

Grade 5 NRSD Curriculum Standards for Math

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

NRSD Math Curriculum Standards - Grade 5	Non-Reported Standard	PARCC Priority
Operations and Algebraic Thinking (OA)		
<i>Write and interpret numerical expressions.</i>		<i>Additional Cluster</i>
CC.5.OA.1 Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.		
CC.5.OA.2 Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. <i>For example, express the calculation “add 8 and 7, then multiply by 2” as $2 \times (8 + 7)$. Recognize that $3 \times (18932 + 921)$ is three times as large as $18932 + 921$, without having to calculate the indicated sum or product.</i>		
<i>Analyze patterns and relationships.</i>		<i>Additional Cluster</i>
CC.5.OA.3.1 Generate two numerical patterns using two given rules. Identify relationships between the two patterns of the given rules. Form ordered pairs using terms from the two patterns, and graph them on a coordinate plane. <i>For example, if Rule 1 is “Add 3” with a starting number 0, and Rule 2 is “Add 6” with a starting number 0, generate terms in the resulting sequences. Observe that the terms in one sequence are twice the corresponding terms in the other sequence. Explain informally why this is so.</i>		
Number and Operations in Base Ten (NBT)		
<i>Understand the place value system.</i>		<i>Major Cluster</i>
CC.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.		In-depth focus
NRSD.5.NBT.1a Read, write, and compare whole numbers to the millions place.		

Number and Operations in Base Ten (NBT) - continued	Non-Reported Standard	PARCC Priority
CC.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.		
5.NBT.3 Read, write, and compare decimals to thousandths.		
CC.5.NBT.3a Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., $347.392 = 3 \times 100 + 4 \times 10 + 7 \times 1 + 3 \times (1/10) + 9 \times (1/100) + 2 \times (1/1000)$.		
CC.5.NBT.3b Compare two decimals to thousandths based on meanings of the digits in each place, using $>$, $=$, and $<$ symbols to record the results of comparisons.		
CC.5.NBT.4 Use place value understanding to round decimals to any place.		
<i>Perform operations with multi-digit whole numbers and with decimals to hundredths.</i>		<i>Major Cluster</i>
CC.5.NBT.5 Fluently multiply multi-digit whole numbers using the standard algorithm.		Fluency
CC.5.NBT.6.1 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.		In-depth focus
CC.5.NBT.6.2 Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.		In-depth focus
CC.5.NBT.7.1 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;		
CC.5.NBT.7.2 Relate the strategy to a written method and explain the reasoning used.		
Number and Operations - Fractions (NF)		
<i>Use equivalent fractions as a strategy to add and subtract fractions.</i>		<i>Major Cluster</i>
NRSD.5.NF.1 Add and subtract fractions with unlike denominators (including mixed numbers) by finding equivalent fractions with like denominators. <i>For example, $2/3 + 5/4 = 8/12 + 15/12 = 23/12$. (In general, $a/b + c/d = (ad + bc)/bd$.)</i>		
CC.5.NF.2.1 Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators. <i>For example, use visual fraction models or equations to represent the problem.</i>		In-depth focus

Number and Operations - Fractions (NF) - continued	Non-Reported Standard	PARCC Priority
<p>CC.5.NF.2.2 Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. <i>For example, recognize an incorrect result $2/5 + 1/2 = 3/7$ by observing that $3/7 < 1/2$.</i></p>		In-depth focus
<p><i>Apply and extend previous understandings of multiplication and division to multiply and divide fractions.</i></p>		Major Cluster
<p>CC.5.NF.3.1 Interpret a fraction as division of the numerator by the denominator ($a/b = a \div b$). <i>For example, use visual fraction models or equations to represent the problem. Interpret $3/4$ as the result of dividing 3 by 4, noting that $3/4$ multiplied by 4 equals 3 and that when 3 wholes are shared equally among 4 people each person has a share of size $3/4$.</i></p>		
<p>CC.5.NF.3.2 Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers. <i>For example, if 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lay?</i></p>		
<p>CC.5.NF.4 Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.</p>		In-depth focus
<p>CC.5.NF.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 $a \times q \div b$. <i>For example, use a visual fraction model to show $(2/3) \times 4 = 8/3$, and create a story context for this equation. Do the same with $(2/3) \times (4/5) = 8/15$. (In general, $(a/b) \times (c/d) = ac/bd$.)</i></p>		In-depth focus
<p>NRSD.5.NF.4a.1 Multiply a fraction or whole number by a fraction using the Multiplication of Fractions Algorithm, also called a 'pen and paper' model. <i>For example, in general, $(a/b) \times (c/d) = ac/bd$. For example, $(2/3) \times 4 = 8/3$</i></p>		In-depth focus
<p>NRSD.5.NF.4b Interpret and compare the multiplication of fractions using visual and concrete models. <i>For example, find the area of a rectangle with fractional side lengths by using "The Area Model" and tiling a rectangle with unit squares of the appropriate unit fraction side lengths to show that the area is the same as would be found by multiplying the side lengths.</i></p>		In-depth focus
<p>CC.5.NF.5 Interpret multiplication as scaling</p>		
<p>NRSD.5.NF.5a Predict the relative size of a product when multiplying a whole number by a fraction (without performing the indicated multiplication).</p>		

