Sample Scope and Sequence for Grade 4 for the Common Core State Standards for Mathematics

In the years prior to Grade 4, students have gained an understanding of multiplication and division of whole numbers, generalized strategies for addition and subtraction to multi-digit numbers, developed understanding of fractions as numbers, and reasoned with shapes and their attributes. They worked with arrays for multiplication and area.

The grade 4 year in this scope and sequence begins with students expanding their understanding of place value. They relate place value to addition and subtraction to estimate and solve problems. Students generalize multiplication and division strategies to multi-digit numbers. They understand, add and subtract (with like denominators) fractional quantities. Fractions are multiplied by whole numbers. Students use symmetry and measure angles. They relate fractions to decimals. Finally, students develop fluency using the standard algorithm to add and subtract.

This scope and sequence assumes 160 days for instruction, divided among 14 units.

The units are sequenced in a way that we believe best develops and connects the mathematical content described in the Common Core State Standards for Mathematics; however, the order of the standards included in any unit does not imply a sequence of content within that unit. Some standards may be revisited several times during the course; others may be only partially addressed in different units, depending on the mathematical focus of the unit.

Throughout Grade 4, students should continue to develop proficiency with the Common Core's eight Standards for Mathematical Practice:

1. **Make sense of problems and persevere in solving them.**
2. **Reason abstractly and quantitatively.**
3. **Construct viable arguments and critique the reasoning of others.**
4. **Model with mathematics.**
5. **Use appropriate tools strategically.**
6. **Attend to precision.**
7. **Look for and make use of structure.**
8. **Look for and express regularity in repeated reasoning.**

These practices should become the natural way in which students come to understand and to do mathematics. While, depending on the content to be understood or on the problem to be solved, any practice might be brought to bear, some practices may prove more useful than others. Opportunities for highlighting certain practices are indicated in different units of study in this sample scope and sequence, but this highlighting should not be interpreted to mean that other practices should be neglected in those units.

This scope and sequence reflects our current thinking related to the intent of the CCSS for Mathematics, but it is an evolving document. We expect to make refinements to this scope and sequence in the coming months in response to new learnings about the standards. In planning your district's instructional program, you should be prepared to have similar flexibility in implementing your district's own scope and sequence for the next 2 to 3 years, as you transition from your state's current standards to full implementation of the CCSS for Mathematics.

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Unit	Standards for Mathematical Content	Standards for Mathematical Practice	Days	Comments
Expanding understanding of the place value system to comparing 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.*) **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.)	**1.** Make sense of problems and persevere in solving them. **2.** Reason abstractly and quantitatively. **3.** Construct viable arguments and critique the reasoning of others. **4.** Model with mathematics. **5.** Use appropriate tools strategically. **6.** Attend to precision. **7**. Look for and make use of structure. **8.** Look for and express regularity in repeated reasoning.	**10**	

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Unit	Standards for Mathematical Content	Standards for Mathematical Practice	Days	Comments
Using addition and subtraction in problem solving	**4.NBT.3** (Use place value understanding to round multi-digit whole numbers to any place.) **4.NBT.4** (Fluently add and subtract multi-digit whole numbers using the standard algorithm.) **[Comment]** **4.OA.3** (Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.) **[Comment]** **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.*) **[Comment]**	**1.** Make sense of problems and persevere in solving them. **2.** Reason abstractly and quantitatively. **3.** Construct viable arguments and critique the reasoning of others. **4.** Model with mathematics. **5.** Use appropriate tools strategically. **6.** Attend to precision. **7.** Look for and make use of structure. **8.** Look for and express regularity in repeated reasoning.	**13**	**4.NBT.4** Students are not expected to have mastery at this time. **4.OA.3** Focus on addition and subraction. **4.MD.3** Focus on measuring perimeter only.
Operations and problems involving time	**4.MD.1 ~~(km, m, cm, kg, g, lb., oz., l, ml)~~** (Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two- column table. *For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36), ...*)**[Comment]** **4.MD.2**(Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.)**[Comment]**	**1.** Make sense of problems and persevere in solving them. **2.** Reason abstractly and quantitatively. **3.** Construct viable arguments and critique the reasoning of others. **4.** Model with mathematics. **5.** Use appropriate tools strategically. **6.** Attend to precision. **7**. Look for and make use of structure. **8.** Look for and express regularity in repeated reasoning.	**7**	**4.MD.1** Focus on measuring time. **4.MD.2** Focus on solving addition and subtraction problems involving time.

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Understanding factors, prime and composite	**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.) **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.*) **[Comment]**	**1.** Make sense of problems and persevere in solving them. **2.** Reason abstractly and quantitatively. **3.** Construct viable arguments and critique the reasoning of others. **4.** Model with mathematics. **5.** Use appropriate tools strategically. **6.** Attend to precision. **7**. Look for and make use of structure. **8.** Look for and express regularity in repeated reasoning.	**10**	**4.OA.5** Students work with mutiplication and apply it to area.
Building efficient and accurate multiplication strategies	**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.) **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.[1]) [1]See Glossary, Table 2. **[Comment]** **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.)**[Comment]** **4.MD.3 [Comment]**	**1.** Make sense of problems and persevere in solving them. **2.** Reason abstractly and quantitatively. **3.** Construct viable arguments and critique the reasoning of others. **4.** Model with mathematics. **5.** Use appropriate tools strategically. **6.** Attend to precision. **7**. Look for and make use of structure. **8.** Look for and express regularity in repeated reasoning.	**10**	**4.OA.2** Focus on working with multiplication. **4.NBT.5** Focus on building strategies. **4.MD.3** Focus on area only.

