



## Skills available for Wisconsin fifth-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: 2010 Common Core State Standards

### 5.OA Operations and Algebraic Thinking

#### 5 Write and interpret numerical expressions.

##### **5.OA.1 Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.**

- Algebra: Simplify expressions using order of operations and parentheses (Fifth grade - Q.1)

##### **5.OA.2 Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them.**

- Algebra: Write variable expressions (Fifth grade - Q.2)
- Algebra: Write equations to represent word problems (Fifth grade - Q.4)

#### 5 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.**

- Algebra: Function tables (Fifth grade - Q.7)
- Algebra: Convert graphs to input/output tables (Fifth grade - Q.8)
- Algebra: Graph linear functions (Fifth grade - Q.10)
- Coordinate graphs: Coordinate graphs review - whole numbers only (Fifth grade - R.1)

### 5.NBT Number and Operations in Base Ten

#### 5 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.**

- Place values and number sense: Place values (Fifth grade - A.1)
- Place values and number sense: Convert between place values (Fifth grade - A.2)
- Decimals: Place values in decimal numbers (Fifth grade - C.3)

##### **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.**

- Place values and number sense: Scientific notation (Fifth grade - A.11)
- Multiplication: Multiplication patterns over increasing place values (Fifth grade - F.3)
- Multiplication: Multiply numbers ending in zeroes (Fifth grade - F.4)
- Multiplication: Multiply numbers ending in zeroes: word problems (Fifth grade - F.5)
- Multiply decimals: Multiply a decimal by a power of ten (Fifth grade - G.2)
- Division: Division patterns over increasing place values (Fifth grade - H.7)
- Division with decimals: Divide by powers of ten (Fifth grade - I.1)
- Division with decimals: Decimal division patterns over increasing place values (Fifth grade - I.2)

##### **5.NBT.3 Read, write, and compare decimals to thousandths.**

##### **5.NBT.3.a Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., $347.392 = 3 \times 100 + 4 \times 10 + 7 \times 1 + 3 \times (1/10) + 9 \times (1/100) + 2 \times (1/1000)$ .**

- Decimals: What decimal number is illustrated? (Fifth grade - C.1)
- Decimals: Understanding decimals expressed in words (Fifth grade - C.2)
- Decimals: Place values in decimal numbers (Fifth grade - C.3)

**5.NBT.3.b Compare two decimals to thousandths based on meanings of the digits in each place, using  $>$ ,  $=$ , and  $<$  symbols to record the results of comparisons.**

- Decimals: Equivalent decimals (Fifth grade - C.4)
- Decimals: Decimal number lines (Fifth grade - C.6)
- Decimals: Compare decimal numbers (Fifth grade - C.7)
- Decimals: Put decimal numbers in order (Fifth grade - C.8)
- Multiply decimals: Inequalities with decimal multiplication (Fifth grade - G.10)

**5.NBT.4 Use place value understanding to round decimals to any place.**

- Decimals: Round decimals (Fifth grade - C.5)
- Add and subtract decimals: Estimate sums and differences of decimals (Fifth grade - E.6)

**5 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.**

- Multiplication: Multiply by 2-digit numbers: complete the missing steps (Fifth grade - F.10)
- Multiplication: Multiply a 2-digit number by a 2-digit number (Fifth grade - F.11)
- Multiplication: Multiply a 2-digit number by a larger number (Fifth grade - F.12)
- Multiplication: Multiply by 2-digit numbers: word problems (Fifth grade - F.13)
- Multiplication: Multiply three or more numbers up to 2 digits each (Fifth grade - F.14)
- Multiplication: Multiply by 3-digit numbers (Fifth grade - F.15)
- Multiplication: Multiply three numbers up to 3 digits each (Fifth grade - F.16)
- Multiplication: Multiply three or more numbers: word problems (Fifth grade - F.17)

**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.**

- Multiplication: Properties of multiplication (Fifth grade - F.6)
- Division: Division facts to 12 (Fifth grade - H.1)
- Division: Division facts to 12: word problems (Fifth grade - H.2)
- Division: Divide multi-digit numbers by 1-digit numbers (Fifth grade - H.3)
- Division: Divide multi-digit numbers by 1-digit numbers: word problems (Fifth grade - H.4)
- Division: Divide numbers ending in zeroes (Fifth grade - H.8)
- Division: Divide numbers ending in zeroes: word problems (Fifth grade - H.9)
- Division: Divide by 2-digit numbers (Fifth grade - H.10)
- Division: Divide by 2-digit numbers: word problems (Fifth grade - H.11)
- Division: Choose numbers with a particular quotient (Fifth grade - H.14)

**5.NBT.7 Add, subtract, multiply, and divide decimals to hundredths, 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.**

