Orange Public Schools

Office of Curriculum & Instruction 2019-2020 Mathematics Curriculum Guide



5th Grade Mathematics

Eureka Math - Unit 2: Multi-Digit Whole Numbers & Decimal Fraction Operations October 8, 2019 – December 4, 2019

ORANGE TOWNSHIP BOARD OF EDUCATION

Tyrone Tarver **President**

Brenda Daughtry Vice President

Members

Guadalupe Cabido Shawneque Johnson Sueann Gravesande Cristina Mateo Jeffrey Wingfield

Derrick Henry Siaka Sherif

SUPERINTENDENT OF SCHOOLS

Gerald Fitzhugh, II, Ed.D.

BUSINESS ADMINISTRATOR/BOARD SECRETARY

Adekunle O. James

EXECUTIVE DIRECTOR OF HUMAN RESOURCES

Glasshebra Jones-Dismuke

DIRECTORS

Karen Harris, English Language Arts/Testing Tina Powell, Ed.D., Math/Science Shelly Harper, Special Services Terri Russo, D.Litt., Curriculum & Instruction

SUPERVISORS

Olga Castellanos, *Math (K-4)* Meng Li Chi Liu, *Math (9-12)* Daniel Ramirez, *Math (5-8)* Donna Sinisgalli, *Visual & Performance Arts* Kurt Matthews, *ELA (8-12) & Media Specialist* Linda Epps, *Social Studies (5-12) / Tech Coordinator* Tia Burnett, *Testing* Jahmel Drakeford, *CTE (K-12)/ Health & Phys Ed* Janet McCloudden, Ed.D., Special Services Rosa Lazzizera, ELA (3-7) & Media Specialist Adrianna Hernandez, ELA (K-2) & Media Specialist Frank Tafur, Guidance Henie Parillon, Science (K-12) Caroline Onyesonwu, Bilingual/ESL & World Lang David Aytas, STEM Focus (8-12) Amina Mateen, Special Services

PRINCIPALS

Faith Alcantara, Heywood Avenue School Yancisca Cooke, Ed.D., Forest St. Comm School Robert Pettit, Cleveland Street School (OLV) Cayce Cummins, Ed.D., Newcomers Academy Debra Joseph-Charles, Ed.D.,Rosa Parks Comm School Denise White, Oakwood Ave. Comm School Jason Belton, Orange High School Jacquelyn Blanton, Orange Early Childhood Center Dana Gaines, Orange Prep Academy Myron Hackett, Ed.D., Park Ave. School Karen Machuca, Scholars Academy Erica Stewart, Ed.D., STEM Academy Frank Iannucci, Jr., Lincoln Avenue School

ASSISTANT PRINCIPALS

Carrie Halstead, Orange High School Mohammed Abdelaziz, Orange High/Athletic Director Oliverto Agosto, Orange Prep Academy Terence Wesley, Rosa Parks Comm School Samantha Sica-Fossella, Orange Prep. Academy Kavita Cassimiro, Orange High School Lyle Wallace, Twilight Program Isabel Colon, Lincoln Avenue School Nyree Delgado, Forest Street Comm School Devonii Reid, EdD., STEM Academy Joshua Chuy, Rosa Parks Comm School Gerald J. Murphy, Heywood Ave School Shadin Belal, Ed. D. Orange Prep Academy April Stokes, Park Avenue School Noel Cruz, Dean of Students/Rosa Parks Comm School Patrick Yearwood, Lincoln Avenue School

From the New Jersey Student Learning Standards:

In **Grade 5**, instructional time should focus on three critical areas: (1) developing fluency with addition and subtraction of fractions, and developing understanding of the multiplication of fractions and of division of fractions in limited cases (unit fractions divided by whole numbers and whole numbers divided by unit fractions); (2) extending division to 2-digit divisors, integrating decimal fractions into the place value system and developing understanding of operations with decimals to hundredths, and developing fluency with whole number and decimal operations; and (3) developing understanding of volume

(1) Students apply their understanding of fractions and fraction models to represent the addition and subtraction of fractions with unlike denominators as equivalent calculations with like denominators. They develop fluency in calculating sums and differences of fractions, and make reasonable estimates of them. Students also use the meaning of fractions, of multiplication and division, and the relationship between multiplication and division to understand and explain why the procedures for multiplying and dividing fractions make sense. (Note: this is limited to the case of dividing unit fractions by whole numbers and whole numbers by unit fractions.)

(2) Students develop understanding of why division procedures work based on the meaning of base-ten numerals and properties of operations. They finalize fluency with multi-digit addition, subtraction, multiplication, and division. They apply their understandings of models for decimals, decimal notation, and properties of operations to add and subtract decimals to hundredths. They develop fluency in these computations, and make reasonable estimates of their results. Students use the relationship between decimals and fractions, as well as the relationship between finite decimals and whole numbers (i.e., a finite decimal multiplied by an appropriate power of 10 is a whole number), to understand and explain why the procedures for multiplying and dividing finite decimals make sense. They compute products and quotients of decimals to hundredths efficiently and accurately.

(3) Students recognize volume as an attribute of three-dimensional space. They understand that volume can be measured by finding the total number of same-size units of volume required to fill the space without gaps or overlaps. They understand that a 1- unit by 1-unit by 1-unit cube is the standard unit for measuring volume. They select appropriate units, strategies, and tools for solving problems that involve estimating and measuring volume. They decompose three-dimensional shapes and find volumes of right rectangular prisms by viewing them as decomposed into layers of arrays of cubes. They measure necessary attributes of shapes in order to determine volumes to solve real world and mathematical problems.