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Unit	Standards for Mathematical Content	Standards for Mathematical Practice	Days	Comments
Measurement	**4.MD.1**	**1.** Make sense of problems and persevere in solving them. **2.** Reason abstractly and quantitatively. **3.** Construct viable arguments and critique the reasoning of others. **4.** Model with mathematics. **5.** Use appropriate tools strategically. **6.** Attend to precision. **7**. Look for and make use of structure. **8.** Look for and express regularity in repeated reasoning.	**15**	
Understanding division	**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.) **[Comment]** **4.OA.2**	**1.** Make sense of problems and persevere in solving them. **2.** Reason abstractly and quantitatively. **3.** Construct viable arguments and critique the reasoning of others. **4.** Model with mathematics. **5.** Use appropriate tools strategically. **6.** Attend to precision. **7**. Look for and make use of structure. **8.** Look for and express regularity in repeated reasoning.	**10**	**4.NBT.6** Students divide up to a three-digit dividened by a one-digit divisor.

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Unit	Standards for Mathematical Content	Standards for Mathematical Practice	Days	Comments
Understanding and comparing fractions	**4.NF.1** (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.) **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.)	**1.** Make sense of problems and persevere in solving them. **2.** Reason abstractly and quantitatively. **3.** Construct viable arguments and critique the reasoning of others. **4.** Model with mathematics. **5.** Use appropriate tools strategically. **6.** Attend to precision. **7**. Look for and make use of structure. **8.** Look for and express regularity in repeated reasoning.	**10**	

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Unit	Standards for Mathematical Content	Standards for Mathematical Practice	Days	Comments
Addition and subtraction of fractions with like denominators	**4.NF.3.a.b.c.d** (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. 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. *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.* 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. 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. **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.[4] *For example, express 3/10 as 30/100, and add 3/10 + 4/100 = 34/100.*) [4]Students who can generate equivalent fractions can develop strategies for adding fractions with unlike denominators in general. But addition and subtraction with un- like denominators in general is not a requirement at this grade. **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.)*	**1.** Make sense of problems and persevere in solving them. **2.** Reason abstractly and quantitatively. **3.** Construct viable arguments and critique the reasoning of others. **4.** Model with mathematics. **5.** Use appropriate tools strategically. **6.** Attend to precision. **7**. Look for and make use of structure. **8.** Look for and express regularity in repeated reasoning.	**10**	
Multiplication with fractions	**4.NF.4.a.b.c** (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).* 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.)* 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 does your answer lie?*)	**1.** Make sense of problems and persevere in solving them. **2.** Reason abstractly and quantitatively. **3.** Construct viable arguments and critique the reasoning of others. **4.** Model with mathematics. **5.** Use appropriate tools strategically. **6.** Attend to precision. **7**. Look for and make use of structure. **8.** Look for and express regularity in repeated reasoning.	**13**	

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Unit	Standards for Mathematical Content	Standards for Mathematical Practice	Days	Comments
Geometry	**4.G.1** (Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.) **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.) **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.) **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.*) **[Comment]**	**1.** Make sense of problems and persevere in solving them. **2.** Reason abstractly and quantitatively. **3.** Construct viable arguments and critique the reasoning of others. **4.** Model with mathematics. **5.** Use appropriate tools strategically. **6.** Attend to precision. **7**. Look for and make use of structure. **8.** Look for and express regularity in repeated reasoning.	**15**	**4.OA.5** Focus on shape patterns.
Measuring angles	**4.MD.5.a.b** (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. b. An angle that turns through n one-degree angles is said to have an angle measure of n degrees.) **4.MD.6** (Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.) **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.)	**1.** Make sense of problems and persevere in solving them. **2.** Reason abstractly and quantitatively. **3.** Construct viable arguments and critique the reasoning of others. **4.** Model with mathematics. **5.** Use appropriate tools strategically. **6.** Attend to precision. **7**. Look for and make use of structure. **8.** Look for and express regularity in repeated reasoning.	**13**	

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Unit	Standards for Mathematical Content	Standards for Mathematical Practice	Days	Comments
Understanding and comparing decimals	**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.*) **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.)	**1.** Make sense of problems and persevere in solving them. **2.** Reason abstractly and quantitatively. **3.** Construct viable arguments and critique the reasoning of others. **4.** Model with mathematics. **5.** Use appropriate tools strategically. **6.** Attend to precision. **7**. Look for and make use of structure. **8.** Look for and express regularity in repeated reasoning.	**12**	
Developing computational fluency and problem solving	**4.NBT.4** **4.NBT.5 [Comment]** **4.NBT.6** **4.OA.3** **4.MD.2**	**1.** Make sense of problems and persevere in solving them. **2.** Reason abstractly and quantitatively. **3.** Construct viable arguments and critique the reasoning of others. **4.** Model with mathematics. **5.** Use appropriate tools strategically. **6.** Attend to precision. **7**. Look for and make use of structure. **8.** Look for and express regularity in repeated reasoning.	**12**	**4.NBT.5** Students work to finalize computation.