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4th Grade Curriculum Guide

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Common Core Grade 4 Descriptors

Common Core Instructional Focus

In Grade 4, instructional time should focus on three critical areas:
Number: developing understanding and fluency with multi-digit multiplication, and developing understanding of dividing to find quotients involving multi-digit dividends;
Fractions: developing an understanding of fraction equivalence, addition and subtraction of fractions with like denominators, and multiplication of fractions by whole numbers;
Geometry: understanding that geometric figures can be analyzed and classified based on their properties, such as having parallel sides, perpendicular sides, particular angle measures, and symmetry

Number and Algebraic Thinking

Students generalize their understanding of place value to 1,000,000, understanding the relative sizes of numbers in each place. They apply their understanding of models for multiplication (equal-sized groups, arrays, area models), place value, and properties of operations, in particular the distributive property, as they develop, discuss, and use efficient, accurate, and generalizable methods to compute products of multi-digit whole numbers.

Depending on the numbers and the context, they select and accurately apply appropriate methods to estimate or mentally calculate products. They develop fluency with efficient procedures for multiplying whole numbers; understand and explain why the procedures work based on place value and properties of operations; and use them to solve problems.

Students apply their understanding of models for division, place value, properties of operations, and the relationship of division to multiplication as they develop, discuss, and use efficient, accurate, and generalizable procedures to find quotients involving multi-digit dividends. They select and accurately apply appropriate methods to estimate and mentally calculate quotients, and interpret remainders based upon the context.

Fractions

Students develop understanding of fraction equivalence and operations with fractions. They recognize that two different fractions can be equal (e.g., 15/9 = 5/3), and they develop methods for generating and recognizing equivalent fractions.

Students extend previous understandings about how fractions are built from unit fractions, composing fractions from unit fractions, decomposing fractions into unit fractions, and using the meaning of fractions and the meaning of multiplication to multiply a fraction by a whole number.

Shape and Space

Students describe, analyze, compare, and classify two-dimensional shapes. Through building, drawing, and analyzing two-dimensional shapes, students deepen their understanding of properties of two-dimensional objects and the use of them to solve problems involving symmetry.

Descriptions from Common Core State Standards for Mathematics 2024

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Grade 4 Overview

Place Value	Addition & Subtraction	Multiplication & Division
Generate and analyze patterns. Generalize place value understanding for multi-digit whole numbers. Use place value understanding and properties of operations to perform multi-digit arithmetic. (4.NBT.A.2) (4.NBT.A.3) (4.NBT.A.1) (4.NF.C.7)	Use the four operations with whole numbers to solve problems. (4.OA.C.5) (4.NBT.B.4) (4.OA.A.3)	Gain familiarity with factors and multiples. Use place value understanding and properties of operations to perform multi-digit arithmetic. (4.OA.A.1) (4.NBT.B.5) (4.OA.A.2) (4.OA.A.3) (4.OA.B.4) (4.NBT.B.6) (4.NBT.A.1)

Fractions	Measurement and data	Shape and Space	Time
Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers. Understand decimal notation for fractions, and compare decimal fractions. (4.NF.A.1) (4.NF.C.6) (4.NF.A.2) (4.MD.B.4) (4.NF.B.3) (4.NF.B.4) (4.NF.C.5)	Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit. Represent and interpret data. (4.MD.A.1) (4.MD.A.2) (4.MD.A.3) (4.MD.B4)	Draw and identify lines and angles, and classify shapes by properties of their lines and angles Understand concepts of angle and measure angles. (4.MD.C.5) (4.G.A.1) (4.MD.C.6) (4.G.A.2) (4.MD.C.7) (4.G.A.3)	Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit. (4.MD.A.2)

** Money is explored throughout the 4 operations.*

Place Value

Common Core Learning Standards	Awesomenicity Lessons
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. (4.NBT.A.2) 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 500 ÷ 50 = 10 by applying concepts of place value and division. (4.NBT.A.1) **Note, this is also explored in multiplication and division.* Use place value understanding to round multi-digit whole numbers to any place. (4.NBT.A.3) 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. (4.NF.C.7)	Lesson 1: Let's make place value connections Lesson 2: Let's expand numbers Lesson 3: Let's apply expanded form Lesson 4: Let's compare numbers Lesson 5: Let's write numbers in written form Lesson 6: Let's round numbers: nearest 10, 100 and 1,000 Lesson 7: Let's applying rounding skills Lesson 8: Let's explore and order decimals Lesson 9: Let's explore decimals Lesson 10: Let's round to the nearest whole number
Consolidation and assessment.	Lesson 11: Let's solve place value puzzles Lesson 12: Let's show what we know! (Assessment)