Yearlong Pacing Guide

Grade 5

Grade	SEP	00	СТ	N	OV	D	EC	JA	N	F	EB	M/	AR	A	PR	M	AY	JUN	N
5	Unit 1		Un	it 2			Unit 3			U	nit 4			Unit 5			Uni	t 6	
5	5.NBT		5.N	IBT			5.NF			5	NF			5.MD			5.0A	& 5.G	
C	Unit 1		Un	it 2	Uni	it 3		Unit 4			Unit 5		Un	it 6	Un	it 7	l	Unit 8	
6	6.G		6.	RP	6.1	RP		6.NS			6.NS		6.	EE	6.	NS		6.SP	
7	Unit 1	Uni	it 2	Un	it 3		Unit 4		Un	it 5		Unit 6			Unit 7		Uni	it 8	
	7.G	7.6	RP	7.	G		7.RP		7.	NS		7.EE			7.G		7.9	SP	
0	Unit 1		Un	it 2	Uni	t 3		Unit 4			Unit 5		Un	it 6	Un	it 7	Uni	it 8	
8	8.G		8.	G	8.6	E		8.EE			8.F		8.	SP	8.	EE	8.	G	







Number & Ops in Base Unit Ten: Multi-Digit Whole 3 Numbers & Decimal Fraction Operations

Number & Ops-Fractions: Addition & Subtraction of Fractions

Unit 4 Fractions:



Measurement & Data: Addition & Multiplication with Volume & Area

Unit 6

Algebraic Thinking / Geometry: Problem Solving w/ Coordinate Plane

	2019-2020 Grade 5 (Eureka)								
Quar	rter 1	Qua	rter 2	Quar	ter 3	Qua	rter 4		
Unit 1/ Mod 1	Unit 2 /	Mod 2	Unit 3 / Mod 3	Unit 4 / Mod 4	Unit 5 /	Mod 5	Unit 6 / Mod 6		
5.NBT.3a(M) 5.NBT.3b(M) 5.NBT.4(M)	5.NBT 5.NBT 5.NBT 5.NBT 5.NBT	7.2(M) 7.5(M) 7.6(M)	5.NF.1(M) 5.NF.2(M)	5.NF.3(M) 5.NF.4a(M) 5.NF.5b(M) 5.NF.5b(M) 5.NF.6(M) 5.NF.7a(M) 5.NF.7b(M) 5.NF.7c(M)	5.NF.4 5.MD. 5.MD. 5.MD 5.MD. 5.MD. 5.MD.	3a(M) 3b(M) .4(M) 5a(M) 5b(M)	5.OA.3(A) 5.G.1(A) 5.G.2(A)		
20 Days	35 E	ays	22 Days	38 Days	25 C)ays	40 Days		
Oct. 7	Dec	. 4	Jan. 15	March 20	Ma	y 4	Jun. 19		

Major Work Supporting Content Additional Content

Table of Contents

Ι.	Unit Overview	p. 1
II.	Pacing Guide	р. 2
III.	Pacing Calendar	р. 3-4
IV.	NJSLA Assessment Evidence Statement	р. 5-7
V.	Differentiated Instruction	р. 8
VI.	Vocabulary	р. 9
VII.	Assessment Framework	р. 10
VIII.	Performance Tasks	р. 11-13
IX.	Modifications	р. 14-17
Х.	Core Instruction & Supplemental Resources	р. 18-21

References

"Eureka Math" Great Minds. 2018 < https://greatminds.org/account/products>

I. Unit Overview

In Module 1, students explored the relationships of adjacent units on the place value chart to generalize whole number algorithms to decimal fraction operations. In Module 2, students apply the patterns of the base ten system to mental strategies and the multiplication and division algorithms.

Topics A through D provide a sequential study of multiplication. To link to prior learning and set the foundation for understanding the standard multiplication algorithm, students begin at the concretepictorial level in Topic A. They use place value disks to model multi-digit multiplication of place value units. They then round factors in Lesson 2 and discuss the reasonableness of their products. Throughout Topic A, students evaluate and write simple expressions to record their calculations using the associative property and parentheses to record the relevant order of calculations. In Topic B, place value understanding moves toward understanding the distributive property via area models, which are used to generate and record the partial products of the standard algorithm. Topic C moves students from whole numbers to multiplication with decimals, again using place value as a guide to reason and make estimations about products. In Topic D, students explore multiplication as a method for expressing equivalent measures. Topics E through H provide a similar sequence for division. Topic E begins concretely with place value disks as an introduction to division with multi-digit whole numbers.

Essential Questions

- How can we write and interpret numerical expressions?
- How can we understand the place value system?
- How can we perform operations with multi-digit whole numbers and with decimals to hundredths?
- How do we multiply decimals?
- How do we divide decimals?
- How can we use appropriate tools strategically?
- How can we attend to precision and look for and make use of structure?

Enduring Understanding

- Computation involves taking apart and combining numbers using a variety of approaches.
- Flexible methods of computation involve grouping numbers in strategic ways.
- Proficiency with basic facts aids in estimation and computation of larger and smaller numbers.
- Rectangular arrays, area models and/or equations are effective methods for illustrating and developing conceptual understanding of arithmetic calculations.
- The relationship between multiplication and division can be used to find whole-number quotients of multi-digit dividends and divisors.
- Standard algorithms are efficient methods for performing calculations.
- There are patterns in the number of zeros of the product and quotient when multiplying and dividing by powers of 10.

II. Pacing Guide

Activity	New Jersey State Learning Standards (NJSLS)	Estimated Time (Blocks)
Topic A- Mental Strategies for Multi-Digit Whole Number Multiplication (Lessons 1 -2)	5.NBT.1; 5.NBT.2	2
Topic B- The Standard Algorithm for Multi-Digit Whole Number Multiplication (Lessons 3-9)	5.OA.1; 5.OA.2 <mark>; 5NBT.5</mark>	7
Topic C- Decimal Multi-Digit Multiplication (Lessons 10-12)	5.NBT.7	3
Topic D- Measurement Word Problems with Whole Number & Decimal Multiplication (Lessons 13-15)	5.NBT.3; 5.NBT.7; <mark>5.MD.1</mark>	3
Mid- Module Assessment (Topics A-D) Optional	5.NBT.1; 5.NBT.2; 5.NBT.5; 5.NBT.6; 5.NBT.7; 5.OA.1; 5.OA.2	1⁄2
Unit/Module 2 Return/ Remediation or Further Application	5.NBT.1; 5.NBT.2; 5.NBT.3; 5.NBT.4	2
Topic E- Mental Strategies for Multi-Digit Whole Number Division (Lessons 16-18)	5.NBT.1; 5.NBT.2; 5.NBT.6	3
Topic F- Partial Quotients and Multi-Digit Whole Number Division (Lessons 19-23)	5.NBT.6	5
Topic G- Partial Quotients and Multi-Digit Decimal Division (Lessons 24-27)	5.NBT.2; 5.NBT.7	4
Topic H- Measurement Word Problems with Multi-Digit Division (Lessons 28-29)	5.NBT.6; 5.NBT.7	2
Unit/Module 2 Return/ Remediation or Further Application	5.NBT.1; 5.NBT.2; 5.NBT.3; 5.NBT.4; 5.NBT.7	2 1⁄2
End-of-Module Assessment (Topics A-H) Optional	5.NBT.1; 5.NBT.2; 5.NBT.5; 5.NBT.6; 5.NBT.7; <mark>5.OA.1;</mark> 5.OA.2; <mark>5.MD.1</mark>	1⁄2
Unit 2 Performance Task	5.NBT.2	1/2
Total Time		35 Blocks
Grade 5 Interim Assessment 1	5.NBT.1; 5.NBT.3a; 5.NBT.3b; 5.NBT.4	1

