Englewood Public School District Mathematics Grade 5 Second Marking Period

Unit – Multiplying and Dividing Fractions

Overview: During this unit, students will multiply and divide fractions and mixed numbers, algebra and decimals

Time Frame: Chapter 4 – 14 days, Chapter 5 – 11 days, Chapter 8 - 14 days

(Pacing includes 1 day for Chapter Opener pages if needed)

Enduring Understandings:

Whole numbers, fractions, and mixed numbers can be multiplied or divided in any combination.

Algebraic expressions can be used to describe situations and solve real-world problems.

Thousandths can be represented with three decimal places or as fractions.

Decimals can be multiplied and divided in the same way as whole numbers.

Essential Questions:

How can models be used to multiply and divide proper fractions?

How can multiply and dividing fractions be helpful in solving real world problems?

Why are variables used?

Where do you see decimals in your life?

Compare and contrast fractions and decimals.

How can place value patterns be used to multiply and divide decimals?

How can multiplying and dividing decimals be used to solve real world problems?

Standards	Topics and Objectives	Activities	Resources	Assessments
Chapter 4				
5.NF.B.4. Apply and extend	Topics	5.NF.B.4b New Park	SE -5A: 165-203	Unit 2 Benchmark
previous understandings of		5.NF.B.4b Chavone's	Workbook 5A: 131-160	Assessment:
multiplication to multiply a	Multiplying and dividing	Bathroom Tiles		• Exact Path
fraction or whole number by	whole numbers, proper	5.NF.B.5 Comparing	Common Core Focus	
a fraction.	fractions, improper fractions,	Heights of Buildings	Lesson Appendix:	Formative Assessments:
a. Interpret the product	and mixed numbers in any	5.NF.B.5 Grass Seedlings	SE 5A: Common Core Focus	• Do Now
$(a/b) \times q$ as a parts of a	combination.	5.NF.B.5b Mrs. Gray's	Lesson Appendix Chapter 4,	 Exit Ticket

partition of q into b equal parts; equivalently, as the result of a sequence of operations $a \times q \div b$. For example, use a visual fraction model to show $(2/3) \times 4 = 8/3$, and create a story context for this equation. Do the same with $(2/3) \times (4/5) = 8/15$. (In general, $(a/b) \times (c/d) = ac/bd$.)

b. Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.

5.NF.B.5. Interpret multiplication as scaling (resizing), by:

a. Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without

Twenty-First Century
Themes and Skills include:

- Creativity and Innovation
- <u>Critical Thinking and</u> Problem Solving
- Communication and Collaboration

Objectives

Students will be able to:

- Compare the size of a product to the size of its factors.
- Multiply proper fractions.
- Solve real-world problems involving multiplication of proper fractions.
- Multiply improper fractions by proper or improper fractions.
- Multiply a mixed number by a whole number.
- Solve real-world problems involving multiplication of whole numbers and mixed numbers.
- Divide a fraction by a whole number.
- Divide a whole number by a unit fraction.
- Solve real-world problems involving multiplication and division of fractions.

Homework Assignment 5.NF.B.6 To Multiply or not to multiply?

Math Playground
http://www.mathplaygrou
nd.com/

Math Coach – Fact Fluency http://schoolwires.henry. k12.ga.us/Page/21865

Math Wire – Basic Facts Link http://mathwire.com/nu mbersense/bfactslinks.ht ml

Math Fact Practice http://www.playkidsgam es.com/games/mathfact/ mathFact.htm

Critical Thinking and Problem Solving p.199: Put on Your Thinking Cap!

Everything you need to know about math journals:

https://thecornerstoneforte achers.com/math-journals/ (NJSLSA.R1, NJSLSA.W2, NJSLSA.L1) Lesson 4.0

Think Central: Online access to all Math in Focus materials listed above and Virtual Manipulatives

Professional Resources:

The Model Method from the Ministry of Education Singapore and Bar Modeling: A Bar Modeling Tool by Yeap Ban Har, PhD.