- Addition and subtraction: Add and subtract money: word problems (Fifth grade - D.4)
- Add and subtract decimals: Add and subtract decimal numbers (Fifth grade - E.1)
- Add and subtract decimals: Add and subtract decimals: word problems (Fifth grade - E.2)
- Add and subtract decimals: Choose decimals with a particular sum or difference (Fifth grade - E.3)
- Add and subtract decimals: Complete the addition or subtraction sentence (Fifth grade - E.4)
- Add and subtract decimals: Inequalities with decimal addition and subtraction (Fifth grade - E.5)
- Multiply decimals: Multiply a decimal by a one-digit whole number (Fifth grade - G.3)
- Multiply decimals: Multiply a decimal by a multi-digit whole number (Fifth grade - G.4)
- Multiply decimals: Multiply decimals and whole numbers: word problems (Fifth grade - G.5)
- Multiply decimals: Multiply money amounts: word problems (Fifth grade - G.6)
- Multiply decimals: Multiply three or more numbers, one of which is a decimal (Fifth grade - G.7)
- Multiply decimals: Multiply two decimals using grids (Fifth grade - G.8)
- Multiply decimals: Multiply two decimals (Fifth grade - G.9)
- Division: Divide money amounts: word problems (Fifth grade - H.12)
- Division with decimals: Division with decimal quotients (Fifth grade - I.3)
- Division with decimals: Division with decimal quotients and rounding (Fifth grade - I.4)
- Division with decimals: Division with decimal quotients: word problems (Fifth grade - I.5)
- Mixed operations: Add, subtract, multiply, and divide decimals (Fifth grade - P.3)

- Mixed operations: Add, subtract, multiply, and divide decimals: word problems (Fifth grade - P.4)
- Consumer math: Price lists (Fifth grade - U.1)
- Consumer math: Unit prices (Fifth grade - U.2)

## 5.NF Number and Operations-Fractions

### 5 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.

- Fractions and mixed numbers: Equivalent fractions (Fifth grade - L.2)
- Fractions and mixed numbers: Reduce fractions to simplest form (Fifth grade - L.3)
- Fractions and mixed numbers: Convert between improper fractions and mixed numbers (Fifth grade - L.4)
- Add and subtract fractions: Add fractions with unlike denominators (Fifth grade - M.4)
- Add and subtract fractions: Subtract fractions with unlike denominators (Fifth grade - M.5)
- Add and subtract fractions: Add 3 or more fractions with unlike denominators (Fifth grade - M.7)
- Add and subtract fractions: Complete addition and subtraction sentences with fractions (Fifth grade - M.9)
- Add and subtract fractions: Inequalities with addition and subtraction of fractions (Fifth grade - M.10)
- Add and subtract fractions: Add mixed numbers with unlike denominators (Fifth grade - M.12)
- Add and subtract fractions: Subtract mixed numbers with unlike denominators (Fifth grade - M.13)
- Add and subtract fractions: Complete addition and subtraction sentences with mixed numbers (Fifth grade - M.15)
- Add and subtract fractions: Inequalities with addition and subtraction of mixed numbers (Fifth grade - M.16)

#### 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.

- Add and subtract fractions: Add and subtract fractions with like denominators: word problems (Fifth grade - M.2)
- Add and subtract fractions: Add and subtract fractions with unlike denominators: word problems (Fifth grade - M.6)
- Add and subtract fractions: Add 3 or more fractions: word problems (Fifth grade - M.8)
- Add and subtract fractions: Add and subtract mixed numbers: word problems (Fifth grade - M.14)

### 5 Apply and extend previous understandings 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.

- Fractions and mixed numbers: Fractions review (Fifth grade - L.1)
- Divide fractions: Divide fractions by whole numbers (Fifth grade - O.1)

#### 5.NF.4 Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.

##### 5.NF.4.a Interpret the product $(a/b) \times q$ as a parts of a partition of $q$ into $b$ equal parts; equivalently, as the result of a sequence of operations $a \times q \div b$ .

- Multiply fractions: Multiply fractions by whole numbers I (Fifth grade - N.1)
- Multiply fractions: Multiply fractions by whole numbers II (Fifth grade - N.2)
- Multiply fractions: Multiply fractions by whole numbers: input/output tables (Fifth grade - N.4)

##### 5.NF.4.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.

- Geometry: Area of squares and rectangles (Fifth grade - B.16)
- Geometry: Area and perimeter: word problems (Fifth grade - B.21)
- Multiply fractions: Multiply fractions - with models (Fifth grade - N.5)

#### 5.NF.5 Interpret multiplication as scaling (resizing), by:

##### 5.NF.5.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.

##### 5.NF.5.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  $\frac{a}{b} = \frac{n \times a}{n \times b}$  to the effect of multiplying  $\frac{a}{b}$  by 1.

