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To the

Oklahoma Academic Standards for Mathematics
Grade 4

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Math Actions and Processes	
Develop a Deep and Flexible Conceptual Understanding Demonstrate a deep and flexible conceptual understanding of mathematical concepts, operations, and relations while making mathematical and real–world connections. Students will develop an understanding of how and when to apply and use the mathematics they know to solve problems.	**SE:** F24, 17, 22, 77, 80, 150, 151–152, 201, 208, 307, 309–310, 346, 351, 381, 393, 430, 455, 529, 526, 573, 581, 592, 609, 628, 665, 718, 720, 733, 801, 806, 846, 850 **TE:** F24–F24A, 17A, 77A, 95A, 107A, 113A, 119A, 125A, 131A, 137A, 149A, 177A, 195A, 201A, 207A, 217A, 231A , 253A, 259A, 271A, 277A, 283A, 295A, 307A, 327A, 333A, 339A, 345A, 351A, 375A, 393A, 417A, 423A, 429A, 465A, 471A, 477A, 483A, 489A, 495A, 501A, 525A, 543A, 549A, 555A, 567A, 573A, 609A, 633A, 645A, 651A, 657A, 715A, 733A, 771A, 777A, 783, 795, 801A, 821A, 845A, 867A, 875A, 883A, 887A, 891A, 895A, 899A
Develop Accurate and Appropriate Procedural Fluency Learn efficient procedures and algorithms for computations and repeated processes based on a strong sense of numbers. Develop fluency in addition, subtraction, multiplication, and division of numbers and expressions. Students will generate a sophisticated understanding of the development and application of algorithms and procedures.	**SE:** F22, 29, 34, 78, 81–83, 143, 154, 155, 173–174, 178, 237, 302, 308, 313, 327, 351, 357, 376, 381, 399, 423, 435, 514, 520, 531, 544, 549, 592, 615, 617, 652, 657, 663, 715, 720, 721, 746, 751, 777, 795, 807, 845, 851, 857 **TE:** F22–F22A, 5A, 11A, 17A, 23A, 29A, 47A, 65A, 71A, 77A, 83, 95A, 101A, 107A, 113A, 119A, 131A, 137A, 143A, 149A, 155, 171A, 177A, 183A, 189A, 207A, 213A, 321A, 237, 253A, 259A, 265A, 271A, 277A, 283A, 289A, 295A, 301A, 307A, 313, 327A, 333A, 351A, 357, 369A, 375A, 381A, 387A, 393A, 399, 411A, 423A, 429A, 435A, 441A, 447A, 465A, 471A, 483A, 489A, 495A, 501A, 507A, 513A, 519A, 525A, 531, 543A, 549A, 555A, 567A, 573A, 591A, 597A, 603A, 609A, 615, 627A, 633A, 639A, 645A, 651A, 657A, 663, 685A, 691A, 703A, 709A, 715A, 721, 733A, 739A, 745A, 751A, 771A, 777A, 789A, 795A, 801A, 807, 833A, 839A, 845A, 851A, 857, 867A, 879A, 891A, 895A, 899A, 903A

