Orange Public Schools

Office of Curriculum & Instruction

2019-2020 Mathematics Curriculum Guide

5th Grade Mathematics

Eureka Math - Unit 3: Addition and Subtraction of Fractions

December 5, 2019 – January 15, 2020

Board Approved: 1.14.2020

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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	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
5	Unit 1 5.NBT	Unit 2 5.NBT		Unit 3 5.NF	Unit 4 5.NF		Unit 5 5.MD		Unit 6 5.OA & 5.G	
6	Unit 1 6.G	Unit 2 6.RP	Unit 3 6.RP	Unit 4 6.NS	Unit 5 6.NS		Unit 6 6.EE	Unit 7 6.NS	Unit 8 6.SP	
7	Unit 1 7.G	Unit 2 7.RP	Unit 3 7.G	Unit 4 7.RP	Unit 5 7.NS	Unit 6 7.EE		Unit 7 7.G	Unit 8 7.SP	
8	Unit 1 8.G	Unit 2 8.G	Unit 3 8.EE	Unit 4 8.EE	Unit 5 8.F		Unit 6 8.SP	Unit 7 8.EE	Unit 8 8.G	

Unit 1	**Number & Ops in Base Ten:** Place Value & Decimal Fractions	Unit 2	**Number & Ops in Base Ten:** Multi-Digit Whole Numbers & Decimal Fraction Operations	Unit 3	**Number & Ops-Fractions:** Addition & Subtraction of Fractions
Unit 4	**Number & Ops-Fractions:** Multiplication & Division of Fractions	Unit 5	**Measurement & Data:** Addition & Multiplication with Volume & Area	Unit 6	**Algebraic Thinking / Geometry:** Problem Solving w/ Coordinate Plane

2019-2020 Grade 5 (Eureka)					
Quarter 1		**Quarter 2**	**Quarter 3**		**Quarter 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.1(M) 5.NBT.2(M) 5.NBT.5(M) 5.NBT.6(M) 5.NBT.7(M)	5.NF.1(M) 5.NF.2(M)	5.NF.3(M) 5.NF.4a(M) 5.NF.5a(M) 5.NF.5b(M) 5.NF.6(M) 5.NF.7a(M) 5.NF.7b(M) 5.NF.7c(M)	5.NF.4b(M) 5.MD.3a(M) 5.MD.3b(M) 5.MD.4(M) 5.MD.5a(M) 5.MD.5b(M) 5.MD.5c(M)	5.OA.3(A) 5.G.1(A) 5.G.2(A)
20 Days	35 Days	22 Days	38 Days	25 Days	40 Days
Oct. 7	Dec. 4	Jan. 15	March 20	May 4	Jun. 19

Major Work Supporting Content Additional Content

Table of Contents

References

“Eureka Math” *Great Minds.* 2018 < https://greatminds.org/account/products>

I. Unit Overview

In Module 3, students' understanding of addition and subtraction of fractions extends from earlier work with fraction equivalence and decimals. This module marks a significant shift away from the elementary grades' centrality of base ten units to the study and use of the full set of fractional units from Grade 5 forward, especially as applied to algebra.

In Topic A, students revisit the foundational Grade 4 standards addressing equivalence. When equivalent, fractions represent the same amount of area of a rectangle and the same point on the number line. These equivalencies can also be represented symbolically. Furthermore, equivalence is evidenced when adding fractions with the same denominator. The sum may be decomposed into parts (or recomposed into an equal sum). In Topic B, students move forward to see that fraction addition and subtraction are analogous to whole number addition and subtraction. Students add and subtract fractions with unlike denominators by replacing different fractional units with an equivalent fraction or like unit.

Throughout the module, a concrete to pictorial to abstract approach is used to convey this simple concept. In Topic C, students move away from the pictorial altogether as they are empowered to write equations clarified by the model.

Topic C also uses the number line when adding and subtracting fractions greater than or equal to 1 so that students begin to see and manipulate fractions in relation to larger whole numbers and to each other. The number line allows students to pictorially represent larger whole numbers. In Topic D, students strategize to solve multi-term problems and more intensely assess the reasonableness of their solutions to equations and word problems with fractional units.

