Mathletics

NWEA Common Core - Real & Complex Number Systems

Skill Quests

RIT Score Band

May, 2022

Mathletics

NWEA Common Core

Real & Complex Number Systems 6–8

Skill Quests

May 2022

RIT Score Band 218–221

1 Ratios & Proportional Relationships

1.1 Understand ratio concepts and use ratio reasoning to solve problems

Outcome	Quests	Content
6.RP.A.1 Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.	Introduction to ratios	Defining, understanding and writing ratios
6.RP.A.2 Understand the concept of a unit rate a/b associated with a ratio a:b with b ≠ 0, and use rate language in the context of a ratio relationship.	Introduction to unit rate	Understanding unit rates and making comparisons
6.RP.A.3.A Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.	Ratio tables	Creating tables of equivalent ratios
		Plotting coordinates from ratio tables
6.RP.A.3.B Solve unit rate problems including those involving unit pricing and constant speed.	Solving unit rate problems	Solving unit rate problems for given time periods
		Solving unit rate problems involving unit pricing
6.RP.A.3.C Find a percent of a quantity as a rate per 100; solve problems involving finding the whole, given a part and the percent.	Percent of a quantity	Expressing rates as a percent
		Solving percent problems: finding the whole
6.RP.A.3.D Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.	Converting measurements using ratios	Converting measurement units using ratios

2 The Number System

2.1 Apply and extend previous understandings of multiplication and division to divide fractions by fractions

Outcome	Quests	Content
6.NS.A.1 Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions.	Dividing fractions	Dividing a fraction by a positive integer
		Dividing a positive integer by a fraction
		Dividing a fraction by a fraction
		Dividing fractions and mixed numbers
		Multiplying by the reciprocal
		Solving word problems: division of fractions

2.2 Compute fluently with multi-digit numbers and find common factors and multiples

Outcome	Quests	Content
6.NS.B.2 Fluently divide multi-digit numbers using the standard algorithm.	Dividing multi-digit numbers, algorithm	Divide 4-digit by 2-digit numbers, no remainder
		Divide 4-digit by 2-digit numbers, with remainders
		Divide 4-digit by 2-digit numbers
6.NS.B.3 Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.	Operations with multi-digit decimals	Adding decimals using the standard algorithm
		Subtracting decimals using the standard algorithm
		Multiplying decimals using the standard algorithm
		Dividing decimals using the standard algorithm
		Word problems: adding and subtracting decimals
		Word problems: multiplying and dividing decimals
6.NS.B.4 Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole	GCF and LCM	Greatest common factor
		Least common multiple
		Solving word problems: factors and multiples

numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1-100 with a common factor as a multiple of a sum of two whole numbers with no common factor.		Factoring using the distributive property

2.3 Apply and extend previous understandings of numbers to the system of rational numbers

Outcome	Quests	Content
6.NS.C.5 Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.	Positive and negative numbers	Investigating and interpreting integers
6.NS.C.6.A Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g., -(-3) = 3, and that 0 is its own opposite.	Opposites on the number line	Opposites on the number line
6.NS.C.6.B Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.	Graphing in the 4 quadrants	Graphing coordinates in the 4 quadrants
		Graphing coordinates across the x- and y-axis
6.NS.C.6.C Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.	Graphing rational numbers	Placing rational numbers on the number line
		Graphing rational numbers on the coordinate plane

6.NS.C.7.A Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram.	Comparing rational numbers	Comparing integers Comparing rational numbers
6.NS.C.7.B Write, interpret, and explain statements of order for rational numbers in real-world contexts.	Ordering rational numbers	Exploring the everyday language of integers Statements of order: rational numbers
6.NS.C.7.C Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation.	Introducing absolute value	Introducing absolute value
6.NS.C.7.D Distinguish comparisons of absolute value from statements about order.	Absolute value vs order	Interpreting meanings of integers in context
6.NS.C.8 Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.	Solve problems by graphing: 4 quadrants	Solving problems by graphing in the 4 quadrants Find the distance between 2 points, absolute value

RIT Score Band 222–226

1 Ratios & Proportional Relationships

1.1 Analyze proportional relationships and use them to solve real-world and mathematical problems

Outcome	Quests	Content
7.RP.A.1 Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units.	Unit rates with fractions	Solving unit rate problems involving fractions
7.RP.A.2.A Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.	Identifying proportional relationships	Identifying proportional relationships
7.RP.A.2.B Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.	Constant of proportionality	Identifying the constant of proportionality
7.RP.A.2.C Represent proportional relationships by equations.	Representing proportional relationships	Representing proportional relationships: equations
7.RP.A.2.D Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points (0, 0) and (1, r) where r is the unit rate.	Graphs of proportional relationships	Interpreting graphs of proportional relationships
7.RP.A.3 Use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.	Ratio and percent problems	Solving multi-step ratio and percent problems

2 The Number System

2.1 Apply and extend previous understandings of operations with fractions

Outcome	Quests	Content
7.NS.A.1.A Describe situations in which opposite quantities combine to make 0.	Understanding opposites	Describing situations involving opposites
7.NS.A.1.B Understand p + q as the number located a distance |q| from p, in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts.	Adding rational numbers	Opposites and absolute value
		Adding rational numbers
		Adding positive and negative fractions
		Adding positive and negative decimals
		Adding integers
7.NS.A.1.C Understand subtraction of rational numbers as adding the additive inverse, p - q = p + (-q). Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.	Subtracting rational numbers	Subtracting rational numbers: adding the inverse
		Subtracting positive and negative fractions
		Subtracting positive and negative decimals
		Subtracting integers
		Subtracting rational numbers: absolute value
7.NS.A.1.D Apply properties of operations as strategies to add and subtract rational numbers.	Rational numbers: addition properties	Add/subtract rational numbers: properties
7.NS.A.2.A Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as (-1)(-1) = 1 and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.	Multiplying rational numbers	Multiplying rational numbers
		Multiplying positive and negative fractions
		Multiplying positive and negative decimals
		Multiplying integers
		Products of rational numbers: real-world contexts
7.NS.A.2.B Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then -(p/q) = (-p)/q = p/(-q). Interpret quotients of rational	Dividing integers	Dividing integers
		Quotients of rational numbers: real-world contexts

numbers by describing real-world contexts.		
7.NS.A.2.C Apply properties of operations as strategies to multiply and divide rational numbers.	Rational numbers: multiplying properties	Multiply/divide rational numbers: properties
7.NS.A.2.D Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.	Converting rational numbers to decimals	Use long division to convert rationals to decimals
7.NS.A.3 Solve real-world and mathematical problems involving the four operations with rational numbers.	Rational numbers problems: 4 operations	Rational numbers problems: 4 operations

2.2 Know that there are numbers that are not rational, and approximate them by rational numbers

Outcome	Quests	Content
8.NS.A.1 Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats eventually into a rational number.	Rational and irrational numbers	Describing properties of irrational numbers
		Classifying real numbers
		Converting repeating decimals to rational numbers
		Repeating and terminating decimals as fractions
8.NS.A.2 Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g., π^2).	Approximating irrational numbers	Comparing irrational numbers
		Locating irrational numbers on a number line
		Approximating the value of an irrational number
		Finding square roots of non-perfect squares

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