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Develop Strategies for Problem Solving Analyze the parts of complex mathematical tasks and identify entry points to begin the search for a solution. Students will select from a variety of problem solving strategies and use corresponding multiple representations (verbal, physical, symbolic, pictorial, graphical, tabular) when appropriate. They will pursue solutions to various tasks from real-world situations and applications that are often interdisciplinary in nature. They will find methods to verify their answers in context and will always question the reasonableness of solutions.	**SE:** F21, F29–F46, 32, 37, 60, 70, 49, 152, 232, 235–236, 284, 296, 334, 345, 381, 394, 429, 435, 484, 486, 573, 578, 598, 609, 645, 641, 704, 715, 740, 746, 801, 806, 846, 851 **TE:** F21–F21A, 17A, 29A, 53A, 65A, 77A, 107A, 131A, 149A, 177A, 219A, 225A, 231A, 271A, 283A, 307A, 327A, 333A, 339A, 345A, 351A, 375A, 381A, 411A, 417A, 429A, 435A, 447A, 465A, 477A, 483A, 501A, 513A, 519A, 525A, 561A, 567A, 573A, 603A, 609A, 633A, 645A, 651A, 675A, 679A, 685A, 691A, 697A, 703A, 709A, 715A, 733A, 751A, 777A, 783A, 789A, 795A, 801A, 845A, 851A, 867A, 875A, 887A, 899A
Develop Mathematical Reasoning Explore and communicate a variety of reasoning strategies to think through problems. Students will apply their logic to critique the thinking and strategies of others to develop and evaluate mathematical arguments, including making arguments and counterarguments and making connections to other contexts.	**SE:** F23, 33–34, 35, 37, 73, 69–70, 132, 136, 192, 219, 296, 302, 327, 333, 387, 393, 442, 447, 453, 502, 519, 562, 567, 579, 598, 610, 640, 646, 709, 723, 734, 745, 757, 784, 788, 851, 859 **TE:** F23–F23A, 5A, 11A, 17A, 23A, 29A, 35, 47A, 53A, 59A, 65A, 71A, 113A, 131A, 143A, 183A, 189A, 207A, 217A, 253A, 259A, 265A, 271A, 277A, 389A, 295A, 301A, 327A, 333A, 345A, 369A, 375A, 381A, 387A, 393A, 417A, 423A, 429A, 435A, 441A, 447A, 453, 465A, 477A, 489A, 501A, 507A, 513A, 519A, 561A, 567A, 579, 591A, 597A, 609A, 627A, 639A, 645A, 657A, 697A, 709A, 745A, 757, 777A, 783A, 789A, 795A, 821A, 827A, 833A, 839A, 845A, 871A, 875A, 883A, 887A, 891A, 895A

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Develop a Productive Mathematical Disposition Hold the belief that mathematics is sensible, useful and worthwhile. Students will develop the habit of looking for and making use of patterns and mathematical structures. They will persevere and become resilient, effective problem solvers.	**SE:** F27, 5–6, 18, 35, 49, 59, 83, 125, 127, 155, 171, 220, 307, 313, 339, 340, 393, 399, 401, 417, 418, 453, 490, 514, 551, 563, 579, 591, 658, 661, 663, 679, 721, 739, 752, 757, 790, 795, 807, 840, 851, 857 **TE:** F27–F27A, 5A, 35, 47A, 59A, 83, 95A, 107A, 113A, 125A, 155, 171A, 195A, 201A, 207A, 213A, 217A, 225A, 231A, 253A, 283A, 289A, 301A, 307A, 313, 339A, 369A, 387A, 393A, 399, 417A, 453, 477A, 543A, 549A, 555A, 561A, 579, 591A, 633A, 651A, 663, 679A, 721, 733A, 739A, 745A, 751A, 757, 771A, 795A, 807, 833A, 839A, 851A, 857, 867A, 871A, 891A
Develop the Ability to Make Conjectures, Model, and Generalize Make predictions and conjectures and draw conclusions throughout the problem-solving process based on patterns and the repeated structures in mathematics. Students will create, identify, and extend patterns as a strategy for solving and making sense of problems.	**SE:** F28, 11–12, 35, 71, 77, 138, 143, 196, 225, 307, 312, 339, 382, 387, 435, 453, 513, 519, 549, 579, 592, 603, 651, 652, 681, 692, 733, 734, 757, 784, 788, 833, 838, 857 **TE:** F28–F28A, 11A, 35, 59A, 71A, 77A, 125A, 131A, 137A, 143A, 225A, 307A, 339A, 381A, 387A, 393A, 435A, 453, 501A, 513A, 519A, 549A, 579, 603A, 651A, 679A, 685A, 691A, 697A, 703A, 721, 733A, 757, 783A, 827A, 833A, 857, 867A, 879A, 891A
Develop the Ability to Communicate Mathematically Students will discuss, write, read, interpret and translate ideas and concepts mathematically. As they progress, students' ability to communicate mathematically will include their increased use of mathematical language and terms and analysis of mathematical definitions.	**SE:** F26, 29, 35, 37, 52, 54, 83, 143, 149, 155, 226, 234, 237, 307, 310, 313, 351, 354, 357, 359, 381, 388, 399, 429, 453, 483, 531, 573, 578, 579, 597, 615, 657, 660, 663, 715, 721, 723, 746, 757, 789, 791, 807, 828, 834, 857 **TE:** F26–F26A, 5A, 29A, 35, 47A, 53A, 83, 143A, 149, 155, 225A, 231A, 237, 277A, 295A, 307A, 313, 327A, 351A, 357, 381A, 399, 429A, 453, 483A, 531, 555A, 573A, 579, 591A, 597A, 615, 627A, 633A, 657A, 663, 679A, 691A, 697A, 703A, 715A, 721, 745A, 757, 771A, 789A, 807, 821A, 827A, 833A, 851A, 857, 871A, 879A, 895A