Essential Questions

- How can we use equivalent fractions as a strategy to 18 add and subtract fractions with unlike denominators?
- How can we explain why fractions are equivalent using visual fraction models?
- How can we solve word problems involving adding and subtracting fractions with unlike denominators?
- How can we explain why fractions are equivalent using visual fraction models?
- How can we decompose fractions in more than one way?
- How can we reason abstractly and quantitatively?
- How can we construct viable arguments and critique the reasoning of others?
- How can we use appropriate tools strategically?
- How can we attend to precision and look for and make use of structure?

Enduring Understanding

- When adding and subtracting fractions it is implied that the whole is the same.
- When adding and subtracting fractions, having the same denominator produces the same size parts.
- When adding and subtracting fractions with unlike denominators, a common denominator can be made by using equivalent fractions, which keeps the value of each fraction the same.

II. Pacing Guide

Activity	New Jersey State Learning Standards (NJSLS)	Estimated Time (Blocks)
Topic A: Equivalent Fractions (Lessons 1 -2)	4.NF.1; 4.NF.3c ; 4.NF.3d	2
Topic B- Making Like Units Pictorially (Lessons 3-7)	5.NF.1 ; 5.NF.2	5
Mid- Module Assessment (Topics A-B) *Optional*	5.NF.1 ; 5.NF.2	½
Unit/Module 3 Return/ Remediation or Further Application	5.NF.1 ; 5.NF.2	2 ½
Topic C- Making Like Units Numerically (Lessons 8-12)	5.NF.1 ; 5.NF.2	5
Topic D- Further Applications (Lessons 13-16)	5.NF.1 ; 5.NF.2	4
Unit/Module 3 Return/ Remediation or Further Application	5.NF.1 ; 5.NF.2	2
End-of-Module Assessment (Topics A-D) *Optional*	5.NF.1; 5.NF.2	½
Unit 3 Performance Task	5.NF.1	½
Total Time		**22 Blocks**
Grade 5 Interim Assessment 2	5.NBT.5; 5.NBT.6; 5.NBT.7a; 5.NBT.7b	**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)*.

DECEMBER

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**	**31**				

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

JANUARY

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	31	

IV. NJSLA Assessment Evidence Statements

Type I Type II Type III

NJSLS	Evidence Statement	Clarification	Math Practices	Calculator ?
5.NF.1-1	Add two fractions with unlike denominators, or subtract two fractions with unlike denominators, by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. For example, 2/3 + 5/4 = 8/12 + 15/12 = 23/12. (In general, a/b + c/d = (ad+bc)/bd.)	i) Tasks have no context. ii) Tasks ask for the answer or ask for an intermediate step that shows evidence of using equivalent fractions as a strategy. iii) Tasks do not include mixed numbers. iv) Tasks may involve fractions greater than 1 (including fractions equal to whole numbers). v) Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy.	MP.6 MP.7	No
5.NF.1-2	Add three fractions with no two denominators equal by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum of fractions with like denominators. For example, 1/2 + 1/3 + 1/4 = (3/6 + 2/6) + 1/4 = 5/6 + 1/4 = 10/12 + 3/12 = 13/12 or alternatively 1/2 + 1/3 + 1/4 = 6/12 + 4/12 + 3/12 = 13/12.	i) Tasks have no context. ii) Tasks ask for the answer or ask for an intermediate step that shows evidence of using equivalent fractions as a strategy. iii) Tasks do not include mixed numbers. iv) Tasks may involve fractions greater than 1. v) Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy.	MP.6 MP.7	No

