 405A–408B, 409A–412B, 413A-416B, 513A–516B, 525A–528B, 529A–532B, 533A–536B
Compare numbers.	
K.CC.6 Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group, e.g., by using matching and counting strategies.	**SE: 61-64, 65-68, 69-72, 73-76, 77-80,** 117-120, **141-144,** 145-148, **149-152,** 153-156, 181-184, 185-188, 509–512 **TE: 61A-64B, 65A-68B, 69A-72B, 73A-76B, 77A-80B,** 117A-120B, **141A-144B,** 145A-148B, **149A-152B,** 153A-156B, 181A-184B, 185A-188B, 509A–512B
K.CC.7 Compare two numbers between 1 and 20 presented as written numerals.	**SE: 145-148,** 149-152, **153-156,** 181-184, 185-188 **TE: 145A-148B,** 149A-152B, **153A-156B,** 181A-184B, 185A-188B

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Operations and Algebraic Thinking (OA)	
Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from	
K.OA.1 Represent addition and subtraction, *in which all parts and whole of the problem are within 10*, with objects, fingers, mental images, drawings, sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations.	**SE: 201-204, 205-208, 209-212, 213-216,** 217–220, 221–224, 225–228, 229–232, **249-252, 253-256, 257-260, 261-264,** 265–268, 269–272, 273–276, 293–296, 297–300, **301-304,** 305–308, 309–312, 313-316, **317-320,** 321-324 **TE: 201A-204B, 205A-208B, 209A-212B, 213A-216B,** 217A–220B, 221A–224B, 225A–228B, 229A–232B, **249A-252B, 253A-256B, 257A-260B, 261A-264B,** 265A–268B, 269A–272B, 273A–276B, 293A–296B, 297A–300B, **301A-304B,** 305A–308B, 309A–312B, 313A-316B, **317A-320B,** 321A-324B
K.OA.2 Solve addition and subtraction word problems *within 10 involving situations of adding to, taking from, putting together and taking apart with unknowns in all positions by* using objects or drawings to represent the problem.	**SE: 201-204,** 205-208, 209-212, 213-216, **217-220, 221-224, 229-232, 249-252,** 253-256, **257-260,** 261-264, **265-268, 273-276, 293-296, 309-312, 313-316, 321-324** **TE: 201A-204B,** 205A-208B, 209A-212B, 213A-216B, **217A-220B, 221A-224B, 229A-232B, 249A-252B,** 253A-256B, **257A-260B,** 261A-264B, **265A-268B, 273A-276B, 293A-296B, 309A-312B, 313A-316B, 321A-324B**
K.OA.3 Decompose numbers less than or equal to 10 into pairs in more than one way, e.g., by using objects or drawings, and record each decomposition by a drawing or equation (e.g., 5 = 2 + 3 and 5 = 4 + 1).	**SE: 293-296, 309-312, 313-316, 321-324,** 325-328, 329-332 **TE: 293A-296B, 309A-312B, 313A-316B, 321A-324B,** 325A-328B, 329A-332B
K.OA.4 For any number from 1 to 9, find the number that makes 10 when added to the given number, e.g., by using objects or drawings, and record the answer with a drawing or equation.	**SE: 325-328, 329-332,** 517-520, 521-524 **TE: 325A-328B, 329A-332B,** 517A-520B, 521A-524B
K.OA.5 ***Fluently*** add and subtract within 5.	**SE: 225-228, 269-272, 297-300,** 301-304, **305-308** **TE: 225A-228B, 269A-272B, 297A-300B,** 301A-304B, **305A-308B**

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Number and Operations in Base Ten (NBT)	
Work with numbers 11-19 to gain foundations for place value	
K.NBT.1 Compose and decompose numbers from 11 to 19 into ten ones and some further ones to understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones, e.g., by using objects or drawings, and record each composition or decomposition by a drawing or equation (e.g., 18 = 10 + 8).	**SE: 389-392, 393-396, 397-400, 401-404, 405-408, 409-412, 413-416** **TE: 389A-392B, 393A-396B, 397A-400B, 401A-404B, 405A-408B, 409A-412B, 413A-416B**
Measurement and Data (MD)	
Describe and compare measurable attributes	
K.MD.1 Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.	**SE:** 549-552, 553-556, 557-560, **561-564, 565-568** **TE:** 549A-552B, 553A-556B, 557A-560B, **561A-564B, 565A-568B**
K.MD.2 Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference. *For example, directly compare the heights of two children and describe one child as taller/shorter.*	**SE: 549-552, 553-556, 557-560, 565-568, 569-572** **TE: 549A-552B, 553A-556B, 557A-560B, 565A-568B, 569A-572B**
Classify objects and count the number of objects in each category	
K.MD.3 Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.	**SE: 173-176, 177-180, 181-184, 185-188,** 465–468 **TE: 173A-176B, 177A-180B, 181A-184B, 185A-188B,** 465A–468B
Geometry (G)	
Identify and describe shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres)	
K.G.1 Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as *above, below, beside, in front of, behind*, and *next to.*	**SE:** 469-472, 473-476, 477-480, 481-484, **485-488, 489-492,** 525-528 **TE:** 469A-472B, 473A-476B, 477A-480B, 481A-484B, **485A-488B, 489A-492B,** 525A-528B
K.G.2 Correctly name shapes regardless of their orientations or overall size.	**SE: 469-472, 473-476, 477-480, 481-484,** 485-488, 489-492 **TE: 469A-472B, 473A-476B, 477A-480B, 481A-484B,** 485A-488B, 489A-492B
K.G.3 Identify shapes as two-dimensional (lying in a plane, "flat") or three-dimensional ("solid").	**SE: 465-468,** 485-488, 521-524 **TE: 465A-468B,** 485A-488B, 521A-524B

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Analyze, compare, create, and compose shapes	
K.G.4 Analyze and compare two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts (e.g., number of sides and vertices/"corners") and other attributes (e.g., having sides of equal length).	**SE:** 473-476, 477-480, 481-484, **509-512, 513-516, 517-520, 521-524,** 529-532 **TE:** 473A-476B, 477A-480B, 481A-484B, **509A-512B, 513A-516B, 517A-520B, 521A-524B,** 529A-532B
K.G.5 Model objects in the world by drawing two-dimensional shapes and building three-dimensional shapes.	**SE:** 513-516, 525-528, **529-532, 533-536** **TE:** 513A-516B, 525A-528B, **529A-532B, 533A-536B**
K.G.6 Compose simple shapes to form larger shapes. *For example, "Can you join these two triangles with full sides touching to make a rectangle?"*	**SE: 525-528, 533-536** **TE: 525A-528B, 533A-536B**
Standards for Mathematical Practice	
1. Make sense of problems and persevere in solving them. In Kindergarten, students begin to build the understanding that doing mathematics involves solving problems and discussing how they solved them. Students explain to themselves the meaning of a problem and look for ways to solve it. Younger students may use concrete objects or pictures to help them conceptualize and solve problems. They may check their thinking by asking themselves, "Does this make sense?" or they may try another strategy.	**SE:** 21-24, 29–32, 77-80, 145–148, 157–160, 173-176, **181-184,** 205-208, **217-220,** 225-228, **265-268,** 273-276, **297-300,** 305-308, 317-320 **TE:** 21A-24B, 29A-32B, 77A-80B, 145A-148B, 157A-160B, 173A-176B, **181A-184B,** 205A-208B, **217A-220B,** 225A-228B, **265A-268B,** 273A-276B, **297A-300B,** 305A-308B, 317A-320B
2. Reason abstractly and quantitatively. Younger students begin to recognize that a number represents a specific quantity. Then, they connect the quantity to written symbols. Quantitative reasoning entails creating a representation of a problem while attending to the meanings of the quantities.	**SE:** 5-8, **9–12,** 25-28, **33-36,** 61-64, 65-68, 93-96, 97-100, **101-104,** 113-116, 117-120, **145–148,** 149-152, 177-180, 185-188 **TE:** 5A-8B, **9A–12B,** 25A-28B, **33A-36B,** 61A-64B, 65A-68B, 93A-96B, 97A-100B, **101A-104B,** 113A-116B, 117A-120B, **145A-148B,** 149A-152B, 177A-180B, 185A-188B
3. Construct viable arguments and critique the reasoning of others. Younger students construct arguments using concrete referents, such as objects, pictures, drawings, and actions. They also begin to develop their mathematical communication skills as they participate in mathematical discussions involving questions like "How did you get that?" and "Why is that true?" They explain their thinking to others and respond to others' thinking.	**SE:** 5-8, 9–12, 13-16, 17-20, **41-44, 65-68, 69-72,** 73-76, 77-80, 93-96, 101-104, 105-108, 109-112, **117-120,** 141-144, **153-156** **TE:** 5A-8B, 9A-12B, 13A-16B, 17A-20B, **41A-44B, 65A-68B, 69A-72B,** 73A-76B, 77A-80B, 93A-96B, 101A-104B, 105A-108B, 109A-112B, **117A-120B,** 141A-144B, **153A-156B**

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4. Model with mathematics. In early grades, students experiment with representing problem situations in multiple ways including numbers, words (mathematical language), drawing pictures, using objects, acting out, making a chart or list, creating equations, etc. Students need opportunities to connect the different representations and explain the connections. They should be able to use all of these representations as needed.	**SE:** 9–12, **17-20,** 21-24, 25-28, **29–32,** 69-72, **77-80, 93-96, 109-112, 141-144,** 153-156, **201-204, 209-212,** 217-220, **221-224** **TE:** 9A–12B, **17A-20B,** 21A-24B, 25A-28B, **29A-32B,** 69A-72B, **77A-80B, 93A-96B, 109A-112B, 141A-144B,** 153A-156B, **201A-204B, 209A-212B,** 217A-220B, **221A-224B**
5. Use appropriate tools strategically. Younger students begin to consider the available tools (including estimation) when solving a mathematical problem and decide when certain tools might be helpful. For instance, kindergarteners may decide that it might be advantageous to use linking cubes to represent two quantities and then compare the two representations side-by-side.	**SE: 5-8,** 13-16, 17-20, 33-36, 97-100, 105-108, 109-112, 113-116, 121-124, **149-152,** 157-160, 181-184, **205-208, 273-276, 293-296** **TE: 5A-8B,** 13A-16B, 17A-20B, 33A-36B, 97A-100B, 105A-108B, 109A-112B, 113A-116B, 121A-124B, **149A-152B,** 157A-160B, 181A-184B, **205A-208B, 273A-276B, 293A-296B**
6. Attend to precision. As kindergarteners begin to develop their mathematical communication skills, they try to use clear and precise language in their discussions with others and in their own reasoning.	**SE: 13-16, 25-28,** 29–32, **61-64,** 65-68, 73-76, **97-100, 105-108,** 149-152, 153-156, **173-176, 177-180,** 185-188, 201-204, **213-216** **TE: 13A-16B, 25A-28B,** 29A–32B, **61A-64B,** 65A-68B, 73A-76B, **97A-100B, 105A-108B,** 149A-152B, 153A-156B, **173A-176B, 177A-180B,** 185A-188B, 201A-204B, **213A-216B**
7. Look for and make use of structure. Younger students begin to discern a pattern or structure. For instance, students recognize the pattern that exists in the teen numbers; every teen number is written with a 1 (representing one ten) and ends with the digit that is first stated. They also recognize that 3 + 2 = 5 and 2 + 3 = 5.	**SE: 37-40,** 41-44, 61-64, 117-120, **121-124,** 181-184, **225-228, 269-272,** 293-296, 317-320, **321-324,** 329–332, 357-360, 361-364, **365-368** **TE: 37A-40B,** 41A-44B, 61A-64B, 117A-120B, **121A-124B,** 181A-184B, **225A-228B, 269A-272B,** 293A-296B, 317A-320B, **321A-324B,** 329A-332B, 357A-360B, 361A-364B, **365A-368B**
8. Look for and express regularity in repeated reasoning. In the early grades, students notice repetitive actions in counting and computation, etc. For example, they may notice that the next number in a counting sequence is one more. When counting by tens, the next number in the sequence is “ten more” (or one more group of ten). In addition, students continually check their work by asking themselves, “Does this make sense?”	**SE: 21-24,** 37-40, 41-44, **73-76, 113-116,** 121-124, 141-144, **157–160,** 177-180, 209-212, 269-272, 293-296, **317-320,** 325–328, **329–332** **TE: 21A-24B,** 37A-40B, 41A-44B, **73A-76B, 113A-116B,** 121A-124B, 141A-144B, **157A-160B,** 177A-180B, 209A-212B, 269A-272B, 293A-296B, **317A-320B,** 325A-328B, **329A-332B**

