

Common Core Skill Alignment

5TH GRADE MATH



5.OA Operations and Algebraic Thinking

5.OA.A Write and interpret numerical expressions.

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

O.4 Evaluate numerical expressions

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

O.3 Write numerical expressions

5.OA.B Analyze patterns and relationships.

5.OA.B.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.

V.8 Complete a table for a two-variable relationship

V.9 Complete a table from a graph

V.10 Graph a two-variable relationship

5.NBT Number and Operations in Base Ten

5.NBT.A Understand the place value system.

5.NBT.A.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 $\frac{1}{10}$ of what it represents in the place to its left.

- A.1 Convert between standard and expanded form
- A.2 Place value
- G.4 Place values in decimal numbers

5.NBT.A.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.

- I.2 Multiply a decimal by a power of ten
- J.1 Divide by powers of ten
- J.2 Decimal division patterns over increasing place values

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

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

- G.1 What decimal number is illustrated?
- G.5 Convert decimals between standard and expanded form
- G.16 Convert decimals between standard and expanded form using fractions

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

- G.9 Compare decimals on number lines

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

- G.7 Round decimals
- H.8 Estimate sums and differences of decimals

5.NBT.B Perform operations with multi-digit whole numbers and with decimals to hundredths.

5.NBT.B.5 Fluently multiply multi-digit whole numbers using the standard algorithm.

- C.12 Multiply by 2-digit numbers: complete the missing steps
- C.13 Multiply 2-digit numbers by 2-digit numbers
- C.14 Multiply 2-digit numbers by 3-digit numbers
- C.15 Multiply 2-digit numbers by larger numbers
- C.16 Multiply by 2-digit numbers: word problems
- C.17 Multiply three or more numbers up to 2 digits each
- C.18 Multiply by 3-digit numbers
- C.19 Multiply three numbers up to 3 digits each
- C.20 Multiply three or more numbers: word problems

5.NBT.B.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.

- D.11 Divide 2-digit and 3-digit numbers by 2-digit numbers
- D.12 Divide 2-digit and 3-digit numbers by 2-digit numbers: word problems
- D.15 Choose numbers with a particular quotient

5.NBT.B.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.

- H.4 Add and subtract decimals: word problems
- I.4 Multiply a decimal by a multi-digit whole number
- I.5 Multiply decimals and whole numbers: word problems
- I.6 Multiply three or more numbers, one of which is a decimal
- I.7 Multiply two decimals using grids
- I.8 Multiply two decimals
- J.3 Division with decimal quotients
- J.4 Division with decimal quotients and rounding
- J.5 Division with decimal quotients: word problems
- S.1 Add and subtract money amounts

- S.2 Add and subtract money: word problems
 - S.3 Multiply money amounts: word problems
 - S.4 Divide money amounts: word problems
 - S.6 Unit prices
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5.NF Number and Operations—Fractions

5.NF.A Use equivalent fractions as a strategy to add and subtract fractions.

5.NF.A.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.

- L.6 Add fractions with unlike denominators using models
- L.7 Add up to 4 fractions with denominators of 10 and 100
- L.8 Add fractions with unlike denominators
- L.9 Subtract fractions with unlike denominators using models
- L.10 Subtract fractions with unlike denominators
- L.12 Add 3 or more fractions with unlike denominators
- L.15 Complete addition and subtraction sentences with fractions
- L.18 Add mixed numbers with unlike denominators
- L.19 Subtract mixed numbers with unlike denominators
- L.22 Complete addition and subtraction sentences with mixed numbers

5.NF.A.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.

- L.4 Add and subtract fractions with like denominators: word problems
- L.11 Add and subtract fractions with unlike denominators: word problems
- L.13 Add 3 or more fractions: word problems
- L.20 Add and subtract mixed numbers: word problems

L.21 Add and subtract fractions in recipes

5.NF.B Apply and extend previous understandings of multiplication and division to multiply and divide fractions.

5.NF.B.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.