5.NF.1-3	Compute the result of adding two fractions and subtracting a third, where no two denominators are equal, by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. For example, 1/2 + 1/3 – 1/4 or 7/8 – 1/3 + 1/2.	i) Tasks have no context. ii) Tasks ask for the answer or ask for an intermediate step that shows evidence of using equivalent fractions as a strategy. iii) Subtraction may be either the first or second operation. The fraction being subtracted must be less than both the other two. iv) Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy.	MP.6 MP.7	No
5.NF.1-4	Add two mixed numbers with unlike denominators, expressing the result as a mixed number, by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum with like denominators. For example, 3 1/2 + 2 2/3 = (3 + 2) + (1/2 + 2/3) = 5 + (3/6 + 4/6) = 5 + 7/6 = 5 + 1 + 1/6 = 6 1/6.	i) Tasks have no context. ii) Tasks ask for the answer or ask for an intermediate step that shows evidence of using equivalent fractions as a strategy. iii) Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy.	MP.6 MP.7	No
5.NF.1-5	Subtract two mixed numbers with unlike denominators, expressing the result as a mixed number, by replacing given fractions with equivalent fractions in such a way as to produce an equivalent difference with like denominators.	i) Tasks have no context. ii) Tasks ask for the answer or ask for an intermediate step that shows evidence of using equivalent fractions as a strategy. iii) Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy.	MP.6 MP.7	No
5.NF.2-1	Solve word problems involving addition and subtraction of fractions referring to the same whole, in cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem.	-	MP.1 MP.4 MP.5	No

5.NF.2-2	Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers to word problems involving addition and subtraction of fractions referring to the same whole in cases of unlike denominators. For example, recognize an incorrect result 2/5 + 1/2 = 3/7, by observing that 3/7 < 1/2.	i) The situation types are those shown in Table 2, p. 9 of the OA Progression document, sampled equally. ii) Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy. iii) Tasks may involve fractions greater than one, including mixed numbers.	MP.2 MP.5 MP.7	No
5.C.4-1	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.NF.2	-	MP.3 MP.5 MP.6	No
5.C.7-2	Distinguish correct explanation/reasoning from that which is flawed, and – if there is a flaw in the argument – present corrected reasoning. (For example, some flawed 'student' reasoning is presented and the task is to correct and improve it.) Content Scope: Knowledge and skills articulated in 5.NF.2	-	MP.3 MP.6 MP.7	No
5.C.7-3	Distinguish correct explanation/reasoning from that which is flawed, and – if there is a flaw in the argument – present corrected reasoning. (For example, some flawed 'student' reasoning is presented and the task is to correct and improve it.) Content Scope: Knowledge and skills articulated in 5.NF.1	-	MP.3 MP.6	No

5.C.7-4	Distinguish correct explanation/reasoning from that which is flawed, and – if there is a flaw in the argument – present corrected reasoning. (For example, some flawed 'student' reasoning is presented and the task is to correct and improve it.) Content Scope: Knowledge and skills articulated in 4.NBT, 4.NF.A, 4.NF.B	i) Tasks may have scaffolding, if necessary, in order to yield a degree of difficulty appropriate to Grade 5.	MP.3 MP.6	No
5.D.2	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	-	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
Benchmark Fraction	e.g., 1/2 is a benchmark fraction when comparing 1/3 and 3/5)
Like denominators	e.g., 1/8 and 5/8
Unlike denominators	e.g., 1/8 and 1/7
Between	e.g., 1/2 is between 1/3 and 3/5
Denominator	denotes the fractional unit: fifths in 3 fifths, which is abbreviated as the 5 in 3/5
Equivalent fraction	e.g., 3/5 = 6/10
Fraction	e.g., 3 fifths or 3/5
Fraction greater than or equal to 1	e.g., 7/3 , 3 1/2 , an abbreviation for 3 + 1/2
Fractional unit	e.g., the fifth unit in 3 fifths denoted by the denominator 5 in 3/5
Hundredth	1/100 or 0.01
Number sentence	e.g., Three plus seven equals ten. Usually written as 3 + 7 = 10.
Numerator	denotes the count of fractional units: 3 in 3 fifths or 3 in 3/5
One tenth of	e.g., 1/10 × 250
Tenth	1/10 or 0.1
Whole unit	e.g., any unit that is partitioned into smaller, equally sized fractional units

VII. Assessment Framework

Unit 3 Assessment Framework				
Assessment	**NJSLS**	**Estimated Time**	**Format**	**Graded ?**
Mid-Module Assessment (After Topic B - Optional) *Eureka Math*	5.NF.1 , 5.NF.2	1 Block	Individual	Yes
End-of-Module Assessment (After Topic D - Optional) *Eureka Math*	5.NF.1 , 5.NF.2	1 Block	Individual	Yes
Grade 5 Interim Assessment 2 (Mid-January) *iReady Standards Mastery*	5.NBT.5; 5.NBT.6; 5.NBT.7a-b	1 Block	Individual	Yes