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2016 Mississippi College- and Career-Readiness Standards for Mathematics Grade 1	**enVision Mathematics Mississippi, ©2020 Grade 1**
Operations and Algebraic Thinking (OA)	
Represent and solve problems involving addition and subtraction	
1.OA.1 Use addition and subtraction within 20 to solve word problems involving situations of adding to and subtracting to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.	**SE: 5–8, 9–12, 13–16, 17–20, 21–24, 25–28, 29–32, 33–36, 37–40,** 57–60, 61–64, 81-84, **85–88,** 113–116, 117–120, 121–124, **137–140, 141–144,** 161–164, **189–192, 193–196, 233–236,** 261–264, 265–268, 269–272 **TE: 5A–8B, 9A–12B, 13A–16B, 17A–20B, 21A–24B, 25A–28B, 29A–32B, 33A–36B, 37A–40B,** 57A–60B, 61A–64B, 81A-84B, **85A–88B,** 113A–116B, 117A–120B, 121A–124B, **137A–140B, 141A–144B,** 161A–164B, **189A–192B, 193A–196B, 233A–236B,** 261A–264B, 265A–268B, 269A–272B
1.OA.2 Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.	**SE:** 225–228, **229–232,** 261–264, 569-572 **TE:** 225A–228B, **229A–232B,** 261A–264B, 569A-572B
Understand and apply properties of operations and the relationship between addition and subtraction	
1.OA.3 Apply properties of operations as strategies to add and subtract.3 *Examples: If 8 + 3 = 11 is known, then 3 + 8 = 11 is also known. (Commutative property of addition.) To add 2 + 6 + 4, the second two numbers can be added to make a ten, so 2 + 6 + 4 = 2 + 10 = 12. (Associative property of addition.)*	**SE: 73–76, 89–92,** 109–112, 141–144, 169-172, **225–228,** 229–232 **TE: 73A–76B, 89A–92B,** 109A–112B, 141A–144B, 169A-172B, **225A–228B,** 229A–232B
1.OA.4 Understand subtraction as an unknown addend problem. *For example, subtract 10 – 8 by finding the number that makes 10 when added to 8.*	**SE:** 29–32, 33–36, **81–84, 173–176, 177–180, 181–184, 185–188** **TE:** 29A–32B, 33A–36B, **81A–84B, 173A–176B, 177A–180B, 181A–184B, 185A–188B**
Add and subtract within 20	
1.OA.5 Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).	**SE: 57–60,** 61–64, **65–68, 77–80, 109–112, 113–116,** 117–120, 121–124, **161–164,** 185–188, 213–216, 217–220, 221–224, 253–256, 257–260, 533-538, 537-540 **TE: 57A–60B,** 61A–64B, **65A–68B, 77A–80B, 109A–112B, 113A–116B,** 117A–120B, 121A–124B, **161A–164B,** 185A–188B, 213A–216B, 217A–220B, 221A–224B, 253A–256B, 257A–260B, 533A-538B, 537A-540B

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2016 Mississippi College- and Career-Readiness Standards for Mathematics Grade 1	**enVision Mathematics Mississippi, ©2020 Grade 1**
1.OA.6 Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., 8 + 6 = 8 + 2 + 4 = 10 + 4 = 14); decomposing a number leading to a ten (e.g., 13 – 4 = 13 – 3 – 1 = 10 – 1 = 9); using the relationship between addition and subtraction (e.g., knowing that 8 + 4 = 12, one knows 12 – 8 = 4); and creating equivalent but easier or known sums (e.g., adding 6 + 7 by creating the known equivalent 6 + 6 + 1 = 12 + 1 = 13).	**SE:** 57–60, **61–64, 65–68, 69–72,** 77–80, 81–84, 85–88, 89–92, **117–120, 121–124, 125–128, 129–132, 133–136,** 137-140, 141–144, **165–168, 169–172,** 173–176, 177–180, 181–184, 185–188, 213-216 **TE:** 57A–60B, **61A–64B, 65A–68B, 69A–72B,** 77A–80B, 81A–84B, 85A–88B, 89A–92B, **117A–120B, 121A–124B, 125A–128B, 129A–132B, 133A–136B,** 137A-140B, 141A–144B, **165A–168B, 169A–172B,** 173A–176B, 177A–180B, 181A–184B, 185A–188B, 213A-216B
Work with addition and subtraction equations	
1.OA.7 Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false. *For example, which of the following equations are true and which are false? 6 = 6, 7 = 8 – 1, 5 + 2 = 2 + 5, 4 + 1 = 5 + 2.*	**SE:** 5–8, 9–12, 13-16, 17-20, **217–220, 221–224, 237–240** **TE:** 5A–8B, 9A–12B, 13A-16B, 17A–20B, **217A–220B, 221A–224B, 237A–240B**
1.OA.8 Determine the unknown whole number in an addition or subtraction equation relating three whole numbers. *For example, determine the unknown number that makes the equation true in each of the equations 8 + ? = 11, 5 = □ – 3, 6 + 6 = □.*	**SE: 213–216,** 221–224, 237–240 **TE: 213A–216B,** 221A–224B, 237A–240B
Number and Operations in Base Ten (NBT)	
Extend the counting sequence	
1.NBT.1 Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral.	**SE: 289–292, 293–296, 297–300, 301–304, 305–308, 309–312,** 329–332, 333–336, 337–340, 373-376, 521-524, 525-528, 537–540, 565–568, 577–580, 585–588 **TE: 289A–292B, 293A–296B, 297A–300B, 301A–304B, 305A–308B, 309A–312B,** 329A–332B, 333A–336B, 337A–340B, 373A-376B, 521A-524B, 525A-528B, 537A–540B, 565A–568B, 577A–580B, 585A–588B

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Understand place value	
1.NBT.2 Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following special cases:	**SE: 333–336, 337–340, 341–344, 345-348, 349-352,** 409-412, 413-416, 417-420, 457–460, 465–468, 469–472, 521-524, 525–528, 529-532, 533-536, 537-540 **TE: 333A–336B, 337A–340B, 341A–344B, 345A-348B, 349A-352B,** 409A-412B, 413A-416B, 417A-420B, 457A–460B, 465A–468B, 469A–472B, 521A-524B, 525A–528B, 529A-532B, 533A-536B, 537A-540B
a. 10 can be thought of as a bundle of ten ones — called a “ten.”	**SE:** 285–288, 305–308, 309–312, **325–328,** 329–332, 405–408, 421–424, 425–428, 433–436 **TE:** 285A–288B, 305A–308B, 309A–312B, **325A–328B,** 329A–332B, 405A–408B, 421A–424B, 425A–428B, 433A–436B
b. The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones.	**SE: 325–328** **TE: 325A–328B**
c. The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones).	**SE: 285–288,** 297–300, 305–308, **329–332,** 401–404, 453–456, 461–464, 573–576 **TE: 285A–288B,** 297A–300B, 305A–308B, **329A–332B,** 401A–404B, 453A–456B, 461A–464B, 573A–576B
1.NBT.3 Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols >, =, and <.	**SE:** 365–368, 369–372, **373–376, 377–380, 381–384, 385–388** **TE:** 365A–368B, 369A–372B, **373A–376B, 377A–380B, 381A–384B, 385A–388B**
Use place value understanding and properties of operations to add and subtract	
1.NBT.4 Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, 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. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten.	**SE: 401–404, 409–412, 413–416, 417–420, 421–424, 425–428, 429–432, 433–436** **TE: 401A–404B, 409A–412B, 413A–416B, 417A–420B, 421A–424B, 425A–428B, 429A–432B, 433A–436B**

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1.NBT.5 Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.	**SE: 365–368, 369–372, 405–408,** 429–432, 453–456, 457–460, 461–464, **469–472,** 473–476, 477–480 **TE: 365A–368B, 369A–372B, 405A–408B,** 429A–432B, 453A–456B, 457A–460B, 461A–464B, **469A–472B,** 473A–476B, 477A-480B
1.NBT.6 Subtract multiples of 10 in the range 10–90 from multiples of 10 in the range 10–90 (positive or zero differences), 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.	**SE: 453–456, 457–460, 461–464, 465–468, 473–476, 477–480** **TE: 453A–456B, 457A–460B, 461A–464B, 465A–468B, 473A–476B, 477A–480B**
Measurement and Data (MD)	
Measure lengths indirectly and by iterating length units	
1.MD.1 Order three objects by length; compare the lengths of two objects indirectly by using a third object.	**SE: 493–496, 497–500,** 505-508 **TE: 493A–496B, 497A–500B,** 505A-508B
1.MD.2 Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. *Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps*.	**SE: 501–504, 505–508,** 557–560, 561–564, 581–584 **TE: 501A–504B, 505A–508B,** 557A–560B, 561A–564B, 581A–584B
Tell and write time with respect to a clock and a calendar	
1.MD.3a Tell and write time in hours and half-hours using analog and digital clocks.	**SE: 529–532, 533–536, 537–540, 541–544** **TE: 529A–532B, 533A–536B, 537A–540B, 541A–544B**
1.MD.3b Identify the days of the week, the number of days in a week, and the number of weeks in each month.	**SE: MS 19A– MS 24A, Lesson MS 4** **TEPO: 134 (MS 19A)–139 (MS 24A), Lesson MS 4**
Represent and interpret data	
1.MD.4 Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.	**SE: 253–256, 257–260, 261–264, 265–268, 269–272** **TE: 253A–256B, 257A–260B, 261A–264B, 265A–268B, 269A–272B**

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Work with money	
1.MD.5a Identify the value of all U.S. coins (penny, nickel, dime, quarter, half-dollar, and dollar coins). Use appropriate cent and dollar notation (e.g., 25¢, $1).	**SE: 521–524, MS 1A–MS 6A, Lesson MS 1** **TE: 521A–524B** **TEPO: 116 (MS 1A)–121 (MS 6A), Lesson MS 1**
1.MD.5b Know the comparative values of all U.S. coins (e.g., a dime is of greater value than a nickel).	**SE: 521–524, MS 1A–MS 6A, Lesson MS 1** **TE: 521A–524B** **TEPO: 116 (MS 1A)–121 (MS 6A), Lesson MS 1**
1.MD.5c Count like U.S. coins up to the equivalent of a dollar.	**SE: MS 7A- MS 12A, Lesson MS 2** **TEPO: 122 (MS 7A)–127 (MS 12A), Lesson MS 2**
1.MD.5d Find the equivalent value for all greater value U.S. coins using like value smaller coins (e.g., 5 pennies equal 1 nickel; 10 pennies equal dime, but not 1 nickel and 5 pennies equal 1 dime).	**SE: MS 13A- MS 18A, Lesson MS 3** **TEPO: 128 (MS 13A)–133 (MS 18A), Lesson MS 3**
Geometry (G)	
Reason with shapes and their attributes	
1.G.1 Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size); build and draw shapes to possess defining attributes.	**SE: 557–560, 561–564, 565–568, 577–580, 581–584, 589–592** **TE: 557A–560B, 561A–564B, 565A–568B, 577A–580B, 581A–584B, 589A–592B**
1.G.2 Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) or three-dimensional shapes (cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape, and compose new shapes from the composite shape.	**SE: 569–572, 573–576, 585–588,** 589–592 **TE: 569A–572B, 573A–576B, 585A–588B,** 589A–592B
1.G.3 Partition circles and rectangles into two and four equal shares, describe the shares using the words *halves, fourths*, and *quarters*, and use the phrases *half of, fourth of*, and *quarter of*. Describe the whole as two of, or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares.	**SE: 609–612, 613–616, 617–620, 621–624** **TE: 609A–612B, 613A–616B, 617A–620B, 621A–624B**

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Standards for Mathematical Practice	
1. Make sense of problems and persevere in solving them. In first grade, students realize that doing mathematics involves solving problems and discussing how they solved them. Students explain to themselves the meaning of a problem and look for ways to solve it. Younger students may use concrete objects or pictures to help them conceptualize and solve problems. They may check their thinking by asking themselves, "Does this make sense?" They are willing to try other approaches.	**SE:** 9–12, **29–32,** 33–36, 37–40, 61–64, 85–88, 117–120, 133–136, **137–140, 169–172,** 185–188, 189-192, 193–196, **233-236,** 253-256 **TE:** 9A–12B, **29A–32B,** 33A–36B, 37A–40B, 61A–64B, 85A–88B, 117A–120B, 133A–136B, **137A–140B, 169A–172B,** 185A–188B, 189A-192B, 193A–196B, **233A-236B,** 253A-256B
2. Reason abstractly and quantitatively. Younger students recognize that a number represents a specific quantity. They connect the quantity to written symbols. Quantitative reasoning entails creating a representation of a problem while attending to the meanings of the quantities.	**SE:** 5–8, **9–12, 13–16,** 17–20, **21–24,** 25–28, 29–32, **65–68, 77–80,** 89–92, **109–112, 121–124,** 137-140, 141–144, 161-164 **TE:** 5A–8B, **9A–12B, 13A–16B,** 17A–20B, **21A–24B,** 25A–28B, 29A–32B, **65A–68B, 77A–80B,** 89A–92B, **109A–112B, 121A–124B,** 137A-140B, 141A–144B, 161A-164B
3. Construct viable arguments and critique the reasoning of others. First graders construct arguments using concrete referents, such as objects, pictures, drawings, and actions. They also practice their mathematical communication skills as they participate in mathematical discussions involving questions like "How did you get that?" "Explain your thinking," and "Why is that true?" They not only explain their own thinking, but listen to others' explanations. They decide if the explanations make sense and ask questions.	**SE:** 13–16, 21–24, **37–40,** 61–64, 65–68, 69–72, 73–76, 89–92, 113–116, **117–120,** 125–128, **129–132, 133-136, 141–144, 185-188** **TE:** 13A–16B, 21A–24B, **37A–40B,** 61A–64B, 65A–68B, 69A–72B, 73A–76B, 89A–92B, 113A–116B, **117A–120B,** 125A–128B, **129A–132B, 133A-136B, 141A–144B, 185A-188B**
4. Model with mathematics. In early grades, students experiment with representing problem situations in multiple ways including numbers, words (mathematical language), drawing pictures, using objects, acting out, making a chart or list, creating equations, etc. Students need opportunities to connect the different representations and explain the connections. They should be able to use all of these representations as needed.	**SE: 5–8,** 17-20, 21–24, 25–28, **33–36, 57–60, 69–72,** 73–76, 81-84, **85-88,** 89–92, **113-116,** 117-120, **125-128,** 137-140 **TE: 5A–8B,** 17A-20B, 21A–24B, 25A–28B, **33A–36B, 57A–60B, 69A–72B,** 73A–76B, 81A-84B, **85A-88B,** 89A–92B, **113A-116B,** 117A-120B, **125A-128B,** 137A-140B