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Number & Operations (N)	
4.N.1 Solve real–world and mathematical problems using multiplication and division.	
4.N.1.1 Demonstrate fluency with multiplication and division facts with factors up to 12.	**SE:** OK5–OK6, OK11–OK12 **TE:** OK2, OK4
4.N.1.2 Use an understanding of place value to multiply or divide a number by 10, 100 and 1,000.	**SE:** 11–16, 95–100, OK7–OK8 **TE:** 11A–16, 95A–100, OK3
4.N.1.3 Multiply 3-digit by 1-digit or a 2-digit by 2-digit whole numbers, using efficient and generalizable procedures and strategies, based on knowledge of place value, including but not limited to standard algorithms.	**SE:** 113–118, 119–124, 125–130, 131–136, 137–142, 143–148, 171–176, 177–182, 195–200, 201–206, 207–212, 213–218, 219–224, 225–230 **TE:** 113A–118, 119A–124, 125A–130, 131A–136, 137A–142, 143A–148, 171A–176, 177A–182, 195A–200, 201A–206, 207A–212, 213A–218, 219A–224, 225A–230
4.N.1.4 Estimate products of 3-digit by 1-digit or 2–digit by 2-digit whole numbers using rounding, benchmarks and place value to assess the reasonableness of results. Explore larger numbers using technology to investigate patterns.	**SE:** 101–106, 183–188, 189–194 **TE:** 101A–106, 183A–188, 189A–194
4.N.1.5 Solve multi-step real-world and mathematical problems requiring the use of addition, subtraction, and multiplication of multi–digit whole numbers. Use various strategies, including the relationship between operations, the use of appropriate technology, and the context of the problem to assess the reasonableness of results.	**SE:** 47–52, 53–58, 59–64, 65–70, 71–76, 77–82, 95–100, 101–106, 107–112, 113–118, 119–124, 125–130, 131–136, 137–142, 143–148, 149–154, 171–176, 177–182, 183–188, 189–194, 195–200, 201–206, 207–212, 213–218, 219–224, 225–230, 231–236, 327–332, 333–338, 339–344, 345–350, 351–356 **TE:** 47A–52, 53A–58, 59A–64, 65A–70, 71A–76, 77A–82, 95A–100, 101A–106, 107A–112, 113A–118, 119A–124, 125A–130, 131A–136, 137A–142, 143A–148, 149A–154, 171A–176, 177A–182, 183A–188, 189A–194, 195A–200, 201A–206, 207A–212, 213A–218, 219A–224, 225A–230, 231A–236, 327A–332, 333A–338, 339A–344, 345A–350, 351A–356