Unit 3 Performance Assessment / PBL Framework				
Assessment	**NJSLS**	**Estimated Time**	**Format**	**Graded ?**
Unit 3 Performance Task 1 (Mid-January) *Egyptian Fractions*	5.NF.A.1	½ Block	Individual w/ Interview Opportunity	Yes; Rubric
Unit 3 Performance Task Option 1 (Optional) *Sharing Lunches*	5.NF.A.2	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

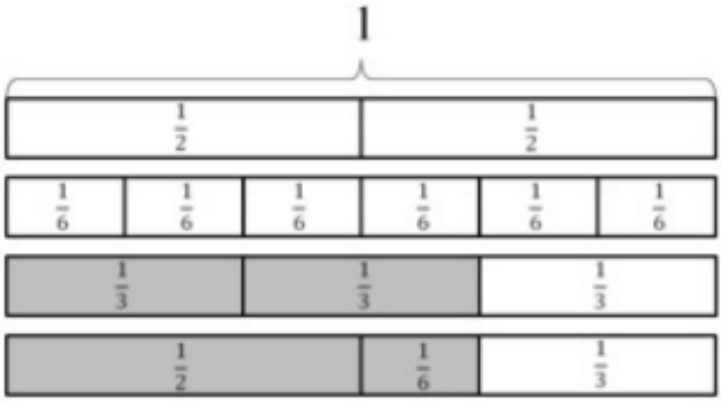
* Use the following links to access ECR protocol and district assessment scoring documents:

- *Assessment & Data in Mathematics Bulletin*
- *Extended Constructed Response Protocol*

Name _____ Block _____ Date _____

Egyptian Fractions **(NJSLS 5.NF.A.1)**

Ancient Egyptians used unit fractions, such as $\frac{1}{2}$ and $\frac{1}{3}$, to represent all fractions. For example, they might write the number $\frac{2}{3}$ as $\frac{1}{2} + \frac{1}{6}$.



We often think of $\frac{2}{3}$ as $\frac{1}{3} + \frac{1}{3}$, but the ancient Egyptians would not write it this way because they didn't use the same unit fraction twice.

a. Write each of the following Egyptian fractions as a single fraction:

i. $\frac{1}{2} + \frac{1}{3}$,

ii. $\frac{1}{2} + \frac{1}{3} + \frac{1}{5}$,

iii. $\frac{1}{4} + \frac{1}{5} + \frac{1}{12}$.

b. How might the ancient Egyptians have writen the fraction we write as $\frac{3}{4}$?

5th Grade Egyptian Fractions Name: _____ Date: _____

NJSLS: 5.NF.1 Type:_____ Teacher: _____

Unit 3 Performance Task 1 PLD Rubric

SOLUTION:

a) (i.) 5/6 (ii.) 31/30 (iii.) 32/60

b) Student writes ¾ as the sum different unit fractions. Possible solutions are included the scoring guide (see page 14-15)

Level 5: Distinguished Command	**Level 4: Strong Command**	**Level 3: Moderate Command**	**Level 2: Partial Command**	**Level 1: No Command**
Clearly constructs and communicates a complete response based on concrete referents provided in the prompt or constructed by the student such as diagrams that are connected to a written (symbolic) method, number line diagrams or coordinate plane diagrams, including: • a logical approach based on a conjecture and/or stated assumptions • a logical and complete progression of steps • complete justification of a conclusion with minor computational error	Clearly constructs and communicates a complete response based on concrete referents provided in the prompt or constructed by the student such as diagrams that are connected to a written (symbolic) method, number line diagrams or coordinate plane diagrams, including: • a logical approach based on a conjecture and/or stated assumptions • a logical and complete progression of steps • complete justification of a conclusion with minor conceptual error	Clearly constructs and communicates a complete response based on concrete referents provided in the prompt or constructed by the student such as diagrams that are connected to a written (symbolic) method, number line diagrams or coordinate plane diagrams, including: • a logical, but incomplete, progression of steps • minor calculation errors • partial justification of a conclusion • a logical, but incomplete, progression of steps	Constructs and communicates an incomplete response based on concrete referents provided in the prompt such as: diagrams, number line diagrams or coordinate plane diagrams, which may include: • a faulty approach based on a conjecture and/or stated assumptions • An illogical and Incomplete progression of steps • majr calculation errors • partial justification of a conclusion	No parts are correct. The student shows no work or justification.