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5. Use appropriate tools strategically. In first grade, students begin to consider the available tools (including estimation) when solving a mathematical problem and decide when certain tools might be helpful. For instance, first graders decide it might be best to use colored chips to model an addition problem.	**SE:** 5–8, **17–20,** 29–32, 81–84, 113–116, 129–132, 161–164, **165–168,** 177–180, 185–188, 213–216, 293–296, 325–328, **365-368,** 369-372 **TE:** 5A–8B, **17A–20B,** 29A–32B, 81A–84B, 113A–116B, 129A–132B, 161A–164B, **165A–168B,** 177A–180B, 185A–188B, 213A–216B, 293A–296B, 325A–328B, **365A-368B,** 369A-372B
6. Attend to precision. As young children begin to develop their mathematical communication skills, they try to use clear and precise language in their discussions with others and when they explain their own reasoning.	**SE:** 37–40, 85–88, 189–192, **217–220, 221–224, 237–240,** 253–256, 257–260, **261–264,** 269–272, **289–292,** 305–308, 329–332, **373–376, 377-380** **TE:** 37A–40B, 85A–88B, 189A–192B, **217A–220B, 221A–224B, 237A–240B,** 253A–256B, 257A–260B, **261A–264B,** 269A–272B, **289A–292B,** 305A–308B, 329A–332B, **373A–376B, 377A-380B**
7. Look for and make use of structure. First graders begin to discern a pattern or structure. For instance, if students recognize *12 + 3 = 15,* then they also know *3 + 12 = 15. (Commutative property of addition.)* To add *4 + 6 + 4, the first two numbers can be added to make a ten, so 4 + 6 + 4 = 10 + 4 = 14.*	**SE:** 9–12, 69–72, **73–76,** 77–80, **81–84, 89–92,** 129–132, **173–176,** 221–224, **225–228,** 265–268, **285–288, 293–296,** 297–300, 301-304 **TE:** 9A–12B, 69A–72B, **73A–76B,** 77A–80B, **81A–84B, 89A–92B,** 129A–132B, **173A–176B,** 221A–224B, **225A–228B,** 265A–268B, **285A–288B, 293A–296B,** 297A–300B, 301A-304B
8. Look for and express regularity in repeated reasoning. In the early grades, students notice repetitive actions in counting and computation, etc. When children have multiple opportunities to add and subtract “ten” and multiples of “ten” they notice the pattern and gain a better understanding of place value. Students continually check their work by asking themselves, “Does this make sense?”	**SE:** 13–16, **25–28,** 57–60, **61–64,** 133–136, 165–168, 169–172, 173–176, **177–180,** 181-184, 229–232, 261–264, 285–288, **297–300, 309–312** **TE:** 13A–16B, **25A–28B,** 57A–60B, **61A–64B,** 133A–136B, 165A–168B, 169A–172B, 173A–176B, **177A–180B,** 181A-184B, 229A–232B, 261A–264B, 285A–288B, **297A–300B, 309A–312B**

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Operations and Algebraic Thinking (OA)	
Represent and solve problems involving addition and subtraction	
2.OA.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 symbol for the unknown number to represent the problem.	**SE: 37–40, 41–44,** 77–80, **113–116,** 117–120, 141–144, 145–148, **165–168, 169–172, 213–216,** 217–220, 245–248, **257–260, 261–264, 281–284, 285–288, 289–292, 293–296, 297–300, 309–312,** 341–344, 345–348, 609–612, 613–616, 617–620, 621–624, 625–628, 649–652, 653–656, 657–660, 661–664 **TE: 37A–40B, 41A–44B,** 77A–80B, **113A–116B,** 117A–120B, 141A–144B, 145A–148B, **165A–168B, 169A–172B, 213A–216B,** 217A–220B, 245A–248B, **257A–260B, 261A–264B, 281A–284B, 285A–288B, 289A–292B, 293A–296B, 297A–300B, 309A–312B,** 341A–344B, 345A–348B, 609A–612B, 613A–616B, 617A–620B, 621A–624B, 625A–628B, 649A–652B, 653A–656B, 657A–660B, 661A–664B
Add and subtract within 20	
2.OA.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.	**SE: 5–8, 9–12, 13–16, 17–20, 21–24, 25–28, 29–32, 33–36,** 37–40, 41–44, 61–64, 65–68, 69–72, 73–76, 77–80, 301–304, 561–564 **TE: 5A–8B, 9A–12B, 13A–16B, 17A–20B, 21A–24B, 25A–28B, 29A–32B, 33A–36B,** 37A–40B, 41A–44B, 61A–64B, 65A–68B, 69A–72B, 73A–76B, 77A–80B, 301A–304B, 561A–564B
Work with equal groups of objects to gain foundations for multiplication	
2.OA.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.	**SE: 61–64, 65–68** **TE: 61A–64B, 65A–68B**
2.OA.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.	**SE: 69–72, 73–76, 77–80,** 577–580, 585–588, 589–592 **TE: 69A–72B, 73A–76B, 77A–80B,** 577A–580B, 585A–588B, 589A–592B

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Number and Operations in Base Ten (NBT)	
Understand place value	
2.NBT.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:	**SE: 381–384, 385–388,** 389–392, 405–408, 409–412 **TE: 381A–384B, 385A–388B,** 389A–392B, 405A–408B, 409A–412B
a. 100 can be thought of as a bundle of ten tens — called a "hundred."	**SE: 377–380,** 393–396 **TE: 377A–380B,** 393A–396B
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).	**SE:** 377–380, **381-384, 385-388** **TE:** 377A–380B, **381A-384B, 385A-388B**
2.NBT.2 Count within 1000; skip-count by 5s starting at any number ending in 5 or 0. Skip-count by 10s and 100s starting at any number.	**SE:** 329–332, 333–336, 337–340, 349–352, 353–356, 357–360, **397–400, 401–404, 413–416,** 437-440, 477-480 **TE:** 329A–332B, 333A–336B, 337A–340B, 349A–352B, 353A–356B, 357A–360B, **397A–400B, 401A–404B, 413A–416B,** 437A-440B, 477A-480B
2.NBT.3 Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.	**SE:** 381–384, 385–388, **389–392, 393–396** **TE:** 381A–384B, 385A–388B, **389A–392B, 393A–396B**
2.NBT.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.	**SE: 405–408, 409–412,** 413–416 **TE: 405A-408B, 409A-412B,** 413A–416B

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Use place value understanding and properties of operations to add and subtract	
2.NBT.5 ***Fluently*** add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.	**SE: 93–96, 97–100, 101–104, 105–108, 109–112,** 113–116, 117–120, **137–140, 141–144, 145–148, 149–152, 153–156,** 157–160, 161–164, 165–168, 169–172, **189–192, 193–196, 197–200, 201–204, 205–208, 209–212,** 213–216, 217–220, **237–240, 241–244, 245–248, 249–252, 253–256,** 257–260, 281–284, 285–288, 289–292, 293–296, 297–300, 305–308 **TE: 93A–96B, 97A–100B, 101A–104B, 105A–108B, 109A–112B,** 113A–116B, 117A–120B, **137A–140B, 141A–144B, 145A–148B, 149A–152B, 153A–156B,** 157A–160B, 161A–164B, 165A–168B, 169A–172B, **189A–192B, 193A–196B, 197A–200B, 201A–204B, 205A–208B, 209A–212B,** 213A–216B, 217A–220B, **237A–240B, 241A–244B, 245A–248B, 249A–252B, 253A–256B,** 257A–260B, 281A–284B, 285A–288B, 289A–292B, 293A–296B, 297A–300B, 305A–308B
2.NBT.6 Add up to four two-digit numbers using strategies based on place value and properties of operations.	**SE: 157–160, 161–164,** 165–168, 169–172 **TE: 157A–160B, 161A–164B,** 165A–168B, 169A–172B
2.NBT.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.	**SE: 437–440, 441–444, 445–448, 449–452,** 453–456, **457–460, 477–480, 481–484, 485–488,** 489–492, **493–496** **TE: 437A–440B, 441A–444B, 445A–448B, 449A–452B,** 453A–456B, **457A–460B, 477A–480B, 481A–484B, 485A–488B,** 489A–492B, **493A–496B**
2.NBT.8 Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a given number 100–900.	**SE:** 397–400, 401–404, 413–416, **433–436, 473–476** **TE:** 397A–400B, 401A–404B, 413A–416B, **433A–436B, 473A-476B**

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2.NBT.9 Explain why addition and subtraction strategies work, using place value and the properties of operations.	**SE:** 93–96, 97–100, 101–104, 109–112, **117–120,** 137–140, 141–144, 145–148, 149–152, 153–156, 157–160, 161–164, 169–172, 189–192, 193–196, 197–200, 201–204, 205–208, 209–212, **217–220,** 237–240, 241–244, 245–248, 249–252, 253–256, 261–264, 309–312, 433–436, 437–440, 441–444, 445–448, 449–452, **453–456,** 457–460, 473–476, 477–480, 481–484, 485–488, **489–492,** 493–496 **TE:** 93A–96B, 97A–100B, 101A–104B, 109A–112B, **117A–120B,** 137A–140B, 141A–144B, 145A–148B, 149A–152B, 153A–156B, 157A–160B, 161A–164B, 169A–172B, 189A–192B, 193A–196B, 197A–200B, 201A–204B, 205A–208B, 209A–212B, **217A–220B,** 237A–240B, 241A–244B, 245A–248B, 249A–252B, 253A–256B, 261A–264B, 309A–312B, 433A–436B, 437A–440B, 441A–444B, 445A–448B, 449A–452B, **453A–456B,** 457A–460B, 473A–476B, 477A–480B, 481A–484B, 485A–488B, **489A–492B,** 493A–496B
Measurement and Data (MD)	
Measure and estimate lengths in standard units	
2.MD.1 Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.	**SE: 513–516, 517–520,** 521–524, **525–528, 529–532,** 533–536, **541–544,** 565–568, 569–572, 573–576, 641–644, 645–648 **TE: 513A–516B, 517A–520B,** 521A–524B, **525A–528B, 529A–532B,** 533A–536B, **541A–544B,** 565A–568B, 569A–572B, 573A–576B, 641A–644B, 645A–648B
2.MD.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.	**SE: 521-524, 533-536,** 581–584 **TE: 521A–524B, 533A–536B,** 581A–584B
2.MD.3 Estimate lengths using units of inches, feet, centimeters, and meters.	**SE: 509–512,** 513–516, 517–520, 525–528, 529–532, 541–544 **TE: 509A–512B,** 513A–516B, 517A–520B, 525A–528B, 529A–532B, 541A–544B
2.MD.4 Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.	**SE: 537–540,** 541–544 **TE: 537A–540B,** 541A–544B

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Relate addition and subtraction to length	
2.MD.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.	**SE:** 537–560, **609–612, 613–616, 617–620, 625–628** **TE:** 537A–540B, **609A–612B, 613A–616B, 617A–620B, 625A–628B**
2.MD.6 Represent whole 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.	**SE: 621–624,** 625–628 **TE: 621A–624B,** 625A–628B
Work with time with respect to a clock and a calendar, and work with money	
2.MD.7 Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.	**SE: 349–352, 353–356, 357–360** **TE: 349A–352B, 353A–356B, 357A–360B**
2.MD.8a 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?*	**SE: 329–332, 333–336, 337–340, 341–344, 345–348,** 433–436, 473-476, 485–488 **TE: 329A–332B, 333A–336B, 337A–340B, 341A–344B, 345A–348B,** 433A–436B, 473A-476B, 485A–488B
2.MD.8b Fluently use a calendar to answer simple real world problems such as “How many weeks are in a year?” or “James gets a $5 allowance every 2 months, how much money will he have at the end of each year?”	**SE: MS 1A–MS 6A, Lesson MS 1** **TEPO: 118 (MS 1A) –123 (MS 6A), Lesson MS 1**
Represent and interpret data	
2.MD.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.	**SE: 641–644, 645–648** **TE: 641A–644B, 645A–648B**
2.MD.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 using information presented in a bar graph.	**SE: 649–652, 653–656, 657–660, 661–664** **TE: 649A–652B, 653A–656B, 657A–660B, 661A–664B**