Addition & Subtraction

Common Core Learning Standards	Awesomenicity Lessons
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. (4.OA.C.5) **Note, patterns are explored in starters throughout the year.* Fluently add and subtract multi-digit whole numbers using the standard algorithm. (4.NBT.B.4)	Lesson 1: Let's explore mental addition strategies Lesson 2: Let's add using bump strategy Lesson 3: Let's explore compensation strategy Lesson 4: Let's use rounding and mental strategies to problem-solve Lesson 5: Let's use jump & split strategy to subtract mentally Lesson 6: Let's use bump strategy subtraction Lesson 7: Let's explore subtraction compensation strategy Lesson 8: Let's apply subtraction strategies in a game Lesson 9: Let's add multi-digit numbers using column addition Lesson 10: Let's explore adding decimals Lesson 11: Let's use column method to investigate adding decimals Lesson 12: Let's use REPS to apply problem-solving skills Lesson 13: Let's use column method to subtract multi-digit numbers Lesson 14: Let's subtract decimals using column subtraction Lesson 15: Let's investigate using addition & subtraction with decimals
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. (4.OA.A.3)	Lesson 16: Let's solve word problems Lesson 17: Let's using strategies to problem-solve
Consolidation and assessment.	Lesson 18: Let's show what we know! (Assessment)

Multiplication

Common Core Learning Standards	Awesomenicity Lessons
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.A.1) 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. (4.OA.A.2) 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.B.4) 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 500 ÷ 50 = 10 by applying concepts of place value and division. (4.NBT.A.1) 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. (4.NBT.B.5)	Lesson 1: Multiply numbers using a variety of strategies Lesson 2: Investigate Multiples Lesson 3: Investigate factors Lesson 4: Finding common factors Lesson 5: Investigate multiple and factor connections Lesson 6: Multiplying by 10, 100 and 1,000 Lesson 7: Multiplying multiples of 10 and 100 Lesson 8: Multiply using place value dot strategy Lesson 9: Introduction to grid method Lesson 10: Applying grid method to multiply Lesson 11: Exploring creative ways to multiply Lesson 12: Introduction to lattice method Lesson 13: Applying lattice method Lesson 14: Introduction to partial product strategy Lesson 15: Applying partial product strategy Lesson 16: Introduction to short multiplication Lesson 17: Apply Short Multiplication
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. (4.OA.A.3)	Lesson 18: Solve multiplication word problems
Consolidation and assessment.	Lesson 19: Multiplication Assessment

Division

Common Core Learning Standards	Awesomenicity Lessons
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. (4.OA.A.2) 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 500 ÷ 50 = 10 by applying concepts of place value and division. (4.NBT.A.1) 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. (4.NBT.B.6)	Lesson 1: Explore dividing amounts into equal groups Lesson 2: Identifying remainders Lesson 3: Use inverse operations to divide Lesson 4: Dividing by 10 and 100 Lesson 5: Dividing by 10, 100 and 1,000 Lesson 6: Dividing using jump strategy Lesson 7: Using jump strategy to divide larger numbers Lesson 8: Use chunking strategy to divide large numbers Lesson 9: Apply chunking strategy Lesson 10: Identifying divisibility rules Lesson 11: Using long division to divide large numbers Lesson 12: Applying long division to divide large numbers
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. (4.OA.A.3)	Lesson 13: Solving word problems
Consolidation and assessment.	Lesson 14: Applying problem-solving skills Lesson 15: Division Assessment

Fractions

Common Core Learning Standards	Awesomenicity Lessons
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.A.1) 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. (4.NF.A.2) Understand a fraction a/b with a > 1 as a sum of fractions 1/b. (4.NF.B.3) 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.NF.C.5) Use decimal notation for fractions with denominators 10 or 100. (4.NF.C.6) 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. (4.MD.B.4)	Lesson 1: Identifying fractions in real life Lesson 2: Exploring and identifying equivalent fractions Lesson 3: Create Equivalent Fractions Lesson 4: Introduction to simplifying fractions Lesson 5: Simplifying fractions Lesson 6: Comparing fractions Lesson 7: Apply comparing fraction knowledge Lesson 8: Find fractions of amounts Lesson 9: Problem-solve with fractions of amounts Lesson 10: Add and subtract fractions (includes mixed numbers, improper fractions) Lesson 11: Converting improper fractions into mixed numbers Lesson 12: Add and subtract fractions with unlike denominators Lesson 13: Connecting fractions to decimals and percentages
Apply and extend previous understandings of multiplication to multiply a fraction by a whole number. (4.NF.B.4)	Lesson 14: Making connections between fractions, decimals and percentages Lesson 15: Multiplying fractions by whole numbers
Consolidation and assessment.	Lesson 16: Fractions Assessment