5th Egyptian Fractions – Scoring Guide

	Solution
a.	For the Egyptian fraction $\frac{1}{2}+\frac{1}{3}$, a common denominator would be 6 since 6 is divisible by both 2 and 3. Converting to this common denominator we find $$\begin{aligned}\frac{1}{2}+\frac{1}{3} &= \frac{3\times 1}{3\times 2}+\frac{2\times 1}{2\times 3}\\ &= \frac{3}{6}+\frac{2}{6}\\ &= \frac{5}{6}.\end{aligned}$$ For $\frac{1}{2}+\frac{1}{3}+\frac{1}{5}$ we could use what we have just found, namely that $\frac{1}{2}+\frac{1}{3}=\frac{5}{6}$. To add $\frac{5}{6}$ and $\frac{1}{5}$ we can use $5\times 6=30$ as a common denominator: $$\begin{aligned}\frac{1}{2}+\frac{1}{3}+\frac{1}{5} &= \frac{5}{6}+\frac{1}{5}\\ &= \frac{5\times 5}{5\times 6}+\frac{6\times 1}{6\times 5}\\ &= \frac{25+6}{30}\\ &= \frac{31}{30}.\end{aligned}$$ For $\frac{1}{4}$, $\frac{1}{5}$, and $\frac{1}{12}$ note that 12 is divisible by 4 so we can look for a common denominator of $\frac{1}{5}$ and $\frac{1}{12}$ and this will also work with $\frac{1}{4}$. For $\frac{1}{5}$ and $\frac{1}{12}$ we can use 5×12 as a common denominator: $$\begin{aligned}\frac{1}{4}+\frac{1}{5}+\frac{1}{12} &= \frac{15\times 1}{15\times 4}+\frac{12\times 1}{12\times 5}+\frac{5\times 1}{5\times 12}\\ &= \frac{15}{60}+\frac{12}{60}+\frac{5}{60}\\ &= \frac{15+12+5}{60}\\ &= \frac{32}{60}.\end{aligned}$$ As a parenthetical note, this gives an example where even though we found the least common denominator to perform the addition, the resulting fraction is not in reduced form: the reduced form is $\frac{8}{15}$.

b.

To write $\frac{3}{4}$ as an Egyptian fraction, we might notice that

$$\begin{aligned}\frac{3}{4} &= \frac{2+1}{4} \\ &= \frac{2}{4} + \frac{1}{4} \\ &= \frac{1}{2} + \frac{1}{4}.\end{aligned}$$

Alternatively, since $\frac{1}{2}$ is the largest of the unit fractions that is less than $\frac{3}{4}$ it would be reasonable to take $\frac{1}{2}$ as one of the unit fractions in the Egyptian fraction expression for $\frac{3}{4}$. Performing subtraction gives

$$\begin{aligned}\frac{3}{4} - \frac{1}{2} &= \frac{3}{4} - \frac{2 \times 1}{2 \times 2} \\ &= \frac{3}{4} - \frac{2}{4} \\ &= \frac{1}{4}.\end{aligned}$$

This gives us the same expression as above: $\frac{3}{4} = \frac{1}{2} + \frac{1}{4}$.

There are many other ways to write $\frac{3}{4}$ as an Egyptian fraction. Since

$$\begin{aligned}\frac{1}{2} &= \frac{3}{6} \\ &= \frac{2}{6} + \frac{1}{6} \\ &= \frac{1}{3} + \frac{1}{6}\end{aligned}$$

and since $\frac{3}{4} = \frac{1}{2} + \frac{1}{4}$ we have another expression of $\frac{3}{4}$ as an Egyptian fraction, namely

$$\frac{3}{4} = \frac{1}{3} + \frac{1}{6} + \frac{1}{4}.$$

All Egyptian fractions share this same property: there are always endless ways to write an Egyptian fraction.