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4.N.1.6 Use strategies and algorithms based on knowledge of place value, equality and properties of operations to divide 3-digit dividend by 1-digit whole number divisors. (e.g., mental strategies, standard algorithms, partial quotients, repeated subtraction, the commutative, associative, and distributive properties).	**SE:** 253–258, 259–264, 265–270, 271–276, 277–282, 283–288, 289–294, 295–300, 301–306, 307–312 **TE:** 253A–258, 259A–264, 265A–270, 271A–276, 277A–282, 283A–288, 289A–294, 295A–300, 301A–306, 307A–312
4.N.1.7 Determine the unknown addend(s) or factor(s) in equivalent and non–equivalent expressions. (e.g., 5 + 6 = 4 + ☐ , 3 x 8 < 3 x ☐).	**SE:** OK15–OK16 **TE:** OK5
4.N.2 Represent and compare fractions and decimals in real–world and mathematical situations; use place value to understand how decimals represent quantities.	
4.N.2.1 Represent and rename equivalent fractions using fraction models (e.g. parts of a set, area models, fraction strips, number lines).	**SE:** 411–416, 417–422, 423–428, 429–434, 447–452 **TE:** 411A–416, 417A–422, 423A–428, 429A–434, 447A–452
4.N.2.2 Use benchmark fractions (0, ¼, $^1/_3$, ½, $^2/_3$, ¾, 1) to locate additional fractions on a number line. Use models to order and compare whole numbers and fractions less than and greater than one using comparative language and symbols.	**SE:** 435–440, 441–446, 447–452, OK19–OK20 **TE:** 435A–440, 441A–446, 447A–452, OK6
4.N.2.3 Decompose a fraction in more than one way into a sum of fractions with the same denominator using concrete and pictorial models and recording results with symbolic representations (e.g., ¾= ¼+¼+¼).	**SE:** 471–476 **TE:** 471A–476
4.N.2.4 Use fraction models to add and subtract fractions with like denominators in real-world and mathematical situations.	**SE:** 465–470, 471–476, 477–482, 483–488, 489–494, 495–500, 501–506, 507–512, 513–518, 519–524, 525–530 **TE:** 465A–470, 471A–476, 477A–482, 483A–488, 489A–494, 495A–500, 501A–506, 507A–512, 513A–518, 519A–524, 525A–530

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4.N.2.5 Represent tenths and hundredths with concrete models, making connections between fractions and decimals.	**SE:** 627–632, 633–638 **TE:** 627A–632, 633A–638
4.N.2.6 Represent, read and write decimals up to at least the hundredths place in a variety of contexts including money.	**SE:** 627–632, 633–638, 651–656 **TE:** 627A–632, 633A–638, 651A–656
4.N.2.7 Compare and order decimals and whole numbers using place value, a number line and models such as grids and base 10 blocks.	**SE:** 17–22, 29–34, 639–644, 657–662, OK1–OK2, OK35–OK36 **TE:** 17A–22, 29A–34, 639A–644, 657A–662, OK1, OK11
4.N.2.8 Compare benchmark fractions (¼, $^1/_3$, ½, $^2/_3$, ¾,) and decimals (0.25, 0.50, 0.75) in real–world and mathematical situations.	**SE:** 435–440, 441–446, 447–452, 639–644, 657–662 **TE:** 435A–440, 441A–446, 447A–452, 639A–644, 657A–662
4.N.3 Determine the value of coins in order to solve monetary transactions.	
4.N.3.1 Given a total cost (whole dollars up to $20 or coins) and amount paid (whole dollars up to $20 or coins), find the change required in a variety of ways. Limited to whole dollars up to $20 or sets of coins.	**SE:** 651–656 **TE:** 651A–656
Algebraic Reasoning & Algebra (A)	
4.A.1 Use multiple representations of patterns to solve real-world and mathematical problems.	
4.A.1.1 Create an input/output chart or table to represent or extend a numerical pattern.	**SE:** 733–738, 739–444 **TE:** 733A–738, 739A–444