K.1 Fractions review

K.2 Fractions of a whole: word problems

N.5 Divide fractions by whole numbers

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

5.NF.B.4a 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 $a \times q \div b$.

M.8 Multiply fractions by whole numbers I

M.9 Multiply fractions by whole numbers II

M.11 Multiply fractions by whole numbers: input/output tables

M.12 Multiply two unit fractions using models

M.14 Multiply two fractions using models

M.15 Multiply two fractions

M.23 Multiply a mixed number by a whole number

M.24 Multiply a mixed number by a fraction

M.25 Multiply two mixed numbers

5.NF.B.4b 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.

M.12 Multiply two unit fractions using models

M.13 Multiply two fractions using models: fill in the missing factor

- M.14** Multiply two fractions using models
- EE.4** Area of squares and rectangles
- EE.10** Area and perimeter: word problems

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

5.NF.B.5a 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.

- M.17** Scaling whole numbers by fractions
- M.18** Scaling fractions by fractions
- M.19** Scaling mixed numbers by fractions

5.NF.B.5b 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 $a/b = (n \times a)/(n \times b)$ to the effect of multiplying a/b by 1.

- M.14** Multiply two fractions using models

5.NF.B.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.

- M.10** Multiply fractions by whole numbers: word problems
- M.16** Multiply two fractions: word problems
- M.27** Multiplication with mixed numbers: word problems
- M.28** Multiply fractions and mixed numbers in recipes

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

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

- N.1** Divide unit fractions by whole numbers

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

N.2 Divide whole numbers by unit fractions using models

N.3 Divide whole numbers by unit fractions

5.NF.B.7c 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.

N.7 Divide unit fractions by whole numbers: word problems

5.MD Measurement and Data

5.MD.A Convert like measurement units within a given measurement system.

5.MD.A.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.

Z.2 Compare and convert customary units of length

Z.3 Compare and convert customary units of weight

Z.4 Compare and convert customary units of volume

Z.5 Compare and convert customary units

Z.6 Conversion tables - customary units

Z.8 Compare and convert metric units of length

Z.9 Compare and convert metric units of weight

Z.10 Compare and convert metric units of volume

Z.11 Compare and convert metric units

Z.12 Conversion tables - metric units

Z.13 Compare customary units by multiplying

Z.14 Convert customary units involving fractions

Z.15 Convert mixed customary units

Z.16 Add and subtract mixed customary units

Z.17 Convert metric mixed units

Z.18 Add and subtract metric mixed units

5.MD.B Represent and interpret data.

5.MD.B.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.

W.12 Create and interpret line plots with fractions

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

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

5.MD.C.3a 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.

EE.11 Volume of rectangular prisms made of unit cubes

5.MD.C.3b 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.

EE.11 Volume of rectangular prisms made of unit cubes

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

EE.11 Volume of rectangular prisms made of unit cubes

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

5.MD.C.5a 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.

EE.11 Volume of rectangular prisms made of unit cubes

5.MD.C.5b 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.

EE.13 Volume of cubes and rectangular prisms

5.MD.C.5c 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.

EE.12 Volume of irregular figures made of unit cubes

5.G Geometry

5.G.A Graph points on the coordinate plane to solve real-world and mathematical problems.

5.G.A.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).

U.1 Objects on a coordinate plane

5.G.A.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.

U.2 Graph points on a coordinate plane

U.4 Follow directions on a coordinate plane

5.G.B Classify two-dimensional figures into categories based on their properties.

5.G.B.3 Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category.

BB.4 Parallel sides in quadrilaterals

BB.5 Identify parallelograms

BB.7 Identify rectangles

BB.8 Identify rhombuses

BB.9 Classify quadrilaterals

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

AA.1 Is it a polygon?

AA.3 Regular and irregular polygons

BB.1 Acute, obtuse, and right triangles

BB.2 Scalene, isosceles, and equilateral triangles

BB.3 Classify triangles

BB.5 Identify parallelograms

BB.7 Identify rectangles

BB.8 Identify rhombuses

BB.9 Classify quadrilaterals