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Geometry (G)	
Reason with shapes and their attributes	
2.G.1 Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces.5 Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.	**SE: 561–564, 565–568, 569–572, 573–576** **TE: 561A–564B, 565A–568B, 569A–572B, 573A–576B**
2.G.2 Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.	**SE: 577–580, 589–592** **TE: 577A–580B, 589A–592B**
2.G.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.	**SE: 581–584, 585–588,** 589–592 **TE: 581A–584B, 585A–588B,** 589A–592B
Standards for Mathematical Practice	
1. Make sense of problems and persevere in solving them. In second grade, students realize that doing mathematics involves solving problems and discussing how they solved them. Students explain to themselves the meaning of a problem and look for ways to solve it. They may use concrete objects or pictures to help them conceptualize and solve problems. They may check their thinking by asking themselves, "Does this make sense?" They make conjectures about the solution and plan out a problem-solving approach.	**SE:** 13–16, 21–24, **37–40,** 41–44, 69–72, 77–80, **113–116,** 117–120, **141–144,** 149–152, **165–168,** 169–172, 193–196, 197–200, 493–496 **TE:** 13A–16B, 21A–24B, **37A–40B,** 41A–44B, 69A–72B, 77A–80B, **113A–116B,** 117A–120B, **141A–144B,** 149A–152B, **165A–168B,** 169A–172B, 193A–196B, 197A–200B, 493A–496B
2. Reason abstractly and quantitatively. Younger students recognize that a number represents a specific quantity. They connect the quantity to written symbols. Quantitative reasoning entails creating a representation of a problem while attending to the meanings of the quantities. Second graders begin to know and use different properties of operations and objects.	**SE: 5–8, 13–16,** 17–20, **21–24, 25–28, 33–36,** 37–40, 41–44, 73–76, **97–100, 105–108,** 109-112, 149-152, **153-156,** 157-160 **TE: 5A–8B, 13A–16B,** 17A–20B, **21A–24B, 25A–28B, 33A–36B,** 37A–40B, 41A–44B, 73A–76B, **97A–100B, 105A–108B,** 109A-112B, 149A-152B, **153A-156B,** 157A-160B

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3. Construct viable arguments and critique the reasoning of others. Second graders may construct arguments using concrete referents, such as objects, pictures, drawings, and actions. They practice their mathematical communication skills as they participate in mathematical discussions involving questions like "How did you get that?", "Explain your thinking," and "Why is that true?" They not only explain their own thinking, but listen to others' explanations. They decide if the explanations make sense and ask appropriate questions.	**SE: 29–32,** 41–44, 69–72, 77–80, **93–96,** 105–108, **117–120,** 137–140, 141–144, **149–152, 157–160,** 169–172, **189–192, 201–204, 217–220** **TE: 29A–32B,** 41A–44B, 69A–72B, 77A–80B, **93A–96B,** 105A–108B, **117A–120B,** 137A–140B, 141A–144B, **149A–152B, 157A–160B,** 169A–172B, **189A–192B, 201A–204B, 217A–220B**
4. Model with mathematics. In early grades, students experiment with representing problem situations in multiple ways including numbers, words (mathematical language), drawing pictures, using objects, acting out, making a chart or list, creating equations, etc. Students need opportunities to connect the different representations and explain the connections. They should be able to use all of these representations as needed.	**SE:** 5–8, 9–12, 21–24, 29–32, 33–36, 41–44, 61–64, 65–68, **73-76. 77–80, 101–104, 109-112.** 137–140, 141-144, 145–148 **TE:** 5A–8B, 9A–12B, 21A–24B, 29A–32B, 33A–36B, 41A–44B, 61A–64B, 65A–68B, **73A-76B. 77A–80B, 101A–104B, 109A-112B.** 137A–140B, 141A-144B, 145A–148B
5. Use appropriate tools strategically. In second grade, students consider the available tools (including estimation) when solving a mathematical problem and decide when certain tools might be better suited. For instance, second graders may decide to solve a problem by drawing a picture rather than writing an equation.	**SE:** 29–32, 73-76, 93–96, 97–100, 117–120, **137–140,** 189–192, 193–196, 209–212, **237–240,** 245–248, 261–264, 305–308, **349-352, 377-380** **TE:** 29A–32B, 73A-76B, 93A–96B, 97A–100B, 109A–112B, 117A–120B, **137A–140B,** 189A–192B, 193A–196B, 209A–212B, **237A–240B,** 245A–248B, 261A–264B, 305A–308B, **349A-352B, 377A-380B**
6. Attend to precision. As children begin to develop their mathematical communication skills, they try to use clear and precise language in their discussions with others and when they explain their own reasoning.	**SE:** 9–12, 37–40, **61–64,** 77–80, 113–116, 197–200, 201–204, **253–256,** 261–264, 301–304, 333–336, 341–344, 349–352, **353–356,** 357–360 **TE:** 9A–12B, 37A–40B, **61A–64B,** 77A–80B, 113A–116B, 197A–200B, 201A–204B, **253A–256B,** 261A–264B, 301A–304B, 333A–336B, 341A–344B, 349A–352B, **353A–356B,** 357A–360B

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7. Look for and make use of structure. Second graders look for patterns. For instance, they adopt mental math strategies based on patterns (making ten, fact families, doubles).	**SE: 9–12,** 13–16, **17-20,** 25–28, 61–64, **65–68, 69–72,** 77–80, 101–104, **145–148,** 153–156, 161–164, 189–192, 201–204, 217–220 **TE: 9A–12B,** 13A–16B, **17A-20B,** 25A–28B, 61A–64B, **65A–68B, 69A–72B,** 77A–80B, 101A–104B, **145A–148B,** 153A–156B, 161A–164B, 189A–192B, 201A–204B, 217A–220B
8. Look for and express regularity in repeated reasoning. Students notice repetitive actions in counting and computation, etc. When children have multiple opportunities to add and subtract, they look for shortcuts, such as rounding up and then adjusting the answer to compensate for the rounding. Students continually check their work by asking themselves, does this make sense?	**SE:** 5–8, 17–20, 25–28, 33–36, 65–68, 77–80, 105–108, 153–156, 157–160, 165–168, **205–208,** 281–284, 345–348, 353–356, 357–360 **TE:** 5A–8B, 17A–20B, 25A–28B, 33A–36B, 65A–68B, 77A–80B, 105A–108B, 153A–156B, 157A–160B, 165A–168B, **205A–208B,** 257A–260B, 345A–348B, 353A–356B, 357A–360B

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Operations and Algebraic Thinking (OA)	
Represent and solve problems involving multiplication and division	
3.OA.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.*	**SE:** 4, 3-ACT Math, **5-8, 9-12,** 13-16, 25-28, 41-44, 45-48, 49-52, 53-56, 57-60, 185-188 **TE:** 4-4C, 3-ACT Math, **5A–8B, 9A–12B,** 13A–16B, 25A–28B, 41A–44B, 45A–48B, 49A–52B, 53A–56B, 57A–60B, 185A–188B
3.OA.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.*	**SE: 17-20, 21-24,** 25-28, 185-188 **TE: 17A–20B, 21A–24B,** 25A–28B, 185A–188B
3.OA.3 Use multiplication and division within 100 to solve word problems in 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.	**SE:** 5–8, 9–12, **13–16,** 17–20, 21–24, **25–28, 41–44, 45–48,** 49–52, **53–56, 57–60, 61–64,** 81–84, 85–88, 89–92, 93–96, 97–100, 117–120, 121–124, 125–128, 129–132, 133–136, 137–140, 141–144, 145–148, **149–152,** 177–180, **181–184, 185–188,** 189–192, 253–256, 257–260, 261–264, 265–268, 269–272, 385–388, 561–564, 617–620 **TE:** 5A–8B, 9A–12B, **13A–16B,** 17A–20B, 21A–24B, **25A–28B, 41A–44B, 45A–48B,** 49A–52B, **53A–56B, 57A–60B, 61A–64B,** 81A–84B, 85A–88B, 89A–92B, 93A–96B, 97A–100B, 117A–120B, 121A–124B, 125A–128B, 129A–132B, 133A–136B, 137A–140B, 141A–144B, 145A–148B, **149A–152B,** 177A–180B, 181A–184B, **185A–188B,** 189A–192B, 253A–256B, 257A–260B, 261A–264B, 265A–268B, 269A–272B, 385A–388B, 561A–564B, 617A–620B
3.OA.4 Determine the unknown whole number in a multiplication or division equation relating three whole numbers, with factors 0-10. *For example, determine the unknown number that makes the equation true in each of the equations 8 × ? = 48, 5 = ? ÷ 3, 6 × 6 = ?.*	**SE:** 141-144, **145-148,** 168, 3-ACT Math, 221-224 **TE:** 141A–144B, **145A–148B,** 168-168C, 3-ACT Math, 221A–224B

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Understand properties of multiplication and the relationship between multiplication and division	
3.OA.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).*	**SE:** 4, 3-ACT Math, 13-16, **49-52, 77-80, 81-84, 85-88, 89-92,** 93-96, **97-100, 101-104, 137-140,** 389-392 **TE:** 4-4C, 3-ACT Math, **13A–16B, 49A–52B, 77A–80B, 81A–84B, 8A5–88B, 89A–92B,** 93A–96B, **97A–100B, 101A–104B, 137A–140B,** 389A–392B
3.OA.6 Understand division as an unknown-factor problem, where a remainder does not exist. For example, find 32 ÷ 8 by finding the number that makes 32 when multiplied by 8 with no remainder.	**SE: 117-120, 121-124, 125-128, 129-132,** 137-140, 141-144 **TE: 117A–120B, 121A–124B, 125A–128B, 129A–132B,** 137A–140B, 141A–144B
Multiply and divide within 100	
3.OA.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. Know from memory all products of two one-digit numbers; and fully understand the concept when a remainder does not exist under division.	**SE:** 49–52, 77–80, 81–84, 85–88, 89–92, **93–96,** 97–100, 117–120, 121–124, 125–128, 129–132, 133–136, 137–140, **141–144,** 145–148, 169–172, **173–176, 177–180,** 181–184, 185–188, 189–192, 221–224, 225–228, 229–232, 233–236, 297–300, 313–316, 345–348, 349–352, 413–416, 417–420, 421–424, 561–564, 617–620, 625–628, 629–632 **TE:**49A–52B, 77A–80B, 81A–84B, 85A–88B, 89A–92B, **93A–96B,** 97A–100B, 117A–120B, 121A–124B, 125A–128B, 129A–132B, 133A–136B, 137A–140B, **141A–144B,** 145A–148B, 169A–172B, **173A–176B, 177A–180B,** 181A–184B, 185A–188B, 189A–192B, 221A–224B, 225A–228B, 229A–232B, 233A–236B, 297A–300B, 313A–316B, 345A–348B, 349A–352B, 413A–416B, 417A–420B, 421A–424B, 561A–564B, 617A–620B, 625A–628B, 629A–632B
Solve problems involving the four operations, and identify and explain patterns in arithmetic	
3.OA.8 Solve two-step (two operational steps) 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. Include problems with whole dollar amounts.	**SE**: 149-152, 253-256, 265-268, 289-292, 297-300, 301–304, 305–308, 313-316, 317-320, 337–340, 341–344, 345–348, 349–352, 353–356, 357–360, 361-364, 381-384, **409-412, 413-416, 417-420, 421-424,** 621-624 **TE:** 149A–152B, 253A–256B, 265A–268B, 289A–292B, 297A–300B, 301A–304B, 305A–308B, 313A–316B, 317A–320B, 337A–340B, 341A–344B, 345A–348B, 349A–352B, 353A–356B, 357A–360B, 361A–364B, 381A–384B, **409A–412B, 413A–416B, 417A–420B, 421A–424B,** 621A–624B