Major Work Supporting Content Additional Content

III. Pacing Calendar

Please complete the pacing calendar based on the suggested pacing (see Pacing Guide on page 1).

	OCTOBER								
Sunday	Monday	Tuesday	Wednesday 2	Thursday 3	Friday 4	Saturday 5			
			-	Ŭ		Ū			
6	7	8	9	10	11	12			
13	14	15	16	17	18	19			
20	21	22	23	24	25	26			
27	28	29	30	31					

Please comp	Please complete the pacing calendar based on the suggested pacing (see Pacing Guide on page 1).							
NOVEMBER								
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday		
					1	2		
3	4	5	6	7	8	9		
10	11	12	13	14	15	16		
17	18	19	20	21	22	23		
24	25	26	27	28	29	30		

DECEMBER								
Sunday 1	2 Monday	Tuesday 3	Wednesday 4	Thursday 5	Friday 6	Saturday 7		
8	9	10	11	12	13	14		
15	16	17	18	19	20	21		
22	23	24	25	26	27	28		
29	30	31						

IV. NJSLA Assessment Evidence Statements Type II Type II Type III

NJSLS	Evidence Statement	Clarification	Math Practices	Calculator ?
<u>5.NBT.1</u>	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.	i) Tasks have "thin context" 2 or no context. ii) Tasks involve the decimal point in a substantial way (e.g., by involving a comparison of a tenths digit to a thousandths digit or a tenths digit to a tens digit).	MP.2 MP.7	No
<u>5.NBT.2</u>	Use whole-number exponents to denote powers of 10.	i) For the explain aspect of 5.NBT.2, see 5.C.3	MP.7	No
<u>5.NBT.3a</u>	Read, write and compare decimals to the thousandths. a. Read and write decimals to thousandths using base- ten numerals, number names, and expanded form, e.g., $347.392 = 3 \times 100 + 4 \times 10 + 7 \times 1 + 3 \times (1/10) + 9 \times (1/100) + 2 \times (1/1000)$.	 i) Tasks have "thin context" or no context. ii) Tasks assess conceptual understanding, e.g., by including a mixture (both within and between items) of expanded form, number names, and base ten numerals. 	MP.7	No
<u>5.NBT.3a</u>	Read, write and compare decimals to the thousandths. b. Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.	 i) Tasks have "thin context" or no context. ii) Tasks assess conceptual understanding, e.g., by including a mixture (both within and between items) of expanded form, number names, and base ten numerals. 	MP.7	No
<u>5.NBT.4</u>	Use place value understanding to round decimals to any place.	i) Tasks have "thin context" or no context.	MP.2	No
<u>5.NBT.5</u>	Fluently multiply multi-digit whole numbers using the standard algorithm.	 i) Tasks assess accuracy. The given factors are such as to require an efficient/ standard algorithm (e.g., 26 × 4871). ii) Factors in the task do 	-	No

5 th Grade Unit	2: Multi-Digit Whole Numbers and Decimal F	raction Operations		
		not suggest any obvious ad hoc or mental strategy (as would be present for example in a case such as 7250 ×40). iii) Tasks do not have a context. iv) For purposes of assessment, the possibilities are 1-digit x 2- digit, 1-digit x 3- digit, 2- digit x 3-digit, or 2-digit x 4- digit v) Tasks are not timed.		
<u>5.NBT.6</u>	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. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.	i) For the illustrate/ explain aspect of 5.NBT.6, see 5.C.1-1, 5.C.2-1, and 5.C.4-3 ii) Tasks involve 3- or 4- digit dividends and one- or two-digit divisors.	MP.1 MP.5	No
<u>5.NBT.7-1</u>	Add two 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	 i) Tasks do not have a context. ii) Only the sum is required. For the explain aspect of 5.NBT.7-1, see 5.C.1-2, 5.C.2-2, and 5.C.4-4 explanations are not assessed here. iii) Prompts may include visual models, but prompts must also present the addends as numbers, and the answer sought is a number, not a picture. iv) Each addend is greater than or equal to 0.01 and less than or equal to 99.99. v) 20% of cases involve a whole number—either the sum is a whole number, or else one of the addends is a whole number presented without a decimal point. (The addends cannot both be whole numbers.) 	MP.5	No

5th Grade Unit 2: Multi-Digit Whole Numbers and Decimal Fraction Operations

1	5 Grade Onit	2. Multi-Digit Whole Numbers and Decimal F			
	<u>5.NBT.7-2</u>	Subtract two 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.	 i) Tasks do not have a context. ii) Only the difference is required. For the explain aspect of 5.NBT.7-2, see 5.C.1-2, 5.C.2-2, 5.C.4-4. iii) Prompts may include visual models, but prompts must also present the subtrahend and minuend as numbers, and the answer sought is a number, not a picture. iv) The subtrahend and minuend are each greater than or equal to 0.01 and less than or equal to 99.99. Positive differences only. (Every included subtraction problem is an unknown-addend problem included in 5.NBT.7-1.) v) 20% of cases involve a whole number—either the difference is a whole number presented without a decimal point, or the subtrahend is a whole number presented without a decimal point. (The subtrahend and minuend cannot both be whole number.) 	MP.5 MP.7	No
	<u>5.NBT.7-3</u>	Multiply tenths with tenths or tenths with 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.	 i) Tasks do not have a context. ii) Only the product is required. For the explain aspect of 5.NBT.7-3, see 5.C.1-2, 5.C.2-2, and 5.C.4-4. iii) Prompts may include visual models, but prompts must also present the factors as numbers, and the answer sought is a number, not a picture. iv) Each factor is greater than or equal to 0.01 and 	MP.5 MP.7	No

