## Englewood Public School District Mathematics <br> Grade 5 <br> 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 previous understandings of multiplication to multiply a fraction or whole number by a fraction. <br> a. Interpret the product $(a / b) \times q$ as $a$ parts of a | Topics <br> Multiplying and dividing whole numbers, proper fractions, improper fractions, and mixed numbers in any combination. | 5.NF.B.4b New Park 5.NF.B.4b Chavone's Bathroom Tiles 5.NF.B. 5 Comparing Heights of Buildings 5.NF.B. 5 Grass Seedlings 5.NF.B.5b Mrs. Gray's | SE -5A: 165-203 <br> Workbook 5A: 131-160 <br> Common Core Focus <br> Lesson Appendix: <br> SE 5A: Common Core Focus Lesson Appendix Chapter 4, | Unit 2 Benchmark Assessment: <br> - Exact Path <br> Formative Assessments: <br> - Do Now <br> - 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, $(a / b) \times(c / d)$ $=a c / b d$.)
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 (resiving), 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
- Critical Thinking and 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
Lesson 4.0
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

 Linkhttp://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)

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 $\boldsymbol{a} / \boldsymbol{b}$ $=(n \times a) /(n \times b)$ 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.

Diving 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 a different type of Number and Operations problem

- Fractions
- 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
$5^{\text {th }}$ 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)

## $5^{\text {th }}$ grade worksheets:

https://www.k5learning.com/ free-math-worksheets/fifth-grade-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 nonzero 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 $20 x$ $(1 / 5)=4$.
(CRP2, CRP4, CRP8)

## $5^{\text {th }}$ 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 $1 / 2 \mathrm{lb}$ 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 |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| 5.0A.A. Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols. $\square$ 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 <br> Using algebraic expressions to describe situations and solve real-world problems. <br> Twenty-First Century Themes and Skills include: <br> - Creativity and Innovation <br> - Critical Thinking and Problem Solving <br> - Communication and Collaboration | 5.OA.A. 1 Using <br> Operations and <br> Parentheses <br> 5.OA.A. 1 Watch out for <br> Parentheses 1 <br> 5.OA.B. 3 Sidewalk <br> Patterns <br> Math Coach - Fact <br> Fluency <br> http://schoolwires.henry. <br> k12.ga.us/Page/21865 <br> Math Wire - Basic Facts | SE -5A: 208-245 <br> Workbook 5A: 175-196 <br> Common Core Focus <br> Lesson Appendix <br> Think Central: Online access to all Math in Focus materials listed above and Virtual Manipulatives <br> Standards Solution Lessons: <br> - PARCC Lesson 14: | Formative Assessments: <br> - Do Now <br> - Exit Ticket <br> - Math Journal Entries (CRP4) <br> - Math notebook (NJSLSA.W2.) <br> - Calendar skills <br> - Observations <br> - Discussions: in groups, have students explain different ways of solving problems |


| then multiply by 2" as $2 \times(8$ <br> +7 ). Recognize that $3 \times$ <br> ( $18932+921$ ) is three times as large as $18932+921$, <br> without having to calculate the indicated sum or product. <br> 5.0A.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. <br> Mathematical Practices MP.1, MP.2, MP.3, MP.4, MP.6, MP. 7 | Objectives <br> Students will be able to: <br> - Recognize, write and evaluate simple algebraic expressions with one variable. <br> - Simplify algebraic expressions with one variable <br> - Write and evaluate inequalities. <br> - Solve simple equations. <br> - Solve real-world problems involving algebraic expressions. | Link <br> http://mathwire.com/nu $\underline{\text { mbersense/bfactslinks.ht }}$ ml <br> Math Fact Practice http://www.playkidsgam es.com/games/mathfact/ mathFact.htm <br> Math Playground <br> http://www.mathplaygrou nd.com/ <br> Critical Thinking and Problem Solving p.241: <br> Put on Your Thinking Cap! <br> $5^{\text {th }}$ grade algebra games (write expressions, number patterns, evaluate expressions): https://www.splashmath.c om/algebra-games-for-5th-graders (8.1.5.A.1) <br> Games, worksheets and quizzes for expressions and equations (scroll down for $5^{\text {th }}$ grade): https://www.mathfox.com /topics/algebra/ (8.1.5.A.1) <br> Children's books: https://www.the-best- | Practice PARCC Type I <br> - CCSS Prescriptive <br> Lesson: <br> Using Brackets and Parenthesis in Numerical Expressions <br> - PARCC Lesson 14: Practice PARCC Type I <br> - PARCC Lesson 14: Practice PARCC Type I <br> - CCSS Prescriptive Lesson Plan: Graphing Patterns <br> $5^{\text {th }}$ 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) <br> 5th grade worksheets, games, lessons, activities: https://www.education.com/r esources/fifth-grade/ (CRP2, CRP4, CRP8) <br> $5^{\text {th }}$ grade worksheets: https://www.k5learning.com/ free-math-worksheets/fifth-grade-5 <br> (CRP2, CRP4, CRP8) <br> $5^{\text {th }}$ grade common core worksheets: | (CRP4) <br> - Multiple choice / short answer assessments <br> - Mini quizzes assess just one topic, or what was done within 1 or 2 days (CRP8) <br> Summative Assessments: <br> Math in Focus Assessments <br> Chapter Review/Test -pp.244-245 <br> Assessments 5 - pp.43-45 <br> ExamView Assessment <br> Suite - Test and Practice Generator <br> Alternative Assessments: Learning centers: each learning center focuses on a different type of problem |
| :---: | :---: | :---: | :---: | :---: |


