



## Skills available for Common Core fourth-grade math standards

Standards are in bold, followed by a list of the IXL math skills that are aligned to that standard. Students can practice these skills online at [www.ixl.com](http://www.ixl.com).

## Standards: Common Core State Standards

### CCSS.Math.Content.4.OA Operations and Algebraic Thinking

#### CCSS.Math.Content.4 Use the four operations with whole numbers to solve problems.

**CCSS.Math.Content.4.OA.A.1 Interpret a multiplication equation as a comparison, e.g., interpret  $35 = 5 \times 7$  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.**

Missing factors - facts to 12 (Fourth grade - D.2)

Properties of multiplication (Fourth grade - D.7)

**CCSS.Math.Content.4.OA.A.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.**

Estimate products: word problems (Fourth grade - D.9)

Multiply a 2-digit number by a 2-digit number: word problems (Fourth grade - D.14)

Multiply a 2-digit number by a larger number: word problems (Fourth grade - D.18)

Multiply numbers ending in zeroes: word problems (Fourth grade - D.20)

Division facts to 12: word problems (Fourth grade - E.2)

Divide larger numbers, one-digit divisors: word problems (Fourth grade - E.5)

Divide numbers ending in zeroes, multi-digit divisors: word problems (Fourth grade - E.14)

Divide by 2-digit numbers: word problems (Fourth grade - E.17)

Divide larger numbers by 2-digit numbers: word problems (Fourth grade - E.19)

Addition, subtraction, multiplication, and division word problems (Fourth grade - F.2)

Estimate sums, differences, products, and quotients: word problems (Fourth grade - F.3)

Price lists with multiplication (Fourth grade - M.7)

Compare customary units by multiplying (Fourth grade - N.4)

Convert between metric and customary units (Fourth grade - N.7)

**CCSS.Math.Content.4.OA.A.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.**

Rounding (Fourth grade - A.6)

Divide by 1-digit numbers: interpret remainders (Fourth grade - E.7)

Estimate sums, differences, products, and quotients: word problems (Fourth grade - F.3)

Multi-step word problems (Fourth grade - F.4)

Word problems with extra or missing information (Fourth grade - F.5)

Solve word problems using guess-and-check (Fourth grade - F.6)

Choose numbers with a particular sum, difference, product, or quotient (Fourth grade - F.7)

Write variable expressions: word problems (Fourth grade - G.2)

Write variable equations to represent word problems (Fourth grade - G.5)

Guess two numbers based on sum and difference (Fourth grade - K.1)

Guess two numbers based on sum, difference, product, and quotient (Fourth grade - K.2)

#### CCSS.Math.Content.4 Gain familiarity with factors and multiples.

**CCSS.Math.Content.4.OA.B.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.**

- Prime and composite numbers (Fourth grade - A.5)
- Choose the multiples of a given number up to 12 (Fourth grade - D.3)
- Identify factors (Fourth grade - D.4)
- Choose numbers with a particular product (Fourth grade - D.15)
- Divisibility rules (Fourth grade - E.11)

**CCSS.Math.Content.4 Generate and analyze patterns.**

**CCSS.Math.Content.4.OA.C.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.**

- Input/output tables with addition, subtraction, multiplication, and division (Fourth grade - H.1)
- Function tables (Fourth grade - H.2)
- Geometric growth patterns (Fourth grade - L.1)
- Increasing growth patterns (Fourth grade - L.2)
- Numeric patterns: word problems (Fourth grade - L.3)
- Patterns involving addition and multiplication (Fourth grade - L.4)
- Mixed patterns review (Fourth grade - L.5)
- Time patterns (Fourth grade - O.8)

## CCSS.Math.Content.4.NBT Number and Operations in Base Ten

**CCSS.Math.Content.4 Generalize place value understanding for multi-digit whole numbers.**

**CCSS.Math.Content.4.NBT.A.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.**

- Place values (Fourth grade - A.1)
- Convert between place values (Fourth grade - A.2)