Lesson and Component Walkthrough:

www.hmhelearning.com

Technology Resources

- Math in Focus eBooks
- Math in Focus Teacher Resources CD

Standards Solution Lessons:

- PARCC Lesson 18:
 Performance-Based
 Assessment Number and
 Operations-Fractions
- PARCC Lesson 16:
 Practice PARCC Type I
 Number and Operations
 – Fractions
- CCSS Lesson Plan:
 Eggs and Chicks:
 Adding and Subtracting
 Mixed Numbers
- PARCC Lesson 16:

- Math Journal Entries (CRP4)
- Math notebook (NJSLSA.W2.)
- Calendar skills
- Observations
- Discussions: in groups, have students explain different ways of solving problems (CRP4)
- Multiple choice / short answer assessments
- Mini quizzes –
 assess just one
 topic, or what was
 done within 1 or 2
 days (CRP8)

Summative Assessments:

Math in Focus Assessments

Chapter Review/Test – pp. 202-203

Assessments 5 - pp. 33-40

ExamView Assessment Suite – Test and Practice Generator

Alternative Assessments:

Learning centers: each learning center focuses on

performing the indicated multiplication.

b. Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence a/h $= (n \times a)/(n \times b)$ to the effect of multiplying *a/b* by 1.

5.NF.B.6. Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.

5.NF.B.7. Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. (Students able to

 Solve real-world problems involving division of a whole number by a unit fraction.

Dividing with fractions – with graham crackers:
https://www.education.co
m/activity/article/dividing
-fractions-grahamcrackers/
(CRP2)

Multiplying and dividing fractions – cookie recipe task, real world application:

https://www.teacherspayte achers.com/Product/Multi plying-and-Dividing-Fractions-Cookie-Recipe-Task-Real-World-Application-991800 (9.2.8.B.3)

4 Dice – all operations with fractions:

https://www.teacherspayte achers.com/Product/4-Dice-Fraction-Games-Adding-Subtracting-Multiplying-Dividing-Fractions-446613

Children's books:

https://www.the-best-childrens-books.org/math-for-kids.html

More additional texts:

www.newsela.com www.readworks.org www.commonlit.org Practice PARCC Type I Number and Operations – Fractions a different type of problem

• CCSS Lesson Plan:

How Does It Measure Up? Multiplying and Adding Fractions in the Real World

CCSS Lesson Plan:

Parts of a Part: Dividing Fractions by Whole Numbers

• CCSS Lesson Plan:

Guess and Check: Real Life Problems for Adding and Subtracting Fractions

5th grade assessments, interactive, videos, games, lessons, homework:

https://www.opened.com/sea rch?area=mathematics&grad e=5&offset=0&resource_typ e=interactive-assessment (CRP2, CRP4, CRP8)

5th grade worksheets, games, lessons, activities: https://www.education.com/r

esources/fifth-grade/ (CRP2, CRP4, CRP8)

5th grade worksheets:

https://www.k5learning.com/ free-math-worksheets/fifthgrade-5 multiply fractions in general can develop strategies to divide fractions in general, by reasoning about the relationship between multiplication and division. But division of a fraction by a fraction is not a requirement at this grade.)

- a. Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. For example, create a story context for $(1/3) \div 4$, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that $(1/3) \div 4 = 1/12$ because $(1/12) \times 4 = 1/3$.
- b. Interpret division of a whole number by a unit fraction, and compute such quotients. For example, create a story context for $4 \div (1/5)$, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that $4\div (1/5) = 20$ because $20 \times (1/5) = 4$.

(CRP2, CRP4, CRP8)

5th grade common core worksheets:

https://www.ixl.com/math/gr ade-5 (CRP2, CRP4, CRP8)

Khan Academy – videos, lessons, assessments www.khanacademy.org Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem. For example, how much chocolate will each person get if 3 people share 1/2 lb of chocolate equally? How many 1/3-cup servings are in 2 cups of raisins?

Mathematical Practices MP.1, MP.3, MP.4, MP.6, MP.7, MP.8

Chapter 5

5.OA.A.1 Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.