|  | childrens-books.org/math-for-kids.html | https://www.ixl.com/math/gr ade-5 <br> (CRP2, CRP4, CRP8,) |
| :---: | :---: | :---: |
|  | More additional texts: <br> www.newsela.com <br> www.readworks.org <br> www.commonlit.org | Khan Academy - videos, lessons, assessments www.khanacademy.org |


| Chapter 8 |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| 5. | Topics | 5.NBT.A. 3 | SE -5B: 7-29 | Form |
| in | Representing thousandths as three-place decimals or as fractions. | Thousan | Workbook 5B: 1-14 | - Do Now |
| digit in one place represents |  | Number Line |  | Exit T |
| 10 times as much as it |  | 5.NBT.A. 4 Rounding to | Common Core Focus | th Journ |
| represents in the place to its |  | Tenths and Hundredths | Lesson Appendix | Entries (CRP4) |
| right and $1 / 10$ of what it |  |  |  | Math notebook |
| represents | Tw | Math Playg | Think Central: On | (NJSLSA.W2.) |
| left. | Themes and Skills include: | http://www.mathpla | access to all Math in Foc | Calendar skills |
|  | - | nd.com/ | materials listed above and | Observati |
| 5.NBT.A.3. Read, write, and | - | Math Coac | Virtual Manipulatives | Discussions: in groups, have |
| thousan |  |  | Standards Solutio | udents explain |
| a. Read and write |  | http://schoolwires.henry. | Lessons: | fferent ways of |
| decimals to thousandths using base-ten | ollaboration | k12.ga.us/Page/21865 | - PARCC Lesson 15: <br> Practice PARCC Type I | solving problems (CRP4) |
| numerals, number names, and expanded |  | Math Wire - Basic Facts Link | Number and Operations in Base Ten | - Multiple choice <br> short answer |
| $\begin{aligned} & \text { form, e.g., } 347.392= \\ & 3 \times 100+4 \times 10+7 \times 1 \end{aligned}$ | Students will be able to: <br> - Read and write | http://mathwire.com/nu mbersense/bfactslinks.ht | - PARCC Lesson 15: <br> Performance-Based | assessments <br> - Mini quizzes |
| $\times(1 / 10)+$ | thousandths in decimal and fraction form. |  | ssessment Number and Operations in Base Ten | ssess just one pic, or what was |
| $(1 / 100)+2 \times(1 / 1000) .$ | - Represent and interpret | Math Fact Practice | Decimals | done within 1 or 2 days (CRP8) |
| b. Compare two decimals to thousandths based on | thousandths in models or in place-value charts. | http://www.playkidsgam es.com/games/mathfact/ | - PARCC Lesson 7: | 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
$5^{\text {th }}$ 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,
$5^{\text {th }}$ grade worksheets:
https://www.k5learning.com/
free-math-worksheets/fifth-grade-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

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5 grade common core
worksheets:
https://www.ixl.com/math/gr
ade-5
(CRP2, CRP4, CRP8)
Khan Academy - videos,
lessons, assessments
www.khanacademy.org
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## 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 <br> - Allow tests to be taken in a separate room <br> - Allow students to use a calculator when appropriate <br> - Divide test into small sections of similar questions or problems | assessments <br> - Allow students to complete an independent project as an alternative test |  |
| :---: | :---: | :---: |
| Interdisciplinary Connections: ELA <br> NJSLSA.R1. Read closely to determine what the text says explicitly and to textual evidence when writing or speaking to support conclusions drawn from NJSLSA.W2. Write informative/explanatory texts to examine and convey selection, organization, and analysis of content NJSLSA.L1. Demonstrate command of the conventions of standard English | e logical inferences and relevan text. <br> lex ideas and information clear <br> mmar and usage when writing or | nnections from it; cite specific nd accurately through the effective eaking |
| Integration of Technology Standards NJSLS: <br> 8.1.5.A.1: Select and use the appropriate digital tools and resources to acco | sh a variety of tasks including p | em solving |
| $21^{\text {st }}$ Century Standards <br> 9.2.8.B. 3 <br> Evaluate communication, collaboration, and leadership skills that can be dev in a career. | ed through school, home, work, | extracurricular activities for use |
| Career Ready Practices: <br> CRP2: Apply appropriate academic and technical skills <br> CRP4: Communicate clearly and effectively and with reason <br> CRP6: Demonstrate creativity and innovation <br> CRP8: Utilize critical thinking to make sense of problems and persevere in | ing them |  |

[^0]
[^0]:    Major Supporting Additional (Identified by PARCC Model Content Frameworks)