5 th Grade Unit	2: Multi-Digit Whole Numbers and Decimal F	raction Operations		
		less than or equal to		
		99.99.The product must		
		not have any non-zero		
		digits beyond the		
		thousandths place. (For		
		example, 1.67 x 0.34 =		
		0.5678 is excluded		
		because the product has		
		an 8 beyond the		
		thousandths place; cf. 5.NBT.3, and see p. 17 of		
		the Number and		
		Operations in Base Ten		
		Progression document.)		
		v) Problems are 2-digit x 2-		
		digit or 1-digit by 3- or 4-		
		digit. (For example, 7.8 x		
		5.3 or 0.3 x 18.24.)		
		vi) 20% of cases involve a		
		whole number—either the		
		product is a whole number,		
		or else one factor is a		
		whole number presented		
		without a decimal point.		
		(Both factors cannot both be whole numbers.		
5.NBT.7-4	Divide in problems involving tenths	i) Tasks do not have a		
<u>0.1101.7 4</u>	and/or hundredths, using concrete	context.		
	models or drawings and strategies	ii) Only the quotient is		
	based on place value, properties of	required. For the explain		
	operations, and/or the relationship	aspect of 5.NBT.7-4, see		
	between addition and subtraction;	5.C.1-2, 5.C.2-2, 5.C.4-4.		
	relate the strategy to a written method	iii) Prompts may include		
	and explain the reasoning used.	visual models, but prompts		
		must also present the		
		dividend and divisor as		
		numbers, and the answer		
		sought is a number, not a	MP.5	
		picture.	MP.7	No
		iv) Divisors are of the form		
		XY, X0, X, X.Y, 0.XY, 0.X,		
		or 0.0X (cf. 5.NBT.6),		
		where X and Y represent		
		non-zero digits. Dividends		
		are of the form XY, X0, X, XYZ.W, XY0.Z, X00.Y,		
		XY.Z, X0.Y, X.YZ, X.Y,		
		X.0Y, 0.XY, or 0.0X, where		
		X, Y, Z, and W represent		
		non-zero digits.		
		v) Quotients are either		

5th Grade Unit 2: Multi-Digit Whole Numbers and Decimal Fraction Operations

5 th Grade Unit	2: Multi-Digit Whole Numbers and Decimal F			
		whole numbers or else decimals terminating at the tenths or hundredths place. (Every included division problem is an unknown-factor problem included in 5.NBT.7-3.) vi) 20% of cases involve a whole number—either the quotient is a whole number, or the dividend is a whole number presented without a decimal point, or the divisor is a whole number presented without a decimal point. (If the quotient is a whole number, then neither the divisor nor the dividend can be a whole number.)		
<u>5.MD.1-1</u>	Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m).	-	MP.5 MP.6	No
<u>5.MD.1-2</u>	Solve multi-step, real world problems requiring conversion among different- sized standard measurement units within a given measurement system.	i) Multi-step problems must have at least 3 steps.	MP.1 MP.6	No
<u>5.0A.1</u>	Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.	i) Expressions have depth no greater than two, e.g., $3\times[5 + (8 \div 2)]$ is acceptable but $3\times[5 + (8 \div \{4-2\})]$ is not.	MP.7	No
<u>5.OA.2-1</u>	Write simple expressions that record calculations with numbers. For example, express the calculation "add 8 and 7, then multiply by 2" as 2 x (8 +7).	-	MP.7	No
<u>5.0A.2-2</u>	Interpret numerical expressions without evaluating them. For example, recognize that $3 \times (18932 + 921)$ is three times as large as $18932 + 921$ without having to calculate the indicated sum or product.	-	MP.7	No

5 th Grade Unit 2: Multi-Digit Whole Numbers and Decimal Fraction Operations				
<u>5.C.3</u>	Reason about the place value system itself. Content Scope: Knowledge and skills articulated in 5.NBT.A	ii) Tasks do not involve reasoning about place value in service of some other goal (e.g., to multiply multi-digit numbers). Rather, tasks involve reasoning directly about the place value system, in ways consistent with the indicated content scope	MP.3 MP.6 MP.7	No
<u>5.C.1-2</u>	Base explanations/reasoning on the properties of operations. Content Scope: Knowledge and skills articulated in 5.NBT.7	 i) Tasks do not have a context. ii) Students need not use technical terms such as commutative, associative, distributive, or property. iii) Unneeded parentheses should not be used. For example, use 4 + 3 x 2 rather than 4 + (3 x 2). 	MP.3 MP.6 MP.7 MP.8	No
<u>5.C.2-1</u>	Base explanations/reasoning on the relationship between multiplication and division. Content Scope: Knowledge and skills articulated in 5.NBT.6	-	MP.3 MP.5 MP.6 MP.7	No
<u>5.C.2-2</u>	Base explanations/reasoning on the relationship between addition and subtraction or the relationship between multiplication and division. Content Scope: Knowledge and skills articulated in 5.NBT.7	-	MP.3 MP.6 MP.7	No
<u>5.C.3</u>		 i) Tasks do not involve reasoning about place value in service of some other goal (e.g., to multiply multi-digit numbers). Rather, tasks involve reasoning directly about the place value system, in ways consistent with the indicated content scope. 	MP.3 MP.6 MP.7	No
<u>5.C.4-3</u>	Base arithmetic explanations/ reasoning on concrete referents such as diagrams (whether provided in the prompt or constructed by the student in her response), connecting the diagrams to a written (symbolic) method. Content Scope: Knowledge and skills articulated in 5.NBT.	-	MP.3 MP.5 MP.6	No