5.OA.A.2 Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. For example, express the calculation "add 8 and 7,

Topics

Using algebraic expressions to describe situations and solve real-world problems.

Twenty-First Century
Themes and Skills include:

- Creativity and Innovation
- <u>Critical Thinking and</u> <u>Problem Solving</u>
- <u>Communication and</u> <u>Collaboration</u>

5.OA.A.1 Using Operations and

Parentheses

5.OA.A.1 Watch out for Parentheses 1

5.OA.B.3 Sidewalk Patterns

Math Coach – Fact Fluency http://schoolwires.henry. k12.ga.us/Page/21865

Math Wire – Basic Facts

SE -5A: 208-245

Workbook 5A: 175-196

Common Core Focus Lesson Appendix

Think Central: Online access to all Math in Focus materials listed above and Virtual Manipulatives

Standards Solution Lessons:

• PARCC Lesson 14:

Formative Assessments:

- Do Now
- Exit Ticket
- Math Journal Entries (CRP4)
- Math notebook (NJSLSA.W2.)
- Calendar skills
- Observations
- Discussions: in groups, have students explain different ways of solving problems

then multiply by 2" as $2 \times (8 + 7)$. Recognize that $3 \times (18932 + 921)$ is three times as large as 18932 + 921, without having to calculate the indicated sum or product.

5.OA.B.3. Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane. For example, given the rule "Add 3" and the starting number 0, and given the rule "Add 6" and the starting number 0, generate terms in the resulting sequences, and observe that the terms in one sequence are twice the corresponding terms in the other sequence. Explain informally why this is so.

Mathematical Practices MP.1, MP.2, MP.3, MP.4, MP.6, MP.7

Objectives

Students will be able to:

- Recognize, write and evaluate simple algebraic expressions with one variable.
- Simplify algebraic expressions with one variable
- Write and evaluate inequalities.
- Solve simple equations.
- Solve real-world problems involving algebraic expressions.

Link http://mathwire.com/nu mbersense/bfactslinks.ht ml

Math Fact Practice http://www.playkidsgam es.com/games/mathfact/ mathFact.htm

Math Playground
http://www.mathplayground.com/

Critical Thinking and Problem Solving p.241: Put on Your Thinking Cap!

5th grade algebra games (write expressions, number patterns, evaluate expressions): https://www.splashmath.c om/algebra-games-for-5th-graders (8.1.5.A.1)

Games, worksheets and quizzes for expressions and equations (scroll down for 5th grade): https://www.mathfox.com/topics/algebra/ (8.1.5.A.1)

Children's books: https://www.the-best-

Practice PARCC Type I

CCSS Prescriptive
Lesson:

Using Brackets and Parenthesis in Numerical Expressions

- PARCC Lesson 14: Practice PARCC Type I
- PARCC Lesson 14: Practice PARCC Type I
- CCSS Prescriptive
 Lesson Plan: Graphing
 Patterns

5th grade assessments, interactive, videos, games, lessons, homework:

https://www.opened.com/sea rch?area=mathematics&grad e=5&offset=0&resource_typ e=interactive-assessment (CRP2, CRP4, CRP8)

5th grade worksheets, games, lessons, activities: https://www.education.com/r esources/fifth-grade/ (CRP2, CRP4, CRP8)

5th grade worksheets: https://www.k5learning.com/ free-math-worksheets/fifthgrade-5 (CRP2, CRP4, CRP8)

5th grade common core worksheets:

- (CRP4)
- Multiple choice / short answer assessments
- Mini quizzes –
 assess just one
 topic, or what was
 done within 1 or 2
 days (CRP8)

Summative Assessments:

Math in Focus Assessments

Chapter Review/Test – pp.244-245

Assessments 5 - pp.43-45

ExamView Assessment Suite – Test and Practice Generator

Alternative Assessments:

Learning centers: each learning center focuses on a different type of problem childrens-books.org/mathfor-kids.html

https://www.ixl.com/math/gr ade-5 (CRP2, CRP4, CRP8,)

More additional texts:

www.newsela.com www.readworks.org www.commonlit.org Khan Academy – videos, lessons, assessments www.khanacademy.org

Chapter 8

5.NBT.A.1. 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.