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3.OA.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.*	**SE:** 41-44, 45-48, 53-56, 57-60, 81-84, 85-88, 89-92, **133-136, 169-172, 189-192, 293-296,** 393-396 **TE:** 41A–44B, 45A–48B, 53A–56B, 57A–60B, 81A–84B, 85A–88B, 89A–92B, **133A–136B, 169A–172B, 189A–192B, 293A–296B,** 393A–396B
Number and Operations in Base Ten (NBT)	
Use place value understanding and properties of operations to perform multi-digit arithmetic.	
3.NBT.1 Use place value understanding to round whole numbers to the nearest 10 or 100.	**SE:** 287-288 Pick a Project, **305-308,** 309-312, 336, 3-ACT Math **TE:** 287-288A, Pick a Project, **305A–308B,** 309A–312B, 336-336C, 3-ACT Math
3.NBT.2 Fluently add and subtract (including subtracting across zeros) within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction. Include problems with whole dollar amounts.	**SE: 289-292, 297-300, 301-304, 309-312, 313-316, 317-320, 337-340, 341-344, 345-348, 349-352, 353-356, 357-360, 361-364,** 409–412, 417–420, 421–424, 541-544, 621-624, **MS 1A–MS 6A, Lesson MS 1** **TE: 289A–292B, 297A–300B, 301A–304B, 309A–312B, 313A–316B, 317A–320B, 337A–340B, 341A–344B, 345A–348B, 349A–352B, 353A–356B, 357A–360B, 361A–364B,** 409A–412B, 417A–420B, 421A–424B, 541A–544B, 621A–624B, **TEPO: 118 (MS 1A) –123 (MS 6A), Lesson MS 1**
3.NBT.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.	**SE:** 379-380, Pick a Project, **381-384, 385-388, 389-392, 393-396** **TE:** 379-380A, Pick a Project, **381A–384B, 385A–388B, 389A–392B, 393A–396B**
Number and Operations – Fractions (NF)	
Develop understanding of fractions as numbers	
3.NF.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*.	**SE:** 435-436, Pick a Project, 437-440, **441-444,** 445-448, **465-468,** 484, 3-ACT Math, 585-588, 589-592 **TE:** 435-436A, Pick a Project, 437A–440B, **441A–444B,** 445A–448B, **465A–468B,** 484-484C, 3-ACT Math, 585A–588B, 589A–592B

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3.NF.2 Understand a fraction as a number on the number line; represent fractions on a number line diagram.	**SE:** 435-436, Pick a Project, 449-452, 453-456, 457-460, 461-464 **TE:** 435-436A, Pick a Project, 449A–452B, 453A–456B, 457A–460B, 461A–464B
a. 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.	**SE:** 435-436, Pick a Project, **449-452,** 453-456, 457-460, 461-464 **TE:** 435-436A, Pick a Project, **449A–452B,** 453A–456B, 457A–460B, 461A–464B
b. 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.	**SE:** 449-452, **453-456,** 457-460, 461-464 **TE:** 449A–452B, **453A–456B,** 457A–460B, 461A–464B
3.NF.3 Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.	**SE:** 485-488, 489-492, 505-508, 509-512 **TE:** 485A–488B, 489A–492B, 505A–508B, 509A–512B
a. Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line. Recognize that comparisons are valid only when the two fractions refer to the same whole.	**SE:** 435-436, Pick a Project, **449-452,** 453-456, 457-460, 461-464 **TE:** 435–436A, Pick a Project, **449A–452B,** 453A–456B, 457A–460B, 461A–464B
b. 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.	**SE:** 449-452, **453-456,** 457-460, 461-464 **TE:** 449A–452B, **453A–456B,** 457A–460B, 461A–464B
c. 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.*	**SE: 445-448,** 484, 3-ACT Math, **509-512** **TE: 445A–448B,** 484-484C, 3-ACT Math, **509A–512B**

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d. Compare two fractions with the same numerator or the same denominator by reasoning about their size. 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.	**SE:** 483, Pick a Project, **493-496, 497-500, 501-504, 513-516** **TE:** 483A, Pick a Project, **493A–496B, 497A–500B, 501A–504B, 513A–516B**
Measurement and Data (MD)	
Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects	
3.MD.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.	**SE:** 531-532, Pick a Project, **533-536, 537-540, 541-544, 565-568** **TE:** 531-532A, Pick a Project, **533A–536B, 537A–540B, 541A–544B, 565A–568B**
3.MD.2 Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l).6 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.	**SE:** 309-312, 531-532, Pick a Project, **545-548, 549-552, 553-556, 557-560, 561-564** **TE:** 309A–312B, 531–532A, Pick a Project **545A–548B, 549A–552B, 553A–556B, 557A–560B, 561A–564B**
Represent and interpret data	
3.MD.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.*	**SE:** 251, Pick a Project, 252, 3-ACT Math, **253-256, 257-260, 261-264, 265-268, 269-272,** 417-420 **TE:** 251A, Pick a Project, 252–252C, 3-ACT Math, **253A–256B, 257A–260B, 261A–264B, 265A–268B, 269A–272B,** 417A–420B
3.MD.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.	**SE:** 435-436, Pick a Project, **457-460, 461-464** **TE:** 435-436A, Pick a Project, **457A–460B, 461A–464B**

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Geometric measurement: understand concepts of area and relate area to multiplication and to addition	
3.MD.5 Recognize area as an attribute of plane figures and understand concepts of area measurement.	**SE:** 209-212, 213-216, 217-220, 252, 3-ACT Math 584, 3-ACT Math, 593-596 **TE:** 209A–212B, 213A–216B, 217A–220B, 252-252C, 3-ACT Math, 584-584C, 3-ACT Math, 593A-596B
a. 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.	**SE:** 207-208, Pick a Project, **209-212,** 213-216, 217-220 **TE:** 207–208A, Pick a Project, **209A–212B,** 213A–216B, 217A–220B
b. 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.	**SE:** 209-212, **213-216,** 217-220, 593-596 **TE:** 209A–212B, **213A–216B,** 217A–220B, 593A–596B
3.MD.6 Measure areas by counting unit squares (square cm, square *m*, square *in*, square *ft*, and improvised units).	**SE:** 207-208, Pick a Project, 209-212, **213-216, 217-220** **TE:** 207-208A, Pick a Project, 209A–212B, **213A–216B, 217A–220B**
3.MD.7 Relate area to the operations of multiplication and addition.	**SE:** 101-104, 221-224, 229-232, 233-236, 252, 3-ACT Math, 597-600, 625-628, 629-632 **TE:** 101A–104B, 221A-224B, 229A-232B, 233A-236B, 252–252C, 3-ACT Math, 597A-600B, 625A-628B, 629A-632B
a. 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.	**SE: 221-224,** 233-236 **TE: 221A–224B,** 233A–236B
b. Multiply side lengths to find areas of rectangles with whole-number side lengths (where factors can be between 1 and 10, inclusively) in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning.	**SE:** 221-224, **233-236,** 597-600, 625-628, 629-632 **TE:** 221A–224B, **233A–236B,** 597A–600B, 625A–628B, 629A–632B

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c. 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* × *b* and *a* × *c*. Use area models to represent the distributive property in mathematical reasoning.	**SE: 225-228** **TE: 225A–228B**
d. 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. Recognize area as additive.	**SE: 229-232,** 233-236 **TE: 229A–232B,** 233A–236B
Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures	
3.MD.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 (including, but not limited to: modeling, drawing, designing, and creating) rectangles with the same perimeter and different areas or with the same area and different perimeters.	**SE: 613-616, 617-620, 621-624, 625-628, 629-632, 633-636** **TE: 613A–616B, 617A–620B, 621A–624B, 625A–628B, 629A–632B, 633A–636B**
Geometry (G)	
Reason with shapes and their attributes	
3.G.1 Understand that shapes in different categories (e.g., rhombuses, rectangles, circles, 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.	**SE:** 584, 3-ACT Math, **585-588, 589-592, 593-596, 597-600** **TE:** 584-584C, 3-ACT Math, **585A–588B, 589A–592B, 593A–596B, 597A–600B**
3.G.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*.	**SE: 437-440,** 441-444, 584, 3-ACT Math 585-588, 589-592 **TE: 437A–440B,** 441A–444B, 584-584C, 3-ACT Math, 585A–588B, 589A–592B

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Standards for Mathematical Practice	
1. Make sense of problems and persevere in solving them. In third grade, students know that doing mathematics involves solving problems and discussing how they solved them. Students explain to themselves the meaning of a problem and look for ways to solve it. Third graders may use concrete objects or pictures to help them conceptualize and solve problems. They may check their thinking by asking themselves, "Does this make sense?" They listen to the strategies of others and will try different approaches. They often will use another method to check their answers.	**SE: 5–8,** 9–12, 17–20, 25–28, 41–44, 49–52, 61–64, 81–84, 89–92, 93–96, 97–100, 101–104, 117–120, 121-124, 125-128, 149–152, 189-192 221-224, **257-260, 265-268,** 269-272, 289-292, 305-308, **313-316,** 341-344, 361-364, 385-388, 393-396, 413-416, **417-420,** 421-424, 437-440, 457-460, **461-464, 465–468,** 501-504, 513-516, 537-540, 561-564, 585-588, 597-600, 617-620, 621-624, 633-636 **TE: 5A–8B,** 9A–12B, 17A–20B, 25A–28B, 41A–44B, 49A–52B, 61A–64B, 81A–84B, 89A–92B, 93A–96B, 97A–100B, 101A–104B, 117A–120B, 121A-124B, 125A-128B, 149A–152B, 189A-192B 221A-224B, **257A-260B, 265A-268B,** 269A-272B, 289A-292B, 305A-308B, **313A-316B,** 341A-344B, 361A-364B, 385A-388B, 393A-396B, 413A-416B, **417A-420B,** 421A-424B, 437A-440B, 457A-460B, **461A-464B, 465A–468B,** 501A-504B, 513A-516B, 537A-540B, 561A-564B, 585A-588B, 597A-600B, 617A-620B, 621A-624B, 633A-636B
2. Reason abstractly and quantitatively. Third graders should recognize that a number represents a specific quantity. They connect the quantity to written symbols and create a logical representation of the problem at hand, considering both the appropriate units involved and the meaning of quantities.	**SE: 9–12, 21–24,** 45–48, 53–56, 61–64, 93–96, 97–100, 117–120, 121–124, 125–128, 129–132, 133–136, 141–144, 145-148, 149-152, **173-176,** 185-188, **213-216,** 217-220, 229-232, 233-236, 253-256, 261-264, 269-272, 309-312, 345-348, **357-360,** 361-364, 381-384, **409-412, 413-416, 445-448,** 457-460, 465-468, 485-488, 493-496, **501-504, 505-508, 509-512,** 537-540, 541-544, **553-556,** 557-560, **565–568,** 593-596, 613-616, **621-624,** 629-632, **633–636** **TE: 9A–12B, 21A–24B,** 45A–4B8, 53A–56B, 61A–64B, 93A–96B, 97A–100B, 117A–120B, 121A–124B, 12A5–128B, 129A–13B2, 133A–136B, 14A1–144B, 145A-148B, 149A-152B, **173A-17B6,** 185A-188B, **213A-216B,** 217A-220B, 229A-232B, 233A-236B, 25A3-25B6, 261A-264B, 269A-272B, 309A-312B, 345A-348B, **357A-360B,** 361A-364B, 381A-384B, **409A-412B, 413A-416B, 445A-448B,** 457A-460B, 465A-468B, 485A-488B, 493A-496B, **501A-504B, 505A-508B, 509A-512B,** 537A-540B, 541A-544B, **553A-556B,** 557A-560B, **565A–568B,** 59A3-596B, 613A-616B, **621A-624B,** 629A-632B, **633A–636B**

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3. Construct viable arguments and critique the reasoning of others. In third grade, students may construct arguments using concrete referents, such as objects, pictures, and drawings. They refine their mathematical communication skills as they participate in mathematical discussions involving questions like "How did you get that?" and "Why is that true?" They explain their thinking to others and respond to others' thinking.	**SE: 13–16,** 25–28, 41–44, 45–48, 57–60, 61–64. 77–80, 101–104, 133–136, 141–144, 149–152, 173–176, 177-180, 185-188, 209-212, 213-216, 261-264, 265-268, 297-300, **301-304,** 305, 308, 317-320, 337-340, 357-360, **361–364, 389-392,** 393-396, 409-412, **421–424,** 437-440, 445-448, 449-452, 453-456, 465-468, 489-492, 493-496, **513–516,** 549-552, 553-556, 565-568, 589-592, 597-600, 617-620, 629-632, 633-636 **TE: 13A–16B,** 25A–28B, 41A–44B, 45A–48B, 57A–60B, 61A–64B. 77A–80B, 101A–104B, 133A–136B, 141A–144B, 149A–152B, 173A–176B, 177A-180B, 185A-188B, 209A-212B, 213A-216B, 261A-264B, 265A-268B, 297A-300B, **301A-304B,** 305A, 308B, 317A-320B, 337A-340B, 357A-360B, **361A–364B, 389A-392B,** 393A-396B, 409A-412B, **421A–424B,** 437A-440B, 445A-448B, 449A-452B, 453A-456B, 465A-468B, 489A-492B, 493A-496B, **513A–516B,** 549A-552B, 553A-556B, 565A-568B, 589A-592B, 597A-600B, 617A-620B, 629A-632B, 633A-636B
4. Model with mathematics. Students experiment with representing problem situations in multiple ways including numbers, words (mathematical language), drawing pictures, using objects, acting out, making a chart, list, or graph, creating equations, etc. Students need opportunities to connect the different representations and explain the connections. They should be able to use all of these representations as needed. Third graders should evaluate their results in the context of the situation and reflect on whether the results make sense.	**SE: 5–8,** 9–12, **17–20,** 21–24, 25–28, **61–64,** 85–88, **93–96, 125–128,** 137–140, **141–144,** 181–184, 189–192, 221–224, **225-228,** 233-236, 257-260, 297-300, 301-304, 313-316, 317–320, 337-340, 341-344, 345-348, 349-352, 385-388, 393-396, 409-412, 441-444, **449-452, 489-492,** 533-536, 541-544, 561-564, 585-588, 613-616 **TE: 5A–8B,** 9A–12B, **17A–20B,** 21A–24B, 25A–28B, **61A–64B,** 85A–88B, **93A–96B, 125A–128B,** 137A–140B, **141A–144B,** 181A–184B, 189A–192B, 221A–224B, **225A-228B,** 233A-236B, 257A-260B, 297A-300B, 301A-304B, 313A-316B, 317A–320B, 337A-340B, 341A-344B, 345A-348B, 349A-352B, 385A-388B, 393A-396B, 409A-412B, 441A-444B, 4**49A-452B, 489A-492B,** 533A-536B, 541A-544B, 561A-564B, 585A-588B, 613A-616B