5th Grade Unit 2: Multi-Digit Whole Numbers and Decimal Fraction Operations

5 th Grade Unit 2: Multi-Digit Whole Numbers and Decimal Fraction Operations				
<u>5.C.4-4</u>	Base arithmetic explanations/reasoning on concrete referents such as diagrams (whether provided in the prompt or constructed by the student in her response), connecting the diagrams to a written (symbolic) method. Content Scope: Knowledge and skills articulated in 5.NBT.7	-	MP.3 MP.5 MP.6	No
<u>5.D.1</u>	Solve multi-step contextual word problems with degree of difficulty appropriate to Grade 5, requiring application of knowledge and skills articulated in Type I, Sub-Claim A Evidence Statements.	 i) Tasks may have scaffolding. ii) Multi-step problems must have at least 3 steps. iii)For purposes of assessment, the possibilities for multiplication are 1- digit x 2-digit, 1-digit x 3-digit, 2- digit x 3-digit, 2-digit x 4- digit, or 3-digit x 3-digit. 	MP.4	No
<u>5.D.2</u>	Solve multi-step contextual problems with degree of difficulty appropriate to Grade 5, requiring application of knowledge and skills articulated in 4.OA, 4.NBT, 4.NF, 4.MD	 i) Tasks may have scaffolding, if necessary, in order to yield a degree of difficulty appropriate to Grade 5. ii) Multi-step problems must have at least 3 steps. 	MP.4	No

V. Differentiated Instruction

Pacing

If pacing is a challenge, consider the following modifications and omissions. Depending on students' strengths, consider consolidating Lessons 5 and 6. In Lesson 5, omit Problem 1 of the Concept Development, and move directly into renaming with the algorithm after Problem 2. Use the Problem Set from Lesson 6 for independent student practice. Consider consolidating Lessons 7 and 8 as well. Ask students to estimate the product beginning with the Concept Development of Lesson 7, and then use the Problem Set from Lesson 8 for student practice. Similarly, Lessons 11 and 12 can also be consolidated. Use estimation from the outset, and have students practice with the Problem Set from Lesson 12.

It is not recommended to omit any lessons from Topic D as it is a foundation for work later in the year. Students convert measurement units from small to large and from large to small using multiplication. This significantly expedites their understanding of and fluency with conversion and fraction multiplication as the year continues. In Lesson 14, students multiply whole numbers by unit fractions, which they learned to do in Grade 4 Module 5. If necessary, consider moving the fluency activity, "Multiply Unit Fractions," from Lesson 14 to Topic C to provide a few extra days of practice prior to beginning Lesson 14.

Scaffolds

The Common Core State Standards for Mathematics require that "all students must have the opportunity to learn and meet the same high standards if they are to access the knowledge and skills necessary in their post school lives." The writers of A Story of Units agree and feel strongly that accommodations cannot be just an extra set of resources for particular students. Instead, scaffolding must be folded into the curriculum in such a way that it is part of its very DNA. Said another way, faithful adherence to the modules IS the primary scaffolding tool.

See III. The Common Core Approach to Differentiating Instruction (Pg. 14) for additional information.

Use the links below for support with specific groups of learners.

Scaffolds for English Language Learners (Pg. 16-17)

Scaffolds for Students with Disabilities (Pg. 17-18)

Scaffolds for Students Performing Below Grade Level (Pg. 19)

Scaffolds for Students Performing Above Grade Level (Pg. 20)

Scaffolding Instruction for English Language Learners: A Resource Guide for Mathematics

VI. VOCABULARY

Term	Definition
Conversion Factor	The factor in a multiplication sentence that renames one measurement unit as another equivalent unit, e.g., 14 x (1in)- 14 x (112ft); 1 in and 112 ft are the conversion factors.
Decimal Fraction	A proper fraction whose denominator is a power of 10.
Multiplier	A quantity by which a given number—a multiplicand—is to be multiplied.
Parentheses	The symbols used to relate order of operations ().
Decimal	A fraction whose denominator is a power of ten and whose numerator is expressed by figures placed to the right of a decimal point
Digit	Any of the numbers 0 to 9.
Divisor	The number by which another number is divided
Equation	A statement that two expressions are equal (e.g., $3 \times __$ = 12, $5 \times b$ =20, $3 + 2 = 5$).
Equivalence	A state of being equal or equivalent.
Equivalent Measures	e.g., 12 inches = 1 foot; 16 ounces = 1 pound
Estimate	An approximation of the value of a quantity or number.
Exponent	The number of times a number is to be used as a factor in a multiplication expression.
Multiple	A number that can be divided by another number without a remainder like 15, 20, or any multiple of 5.
Pattern	A systematically consistent and recurring trait within a sequence.
Product	The result of multiplying numbers together.
Quotient	The answer of dividing one quantity by another.
Remainder	The number left over when one integer is divided by another.
Renaming	Decomposing or composing a number or units within a number
Rounding	Approximating the value of a given number
Unit Form	Place value counting, e.g., 34 stated as 3 tens 4 ones

VII. Assessment Framework

Unit 2 Assessment Framework				
Assessment	NJSLS	Estimated Time	Format	Graded ?
Mid-Module Assessment (After Topic D - Optional) Eureka Math	5.NBT.1 , 5.NBT.2, 5.NBT.3, 5.NBT.5, 5.NBT.7, 5.OA.1, 5.OA.2; 5.MD.1	½ Block	Individual	Yes
End-of-Module Assessment (After Topic H - Optional) <i>Eureka Math</i>	5.NBT.1 , 5.NBT.2 5.NBT.3, 5.NBT.4, 5.NBT.5, 5.NBT.6 5.NBT.7, 5.OA.1, 5.OA.2, 5.MD.1	1⁄2 Block	Individual	Yes
Grade 5 Interim Assessment 1 (Early November) iReady Standards Mastery	5.NBT.1; 5.NBT.3a; 5.NBT.3b; 5.NBT.4	1 Block	Individual	Yes