5.NBT.A.3. Read, write, and compare decimals to thousandths.

a. Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., $347.392 = 3 \times 100 + 4 \times 10 + 7 \times 1 + 3 \times (1/100) + 9 \times (1/1000)$. b. Compare two decimals

to thousandths based on

Topics

Representing thousandths as three-place decimals or as fractions.

Twenty-First Century
Themes and Skills include:

- <u>Creativity and</u> <u>Innovation</u>
- Critical Thinking and Problem Solving Communication and Collaboration

Objectives

Students will be able to:

- Read and write thousandths in decimal and fraction form.
- Represent and interpret thousandths in models or in place-value charts.

5.NBT.A.3 Placing
Thousandths on the
Number Line
5.NBT.A.4 Rounding to
Tenths and Hundredths

Math Playground http://www.mathplaygrou nd.com/

Math Coach – Fact Fluency http://schoolwires.henry. k12.ga.us/Page/21865

Math Wire – Basic Facts Link http://mathwire.com/nu mbersense/bfactslinks.ht ml

Math Fact Practice http://www.playkidsgam es.com/games/mathfact/ SE -5B: 7-29
Workbook 5P: 1 14

Workbook 5B: 1-14

Common Core Focus Lesson Appendix

Think Central: Online access to all Math in Focus materials listed above and Virtual Manipulatives

Standards Solution Lessons:

- PARCC Lesson 15:
 Practice PARCC Type I
 Number and Operations in Base Ten
- PARCC Lesson 15:
 Performance-Based
 Assessment Number and
 Operations in Base Ten
 Decimals
- PARCC Lesson 7:

Formative Assessments:

- Do Now
- Exit Ticket
- Math Journal Entries (CRP4)
- Math notebook (NJSLSA.W2.)
- Calendar skills
- Observations
- Discussions: in groups, have students explain different ways of solving problems (CRP4)
- Multiple choice / short answer assessments
- Mini quizzes assess just one topic, or what was done within 1 or 2 days (CRP8)

meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.

5.NBT.B.4 Use place value understanding to round decimals to any place.

5.NBT.B.7. Add, subtract, multiply, and divide 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.

Mathematical Practices MP.1, MP.6

- Write a fraction with denominator 1,000 as a decimal.
- Compare and order decimals to 3 decimal places.
- Round decimals to the nearest hundredth.
- Rewrite decimals as fractions and mixed numbers in simplest form.

mathFact.htm

Critical Thinking and Problem Solving p.25:
Put on Your Thinking
Cap!

Children's books:

https://www.the-best-childrens-books.org/math-for-kids.html

More additional texts:

www.newsela.com www.readworks.org www.commonlit.org Selected-Response /Sort by Category

- PARCC Lesson 15:
 Practice PARCC Type I
 Number and Operations
 in Base Ten
- CCSS Lesson Plan: Comparing Decimals
- CCSS Prescriptive
 Lesson Plan: Reading,
 Writing, and Comparing
 Decimal Numbers
- PARCC Lesson 15:
 Practice PARCC Type I
 Number and Operations
 in Base Ten

5th grade assessments, interactive, videos, games, lessons, homework:

https://www.opened.com/sea rch?area=mathematics&grad e=5&offset=0&resource_typ e=interactive-assessment (CRP2, CRP4, CRP8)

5th grade worksheets, games, lessons, activities:

https://www.education.com/resources/fifth-grade/(CRP2, CRP4, CRP8,

5th grade worksheets:

https://www.k5learning.com/ free-math-worksheets/fifthgrade-5 (CRP2, CRP4, CRP8,

Summative Assessments:

Math in Focus Assessments

Chapter Review/Test – pp 28-29

Assessments 5 - pp.71-73

ExamView Assessment Suite – Test and Practice Generator

Alternative Assessments:

Learning centers: each learning center focuses on a different type of problem

5th grade common core worksheets:

https://www.ixl.com/math/gr ade-5 (CDD2 CDD4 CDD9)