**CCSS.Math.Content.4.NBT.A.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.**

- Place values (Fourth grade - A.1)
- Word names for numbers (Fourth grade - A.3)
- Compare numbers up to billions (Fourth grade - A.9)
- Addition patterns over increasing place values (Fourth grade - B.6)
- Inequalities with multiplication (Fourth grade - D.22)
- Inequalities with division (Fourth grade - E.20)
- Inequalities involving addition, subtraction, multiplication, and division (Fourth grade - F.9)

**CCSS.Math.Content.4.NBT.A.3 Use place value understanding to round multi-digit whole numbers to any place.**

- Rounding (Fourth grade - A.6)
- Estimate sums (Fourth grade - B.8)
- Estimate sums: word problems (Fourth grade - B.9)
- Estimate differences (Fourth grade - C.6)
- Estimate differences: word problems (Fourth grade - C.7)
- Estimate products (Fourth grade - D.8)
- Estimate quotients, one-digit divisors (Fourth grade - E.10)
- Estimate quotients (Fourth grade - E.21)

**CCSS.Math.Content.4 Use place value understanding and properties of operations to perform multi-digit arithmetic.****CCSS.Math.Content.4.NBT.B.4 Fluently add and subtract multi-digit whole numbers using the standard algorithm.**

- Add numbers up to millions (Fourth grade - B.1)
- Add numbers up to millions: word problems (Fourth grade - B.2)
- Addition: fill in the missing digits (Fourth grade - B.3)
- Add 3 or more numbers up to millions (Fourth grade - B.5)
- Choose numbers with a particular sum (Fourth grade - B.7)
- Subtract numbers up to millions (Fourth grade - C.1)
- Subtract numbers up to millions: word problems (Fourth grade - C.2)
- Subtraction: fill in the missing digits (Fourth grade - C.3)
- Choose numbers with a particular difference (Fourth grade - C.5)

**CCSS.Math.Content.4.NBT.B.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.**

- Multiply 1-digit numbers by larger numbers (Fourth grade - D.5)
- Multiplication patterns over increasing place values (Fourth grade - D.6)
- Properties of multiplication (Fourth grade - D.7)
- Multiply a 2-digit number by a 2-digit number: complete the missing steps (Fourth grade - D.12)
- Multiply a 2-digit number by a 2-digit number (Fourth grade - D.13)
- Multiply numbers ending in zeroes (Fourth grade - D.19)

**CCSS.Math.Content.4.NBT.B.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.**

- Properties of division (Fourth grade - E.3)
- Divide larger numbers, one-digit divisors (Fourth grade - E.4)
- Divide by 1-digit numbers: complete the table (Fourth grade - E.6)
- Divide numbers ending in zeroes, one-digit divisors (Fourth grade - E.9)

## CCSS.Math.Content.4.NF Number and Operations-Fractions

**CCSS.Math.Content.4 Extend understanding of fraction equivalence and ordering.****CCSS.Math.Content.4.NF.A.1 Explain why a fraction  $a/b$  is equivalent to a fraction  $(n \times a)/(n \times b)$  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.**

- Equivalent fractions (Fourth grade - Q.4)
- Patterns of equivalent fractions (Fourth grade - Q.6)
- Reduce fractions to lowest terms (Fourth grade - Q.7)

**CCSS.Math.Content.4.NF.A.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.**

- Benchmark fractions (Fourth grade - Q.8)
- Compare fractions using benchmarks (Fourth grade - Q.9)
- Compare fractions (Fourth grade - Q.11)
- Put fractions in order (Fourth grade - Q.14)
- Inequalities with addition and subtraction of fractions (Fourth grade - S.14)