Name _____ Block _____ Date _____

Sharing Lunches (5.NF.A.2)

Task

Alex, Bryan, and Cynthia are about to eat lunch, and they have two sandwiches to share.

A. Draw a picture to show how they could equally share the sandwiches. How much of a sandwich does each person get?

B. Write an equation involving addition to show how together these parts make up the 2 sandwiches. Explain how the equation you wrote represents this situation.

C. Write an equation involving multiplication to show how all the parts make up the 2 sandwiches. Explain how the equation you wrote represents this situation.

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 and Career Skills:

Career Ready Practices describe the career-ready skills that all educators in all content areas should seek to develop in their students. They are practices that have been linked to increase college, career, and life success. Career Ready Practices should be taught and reinforced in all career exploration and preparation programs with increasingly higher levels of complexity and expectation as a student advances through a program of study.
https://www.state.nj.us/education/cccs/2014/career/9.pdf

- **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 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.

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 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.
D. **Digital Citizenship:** Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior.
E. **Research and Information Fluency:** Students apply digital tools to gather, evaluate, and use of information.
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.

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 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.
E. **Computational Thinking: Programming-** Computational thinking builds and enhances problem solving, allowing students to move beyond using knowledge to creating knowledge.

Interdisciplinary Connections:	
English Language 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 *grade 5 topics and texts*, 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
K (v. 2019)	• **Teacher Edition: Module 1-6** • Eureka Math Teacher Resource Pack • Eureka K-5 PD Toolkit	• Learn Workbook Set: Module 1-6 • Succeed Workbook Set: Module 1-6 • Practice Workbook, Fluency: Module 1-6
1	• **Teacher Edition: Module 1-6** • Eureka Math Teacher Resource Pack • Eureka K-5 PD Toolkit	• Learn Workbook Set: Module 1-6 • Succeed Workbook Set: Module 1-6 • Practice Workbook, Fluency: Module 1-6
2	• **Teacher Edition: Module 1-8** • Eureka Math Teacher Resource Pack • Eureka K-5 PD Toolkit	• Learn Workbook Set: Module 1-8 • Succeed Workbook Set: Module 1-8 • Practice Workbook, Fluency: Module 1-8
3	• **Teacher Edition: Module 1-7** • Eureka Math Teacher Resource Pack • Eureka K-5 PD Toolkit	• Learn Workbook Set: Module 1-7 • Succeed Workbook Set: Module 1-7 • Practice Workbook, Fluency: Module 1-7
4	• **Teacher Edition: Module 1-7** • Eureka Math Teacher Resource Pack • Eureka K-5 PD Toolkit	• Learn Workbook Set: Module 1-7 • Succeed Workbook Set: Module 1-7 • Practice Workbook, Fluency: Module 1-7
5	• **Teacher Edition: Module 1-6** • Eureka Math Teacher Resource Pack • Eureka K-5 PD Toolkit	• Learn Workbook Set: Module 1-6 • Succeed Workbook Set: Module 1-6 • 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.

IDEAL MATH BLOCK

Whole Group Instruction	55min	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 learning Collaborative Work* Guided Learning/Guided Practice Independent Work (Demonstration of Student Thinking) Additional Activities / Let's Practice		
Rotation Stations (Student Notebooks & Chromebooks Needed)	1-2X 30 min	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) TOOLS/RESOURCES Practice Problems Extra Practice/Enrichment Are you ready for more? Put Your Thinking Cap On	STATION 2: Focus on Student Needs TECH STATION Independent 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. Dreambox (ELL) – Adaptive online learning platform.	TEACHER STATION: Focus on Grade Level Content; heavily scaffolded to connect deficiencies TARGETED INSTRUCTION 4 – 5 Students TOOLS/ RESOURCES Homework Manipulatives Reteach Workbook Transition Guide *all students seen in 2 weeks
Closure	5 min	INSTRUCTION Exit Ticket (Demonstration of Student Thinking) TOOLS/RESOURCES Notebooks or Exit Ticket Slips		

* Promotes discourse and collaboration

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/