(CRP2, CRP4, CRP8)

Khan Academy – videos, lessons, assessments www.khanacademy.org

Key Vocabulary:

Chapter 4:

product, common factor, proper fraction, improper fraction, mixed fraction, reciprocal

Chapter 5:

numerical expression, variable, evaluate, simplify, like terms, inequality, equation, true, Equality Properties, solve

Chapter 8:

thousandth, equivalent

Key Vocabulary:

Chapter 1:

hundred thousand, standard form, word form, periods, million, place value, expanded form, greater than(>), less than (<)

Chapter 2:

product, factor, quotient, dividend, divisor, remainder, numeric expression, order of operations

Chapter 3:

multiple, least common multiple, least common denominator, equivalent, benchmarks, division expression, mixed number

Accommodations and Modifications:

Students with special needs: Support staff will be available to aid students related to IEP specifications. 504 accommodations will also be attended to by all instructional leaders. Modifications, alternative assessments, and scaffolding strategies will be used to support this learning. The use of Universal Design for Learning (UDL) will be considered for all students as teaching strategies are considered. Additional staff should be included so

all students can fully participate in the standards associated with this curriculum.

ELL/ESL students: Students will be supported according to the recommendations for "can do's" as outlined by WIDA - https://www.wida.us/standards/CAN DOs/

Students at risk of school failure: Formative and summative data will be used to monitor student success at first signs of failure. Student work will be reviewed to determine support. This may include parent consultation, basic skills review and differentiation strategies. With considerations to UDL, time may be a factor in overcoming developmental considerations. More time will be made available with a certified instructor to aid students in reaching the standards.

Gifted and Talented Students: Students excelling in mastery of standards will be challenged with complex, high level challenges.

English Language Learners:

- Teaching modeling
- Peer modeling
- Word walls
- Give directions in small steps and in as few words as possible
- Provide visual aids
- Group similar problems together
- Repeat directions when necessary
- Provide a vocabulary list with definitions

Special Education:

- Utilize modifications & accommodations delineated in the students' IEP
- Work with paraprofessional
- Work with a partner
- Shorten assignments to focus on mastery or key concepts
- Maintain adequate space between desks
- Keep workspaces clear of unrelated materials
- Provide fewer problems to attain passing grades
- Tape a number line to the students desk
- Create a math journal that they can use during class, on assignments and (if teacher allows) on assessments
- Provide extra time to complete a task when needed

At-Risk:

- Use visual demonstrations, illustrations and models
- Give directions / instructions verbally and in simple written format
- Peer support
- Increased one on one time
- Teachers may modify instructions by modeling what the student is expected to do
- Instructions may be printed out in large print and hung up for the students to see during the time of the lesson
- Review behavior expectations and made adjustments
- Create a math journal that they can use during class, on assignments and (if teacher allows) on

Gifted and Talented:

- Inquiry based instruction
- Independent study
- Higher order thinking skills
- Adjusting the pace of the lessons
- Real world scenarios
- Student driven instruction
- Allow students to complete an independent project as an alternative test

 Provide definitions of different graphs / charts with illustrations Allow tests to be taken in a 	 assessments Allow students to complete an independent project as an alternative test 	
 separate room Allow students to use a calculator when appropriate Divide test into small sections of similar questions 		

Interdisciplinary Connections: ELA

NJSLSA.R1. Read closely to determine what the text says explicitly and to make logical inferences and relevant connections from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.

NJSLSA.W2. Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content

NJSLSA.L1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking

or problems

Integration of Technology Standards NJSLS:

8.1.5.A.1: Select and use the appropriate digital tools and resources to accomplish a variety of tasks including problem solving

21st Century Standards

9.2.8.B.3

Evaluate communication, collaboration, and leadership skills that can be developed through school, home, work, and extracurricular activities for use in a career.

Career Ready Practices:

CRP2: Apply appropriate academic and technical skills **CRP4:** Communicate clearly and effectively and with reason

CRP6: Demonstrate creativity and innovation

CRP8: Utilize critical thinking to make sense of problems and persevere in solving them