

Mathletics NWEA Common Core - Number & Operations

Skill Quests

RIT Score Band
May, 2022

Mathletics

NWEA Common Core

Number & Operations 3–5

Skill Quests

May 2022

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RIT Score Band 189–200

1 Number & Operations in Base Ten

1.1 Use place value understanding and properties of operations to perform multi-digit arithmetic

Outcome	Quests	Content
3.NBT.A.1 Use place value understanding to round whole numbers to the nearest 10 or 100.	Rounding to the nearest 10 or 100	Rounding numbers up to 1000 to the nearest 100
		Rounding numbers up to 1000 to the nearest 10
3.NBT.A.2 Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.	Add and subtract within 1000	Add 2- and 3-digit numbers: number line
		Add 2- and 3-digit numbers: jump strategy
		Add two 2-digit numbers: base ten blocks
		Add 2- and 3-digit numbers: expanded form
		Add two 2-digit numbers: compensation
		Subtract 2-digit from 3-digit: number line
		Subtract 2-digit from 3-digit: jump strategy
		Subtract two 2-digit numbers: base ten blocks
		Subtract 2-digit from 3-digit: expanded form
		Subtract two 2-digit numbers: compensation
		Add and subtract up to 3-digits: number line
		Add and subtract up to 3-digits: jump strategy
		Add and subtract two 2-digits: place value blocks
		Add and subtract up to 3-digits: expanded form
Add and subtract two 2-digits: compensation		

3.NBT.A.3 Multiply one-digit whole numbers by multiples of 10 in the range 10-90 using strategies based on place value and properties of operations.	Multiplying by a multiple of 10	Using place value to multiply by multiples of 10
		Multiplying by a multiple of 10

2 Number & Operations – Fractions

2.1 Develop understanding of fractions as numbers

Outcome	Quests	Content
3.NF.A.1 Understand a fraction $\frac{1}{b}$ as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction $\frac{a}{b}$ as the quantity formed by a parts of size $\frac{1}{b}$.	Introducing fractions	Introducing the numerator and denominator
		Introducing eighths
		Halves, quarters and eighths of objects or shapes
		Halves, thirds or quarters of shapes: partitioning
		Introducing sixths
		Thirds and sixths of objects, shapes and sets
3.NF.A.2.A Represent a fraction $\frac{1}{b}$ on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into b equal parts. Recognize that each part has size $\frac{1}{b}$ and that the endpoint of the part based at 0 locates the number $\frac{1}{b}$ on the number line.	Locating unit fractions on a number line	Locating unit fractions on a number line
3.NF.A.2.B Represent a fraction $\frac{a}{b}$ on a number line diagram by marking off a lengths $\frac{1}{b}$ from 0. Recognize that the resulting interval has size $\frac{a}{b}$ and that its endpoint locates the number $\frac{a}{b}$ on the number line.	Locating fractions on a number line	Locating fractions on a number line
3.NF.A.3.A Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line.	Investigating equivalent fractions	Investigating equivalent fractions
3.NF.A.3.B Recognize and generate simple equivalent fractions. Explain why the fractions are equivalent.	Finding simple equivalent fractions	Recognize and generate simple equivalent fractions
3.NF.A.3.C Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers.	Whole numbers as fractions	Express and recognize whole numbers as fractions

<p>3.NF.A.3.D Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols $>$, $=$, or $<$, and justify the conclusions.</p>	<p>Compare fractions</p>	<p>Comparing fractions: same numerator or denominator</p>
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RIT Score Band 201–210

1 Number & Operations in Base Ten

1.1 Generalize place value understanding for multi-digit whole numbers

Outcome	Quests	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.	Generalizing place value understanding	Generalizing place value understanding
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.	Reading and writing multi-digit numbers	Reading and writing multi-digit numbers
		Comparing two 6-digit numbers
4.NBT.A.3 Use place value understanding to round multi-digit whole numbers to any place.	Rounding 6-digit numbers	Rounding 6-digit numbers to any place value

1.2 Use place value understanding and properties of operations to perform multi-digit arithmetic

Outcome	Quests	Content
4.NBT.B.4 Fluently add and subtract multi-digit whole numbers using the standard algorithm.	Add/subtract multi-digit numbers	Adding multi-digit numbers, no regrouping
		Adding multi-digit numbers, regrouping
		Subtracting multi-digit numbers, no regrouping
		Subtracting multi-digit numbers, regrouping
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	Multiplying numbers: place value	Multiply multi-digit numbers, expanded algorithm
		Multiply 2-digit by 2-digit, expanded algorithm
		Multiply multi-digit numbers using place value
		Multiply multi-digit numbers, area model

equations, rectangular arrays, and/or area models.		Multiply 2-digit by 2-digit, area model
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.	Dividing numbers: place value	Dividing numbers, place value blocks
		Dividing numbers, area model
		Dividing numbers, place value strategy
		Introducing remainders in division

2 Number & Operations – Fractions

2.1 Extend understanding of fraction equivalence and ordering

Outcome	Quests	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.	Investigating fraction equivalence	Equivalent fractions with models
		Equivalent fractions with multiplication
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.	Comparing fractions	Compare fractions using models
		Compare fractions, different numerator/denominator
		Compare fractions using common denominators