Unit 2 Perform	Unit 2 Performance Assessment / PBL Framework					
Assessment	NJSLS	Estimated Time	Format	Graded ?		
Unit 2 Performance Task 1 (Late December) Veronica's Statement	5.NBT.1	1/2 Block	Individual w/ Interview Opportunity	Yes; Rubric		
Unit 2 Performance Task Option 1 (Optional) John's Canvas	5.NBT.7	Teacher Discretion	Teacher Discretion	Yes, if administered		
Extended Constructed Response (ECR)* (click here for access)	Dependent on unit of study & month of administration	Up to 30 minutes	Individual	Yes; Rubric		

* Use the following links to access ECR protocol and district assessment scoring documents:

- Assessment & Data in Mathematics Bulletin

- <u>Extended Constructed Response Protocol</u>

	5 th Grade: Unit 2 Performance Task			
Na	ame Block Date			
V	eronica's Statement (NJSLS 5.NBT.1)			
	class Veronica told her teacher that when you multiply a number by 10, you just always add 0 to e end of the number. Think about her statement (conjecture), then answer the following questions.			
•	When does Veronica's statement (conjecture) work?			
•	When doesn't Veronica's statement (conjecture) work?			
•	Is the opposite true? When you divide a number by 10, can you just remove a 0 from the end of the number? When does that work? When doesn't that work?			
•	Rewrite Veronica's statement (conjecture) so that it is true for ALL numbers.			
•	Write a statement (conjecture) about what happens when you divide a number by 10.			
•	Rewrite your statement (conjecture) again so that it applies to other powers of 10.			
•	Explain how these statements (conjectures) are related to place value. (HINT: Think about the decimal point!)			

5 th Grade Veronica's Statement	Name:	Date:

NJSLS: 5.NBT.1

Type:_____ Teacher: _____

Unit 2 Performance Task 1 PLD Rubric

SOLUTION:

- Student explains that Veronica's conjecture is only true for whole numbers and will not work for decimals. •
- Student explains that the opposite (dividing by 10 and removing a 0) will only work for whole numbers that • end in 0.
- Student generates a conjecture about multiplying by 10 that is true for all numbers. •
- Student adjusts their conjecture so that it applies to other powers of 10. •
- Student's explanation includes a description of how the decimal point moves when you multiply or divide by • a power of 10.

Level 5:	Level 4:	Level 3:	Level 2:	Level 1:
Distinguished	Strong	Moderate	Partial	No
Command Command		Command	Command	Command
 All parts correct Student explains that Veronica's conjecture is only true for whole numbers and will not work for decimals. Student explains that the opposite (dividing by 10 and removing a 0) will only work for whole numbers that end in 0. Student generates a conjecture about multiplying by 10 that is true for all numbers. Student adjusts their conjecture so that it applies to other powers of 10. Student's explanation includes a description of how the decimal point moves when you multiply or divide by a power of 10. 	 All parts correct but explanation contains minor errors Student explains that Veronica's conjecture is only true for whole numbers and will not work for decimals. Student explains that the opposite (dividing by 10 and removing a 0) will only work for whole numbers that end in 0. Student generates a conjecture about multiplying by 10 that is true for all numbers. Student adjusts their conjecture so that it applies to other powers of 10. Student's explanation includes a description of how the decimal point moves when you multiply or divide by a power of 10. 	 2 parts incorrect Student explains that Veronica's conjecture is not always correct and gives some examples of when it will and won't work. Student rewrites Veronica's conjecture but it may not be true of all numbers. Student has difficulty generating conjectures for dividing by 10 and for working with other powers of 10. Student exhibits some sound and some faulty reasoning. Student makes some connection to place value, but explanation does not refer to the movement of the decimal point. 	 Limited Performance Student is unable to explain why Veronica's conjecture is incorrect. Student is unable to generate a conjecture that is correct for all numbers, or adjust the conjecture so that it applies to division and other powers of 10. Student is unable to explain how the task relates to place value. 	No parts correct The student shows no work or justification.

5th Grade: Unit 2 Performance Task Option 1

Name _____ Date _____

John's Canvas (NJSLS 5.NBT.7)

John is purchasing a piece of canvas on which to paint a self-portrait. The canvas is 4.4 feet wide and 2.05 feet long. In order to determine how much paint he needs for his background color, John wants to know the area of his canvas.

1) What is the area of the canvas?

2) In order to frame the canvas, John needs to know the perimeter of the canvas. What is its perimeter?

3) John decides the canvas is too big, so he cuts it in half. What are the new area and perimeter of his canvas?

IX. Modifications

Special Education/ 504:	English Language Learners:
 -Adhere to all modifications and health concerns stated in each IEP. -Give students a MENU options, allowing students to pick assignments from different levels based on difficulty. -Accommodate Instructional Strategies: reading aloud text, graphic organizers, one-on-one instruction, class website (Google Classroom), handouts, definition list with visuals, extended time -Allow students to demonstrate understanding of a problem by drawing the picture of the answer and then explaining the reasoning orally and/or writing , such as Read-Draw-Write -Provide breaks between tasks, use positive reinforcement, use proximity -Assure students have experiences that are on the Concrete- Pictorial- Abstract spectrum by using manipulatives -Implement supports for students with disabilities (click here) Make use of strategies imbedded within lessons -Common Core Approach to Differentiate Instruction: Students with Disabilities (pg 17-18) - Strategies for students with 504 plans 	 Use manipulatives to promote conceptual understanding and enhance vocabulary usage Provide graphic representations, gestures, drawings, equations, realia, and pictures during all segments of instruction During i-Ready lessons, click on "Español" to hear specific words in Spanish Utilize graphic organizers which are concrete, pictorial ways of constructing knowledge and organizing information Use sentence frames and questioning strategies so that students will explain their thinking/ process of how to solve word problems Utilize program translations (if available) for L1/ L2 students Reword questions in simpler language Make use of the ELL Mathematical Language Routines (click here for additional information) Scaffolding instruction for ELL Learners Common Core Approach to Differentiate Instruction: Students with Disabilities (pg 16-17)
Gifted and Talented:	Students at Risk for Failure:
 Elevated contextual complexity Inquiry based or open ended assignments and projects More time to study concepts with greater depth Promote the synthesis of concepts and making real world connections Provide students with enrichment practice that are imbedded in the curriculum such as: Application / Conceptual Development Are you ready for more? Provide opportunities for math competitions Alternative instruction pathways available Common Core Approach to Differentiate Instruction: Students with Disabilities (pg. 20) 	 Assure students have experiences that are on the Concrete- Pictorial- Abstract spectrum Modify Instructional Strategies, reading aloud text, graphic organizers, one-on-one instruction, class website (Google Classroom), inclusion of more visuals and manipulatives, Peer Support Constant parental/ guardian contact Provide academic contracts to students & guardians Create an interactive notebook with samples, key vocabulary words, student goals/ objectives. Plan to address students at risk in your learning tasks, instructions, and directions. Anticipate where the needs will be, then address them prior to lessons. Common Core Approach to Differentiate Instruction: Students with Disabilities (pg 19)