**CCSS.Math.Content.4 Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.**

**CCSS.Math.Content.4.NF.B.3 Understand a fraction  $a/b$  with  $a > 1$  as a sum of fractions  $1/b$ .**

**CCSS.Math.Content.4.NF.B.3a Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.**

- Add fractions with like denominators using number lines (Fourth grade - R.4)
- Subtract fractions with like denominators using number lines (Fourth grade - R.5)
- Add and subtract fractions with like denominators using number lines (Fourth grade - R.6)
- Add and subtract fractions with like denominators (Fourth grade - R.7)
- Add 3 or more fractions with like denominators (Fourth grade - R.10)
- Compare sums of unit fractions (Fourth grade - S.6)
- Compare differences of unit fractions (Fourth grade - S.7)
- Compare sums and differences of unit fractions (Fourth grade - S.8)

**CCSS.Math.Content.4.NF.B.3b 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.**

- Decompose fractions into unit fractions (Fourth grade - R.1)
- Decompose fractions (Fourth grade - R.2)
- Decompose fractions multiple ways (Fourth grade - R.3)
- Add and subtract fractions with like denominators (Fourth grade - R.7)
- Add 3 or more fractions with like denominators (Fourth grade - R.10)

**CCSS.Math.Content.4.NF.B.3c 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.**

- Add and subtract mixed numbers with like denominators (Fourth grade - R.11)

**CCSS.Math.Content.4.NF.B.3d 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.**

- Add and subtract fractions with like denominators: word problems (Fourth grade - R.8)
- Add and subtract fractions with like denominators in recipes (Fourth grade - R.9)

**CCSS.Math.Content.4.NF.B.4 Apply and extend previous understandings of multiplication to multiply a fraction by a whole number.**

**CCSS.Math.Content.4.NF.B.4a Understand a fraction  $a/b$  as a multiple of  $1/b$ .**

- Multiply unit fractions by whole numbers using number lines (Fourth grade - T.1)
- Multiply unit fractions and whole numbers: sorting (Fourth grade - T.2)
- Multiply fractions by whole numbers I (Fourth grade - T.3)

**CCSS.Math.Content.4.NF.B.4b Understand a multiple of  $a/b$  as a multiple of  $1/b$ , and use this understanding to multiply a fraction by a whole number.**

- Multiply fractions by whole numbers using number lines (Fourth grade - T.4)
- Multiply fractions and whole numbers: sorting (Fourth grade - T.5)
- Multiply fractions by whole numbers II (Fourth grade - T.6)

**CCSS.Math.Content.4.NF.B.4c 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.**

- Multiply fractions by whole numbers: word problems (Fourth grade - T.7)
- Multiply fractions and mixed numbers by whole numbers in recipes (Fourth grade - T.8)

**CCSS.Math.Content.4 Understand decimal notation for fractions, and compare decimal fractions.****CCSS.Math.Content.4.NF.C.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.**

Fractions with denominators of 10, 100, and 1000 (Fourth grade - Q.5)

Add up to 4 fractions with denominators of 10 and 100 (Fourth grade - S.3)

Add and subtract fractions with denominators of 10, 100, and 1000 (Fourth grade - S.4)

**CCSS.Math.Content.4.NF.C.6 Use decimal notation for fractions with denominators 10 or 100.**

Graph decimals on number lines (Fourth grade - U.6)

Graph fractions as decimals on number lines (Fourth grade - U.7)

Convert decimals between standard and expanded form using fractions (Fourth grade - U.8)

Convert fractions and mixed numbers to decimals (Fourth grade - U.9)

Convert decimals to fractions and mixed numbers (Fourth grade - U.10)

**CCSS.Math.Content.4.NF.C.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.**

Compare money amounts (Fourth grade - M.1)

Compare decimals on number lines (Fourth grade - U.13)

Compare decimal numbers (Fourth grade - U.14)

Put decimal numbers in order (Fourth grade - U.15)

Put tricky decimals in order (Fourth grade - U.16)

Compare fractions and decimals on number lines (Fourth grade - U.17)