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5. Use appropriate tools strategically. Third graders consider the available tools (including estimation) when solving a mathematical problem and decide when certain tools might be helpful. For instance, they may use graph paper to find all the possible rectangles that have a given perimeter. They compile the possibilities into an organized list or a table, and determine whether they have all the possible rectangles	**SE:** 13–16, **25–28, 49–52,** 57–60, 81–84, **117–120, 181–184, 209–212,** 233–236, 257–260, 317–320, **341–344, 353–356,** 357–360, 381–384, 393-396, **543-546, 485-488, 493-496,** 513-516, 549-552, 553-556, 589-592, 597-600, **629-632** **TE:** 13A–16B, **25A–28B, 49A–52B,** 57A–60B, 81A–84B, **117A–120B, 181A–184B, 209A–212B,** 233A–236B, 257A–260B, 317A–320B, **341A–344B, 353A–356B,** 357A–360B, 381A–384B, 393A-396B, **543A-546B, 485A-488B, 493A-496B,** 513A-516B, 549A-552B, 553A-556B, 589A-592B, 597A-600B, **629A-632B**
6. Attend to precision. As third graders develop their mathematical communication skills, they try to use clear and precise language in their discussions with others and in their own reasoning. They are careful about specifying units of measure and state the meaning of the symbols they choose. For instance, when figuring out the area of a rectangle they record their answers in square units.	**SE:** 17–20, 49–52, **57–60,** 77–80, 137–140, 145–148, 149–152, 169–172, **217–220,** 233–236, 253–256, **261–264, 269–272, 305–308, 309-312,** 349-352, 389-392, 413-416, 421-424, **437-440,** 441-444, 453-456, **457-460, 497-500,** 505-508, 513-516, 533-536, **545-548, 549-552,** 557-560, 565-568, **597–600, 625-628,** 633-636 **TE:** 17A–20B, 49A–52B, **57A–60B,** 77A–80B, 137A–140B, 145A–148B, 149A–152B, 169A–172B, **217A–220B,** 233A–236B, 253A–256B, **261A–264B, 269A–272B, 305A–308B, 309A-312B,** 349A-352B, 389A-392B, 413A-416B, 421A-424B, **437A-440B,** 441A-444B, 453A-456B, **457A-460B, 497A-500B,** 505A-508B, 513A-516B, 533A-536B, **545A-548B, 549A-552B,** 557A-560B, 565A-568B, **597A–600B, 625A-628B,** 633A-636B

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7. Look for and make use of structure. In third grade, students look closely to discover a pattern or structure. For instance, students use properties of operations as strategies to multiply and divide (commutative and distributive properties).	**SE:** 13–16, 25–28, **41–44, 45–48, 53–56, 77–80, 81–84,** 85–88, **89–92,** 101–104, 121–124, **129–132, 137-140, 169-172, 177-180, 189–192,** 225-228, **229-232, 233–236, 253-256, 289-292, 293-296, 297-300, 337-340, 349-352, 381-384, 385-388, 393–396,** 417-420, 461-464, 485-488, 505-508, 509-512, **533-536, 557-560, 585-588, 593-596, 671-620,** 621, 624 **TE:** 3A–16B, 25A–28B, **41A–44B, 45A–48B, 53A–56B, 77A–80B, 81A–84B,** 85A–88B, **89A–92B,** 101A–104B, 121A–124B, **129A–132B, 137A-140B, 169A-172B, 177A-180B, 189A–192B,** 225A-228B, **229A-232B, 233A–236B, 253A-256B, 289A-292B, 293A-296B, 297A-300B, 337A-340B, 349A-352B, 381A-384B, 385A-388B, 393A–396B,** 417A-420B, 461A-464B, 485A-488B, 505A-508B, 509A-512B, **533A-536B, 557A-560B, 585A-588B, 593A-596B, 617A-620B,** 621A, 624B
8. Look for and express regularity in repeated reasoning. Students in third grade should notice repetitive actions in computation and look for more shortcut methods. For example, students may use the distributive property as a strategy for using products they know to solve products that they don't know. For example, if students are asked to find the product of 7 x 8, they might decompose 7 into 5 and 2 and then multiply 5 x 8 and 2 x 8 to arrive at 40 + 16 or 56. In addition, third graders continually evaluate their work by asking themselves, "Does this make sense?"	**SE:** 21–24, 53–56, **97–100, 101–104,** 133–136, 145–148, 181–184, **185–188, 221–224,** 225–228, 269–272, 293–296, **345–348,** 353–356, 389–392, 417-420, 441-444, 493-496, 545-548, **589-592,** 625-628 **TE:** 21A–24B, 53A–56B, **97A–100B, 101A–104B,** 133A–136B, 145A–148B, 181A–184B, **185A–188B, 221A–224B,** 225A–228B, 269A–272B, 293A–296B, **345A–348B,** 353A–356B, 389A–392B, 417A-420B, 441A-444B, 493A-496B, 545A-548B, **589A-592B,** 625A-628B

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Operations and Algebraic Thinking (OA)	
Use the four operations with whole numbers to solve problems	
4.OA.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.	**SE:** 225–228, **229–232** **TE:** 225A–228B, **229A–232B**
4.OA.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.	**SE:** 85–88, **225–228,** 229–232, 233–236, 237–240, 241–244, **245–248** **TE:** 85A–88B, **225A–228B,** 229A–232B, 233A–236B, 237A–240B, 241A–244B, **245A–248B**
4.OA.3 Solve multistep (two or more operational steps) 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 including rounding.	**SE: 41–44,** 45–48, 49–52, 53–56, 57–60, 61–64, **65–68, 85–88,** 97–100, 105-108, **109–112, 137–140,** 141–144, 149–152, **173–176, 177-180, 181-184,** 193–196, 197–120, **205–208, 233–236, 237–240, 241–244,** 245–248, 481–484, 485–488, 489–492, 493–496, 497–500, 501–504, 505–508, 529–532, 569–572 **TE: 41A–44B,** 45A–48B, 49A–52B, 53A–56B, 57A–60B, 61A–64B, **65A–68B, 85A–88B,** 97A–100B, 105A-108B, **109A–112B, 137A–140B,** 141A–144B, 149A–152B, **173A–176B, 177A–180B, 181A–184B,** 193A–196B, 197A–120B, **205A–208B, 233A–236B, 237A–240B, 241A–244B,** 245A–248B, 481A–484B, 485A–488B, 489A–492B, 493A–496B, 497A–500B, 501A–504B, 505A–508B, 529A–532B, 569A–572B
Gain familiarity with factors and multiples	
4.OA.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.	**SE: 261–264, 265–268, 269–272, 273–276, 277–280,** 305–308, 521-524, 525-528 **TE: 261A–264B, 265A–268B, 269A–272B, 273A–276B, 277A–280B,** 305A–308B, 521A-524B, 525A-528B

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Generate and analyze patterns	
4.OA.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.*	**SE: 521-524, 525-528, 529-532, 533-536,** 589-592 **TE: 521A-524B, 525A-528B, 529A-532B, 533A-536B,** 589A-592B
Number and Operations in Base Ten (NBT)	
Generalize place value understanding for multi-digit whole numbers	
4.NBT.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.*	**SE: 9–12, 21–24** **TE: 9A–12B, 21A–24B**
4.NBT.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.	**SE: 5-8, 13–16,** 21–24 **TE: 5A-8B, 13A–16B,** 21A–24B
4.NBT.3 Use place value understanding to round multi-digit whole numbers to any place.	**SE: 17–20,** 21–24 **TE: 17A–20B,** 21A–24B
Use place value understanding and properties of operations to perform multi-digit arithmetic	
4.NBT.4 ***Fluently*** add and subtract (including subtracting across zeros) multi-digit whole numbers using the standard algorithm.	**SE: 37–40,** 41–44, **45–48, 49–52, 53–56, 57–60, 61–64,** 65–68, 233–236, 237–240, 241–244, 525-528, **TE: 37A–40B,** 41A–44B, **45A–48B, 49A–52B, 53A–56B, 57A–60B, 61A–64B,** 65A–68B, 233A–236B, 237A–240B, 241A–244B, 525A-528B

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4.NBT.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.	**SE: 81–84, 89–92, 93–96, 97–100, 101–104, 105–108,** 109–112, **129–132, 133–136,** 137–140, **141–144, 145–148, 149–152, 153–156,** 173–176, 177–180, 225–228, 229–232, 233–236, 237–240, 241–244, 245–248, 261–264, 265–268, 269–272, 273–276, 277–280, 301–304, 313–316, 525-528 **TE: 81A–84B, 89A–92B, 93A–96B, 97A–100B, 101A–104B, 105A–108B,** 109A–112B, **129A–132B, 133A–136B,** 137A–140B, **141A–144B, 145A–148B, 149A–152B, 153A–156B,** 173A–176B, 177A–180B, 225A–228B, 229A–232B, 233A–236B, 237A–240B, 241A–244B, 245A–248B, 261A–264B, 265A–268B, 269A–272B, 273A–276B, 277A–280B, 301A–304B, 313A–316B, 525A-528B, 80–80C, 3-ACT Math
4.NBT.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.	**SE: 169–172,** 173–176, 177–180, 181–184, **185–188, 189–192, 193–196, 197–200, 201–204,** 205–208, 229–232, 233–236, 237–240, 241–244, 245–248, 305–308, 525-528, 529-532 **TE: 169A–172B,** 173A–176B, 177A–180B, 181A–184B, **185A–188B, 189A–192B, 193A–196B, 197A–120B, 201A–204B,** 205A–208B, 229A–232B, 233–236B, 237A–240B, 241A–244B, 245A–248B, 305A–308B, 525A-528B, 529A-532B
Number and Operations – Fractions (NF)	
Extend understanding of fractions equivalence and ordering	
4.NF.1 Recognizing that the value of “n” cannot be 0, explain why a fraction a/b is equivalent to a fraction (n × a)/ (n × 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.	**SE: 293–296, 297–300, 301–304, 305–308,** 313–316, **317–320,** 421-424, 553-556 **TE: 293A–296B, 297A–300B, 301A–304B, 305A–308B,** 313A–316B, **317A–320B,** 421A-424B, 553A-556B
4.NF.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.	**SE: 309–312, 313–316,** 317–320, 421-424 **TE: 309A–312B, 313A–316B,** 317A–320B, 421A-424B

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Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers	
4.NF.3 Understand a fraction *a/b* with *a* > 1 as a sum of fractions 1*/b*. a. Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.	**SE: 333-336, 341-344, 345-348, 349-352, 353-356,** 369-372 **TE: 333A-336B, 341A-344B, 345A-348B, 349A-352B, 353A-356B,** 369A-372B
4.NF.3 Understand a fraction *a/b* with *a* > 1 as a sum of fractions 1*/b*. b. Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model (including, but not limited to: concrete models, illustrations, tape diagram, number line, area model, etc.). 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.	**SE: 337-340,** 553-556 **TE: 337A-340B,** 553A-556B
4.NF.3 Understand a fraction *a/b* with *a* > 1 as a sum of fractions 1*/b*. c. 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.	**SE: 357-360, 361-364, 365-368,** 369-372, 429-432, 569-572 **TE: 357A-360B, 361A-364B, 365A-368B,** 369A-372B, 429A-432B, 569A-572B
4.NF.3 Understand a fraction *a/b* with *a* > 1 as a sum of fractions 1*/b*. d. 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.	**SE:** 333-336, 341–344, 345-348, 349–352, 353-356, 357-360, 361–364, 365–368, **369-372,** 397-400, 401-404, 417-420, 421-424, 425-428, 429–432, 481-484, 485-488, 489-492 **TE:** 333A-336B, 341A–344B, 345A-348B, 349A–352B, 353A-356B, 357A-360B, 361A–364B, 365A–368B, **369A-372B,** 397A-400B, 401A-404B, 417A-420B, 421A-424B, 425A-428B, 429A–432B, 481A-484B, 485A-488B, 489A-492B