21st Century Life Career Ready Practices describe the career-re should seek to develop in their students. They college, career, and life success. Career Ready career exploration and preparation programs w expectation as a student advance https://www.state.nj.us/educe	ady skills that all educators in all content areas are practices that have been linked to increase Practices should be taught and reinforced in all ith increasingly higher levels of complexity and ces through a program of study.			
 CRP1. Act as a responsible and contributing citizen and employee. CRP2. Apply appropriate academic and technical skills. CRP3. Attend to personal health and financial well-being. CRP4. Communicate clearly and effectively and with reason. CRP5. Consider the environmental, social and economic impacts of decisions. CRP6. Demonstrate creativity and innovation. 	 CRP7. Employ valid and reliable research strategies. CRP8. Utilize critical thinking to make sense of problems and persevere in solving them. CRP9. Model integrity, ethical leadership and effective management. CRP10. Plan education and career paths aligned to personal goals. CRP11. Use technology to enhance productivity. CRP12. Work productively in teams while using cultural global competence. 			
Students are given an opportunity to communicate with peers effectively, clearly, and with the use of technical language. They are encouraged to reason through experiences that				

the use of technical language. They are encouraged to reason through experiences that promote critical thinking and emphasize the importance of perseverance. Students are exposed to various mediums of technology, such as digital learning, calculators, and educational websites.

5 Glade Glit 2. Mait Digit Whole Humbers and Decimal			
Technology Standards: All students will be prepared to meet the challenge of a dynamic global society in which they participate, contribute, achieve, and flourish through universal access to people, information, and ideas. https://www.state.nj.us/education/cccs/2014/tech/			
 8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge. A. Technology Operations and Concepts: Students demonstrate a sound 	 8.2 Technology Education, Engineering, Design, and Computational Thinking - Programming: All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment. A. The Nature of Technology: Creativity and Innovation- Technology systems impact 		
 understanding of technology concepts, systems and operations. B. Creativity and Innovation: Students demonstrate creative thinking, construct knowledge and develop innovative products and process using technology. C. Communication and Collaboration: Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others. 	 every aspect of the world in which we live. B. Technology and Society: Knowledge and understanding of human, cultural, and societal values are fundamental when designing technological systems and products in the global society. C. Design: The design process is a systematic approach to solving problems. D. Abilities in a Technological World: The designed world in a product of a design process that provides the means to convert resources into products and systems. 		
D. Digital Citizenship: Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior.	E. Computational Thinking: Programming- Computational thinking builds and enhances problem solving, allowing students to move beyond using knowledge to creating		
E. Research and Information Fluency: Students apply digital tools to gather, evaluate, and use of information.	knowledge.		
 F. Critical thinking, problem solving, and decision making: Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources. 			

5th Grade Unit 2: Multi-Digit Whole Numbers and Decimal Fraction Operations

Interdisciplinary Connections:			
English Lar	nguage Arts:		
L.5.3	Use knowledge of language and its conventions when writing, speaking, reading, or listening.		
SL.5.1	Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on <i>grade 5 topics and texts</i> , building on others' ideas and expressing their own clearly.		
W.5.1	Write opinion pieces on topics or texts, supporting a point of view with reasons and information.		

X. Core Instruction & Supplemental Resources

Core Instruction

EUREKA MATH V. 2019 (GREAT MINDS)

GRADE	TEACHER RESOURCES	STUDENT RESOURCES
К	• Teacher Edition: Module 1-6	Learn Workbook Set: Module 1-6
	Eureka Math Teacher Resource Pack	 Succeed Workbook Set: Module 1-6
(v. 2019)	Eureka K-5 PD Toolkit	• Practice Workbook, Fluency: Module 1-6
	• Teacher Edition: Module 1-6	Learn Workbook Set: Module 1-6
	Eureka Math Teacher Resource Pack	 Succeed Workbook Set: Module 1-6
1	• Eureka K-5 PD Toolkit	Practice Workbook, Fluency: Module 1-6
	• Teacher Edition: Module 1-8	Learn Workbook Set: Module 1-8
	Eureka Math Teacher Resource Pack	 Succeed Workbook Set: Module 1-8
2	Eureka K-5 PD Toolkit	• Practice Workbook, Fluency: Module 1-8
3	• Teacher Edition: Module 1-7	Learn Workbook Set: Module 1-7
5	• Eureka Math Teacher Resource Pack	 Succeed Workbook Set: Module 1-7
	• Eureka K-5 PD Toolkit	Practice Workbook, Fluency: Module 1-7
4	The sheet of the second state of the	
	• Teacher Edition: Module 1-7	Learn Workbook Set: Module 1-7
	Eureka Math Teacher Resource Pack	Succeed Workbook Set: Module 1-7
	Eureka K-5 PD Toolkit	Practice Workbook, Fluency: Module 1-7
5	• Teacher Edition: Module 1-6	Learn Workbook Set: Module 1-6
	Eureka Math Teacher Resource Pack	Succeed Workbook Set: Module 1-6
	Eureka K-5 PD Toolkit	Practice Workbook, Fluency: Module 1-6