2.2 Build fractions from unit fractions

Outcome	Quests	Content
4.NF.B.3.A Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.	Understand adding/subtracting fractions	Adding unit fractions, same denominators: models
		Adding fractions, same denominator
		Subtracting fractions, same denominator
		Adding and subtracting fractions, same denominator
4.NF.B.3.B 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.	Decomposing fractions	Decomposing fractions

4.NF.B.3.C Add and subtract mixed numbers with like denominators.	Adding and subtracting mixed numbers	Adding mixed numbers, same denominator
		Subtracting mixed numbers, same denominator
4.NF.B.3.D Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators.	Word problems: add/subtract fractions	Word problems: add/subtract fractions
4.NF.B.4.A Understand a fraction a/b as a multiple of $1/b$.	Fractions: multiples of unit fractions	Fractions: multiples of unit fractions
4.NF.B.4.B 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 fraction by whole number, model	Multiply fractions by whole numbers using models
4.NF.B.4.C 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.	Word problems: multiplying fractions	Word problems: multiply fractions by whole numbers

2.3 Understand decimal notation for fractions, and compare decimal fractions

Outcome	Quests	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.	Add fractions: denominator of 10 and 100	Adding fractions with denominators of 10 and 100
4.NF.C.6 Use decimal notation for fractions with denominators 10 or 100.	Representing fractions as decimals	Introducing decimal notation
		Introducing tenths
		Introducing hundredths
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.	Comparing decimals to hundredths	Compare and order decimals to hundredths

RIT Score Band 211–217

1 Number & Operations in Base Ten

1.1 Understand the place value system

Outcome	Quests	Content
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.	Understanding the place value system	Identifying the place value of a digit in a number
		Understanding the place value system: powers of 10
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.	Multiplying and dividing by powers of 10	Multiplying decimals by powers of 10
		Dividing decimals by powers of 10
		Finding numbers before & after using powers of 10
		Writing numbers using powers of 10
5.NBT.A.3.A Read and write decimals to thousandths using base-ten numerals, number names, and expanded form.	Read and write decimals to thousandths	Reading and writing decimals to thousandths
5.NBT.A.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.	Comparing decimals to thousandths	Comparing and ordering decimals to thousandths
5.NBT.A.4 Use place value understanding to round decimals to any place.	Rounding decimals	Rounding decimals

1.2 Perform operations with multi-digit whole numbers and with decimals to hundredths

Outcome	Quests	Content
5.NBT.B.5 Fluently multiply multi-digit whole numbers using the standard algorithm.	Multiply multi-digit numbers, algorithm	Multiplying multi-digit numbers, algorithm
5.NBT.B.6 Find whole-number quotients of whole numbers with up	Dividing multi-digit numbers	Using facts to divide 2-digit multiples of 10

<p>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.</p>		Multiplying and dividing 2-digit multiples of 10
		Multiplication/division problems: multiples of 10
		Dividing by subtracting partial products
		Dividing multi-digit numbers, algorithm
		Divide multi-digit numbers, whole number remainder
<p>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.</p>	<p>Operations with decimals</p>	Adding decimals to hundredths, algorithm
		Subtracting decimals using mental strategies
		Subtracting decimals to hundredths, algorithm
		Multiplying decimals and whole numbers
		Multiplying decimals to hundredths, algorithm
		Multiplying decimals using mental strategies
		Multiplicative relationships with decimals
		Divide whole numbers & decimals, mental strategies
		Dividing whole numbers and decimals, algorithm

2 Number & Operations – Fractions

2.1 Use equivalent fractions as a strategy to add and subtract fractions

Outcome	Quests	Content
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.	Adding and subtracting fractions	Adding fractions and mixed numbers
		Subtracting fractions and mixed numbers
		Adding and subtracting fractions and mixed numbers
		Adding fractions, proper and improper
		Adding mixed numbers
		Subtracting fractions, proper and improper
		Subtracting 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.	Add/subtract fraction word problems	Solving word problems: fractions and mixed numbers
Solving fraction word problems		

2.2 Apply and extend previous understandings of multiplication and division

Outcome	Quests	Content
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.	Interpreting fractions as division	Interpreting fractions as division
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 $a \times q \div b$.	Understanding multiplying fractions	Multiplying a fraction by a whole number
		Multiplying a fraction by a fraction
5.NF.B.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.	Area of a rectangle, fractional sides	Find the area of a rectangle with fractional sides
5.NF.B.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.	Comparing products and factors	Comparing products and factors
5.NF.B.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 $a/b = (n \times a)/(n \times b)$ to the effect of multiplying a/b by 1.	Effects of multiplying fractions	Interpreting multiplying fractions as scaling

5.NF.B.6 Solve real world problems involving multiplication of fractions and mixed numbers.	Multiplying fractions word problems	Word problems: multiply fractions & mixed numbers
5.NF.B.7.A Interpret division of a unit fraction by a non-zero whole number, and compute such quotients.	Dividing unit fractions by whole numbers	Dividing unit fractions by whole numbers, models
		Dividing unit fractions by whole numbers
5.NF.B.7.B Interpret division of a whole number by a unit fraction, and compute such quotients.	Dividing whole numbers by unit fractions	Dividing whole numbers by unit fractions, models
		Dividing whole numbers by unit fractions
5.NF.B.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.	Dividing unit fractions word problems	Word problems: divide unit fractions/whole numbers



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