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4.NF.4 Apply and extend previous understandings of multiplication to multiply a fraction by a whole number. a. 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).*	**SE: 385-388,** 389-392, 393-396 **TE: 385A-388B,** 389A-392B, 393A-396B
4.NF.4 Apply and extend previous understandings of multiplication to multiply a fraction by a whole number. b. 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.)*	**SE: 389-392, 393-396** **TE: 389A-392B, 393A-396B**
4.NF.4 Apply and extend previous understandings of multiplication to multiply a fraction by a whole number. c. 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 do you expect your answer to lie?	**SE:** 389-392, 393-396, 393-396, **401-404,** 481-484, 485-488, 489-492, 501–504, 505-508 **TE:** 389A-392B, 393A-396B, 393A-396B, **401A-404B,** 481A-484B, 485A-488B, 489A-492B, 501A–504B, 505A-508B
Understand decimal notation for fractions, and compare decimal fractions	
4.NF.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. *For example, express 3/10 as 30/100, and add 3/10 + 4/100 = 34/100.*	**SE: 457-460** **TE: 457A-460B**
4.NF.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 diagram*.	**SE: 445-448, 449-452** **TE: 445A-448B, 449A-452B**

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4.NF.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.	**SE: 453-456, 465-468,** 493-496 **TE: 453A-456B, 465A-468B,** 493A-496B
Measurement and Data (MD)	
Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.	
4.MD.1 Know relative sizes of measurement units within one system of units including km, m, cm, mm; kg, g, mg; 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).	**SE:** 379-400, **481-484, 485-488, 489-492, 493-496, 497-500** **TE:** 379A-400B, **481A-484B, 485A-488B, 489A-492B, 493A-496B, 497A-500B**
4.MD.2 Use the four operations to solve word problems involving ● intervals of time ● money ● distances ● liquid volumes ● masses of objects 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.	**SE: 397-400,** 401-404, 449-452, 453-456, **461-464,** 465-468, 481-484, 485-488, 489-492, 493-496, 497-500, 501–504, 505-508 **TE: 397A-400B,** 401A-404B, 449A-452B, 453A-456B, **461A-464B,** 465A-468B, 481A-484B, 485A-488B, 489A-492B, 493A-496B, 497-500B, 501A–504B, 505A-508B
4.MD.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*.	**SE:** 153-156, **501-504, 505-508,** 605-608 **TE:** 153A-156B, **501A-504B, 505A-508B,** 605A-608B

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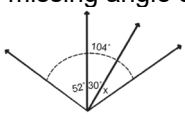
Represent and interpret data	
4.MD.4 Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Solve problems involving addition and subtraction of fractions by using information presented in line plots. *For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.*	**SE: 417-420, 421-424, 425-428, 429-432** **TE: 417A-420B, 421A-424B, 425A-428B, 429A-432B**
Geometric measurement: understand concepts of angle and measure angles	
4.MD.5 Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement: a. 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.	**SE:** 549-552, **553-556,** 557-560 **TE:** 549A-552B, **553A-556B,** 557A-560B
4.MD.5 Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement: b. An angle that turns through *n* one-degree angles is said to have an angle measure of *n* degrees.	**SE: 557-560,** 561-564 **TE: 557-560B,** 561-564B
4.MD.6 Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.	**SE: 561-564, 569-572** **TE: 561A-564B, 569A-572B**
4.MD.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. Example: Find the missing angle using an equation.  	**SE: 565-568,** 569-572 **TE: 565A-568B,** 569A-572B

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Geometry (G)	
Draw and identify lines and angles, and classify shapes by properties of their lines and angles	
4.G.1 Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.	**SE: 549-552, 585-588,** 589-592, 593-596, 605-608 **TE: 549A-552B, 585A-588B,** 589A-592B, 593A-596B, 605A-608B
4.G.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.	**SE: 589-592, 593-596, 605-608** **TE: 589A-592B, 593A-596B, 605A-608B**
4.G.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.	**SE: 597-600, 601-604** **TE: 597A-600B, 601A-604B**
Standards for Mathematical Practice	
1. Make sense of problems and persevere in solving them. In fourth grade, students know that doing mathematics involves solving problems and discussing how they solved them. Students explain to themselves the meaning of a problem and look for ways to solve it. Fourth graders may use concrete objects or pictures to help them conceptualize and solve problems. They may check their thinking by asking themselves, “Does this make sense?” They listen to the strategies of others and will try different approaches. They often will use another method to check their answers.	**SE:** 13–16, 21–24, 49–52, 53–56, 65–68, 81–84, 105–108, 109–112, **153–156,** 205–208, 233-236, 237-240, **245–248,** 265-268, 269-272, 293-296, 297-300, 317–320, 333-336, 365-368, 369–372, 397-400, 421-424, 425-428 **TE:** 13A–16B, 21A–24B, 49A–52B, 53A–56B, 65A–68B, 81A–84B, 105A–108B, 109A–112B, **153A–156B,** 205A–208B, 233A-236B, 237-240, **245A–248B,** 265A-268B, 269A-272B, 293A-296B, 297A-300B, 317A–320B, 333A-336B, 365A-368B, 369A–372B, 397A-400B, 421A-424B, 425A-428B

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2. Reason abstractly and quantitatively. Fourth graders should recognize that a number represents a specific quantity. They connect the quantity to written symbols and create a logical representation of the problem at hand, considering both the appropriate units involved and the meaning of quantities. They extend this understanding from whole numbers to their work with fractions and decimals. Students write simple expressions, record calculations with numbers, and represent or round numbers using place value concepts, considering both the appropriate units involved and the meaning of quantities. They extend this understanding from whole numbers to their work with fractions and decimals. Students write simple expressions, record calculations with numbers, and represent or round numbers using place value concepts.	**SE:** 5–8, 9–12, 13–16, 17–20, 21–24, 41–44, 57–60, 61–64, **65–68,** 81–84, 105–108, 133–136, 137–140, 149–152, 169–172, 273-276, 417-420, 569-57 **TE:** 5A–8B, 9A–12B, 13A–16B, 17A–20B, 21A–24B, 41A–44B, 57A–60B, 61A–64B, **65A–68B,** 81A–84B, 105A–108B, 133A–136B, 137A–140B, 149A–152B, 169A–172B, 273A-276B, 417A-420B, 569A-572B
3. Construct viable arguments and critique the reasoning of others. In fourth grade, students may construct arguments using concrete referents, such as objects, pictures, and drawings. They explain their thinking and make connections between models and equations. They refine their mathematical communication skills as they participate in mathematical discussions involving questions like “How did you get that?” and “Why is that true?” They explain their thinking to others and respond to others’ thinking.	**SE:** 9–12, 17–20, **21–24,** 37–40, 41–44, 45–48, 49–52, 57–60, 61–64, 85–88, 101–104, 137–140, **317–320, 429–432, 605–608** **TE:** 9A–12B, 17A–20B, **21A–24B,** 37A–40B, 41A–44B, 45A–48B, 49A–52B, 57A–60B, 61A–64B, 85A–88B, 101A–104B, 137A–140B, **317A–320B, 429A–432B, 605A–608B**
4. Model with mathematics. Students experiment with representing problem situations in multiple ways including numbers, words (mathematical language), drawing pictures, using objects, making a chart, list, or graph, creating equations, etc. Students need opportunities to connect the different representations and explain the connections. They should be able to use all of these representations as needed. Fourth graders should evaluate their results in the context of the situation and reflect on whether the results make sense.	**SE:** 13–16, 65–68, 89–92, 93–96, **109–112,** 141–144, 145–148, 153–156, 169–172, 177–180, 181–184, 185–188, **205–208, 369–372, 401–404,** 505-508 **TE:** 13A–16B, 65A–68B, 89A–92B, 93A–96B, **109A–112B,** 141A–144B, 145A–148B, 153A–156B, 169A–172B, 177A–180B, 181A–184B, 185A–188B, **205A–208B, 369A–372B, 401A–404B,** 505A-508B

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5. Use appropriate tools strategically. Fourth graders consider the available tools (including estimation) when solving a mathematical problem and decide when certain tools might be helpful. For instance, they may use graph paper or a number line to represent and compare decimals and protractors to measure angles. They use other measurement tools to understand the relative size of units within a system and express measurements given in larger units in terms of smaller units.	**SE:** 17–20, 45–48, 53–56, 97–100, 133–136, 193–196, 225–228, 245–248, 293–296, 313–316, 317–320, 333–336, 337-340, 345-348, 453-456, 457-460, 557-560, 561-564, **569-572** **TE:** 17A–20B, 45A–48B, 53A–56B, 97A–100B, 133A–136B, 193A–196B, 225A–228B, 245A–248B, 293A–296B, 313A–316B, 317A–320B, 333A–336B, 337A-340B, 345A-348B, 453A-456B, 457A-460B, 557A-560B, 561A-564B, **569A-572B,**
6. Attend to precision. As fourth graders develop their mathematical communication skills, they try to use clear and precise language in their discussions with others and in their own reasoning. They are careful about specifying units of measure and state the meaning of the symbols they choose. For instance, they use appropriate labels when creating a line plot.	**SE:** 21–24, 37–40, 97–100, 105–108, 153–156, 197–200, 245–248, 269–272, 305–308, 345–348, 393–396, 417–420, 449–452, 465–468, **505–508,** 549-552, 605-608 **TE:** 21A–24B, 37A–40B, 97A–100B, 105A–108B, 153A–156B, 197A–200B, 245A–248B, 269A–272B, 305A–308B, 345A–348B, 393A–396B, 417A–420B, 449A–452B, 465A–468B, **505A–508B,** 549A-552B, 605A-608B
7. Look for and make use of structure. In fourth grade, students look closely to discover a pattern or structure. For instance, students use properties of operations to explain calculations (partial products model). They relate representations of counting problems such as tree diagrams and arrays to the multiplication principal of counting. They generate number or shape patterns that follow a given rule.	**SE:** 5–8, 37–40, 45–48, 53–56, 57–60, 61–64, 81–84, 89–92, 93–96, 97–100, 101–104, 129–132, 141–144, 185-188, 189-192, 341-344, **465–468, 533–536,** 593-596, 597-600 **TE:** 5A–8B, 37A–40B, 45A–48B, 53A–56B, 57A–60B, 61A–64B, 81A–84B, 89A–92B, 93A–96B, 97A–100B, 101A–104B, 129A–132B, 141A–144B, 185A-188B, 189A-192B, 341A-344B, **465A–468B, 533A–536B,** 593A-596B, 597A-600B
8. Look for and express regularity in repeated reasoning. Students in fourth grade should notice repetitive actions in computation to make generalizations Students use models to explain calculations and understand how algorithms work. They also use models to examine patterns and generate their own algorithms. For example, students use visual fraction models to write equivalent fractions.	**SE:** 9–12, 49–52, **269–272,** 273-276, 309–312, 361–364, 365–368, 389–392, 421–424, 461–464, 481–484, 485–488, 489–492, 497–500, 521-524, 557-560, 589-592 **TE:** 9A–12B, 49A–52B, **269A–272B,** 273A-276B, 309A–312B, 361A–364B, 365A–368B, 389A–392B, 421A–424B, 461A–464B, 481A–484B, 485A–488B, 489A–492B, 497A–500B, 521A-524B, 557A-560B, 589A-592B

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Operations and Algebraic Thinking (OA)	
Write and interpret numerical expressions	
5.OA.1 Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.	**SE: 537–540,** 541–544, **549–552** **TE: 537A–540B,** 541A–544B, **549A–552B**
5.OA.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.*	**SE: 541–544, 545–548** **TE: 541A–544, 545A–548**
Analyze patterns and relationships	
5.OA.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 sequence are twice the corresponding terms in the other sequence. Explain informally why this is so.*	**SE: 593–596, 597–600, 601–604, 605–608** **TE: 593A–596B, 597A–600B, 601A–604B, 605A–608B**
Number and Operations in Base Ten (NBT)	
Understand the place value system	
5.NBT.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 (e.g., "*In the number 3.33, the underlined digit represents 3/10, which is 10 times the amount represented by the digit to its right (3/100) and is 1/10 the amount represented by the digit to its left (3))*.	**SE: 9–12, 13–16,** 81–84 **TE: 9A–12B, 13A–16B,** 81A–84B
5.NBT.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.	**SE: 5–8, 81–84, 129–132, 229–232,** 501–504, 505–508, 509–512 **TE: 5A–8B, 81A–84B, 129A–132B, 229A–232B,** 501A–504B, 505A–508B, 509A–512B

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5.NBT.3 Read, write, and compare decimals to thousandths. a. 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).	**SE:** 13–16, **17–20, 29–32** **TE:** 13A–16B, **17A–20B, 29A–32B**
5.NBT.3 Read, write, and compare decimals to thousandths. b. Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.	**SE: 21–24,** 29–32 **TE: 21A–24B,** 29A–32B
5.NBT.4 Use place value understanding to round decimals to any place.	**SE: 25–28,** 45–48, 49–52 **TE: 25A–28B,** 45A–48B, 49A–52B
Perform operations with multi-digit whole numbers and with decimals to hundredths	
5.NBT.5 ***Fluently*** multiply multi-digit whole numbers using the standard algorithm.	**SE: 85–88, 89–92, 93–96, 97–100, 101–104, 105–108, 109–112, 113–116,** 489–492, 493–496, 497–500, 513–516, 517–520, 521–524 **TE: 85A–88B, 89A–92B, 93A–96B, 97A–100B, 101A–104B, 105A–108B, 109A–112B, 113A–116B,** 489A–492B, 493A–496B, 497A–500B, 513A–516B, 517A–520B, 521A–524B
5.NBT.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.	**SE: 181–184, 185–188, 189–192, 193–196, 197–200, 201–204, 205–208, 209–212,** 489–492, 493–496, 497–500, 513–516 **TE: 181A–184B, 185A–188B, 189A–192B, 193A–196B, 197A–200B, 201A–204B, 205A–208B, 209A–212B,** 489A–492B, 493A–496B, 497A–500B, 513A–516B