**CCSS.Math.Content.4.MD Measurement and Data****CCSS.Math.Content.4 Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.****CCSS.Math.Content.4.MD.A.1 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.**

Compare and convert customary units (Fourth grade - N.2)

Compare and convert metric units (Fourth grade - N.3)

Convert mixed customary units (Fourth grade - N.5)

Convert time units (Fourth grade - O.1)

Fractions of time units (Fourth grade - O.3)

**CCSS.Math.Content.4.MD.A.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.**

Making change (Fourth grade - M.5)

Price lists with addition and subtraction (Fourth grade - M.6)

Price lists with multiplication (Fourth grade - M.7)

Unit prices (Fourth grade - M.8)

Add and subtract mixed customary units (Fourth grade - N.6)

Add and subtract mixed time units (Fourth grade - O.2)

Elapsed time (Fourth grade - O.5)

Find start and end times: multi-step word problems (Fourth grade - O.6)

Add and subtract fractions with unlike denominators in recipes (Fourth grade - S.15)

Solve decimal problems using diagrams (Fourth grade - U.19)

**CCSS.Math.Content.4.MD.A.3 Apply the area and perimeter formulas for rectangles in real world and mathematical problems.**

- Perimeter (Fourth grade - P.17)
- Area of squares and rectangles (Fourth grade - P.18)
- Compare area and perimeter of two figures (Fourth grade - P.21)
- Relationship between area and perimeter (Fourth grade - P.22)
- Use area and perimeter to determine cost (Fourth grade - P.24)

**CCSS.Math.Content.4 Represent and interpret data.**

**CCSS.Math.Content.4.MD.B.4 Make a line plot to display a data set of measurements in fractions of a unit ( $\frac{1}{2}$ ,  $\frac{1}{4}$ ,  $\frac{1}{8}$ ). Solve problems involving addition and subtraction of fractions by using information presented in line plots.**

- Interpret line plots (Fourth grade - J.6)
- Create line plots (Fourth grade - J.7)

**CCSS.Math.Content.4 Geometric measurement: understand concepts of angle and measure angles.**

**CCSS.Math.Content.4.MD.C.5 Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement:**

**CCSS.Math.Content.4.MD.C.5a 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  $\frac{1}{360}$  of a circle is called a "one-degree angle," and can be used to measure angles.**

- Angles of 90, 180, 270, and 360 degrees (Fourth grade - P.12)

**CCSS.Math.Content.4.MD.C.5b An angle that turns through  $n$  one-degree angles is said to have an angle measure of  $n$  degrees.**

- Angles of 90, 180, 270, and 360 degrees (Fourth grade - P.12)
- Estimate angle measurements (Fourth grade - P.14)
- Adjacent angles (Fourth grade - P.15)

**CCSS.Math.Content.4.MD.C.6 Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.**

- Measure angles with a protractor (Fourth grade - P.13)
- Estimate angle measurements (Fourth grade - P.14)

**CCSS.Math.Content.4.MD.C.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.**

- Adjacent angles (Fourth grade - P.15)

## CCSS.Math.Content.4.G Geometry

**CCSS.Math.Content.4 Draw and identify lines and angles, and classify shapes by properties of their lines and angles.**

**CCSS.Math.Content.4.G.A.1 Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.**

- Acute, right, obtuse, and straight angles (Fourth grade - P.11)
- Lines, line segments, and rays (Fourth grade - P.27)
- Parallel, perpendicular, intersecting (Fourth grade - P.28)

**CCSS.Math.Content.4.G.A.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.**

Identify planar and solid figures (Fourth grade - P.1)

Types of triangles (Fourth grade - P.2)

Which 2-dimensional shape is being described? (Fourth grade - P.4)

Classify quadrilaterals (Fourth grade - P.6)

**CCSS.Math.Content.4.G.A.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.**

Lines of symmetry (Fourth grade - P.26)

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