- Multiply fractions: Multiply fractions - with models (Fifth grade - N.5)

**5.NF.6 Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.**

- Multiply fractions: Multiply fractions by whole numbers: word problems (Fifth grade - N.3)
- Multiply fractions: Multiply two fractions (Fifth grade - N.6)
- Multiply fractions: Multiply two fractions: word problems (Fifth grade - N.7)
- Multiply fractions: Multiply a mixed number by a whole number (Fifth grade - N.11)
- Multiply fractions: Multiply a mixed number by a fraction (Fifth grade - N.12)
- Multiply fractions: Multiply two mixed numbers (Fifth grade - N.13)
- Multiply fractions: Multiplication with mixed numbers: word problems (Fifth grade - N.15)
- Mixed operations: Add, subtract, multiply, and divide fractions and mixed numbers (Fifth grade - P.5)
- Mixed operations: Add, subtract, multiply, and divide fractions and mixed numbers: word problems (Fifth grade - P.6)

**5.NF.7 Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.**

**5.NF.7.a Interpret division of a unit fraction by a non-zero whole number, and compute such quotients.**

- Divide fractions: Divide fractions by whole numbers (Fifth grade - O.1)

**5.NF.7.b Interpret division of a whole number by a unit fraction, and compute such quotients.**

- Divide fractions: Divide whole numbers by fractions (Fifth grade - O.3)

**5.NF.7.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.**

- Divide fractions: Divide fractions by whole numbers: word problems (Fifth grade - O.2)

## 5.MD Measurement and Data

**5 Convert like measurement units within a given measurement system.**

**5.MD.1 Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.**

- Measurement: Compare and convert customary units (Fifth grade - W.3)
- Measurement: Compare and convert metric units (Fifth grade - W.4)
- Measurement: Compare customary units by multiplying (Fifth grade - W.5)
- Measurement: Convert customary units involving fractions (Fifth grade - W.6)
- Measurement: Convert mixed customary units (Fifth grade - W.7)
- Measurement: Add and subtract mixed customary units (Fifth grade - W.8)

**5 Represent and interpret data.**

**5.MD.2 Make a line plot to display a data set of measurements in fractions of a unit ( $\frac{1}{2}$ ,  $\frac{1}{4}$ ,  $\frac{1}{8}$ ). Use operations on fractions for this grade to solve problems involving information presented in line plots.**

- Data, charts, and graphs: Interpret line plots (Fifth grade - S.10)
- Data, charts, and graphs: Create line plots (Fifth grade - S.11)

**5 Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.**

**5.MD.3 Recognize volume as an attribute of solid figures and understand concepts of volume measurement.**

**5.MD.3.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.**

- Geometry: Volume of rectangular prisms made of unit cubes (Fifth grade - B.22)

**5.MD.3.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.**

- Geometry: Volume of rectangular prisms made of unit cubes (Fifth grade - B.22)

**5.MD.4 Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.**

- Geometry: Volume of rectangular prisms made of unit cubes (Fifth grade - B.22)

**5.MD.5 Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume.**

**5.MD.5.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 threefold whole-number products as volumes, e.g., to represent the associative property of multiplication.**

- Geometry: Volume of rectangular prisms made of unit cubes (Fifth grade - B.22)
- Geometry: Volume of cubes and rectangular prisms (Fifth grade - B.24)

**5.MD.5.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.**

- Geometry: Volume of cubes and rectangular prisms (Fifth grade - B.24)

**5.MD.5.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.**

- Geometry: Volume of irregular figures made of unit cubes (Fifth grade - B.23)

## 5.G Geometry

### 5 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).**

- Coordinate graphs: Coordinate graphs review - whole numbers only (Fifth grade - R.1)
- Coordinate graphs: Coordinate graphs with decimals and negative numbers (Fifth grade - R.2)
- Coordinate graphs: Graph points on a coordinate plane (Fifth grade - R.3)

**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.**

- Coordinate graphs: Graph points on a coordinate plane (Fifth grade - R.3)
- Coordinate graphs: Coordinate graphs as maps (Fifth grade - R.4)
- Coordinate graphs: Relative coordinates: follow directions (Fifth grade - R.5)

### 5 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.**

- Geometry: Classify quadrilaterals (Fifth grade - B.7)

**5.G.4 Classify two-dimensional figures in a hierarchy based on properties.**

- Geometry: Identify planar and solid figures (Fifth grade - B.1)
- Geometry: Types of triangles (Fifth grade - B.2)
- Geometry: Open and closed shapes and qualities of polygons (Fifth grade - B.3)
- Geometry: Regular and irregular polygons (Fifth grade - B.4)
- Geometry: Number of sides in polygons (Fifth grade - B.5)
- Geometry: Which figure is being described? (Fifth grade - B.6)
- Geometry: Classify quadrilaterals (Fifth grade - B.7)

- **GEOMETRY. Classify quadrilaterals (fifth grade - 5.7)**

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