5 Practices for Orchestrating Productive Mathematics Discussions

Anticipate	Consider how students might mathematically interpret a problem, the array of strategies—both correct and incorrect—that they might use to tackle it, and how those strategies and interpretations might relate to the mathematical concepts, representations, procedures, and practices that you would like the students to learn.
	 Solve the problem yourself first. If possible work with colleagues. Ask yourself the following questions: What strategies have students used in the past? What representations are students most likely to use? What incorrect or unproductive strategies are students likely to try? What things might get in the way of students being able to engage with the problem? How can you remove those barriers? What questions will you ask those who struggle?
Monitor	Pay close attention to students' mathematical thinking and solution strategies as they work on the task.
	 Create a list of strategies the students may produce. Circulate the room. Watch and listen to students as they work. If any students use strategies you anticipated, write their name or group number on your list. Ask questions that will help students make their thinking visible. Ask questions that will help students clarify their thinking. Press students to consider aspects of the task to which they need to attend.
Select	Select particular students to share their work with the rest of the class to get specific mathematics into the open for discussion. The selection of particular students and their solutions is guided by the previously anticipated strategies and your assessment of how each approach will contribute to that goal.
	 Based on the previously anticipated strategies and the mathematical goal of the activity, decide which student strategies to highlight. Select students who will share their work with the class.
Sequence	Make purposeful choices about the order in which students' work is shared to maximize the chances of achieving the mathematical goals for the discussion.
	 Based on the mathematical goal, decide on the purpose for the sequence of work. For example: least efficient to most efficient, concrete to abstract, misconceptions to conceptions, or building representations. Decide in which order students will present their work.
Connect	Help students draw connections between their solutions and other students' solutions as well as the key mathematical ideas in the lesson. Help students to make judgments about the consequences of different approaches for the range of problems that can be solved, one's likely accuracy and efficiency in solving them, and the kinds of mathematical patterns that can be most easily discerned. Know where you want the discussion to "land" and make choices that are likely to get you there. If necessary, you may have to demonstrate an approach that students didn't come up with themselves.
	 As students share, ask questions to elicit and clarify student thinking. After each student shares, ask questions to connect it to previously shared work or ask a student to summarize what another student said in their own words. Ask students to compare and contrast strategies or representations during the discussion. If students did not come up with an approach that you need them to see in order for the discussion to "land," demonstrate this approach and connect it to the work that students did.

Whole Group Instruction INSTRUCTION (Grades 3 - 8) Daily Routine: Mathematical Content or Language Routine (7 - 10 min) Anchor Task: Anticipate, Monitor, Select, Sequence, Connect Tech Integration: Digital applets embedded within lessons designed to enhance student Collaborative Work* Guided Learning/Guided Practice Independent Work (Demonstration of Student Thinking) Additional Activities / Let's Practice Independent Work (Demonstration of Student Thinking) Additional Activities / Let's Practice Rotation Stations (Student Notebooks & Chromebooks Needed) STATION 1: Focus on current Grade Level Content STUDENT EXPLORATION* Independent or groups of 2-3 Emphasis on MP's 3, 6 (Reasoning and Precision) And MP's 1 & 4 (Problem Solving and Application) STATION 2: Focus on Student Needs TECH INTEGRATION iReady -i-Ready delivers online lessons driven by student data to provide tailored instruction that meets students where they are in their learning trajectory. TARGETED INSTRUCTION 4 - 5 Students	IDEAL MATH BLOCK				
Rotation Stations (Student Notebooks & Chromebooks Needed)1-2X 30 minFocus on current Grade Level ContentFocus on Student NeedsFocus on Grade Content1-2X Solving and Application)1-2X TOOL S/RESOURCES1-2X Solving and ApplicationFocus on Student NeedsFocus on Grade Content1-2X Solving and Application)1-2X And MP's 1 & 4 (Problem Solving and Application)Focus on Student NeedsFocus on Grade Content; heavily scaffolded to condent1-2X Solving and Application)1-2X And MP's 1 & 4 (Problem Solving and Application)Focus on Student NeedsFocus on Grade Content; heavily scaffolded to condent1-2X Solving and Application)1-2X And MP's 1 & 4 (Problem Solving and Application)Focus on Student NeedsFocus on Grade Content; heavily scaffolded to condent1-2X Solving and Application)1-2X And MP's 1 & 4 (Problem Solving and Application)Focus on Student NeedsFocus on Grade Content; heavily Solving and Precision)1-2X Solving and Application)1-2X And MP's 1 & 4 (Problem Solving and Application)Focus on Student NeedsTOOLS/RESOURCES1-2X Solving and Application1-2X Student data to provide tailored instruction that meets students where they are inFocus on Student NeedsTOOLS/RESOURCES	Daily Routine: Mathematical Content or Language Routine (7 - 10 min) Anchor Task: Anticipate, Monitor, Select, Sequence, Connect Tech Integration: Digital applets embedded within lessons designed to enhance student learning Collaborative Work* Guided Learning/Guided Practice Independent Work (Demonstration of Student Thinking)				
Extra Practice/Enrichment Are you ready for more? Put Your Thinking Cap OnDreambox (ELL) – Adaptive online learning platform.Reteach Workby Transition Guid *all students seen in	e Level y mnect N OURCES ook ie				
Closure 5 min INSTRUCTION Exit Ticket (Demonstration of Student Thinking) TOOLS/RESOURCES Notebooks or Exit Ticket Slips * Promotes discourse and collaboration					

5th Grade Unit 2: Multi-Digit Whole Numbers and Decimal Fraction Operations

Supplemental Resources

Achieve the Core

Tasks - https://achievethecore.org/category/416/mathematics-tasks

Coherence Map - https://achievethecore.org/page/1118/coherence-map

Embarc

https://embarc.online/

Engage NY

https://www.engageny.org/ccss-library/?f%5B0%5D=field_subject%253Aparents_all%3A13601

Greatminds

https://greatminds.org/math

iReady Digital Platform

https://login.i-ready.com/

Illustrative Mathematics

Content Standard Tasks - https://tasks.illustrativemathematics.org/content-standards

Practice Standard Tasks - https://tasks.illustrativemathematics.org/practice-standards

Open Up Resources - https://access.openupresources.org/sign_in

iM Additional Resources - https://bit.ly/imshare

Khan Academy

https://www.khanacademy.org/math/illustrative-math

NJDOE Digital Item Library

https://nj.digitalitemlibrary.com/home?subject=Math

Ready Teacher Toolbox

https://teacher-toolbox.com/