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4.A.1.2 Describe the single operation rule for a pattern from an input/output table or function machine involving any operation of a whole number.	**SE:** OK47–OK48 **TE:** OK15
4.A.1.3 Create growth patterns involving geometric shapes and define the single operation rule of the pattern.	**SE:** 745–750, 751–756, OK47–OK48 **TE:** 745A–750, 751A–756, OK15
4.A.2 Use multiplication and division with unknowns to create number sentences representing a given problem situation.	
4.A.2.1 Use number sense, properties of multiplication and the relationship between multiplication and division to solve problems and find values for the unknowns represented by letters and symbols that make number sentences true.	**SE:** 327–332, 333–338, 339–344, 345–350, 351–356 **TE:** 327A–332, 333A–338, 339A–344, 345A–350, 351A–356
4.A.2.2 Solve for unknowns in problems by solving open sentences (equations) and other problems involving addition, subtraction, multiplication, or division with whole numbers. Use real–world situations to represent number sentences and vice versa.	**SE:** 327–332, 333–338, 339–344, 345–350, 351–356, OK15–OK16 **TE:** 327A–332, 333A–338, 339A–344, 345A–350, 351A–356, OK5
Geometry & Measurement (GM)	
4.GM.1 Name, describe, classify and construct polygons, and three-dimensional figures.	
4.GM.1.1 Identify points, lines, line segments, rays, angles, endpoints, and parallel and perpendicular lines in various contexts.	**SE:** 771–776, 821–826 **TE:** 771A–776, 821A–826
4.GM.1.2 Describe, classify, and sketch quadrilaterals, including squares, rectangles, trapezoids, rhombuses, parallelograms, and kites. Recognize quadrilaterals in various contexts.	**SE:** 833–838, OK51–OK52 **TE:** 833A–838, OK16

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4.GM.1.3 Given two three–dimensional shapes, identify similarities, and differences.	**SE:** OK51–OK52 **TE:** OK16
4.GM.2 Understand angle, length, and area as measurable attributes of real-world and mathematical objects. Use various tools to measure angles, length, area, and volume.	
4.GM.2.1 Measure angles in geometric figures and real–world objects with a protractor or angle ruler.	**SE:** 789–794, 801–806 **TE:** 789A–794, 801A–806
4.GM.2.2 Find the area of polygons that can be decomposed into rectangles.	**SE:** OK43–OK44 **TE:** OK14
4.GM.2.3 Using a variety of tools and strategies, develop the concept that the volume of rectangular prisms with whole-number edge lengths can be found by counting the total number of same–sized unit cubes that fill a shape without gaps or overlaps. Use appropriate measurements such as cm^3.	**SE:** OK53–OK54 **TE:** OK17
4.GM.2.4 Choose an appropriate instrument and measure the length of an object to the nearest whole centimeter or quarter-inch.	**SE:** OK39–OK40 **TE:** OK12
4.GM.2.5 Solve problems that deal with measurements of length, when to use liquid volumes, when to use mass, temperatures above zero and money using addition, subtraction, multiplication, or division as appropriate (customary and metric).	**SE:** 573–578, OK41–OK42 **TE:** 573A–578, OK13
4.GM.3 Determine elapsed time and convert between units of time.	
4.GM.3.1 Determine elapsed time.	**SE:** OK23–OK24 **TE:** OK7

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4.GM.3.2 Solve problems involving the conversion of one measure of time to another.	**SE:** 567–572 **TE:** 567A–572
Data & Probability (D)	
4.D.1 Collect, organize, and analyze data.	
4.D.1.1 Represent data on a frequency table or line plot marked with whole numbers and fractions using appropriate titles, labels, and units.	**SE:** 591–596, 597–602, 603–608, 609–614, OK27–OK28 **TE:** 591A–596, 597A–602, 603A–608, 609A–614, OK8
4.D.1.2 Use tables, bar graphs, timelines, and Venn diagrams to display data sets. The data may include benchmark fractions or decimals (¼, $^1/_3$, ½, $^2/_3$, ¾, 0.25, 0.50, 0.75).	**SE:** OK29–OK30, OK31–OK32 **TE:** OK9, OK10
4.D.1.3 Solve one- and two-step problems using data in whole number, decimal, or fraction form in a frequency table and line plot.	**SE:** 591–596, 597–602, 603–608, 609–614, OK27–OK28 **TE:** 591A–596, 597A–602, 603A–608, 609A–614, OK8