Number and Operations - Fractions (NF) - continued	Non-Reported Standard	PARCC Priority
CC.5.NF.5b.1 Explain why multiplying a given number by a fraction greater than 1 results in a product greater than the given number. Explain why multiplying a given number by a fraction less than 1 results in a product smaller than the given number		
NRSD.5.NF.5b.2 Relate the principle of fraction equivalence $a/b = (n \cdot a)/(n \cdot b)$ to the effect of multiplying a/b by 1.		
CC.5.NF.6 Solve real world problems involving multiplication of fractions and mixed numbers. <i>For example, use visual fraction models or equations to represent the problem.</i>		
CC.5.NF.7 Divide unit fractions by whole numbers and whole numbers by unit fractions. <i>(Footnote: Students able to multiply fractions in general can develop strategies to divide fractions in general, by reasoning about the relationship between multiplication and division. Division of a fraction by a fraction is not a requirement at this grade.)</i>		
CC.5.NF.7a Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. <i>For example, create a story context for $(1/3) \div 4$ and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that $(1/3) \div 4 = 1/12$ because $(1/12) \times 4 = 1/3$.</i>		
CC.5.NF.7b Interpret division of a whole number by a unit fraction, and compute such quotients. <i>For example, create a story context for $4 \div (1/5)$ and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that $4 \div (1/5) = 20$ because $20 \times (1/5) = 4$.</i>		
NRSD.5.NF.7c Use visual models and equations to solve real-world word problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions. <i>For example, how much chocolate will each person get if 3 people share $1/2$ lb of chocolate equally? How many $1/3$-cup servings are in 2 cups of raisins?</i>		
The Number System (NS)		
<i>Gain Familiarity with concepts of positive and negative integers.</i>		
MA.5.NS.1 Use positive and negative integers to describe quantities such as temperature above/below zero, elevation above/below sea level, or credit/debit.		

Measurement and Data (MD)	Non-Reported Standard	PARCC Priority
<i>Convert like measurement units within a given measurement system.</i>		<i>Supporting Cluster</i>
CC.5.MD.1 Convert different-sized standard 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.		
<i>Represent and interpret data.</i>		<i>Supporting Cluster</i>
CC.5.MD.2 Make a line plot to display a data set of measurements in fractions of a unit ($\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$). Solve problems involving the information presented in these line plots using the operations of addition, subtraction, and multiplication. <i>For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally.</i>		
<i>Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.</i>		<i>Major Cluster</i>
CC.5.MD.3 Recognize volume as an attribute of solid figures and understand concepts of volume measurement.		
CC.5.MD.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.		
Measurement and Data (MD) - continued		
CC.5.MD.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.		
CC.5.MD.4 Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.		
CC.5.MD.5 Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume.		In-depth focus
CC.5.MD.5a.1 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 whether multiplying the edge lengths, or multiplying the height by the area of the base.		In-depth focus
CC.5.MD.5a.2 Represent three-fold whole-number products as volumes. Use the associative property of multiplication to show that the strategies are equivalent. <i>For example, $(b \times h) \times w = b \times (h \times w)$.</i>		In-depth focus
CC.5.MD.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.		In-depth focus
CC.5.MD.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.		In-depth focus

Geometry (G)	Non-Reported Standard	PARCC Priority
<i>Graph points on the coordinate plane to solve real world and mathematical problems.</i>		<i>Additional Cluster</i>
NRSD.5.G.1 Using ordered pairs, locate & graph points on the Cartesian coordinate plane.		
CC.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.		
<i>Classify two-dimensional figures into categories based on their properties.</i>		<i>Additional Cluster</i>
CC.5.G.3 Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles.		
CC.5.G.4 Classify two-dimensional figures in a hierarchy based on properties. <i>For example, identify, describe, and compare special types of triangles (e.g., isosceles, equilateral, right) and quadrilaterals (square, rectangle, parallelogram, rhombus, trapezoid), e.g. recognize that all equilateral triangles are isosceles, but not all isosceles triangles are equilateral.</i>		