Measurement

Common Core Learning Standards	Awesomenicity Lessons
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. (4.MD.A.1) 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. (4.MD.A.2) Apply the area and perimeter formulas for rectangles in real-world and mathematical problems. (4.MD.A.3)	Lesson 1: Identifying different types of measurement Lesson 2: Exploring and converting US standard units of measurement Lesson 3: Estimating and measuring length and distance Lesson 4: Converting between mm, cm, m and km Lesson 5: Calculating perimeter Lesson 6: Calculating perimeter using compound shapes Lesson 7: Calculating the area of rectangles Lesson 8: Calculating the area of compound shapes Lesson 9: Applying area and perimeter Lesson 10: Introduction to capacity/volume Lesson 11: Measuring capacity/volume and converting between units Lesson 12: Exploring US liquid volume measurements Lesson 13: Converting between US liquid volume measurements Lesson 14: Exploring mass Lesson 15: Problem-solving mass investigation Lesson 16: Metric measurement problem-solving Lesson 17: Metric Olympics!
Consolidation and assessment.	Lesson 18: US Measurement Assessment

** Lesson 4 can be skipped in the US Common Core*

Shape and Space

Common Core Learning Standards	Awesomenicity Lessons
Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement. (4.MD.C.5) Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure. (4.MD.C.6) 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. (4.MD.C.7) Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures. (4.G.A.1)	Lesson 1: Introduction to angles Lesson 2: Measuring angles Lesson 3: Calculating angles Lesson 4: Drawing angles
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.A.2) 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.G.A.3)	Lesson 5: Using lines to draw 2D shapes Lesson 6: Constructing and identifying 3D shapes Lesson 7: Using nets to make 3D shapes Lesson 8: Locating and plotting coordinates Lesson 9: Plotting coordinates Lesson 10: Translating shapes on a grid Lesson 11: Making & describing translations Lesson 12: Identifying lines of symmetry Lesson 13: Reflecting shapes
Consolidation and assessment.	Lesson 14: Shape and Space Assessment

Statistics and Data

Common Core Learning Standards	Awesomenicity Lessons
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. (4.MD.B4)	Lesson 1: Interpreting graphs Lesson 2: Creating line graphs Lesson 3: Gathering and presenting data Lesson 4: Calculating mean averages Lesson 5: Mean, mode, median and range
List outcomes of chance experiments involving equally likely outcomes and represent probabilities of those outcomes using fractions. *Note, this outcomes are not explicitly stated in the curriculum. Feel free to disregard these lessons. If these lessons are not taught, avoid printing questions 10 and 11 on page 7 of the assessment printables as it pertains to these objectives.	Lesson 6: Introduction to chance and probability Lesson 7: Using probability to make predictions
Consolidation and assessment.	Lesson 8: Statistics, Probability and Data Assessment

Time

Common Core Learning Standards	Awesomenicity Lessons
Use the four operations to solve word problems involving intervals of time 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. (4.MD.A.2)	Lesson 1: Converting between units of time Lesson 2: Converting 24 hour time Lesson 3: Calculating elapsed time Lesson 4: Reading timetables
Consolidation and assessment.	Lesson 5: Time Summative Assessment

Grade 4 Checklist

Operations and Algebraic Thinking

Objective	✓
Use the four operations with whole numbers to solve problems.	
Gain familiarity with factors and multiples.	
Generate and analyze patterns.	
Solve problems involving the four operations, and identify and explain patterns in arithmetic.	

Measurement and Data

Objective	✓
Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.	
Represent and interpret data.	
Understand concepts of angle and measure angles.	

Number and Operations in Base Ten

Objective	✓
Generalize place value understanding for multi-digit whole numbers.	
Use place value understanding and properties of operations to perform multi-digit arithmetic.	

Number and Operations – Fractions

Objective	✓
Extend understanding of fraction equivalence and ordering.	
Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.	
Understand decimal notation for fractions, and compare decimal fractions.	

Geometry

Objective	✓
Draw and identify lines and angles, and classify shapes by properties of their lines and angles.	

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