



TABLE OF CONTENTS

Start Quick and Ramp It Up! 5th Grade Thinking Through the Operations

ACTIVITY TYPE	ACTIVITY	TOPICS	PAGE
	Table of Standards		4
Quick Start	At the Theater	Choosing the Operation	7
Ramp Up	Johnny Spaceface	Whole Numbers	18
Ramp Up	Monkey Business	Answering the Right Question—Whole Numbers	24
Ramp Up	Correct Counts	Identifying the Mistake—Whole Numbers	29
Ramp Up	Oliver's Farms	Choosing the Operation—Decimals	36
Ramp Up	Monkeying Around	Answering the Right Question—Decimals	44
Ramp Up	NBA Shoes	Data from Dot Plots & Stem-and-Leaf Plots with Decimals	51
Ramp Up	Carlos Counts	Word Problems & Equations Fill-in-the-Blanks	55
Ramp Up	Sweet Sensations	Multiplication & Division of Fractions	62
Ramp Up	Laser Troubles	Finding & Correcting Mistakes—Fractions	67
Ramp Up	Something's A-Foot	Data from Dot Plots & Stem-and-Leaf Plots with Fractions	75
Ramp Up	Sailboats, Yachts, & Cruisers	Problem Solving—Fractions	80
Ramp Up	Adventures Aplenty	Whole Number, Fraction, & Decimal Operations	85
	Grid Paper		100
	Number Line Template		101

Content and Instruction Extras

MEANING BEHIND THE MATH

How do You Decide What Operation to Use? What are the Clues? (5.1A, 5.1B)	19
Teaching Children to Attack Multi-Step Problems (5.1B)	37
Estimating with Decimals (5.1B)	45
When Should Students Stop Using Models? (5.1C)	45
Real-Life Estimation (5.1C)	45
Frequency Tables, Dot Plots, Bar Graphs, and Stem-and-Leaf Plots, Part 1	52
Distinguishing Multiplication of Fractions from Division of Fractions (5.1B)	63
School-Based Math Problems (5.1A)	68
Frequency Tables, Dot Plots, Bar Graphs, and Stem-and-Leaf Plots, Part 2	76

READING, WRITING, AND SPEAKING TO IMPROVE CRITICAL THINKING

Beyond Key Words (5.1B)	8
What Makes a Team Response so Powerful?	8
Thinking About Thinking (5.1D)	29
Justification (5.1G)	29
Five Key Elements of ELL Success in the Math Classroom	86

WORKING THE CLASSROOM

Helping Students Get Started with Word Problems (5.1B)	19
Using the "Draw a Picture" Strategy (5.1E)	37
Strategies to Support Students with Math Anxiety	55
The Noise of Math (5.1D, 5.1G)	80



TABLE OF STANDARDS (PG. 1 OF 2)

The activities in this 5th grade Thinking Through the Operations book address the following standards.

Where are we going? Focus Standards		Activity
(5.3)	Number and operations. The student applies mathematical process standards to develop and use strategies and methods for positive rational number computations in order to solve problems with efficiency and accuracy. The student is expected to:	
5.3B	multiply with fluency a three-digit number by a two-digit number using the standard algorithm; Supporting Standard	1 , 2 , 3 , 4 , 13
5.3C	solve with proficiency for quotients of up to a four-digit dividend by a two-digit divisor using strategies and the standard algorithm; Supporting Standard	1 , 2 , 3 , 4 , 13
5.3E	solve for products of decimals to the hundredths, including situations involving money, using strategies based on place-value understandings, properties of operations, and the relationship to the multiplication of whole numbers; Readiness Standard	5 , 6 , 8 , 13
5.3G	solve for quotients of decimals to the hundredths, up to four-digit dividends and two-digit whole number divisors, using strategies and algorithms, including the standard algorithm; Readiness Standard	5 , 6 , 8 , 13
5.3I	represent and solve multiplication of a whole number and a fraction that refers to the same whole using objects and pictorial models, including area models; Supporting Standard	9 , 10 , 13
5.3K	add and subtract positive rational numbers fluently; Readiness Standard	1 , 2 , 3 , 4 , 5 , 6 , 8 , 10 , 13
5.3L	divide whole numbers by unit fractions and unit fractions by whole numbers. Readiness Standard	9 , 10
(5.9)	Data analysis. The student applies mathematical process standards to solve problems by collecting, organizing, displaying, and interpreting data. The student is expected to:	
5.9C	solve one- and two-step problems using data from a frequency table, dot plot, bar graph, stem-and-leaf plot, or scatterplot. Readiness Standard	7 , 11 , 12



TABLE OF STANDARDS (PG. 2 OF 2)

The activities in this 5th grade Thinking Through the Operations book address the following standards.

How will we get there? Working Standards		Activity
(5.3)	Number and operations. The student applies mathematical process standards to develop and use strategies and methods for positive rational number computations in order to solve problems with efficiency and accuracy. The student is expected to:	
5.3A	estimate to determine solutions to mathematical and real-world problems involving addition, subtraction, multiplication, or division; Supporting Standard	6 , 8 , 11 , 12
5.3E	solve for products of decimals to the hundredths, including situations involving money, using strategies based on place-value understandings, properties of operations, and the relationship to the multiplication of whole numbers; Readiness Standard	1 , 2 , 3 , 4 , 7
5.3F	represent quotients of decimals to the hundredths, up to four-digit dividends and two-digit whole number divisors, using objects and pictorial models, including area models; Supporting Standard	1 , 2 , 3 , 4
5.3G	solve for quotients of decimals to the hundredths, up to four-digit dividends and two-digit whole number divisors, using strategies and algorithms, including the standard algorithm; Readiness Standard	7
5.3I	represent and solve multiplication of a whole number and a fraction that refers to the same whole using objects and pictorial models, including area models; Supporting Standard	11 , 12
5.3J	represent division of a unit fraction by a whole number and the division of a whole number by a unit fraction such as $1/3 \div 7$ and $7 \div 1/3$ using objects and pictorial models, including area models; Supporting Standard	9
5.3K	add and subtract positive rational numbers fluently; Readiness Standard	7 , 11 , 12
5.3L	divide whole numbers by unit fractions and unit fractions by whole numbers. Readiness Standard	11 , 12

What kind of mathematical thinking will we use? Process Standards		Activity
(5.1)	Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:	
5.1A	apply mathematics to problems arising in everyday life, society, and the workplace;	8 , 10 , 12 , 13
5.1B	use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution;	1 , 2 , 3 , 4 , 5 , 6 , 7 , 8 , 9 , 10 , 11 , 12 , 13
5.1C	select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems;	8 , 10 , 13
5.1D	communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate;	1 , 2 , 3 , 4 , 5 , 6
5.1E	create and use representations to organize, record, and communicate mathematical ideas;	1 , 2 , 3 , 4 , 5 , 6
5.1F	analyze mathematical relationships to connect and communicate mathematical ideas.	1 , 2 , 3 , 4 , 5 , 6 , 7 , 11
5.1G	display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication.	1 , 2 , 3 , 4 , 5 , 6 , 10