# Mathletics NWEA Common Core -Number & Operations

# **Skill Quests**



# **RIT Score Band**



May, 2022

# 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 multidigit arithmetic

Outcome	Quests	Content
3.NBT.A.1 Use place value	Rounding to the	Rounding numbers up to 1000
understanding to round whole	nearest 10 or 100	to the nearest 100
numbers to the hearest 10 or 100.		Rounding numbers up to 1000
		to the nedrest 10
3.NBT.A.2 Fluently add and	Add and subtract	Add 2- and 3-digit numbers:
strategies and algorithms based on		Add 2- and 3-digit numbers:
place value, properties of		jump strategy
operations, and/or the relationship		Add two 2-digit numbers:
between addition and subtraction.		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-algit from 3-algit:
		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	Multiplying by a multiple of 10	Using place value to multiply by multiples of 10
range 10-90 using strategies based		Multiplying by a multiple of 10
on place value and properties of		
operations.		

# 2 Number & Operations – Fractions

### 2.1 Develop understanding of fractions as numbers

Outcome	Quests	Content
3.NF.A.1 Understand a fraction 1/b as the quantity formed by 1 part when a whole is partitioned into b	Introducing fractions	Introducing the numerator and denominator
equal parts; understand a fraction a/b as the quantity formed by a		Introducing eighths
parts of size 1/b.		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 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 1/b and that the endpoint of the part based at 0 locates the number 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 a/b on a number line diagram by marking off a lengths 1/b from 0. Recognize that the resulting interval has size a/b and that its endpoint locates the number 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

3.NF.A.3.D Compare two fractions	Compare fractions	Comparing fractions: same
with the same numerator or the		numerator or denominator
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.		

# 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 multidigit arithmetic

Outcome	Quests	Content
4.NBT.B.4 Fluently add and	Add/subtract multi-	Adding multi-digit numbers,
subtract multi-digit whole numbers	digit numbers	no regrouping
using the standard algorithm.		Adding multi-digit numbers,
		regrouping
		Subtracting multi-digit
		numbers, no regrouping
		Subtracting multi-digit
		numbers, regrouping
4.NBT.B.5 Multiply a whole number	Multiplying numbers:	Multiply multi-digit numbers,
of up to four digits by a one-digit	place value	expanded algorithm
whole number, and multiply two		Multiply 2-digit by 2-digit,
two-digit numbers, using strategies		expanded algorithm
based on place value and the		Multiply multi-digit numbers
properties of operations. Illustrate		using place value
and explain the calculation by using		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	Dividing numbers: place value	Dividing numbers, place value blocks
to four-digit dividends and one-		Dividing numbers, area model
digit divisors, using strategies		Dividing numbers, place value
based on place value, the		strategy
properties of operations, and/or the		Introducing remainders in
relationship between multiplication		division
and division. Illustrate and explain		
the calculation by using equations,		
rectangular arrays, and/or area		
models.		

## 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	Investigating fraction	Equivalent fractions with
x = b by using visual fraction models	equivalence	Fauivalent fractions with
with attention to how the number		multiplication
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.		
4.NF.A.2 Compare two fractions	Comparing fractions	Compare fractions using
with different numerators and		models
different denominators, e.g., by		Compare fractions, different
creating common denominators or		numerator/denominator
numerators, or by comparing to a		Compare fractions using
benchmark fraction such as 1/2.		common denominators
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.		

#### 2.2 Build fractions from unit fractions

Outcome	Quests	Content
4.NF.B.3.A Understand addition	Understand	Adding unit fractions, same
and subtraction of fractions as	fractions	denominators: models
referring to the same whole.	Indetions	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,
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	Representing fractions	Introducing decimal notation
fractions with denominators 10 or	as decimals	Introducing tenths
100.		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	Understanding the place value system	Identifying the place value of a digit in a number
place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents		Understanding the place value system: powers of 10
5.NBT.A.2 Explain patterns in the	Multiplying and	Multiplying decimals by
number of zeros of the product	dividing by powers of	powers of 10
when multiplying a number by powers of 10, and explain patterns	10	Dividing decimals by powers of 10
in the placement of the decimal point when a decimal is multiplied		Finding numbers before & after using powers of 10
or divided by a power of 10. Use		Writing numbers using
powers of 10.		powers of 10
5.NBT.A.3.A Read and write	Read and write	Reading and writing decimals
decimals to thousandths using	decimals to	to thousandths
base-ten numerals, number names, and expanded form.	thousandths	
5.NBT.A.3.B Compare two decimals	Comparing decimals to	Comparing and ordering
to thousandths based on meanings	thousandths	decimals to thousandths
of the digits in each place, using >,		
=, and < symbols to record the results of comparisons.		
5.NBT.A.4 Use place value	Rounding decimals	Rounding decimals
understanding to round decimals to		
any place.		

# **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

to four-digit dividends and two- digit divisors, using strategies		Multiplying and dividing 2- digit multiples of 10
based on place value, the		Multiplication/division
properties of operations, and/or the		problems: multiples of 10
relationship between multiplication		Dividing by subtracting partial
and division. Illustrate and explain		products
the calculation by using equations,		Dividing multi-digit numbers,
rectangular arrays, and/or area		algorithm
models.		Divide multi-digit numbers,
		whole number remainder
5.NBT.B.7 Add, subtract, multiply,	Operations with	Adding decimals to
and divide decimals to hundredths,	decimals	hundredths, algorithm
using concrete models or drawings		Subtracting decimals using
and strategies based on place		mental strategies
value, properties of operations,		Subtracting decimals to
and/or the relationship between		hundredths, algorithm
addition and subtraction; relate the		Multiplying decimals and
strategy to a written method and		whole numbers
explain the reasoning used.		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	Adding and subtracting fractions	Adding fractions and mixed numbers
		Subtracting fractions and mixed numbers
in such a way as to produce an equivalent sum or difference of		Adding and subtracting fractions and mixed numbers
fractions with like denominators.		Adding fractions, proper and improper
		Adding mixed numbers
		Subtracting fractions, proper
		Subtracting mixed numbers
5.NF.A.2 Solve word problems	Add/subtract fraction	Solving word problems:
of fractions referring to the same		Solving fraction word
whole, including cases of unlike		problems
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.		

### 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) × q as a parts of a partition of	Understanding multiplying fractions	Multiplying a fraction by a whole number
q into b equal parts; equivalently, as the result of a sequence of operations a × q ÷ b.		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	Dividing unit fractions by whole numbers	Dividing unit fractions by whole numbers, models
number, and compute such quotients.		Dividing unit fractions by whole numbers
5.NF.B.7.B Interpret division of a whole number by a unit fraction,	Dividing whole numbers by unit	Dividing whole numbers by unit fractions, models
and compute such quotients.	fractions	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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