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5.NBT.7 Add, subtract, multiply, and divide decimals to hundredths, using concrete models (to include, but not limited to: base ten blocks, decimal tiles, etc.) 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.	**SE: 45–48, 49–52, 53–56, 57–60, 61–64, 65–68,** 129–132, **133–136, 137–140, 141–144, 145–148, 149–152, 153–156, 157–160, 161–164,** 229–232, **233–236, 237–240, 241–244, 245–248, 249–252** **TE: 45A–48B, 49A–52B, 53A–56B, 57A–60B, 61A–64B, 65A–68B,** 129A–132B, **133A–136B, 137A–140B, 141A–144B, 145A–148B, 149A–152B, 153A–156B, 157A–160B, 161A–164B,** 229A–232B, **233A–236B, 237A–240B, 241A–244B, 245A–248B, 249A–252B**
Number and Operations – Fractions (NF)	
Use Equivalent fractions as a strategy to add and subtract fractions	
5.NF.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.)*	**SE:** 269–272, **273–276, 277–280, 281–284, 285–288,** 289–292, 293–296, **297–300, 301–304, 305–308, 309–312** **TE:** 269A–272B, **273A–276B, 277A–280B, 281A–284B, 285A–288B,** 289A–292B, 293A–296B, **297A–300B, 301A–304B, 305A–308B, 309A–312B**
5.NF.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.*	**SE: 269–272,** 272–276, 277–280, 281–284, 285–288, **289–292, 293–296,** 297–300, 301–304, 305–308, 309–312, **313–316,** 429–432, 433–436, 437–440, 441–444 **TE: 269A–272B,** 272A–276B, 277A–280B, 281A–284B, 285A–288B, **289A–292B, 293A–296B,** 297A–300B, 301A–304B, 305A–308B, 309A–312B, **313A–316B,** 429A–432B, 433A–436B, 437A–440B, 441A–444B
Apply and extend previous understanding of multiplication and division to multiply and divide fractions	
5.NF.3 Interpret a fraction as division of the numerator by the denominator ($a/b = a \div b$). 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?*	**SE: 385–388, 389–392** **TE: 385A–388B, 389A–392B**

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5.NF.4 Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction. a. 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.)*	**SE: 333–336, 337–340, 341–344, 345–348, 349–352** **TE: 333A–336B, 337A–340B, 341A–344B, 345A–348B, 349A–352B**
5.NF.4 Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction. b. 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.	**SE: 353–356** **TE: 353A–356B**
5.NF.5 Interpret multiplication as scaling (resizing), by:	
a. 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.	**SE: 361–364** **TE: 361A–364B**
b. 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.	**SE: 361–364** **TE: 361A–364B**
5.NF.6 Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by us in visual fraction models or equations to represent the problem.	**SE:** 333–336, 337–340, **357–360, 365–368,** 437–440 **TE:** 333A–336B, 337A–340B, **357A–360B, 365A–368B,** 437A–440B

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5.NF.7 Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. a. 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*.	**SE: 401–404, 405–408, 413–416** **TE: 401A–404B, 405A–408B, 413A–416B**
5.NF.7 Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. b. 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.*	**SE: 393–396, 397–400,** 405–408, 409–412 **TE: 393A–396B, 397A–400B,** 405A–408B, 409A–412B
5.NF.7 Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. c. 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?*	**SE:** 393–396, 397–400, 401–404, 405–408, **409–412** **TE:** 393A–396B, 397A–400B, 401A–404B, 405A–408B, **409A–412B**
Measurement and Data (MD)	
Convert like measurement units within a given measurement system	
5.MD.1 Convert among different-sized standard measurement units within a given measurement system (customary and metric) (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.	**SE: 489–492, 493–496, 497–500, 501–504, 505–508, 509–512, 513–516, 517–520, 521–524** **TE: 489A–492B, 493A–496B, 497A–500B, 501A–504B, 505A–508B, 509A–512B, 513A–516B, 517A–520B, 521A–524B**

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Represent and interpret data	
5.MD.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.*	**SE: 429–432, 433–436, 437–440, 441–446** **TE: 429A–432B, 433A–436B, 437A–440B, 441A-446B**
Geometric measurement: understand concepts of area and relate area to multiplication and to addition	
5.MD.3 Recognize volume as an attribute of solid figures and understand concepts of volume measurement. a. 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.	**SE: 457–460, 473–476** **TE: 457A–460B, 473A–476B**
5.MD.3 Recognize volume as an attribute of solid figures and understand concepts of volume measurement. b. 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.	**SE: 457–460, 473–476** **TE: 457A–460B, 473A–476B**
5.MD.4 Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.	**SE: 457–460, 461–464, 473–476** **TE: 457A–460B, 461A–464B, 473A–476B**
5.MD.5 Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume. a. 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 three-fold whole-number products as volumes, e.g., to represent the associative property of multiplication.	**SE: 461–464** **TE: 461A–464B**

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5.MD.5 Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume. b. 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.	**SE: 461–464** **TE: 461A–464B**
5.MD.5 Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume. c. 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.	**SE: 465–468, 469–472** **TE: 465A–468B, 469A–472B**
Geometry (G)	
Graph points on the coordinate plane to solve real-world and mathematical problems	
5.G.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).	**SE: 565–568,** 569–572, 577–580 **TE: 565A–568B,** 569A–572B, 577A–580B
5.G.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.	**SE: 569–572, 573–576, 577–580, 601–604** **TE: 569A–572B, 573A–576B, 577A–580B, 601A–604B**
Classify two-dimensional figures into categories based on their properties	
5.G.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.*	**SE: 621–624, 625–628, 629–632, 633–636** **TE: 621A–624, 625A–628, 629A–632, 633A–636**

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5.G.4 Classify two-dimensional figures in a hierarchy based on properties.	**SE: 621–624, 625–628, 629–632, 633–636** **TE: 621A–624, 625A–628, 629A–632, 633A–636**
Standards for Mathematical Practice	
1. Make sense of problems and persevere in solving them. Students solve problems by applying their understanding of operations with whole numbers, decimals, and fractions including mixed numbers. They solve problems related to volume and measurement conversions. Students seek the meaning of a problem and look for efficient ways to represent and solve it. They may check their thinking by asking themselves, "What is the most efficient way to solve the problem?", "Does this make sense?", and "Can I solve the problem in a different way?"	**SE:** 25–28, 53–56, 61–64, 65–68, 97–100, 101–104, 109–112, 113–116, 137–140, 149–152, 153–156, 161–164, 185–188, 209–212, 605–608 **TE:** 25A–28B, 53A–56B, 61A–64B, 65A–68B, 97A–100B, 101A–104B, 109A–112B, 113A–116B, 137A–140B, 149A–152B, 153A–156B, 161A–164B, 185A–188B, 209A–212B, 605A–608B
2. Reason abstractly and quantitatively. Fifth graders should recognize that a number represents a specific quantity. They connect quantities to written symbols and create a logical representation of the problem at hand, considering both the appropriate units involved and the meaning of quantities. They extend this understanding from whole numbers to their work with fractions and decimals. Students write simple expressions that record calculations with numbers and represent or round numbers using place value concepts.	**SE:** 13–16, 45–48, 49–52, 85–88, 105–108, 113–116, 133–136, 197–200, 201–204, 205–208, 209–212, 249–252, 549–552, 577–580 **TE:** 13A–16B, 45A–48B, 49A–52B, 85A–88B, 105A–108B, 113A–116B, 133A–136B, 197A–200B, 201A–204B, 205A–208B, 209A–212B, 249A–252B, 549A–552B, 577A–580B
3. Construct viable arguments and critique the reasoning of others. In fifth grade, students may construct arguments using concrete referents, such as objects, pictures, and drawings. They explain calculations based upon models and properties of operations and rules that generate patterns. They demonstrate and explain the relationship between volume and multiplication. They refine their mathematical communication skills as they participate in mathematical discussions involving questions like "How did you get that?" and "Why is that true?" They explain their thinking to others and respond to others' thinking.	**SE:** 9–12, 13–16, 21–24, 25–28, 45–48, 49–52, 57–60, 65–68, 81–84, 85–88, 89–92, 93–96, 113–116, 441–444, 633–636 **TE:** 9A–12B, 13A–16B, 21A–24B, 25A–28B, 45A–48B, 49A–52B, 57A–60B, 65A–68B, 81A–84B, 85A–88B, 89A–92B, 93A–96B, 113A–116B, 441A–444B, 633A–636B

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4. Model with mathematics. Students experiment with representing problem situations in multiple ways including numbers, words (mathematical language), drawing pictures, using objects, making a chart, list, or graph, creating equations, etc. Students need opportunities to connect the different representations and explain the connections. They should be able to use all of these representations as needed. Fifth graders should evaluate their results in the context of the situation and whether the results make sense. They also evaluate the utility of models to determine which models are most useful and efficient to solve problems.	**SE:** 5–8, 65–68, 89–92, 93–96, 101–104, 105–108, 109–112, 145–148, 161–164, 185–188, 193–196, 197–200, 313–316, 365–368, 473–476, 521–524, 549–552 **TE:** 5A–8B, 65A–68B, 89A–92B, 93A–96B, 101A–104B, 105A–108B, 109A–112B, 145A–148B, 161A–164B, 185A–188B, 193A–196B, 197A–200B, 313A–316B, 365A–368B, 473A–476B, 521A–524B, 549A–552B
5. Use appropriate tools strategically. Fifth graders consider the available tools (including estimation) when solving a mathematical problem and decide when certain tools might be helpful. For instance, they may use unit cubes to fill a rectangular prism and then use a ruler to measure the dimensions. They use graph paper to accurately create graphs and solve problems or make predictions from real world data.	**SE:** 5–8, 61–64, 81–84, 149–152, 189–192, 197–200, 237–240, 273–276, 293–296, 301–304, 353–356, 397–400, 401–404, 457–460, 473–476, 549–552, 577–580, 605–608 **TE:** 5A–8B, 61A–64B, 81A–84B, 149A–152B, 189A–192B, 197A–200B, 237A–240B, 273A–276B, 293A–296B, 301A–304B, 353A–356B, 397A–400B, 401A–404B, 457A–460B, 473A–476B, 549A–552B, 577A–580B, 605A–608B
6. Attend to precision. Students continue to refine their mathematical communication skills by using clear and precise language in their discussions with others and in their own reasoning. Students use appropriate terminology when referring to expressions, fractions, geometric figures, and coordinate grids. They are careful about specifying units of measure and state the meaning of the symbols they choose. For instance, when figuring out the volume of a rectangular prism they record their answers in cubic units.	**SE:** 17–20, 21–24, 29–32, 105–108, 113–116, 133–136, 145–148, 161–164, 181–184, 249–252, 305–308, 309–312, 341–344, 521–524, 625–628 **TE:** 17A–20B, 21A–24B, 29A–32B, 105A–108B, 113A–116B, 133A–136B, 145A–148B, 161A–164B, 181A–184B, 249A–252B, 305A–308B, 309A–312B, 341A–344B, 521A–524B, 625A–628B
7. Look for and make use of structure. In fifth grade, students look closely to discover a pattern or structure. For instance, students use properties of operations as strategies to add, subtract, multiply and divide with whole numbers, fractions, and decimals. They examine numerical patterns and relate them to a rule or a graphical representation.	**SE:** 5–8, 9–12, 13–16, 17–20, 25–28, 29–32, 61–64, 101–104, 129–132, 153–156, 181–184, 201–204, 229–232, 245–248, 297–300, 573–576, 597–600 **TE:** 5A–8B, 9A–12B, 13A–16B, 17A–20B, 25A–28B, 29A–32B, 61A–64B, 101A–104B, 129A–132B, 153A–156B, 181A–184B, 201A–204B, 229A–232B, 245A–248B, 297A–300B, 573A–576B, 597A–600B

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8. Look for and express regularity in repeated reasoning. Fifth graders use repeated reasoning to understand algorithms and make generalizations about patterns. Students connect place value and their prior work with operations to understand algorithms to fluently multiply multi-digit numbers and perform all operations with decimals to hundredths. Students explore operations with fractions with visual models and begin to formulate generalizations.	**SE:** 17–20, 29–32, 57–60, 133–136, 141–144, 145–148, 157–160, 281–284, 289–292, 301–304, 357–360, 413–416, 433–436, 489–492, 493–496, 597–600, 625–628 **TE:** 17A–20B, 29A–32B, 57A–60B, 133A–136B, 141A–144B, 145A–148B, 157A–160B, 281A–284B, 289A–292B, 301A–304B, 357A–360B, 413A–416B, 433A–436B, 489A–492B, 493A–496B, 597A–600B, 625A–628B