Gr 5 Unit 3 Fraction concepts, addition and subtraction

Content Area: **Math**
Course(s):
Time Period: **Trimester 1**
Length: **4 Weeks**
Status: **Published**

Course Pacing Guide

In this unit, students build on fraction concepts from previous grades to understand fractions as division. They also use visual models to make estimates, add and subtract fractions and mixed numbers, and check the reasonableness of their answers. Finally, students explore strategies for solving fraction-of problems.

Unit	MP/Trimester	Weeks
Unit 1 Area and Volume	1	3
Unit 2 Whole Number Place Value and Operations	1	4
Unit 3 Fraction Concepts Addition and Subtraction	**1**	**4**
Unit 4 Decimal Concepts and Coordinate Grids	2	4
Unit 5 Operations with Fractions	2	4
Unit 6 Investigations in Measurement;Decimal multiplication and Division	2	4
Unit 7 Multiplication of Mixed Numbers;Geometry;Graphs	3	4
Unit 8 Applications of Measurement, Computation, and Graphing	3	4

3.1

Solve division number stories that lead to fractional answers.

3.2

Solve division number stories and write number models to build an understanding of fractions as division.
3.3
Apply understanding of fractions as division to report remainders as fractions.

3.4

Use number lines to represent, compare and rename fractions.
3.5

Play fraction Top It to devise a rule for making the largest possible fraction. Discuss whether other students' rules work and revise individual rules.

3.6
Use fraction number sense to estimate and assess the reasonableness of answers to fraction addition and subtraction problems.

3.7
Use benchmarks to estimate sums and differences of fractions

3.8

Rename mixed numbers and fractions greater than 1 by composing and breaking apart wholes.

3.9

Explore strategies and tools for adding and subtracting fractions and mixed numbers. 3.10
Use fraction circle pieces to generate equivalent fractions and add fractions.

3.11

Play Fraction Capture to practice breaking apart and adding fractions.

3.12

Identify problem solving strategies and solve a variety of fraction number stories.

3.13
Solve fraction-of problems to build readiness for multiplying fractions by whole numbers.

3.14

Solve fractions-of problems with fractional answers to continue building readiness for multiplying fractions by whole numbers.

Unit Overview

Theme:

Fraction Concepts, Addition and Subtraction

Conceptual Lens:

Refer to page 206 in teacher manual for mathematical content and topics.

Connecting fractions to division

Interpreting remainders. Fraction estimation

Renaming fractions as mixed numbers.

Addition and Subtraction of Fractions

Solving Fraction Number Stories

Fraction-Of Problems.

Enduring Understandings

Fractions are connected to decimals. Understanding decimals enables me to perform the mathematics I need for higher level problems.

I can find out if fractions are equivalent by drawing pictures.

A number of a factor of two or more numbers is a common factor. The greatest number that is a factor of two or more numbers is the greatest common denominator.

I can add mixed numbers by writing each mixed number as an improper fraction; then convert them to have like denominators; finally, add the fractions and write the answer in simplest form.

I can subtract fractions with like denominators by keeping the denominator the same and subtracting the numerator. I can subtract with unlike denominators by finding the least common denominator and then subtract.

I can subtract mixed numbers by writing them as improper fractions and convert them so they have like denominators.

Fractions and decimals represent a relationship between two or more numbers.

Essential Questions

Essential QUESTIONS:

How will knowing how to use fractions help me solve complex mathematical problems?

How can I find out whether fractions are equivalent?

What are a common factor and the greatest common factor?

How do I add mixed numbers?

How can I subtract fractions with like and unlike denominators?

How can I subtract mixed numbers?

How are the four operations related to each other?

GUIDING QESTIONS:

Why does your method for comparing fractions work?

Why do you need different methods for different fraction comparisons?

How do you use estimation to check your answers?

Why is it important to understand the meanings of pictures and other representations?

How do you check to make sure that your solutions are correct?

Why is it useful to know more than one strategy for solving problems?

New Jersey Student Learning Standards (No CCS)

MA.5.NF	Number and Operations—Fractions
MA.5.NF.A	Use equivalent fractions as a strategy to add and subtract fractions.
MA.5.NF.A.1	Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators.
MA.5.NF.A.2	Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers.
MA.5.NF.B.3	Interpret a fraction as division of the numerator by the denominator ($a/b = a \div b$). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem.
MA.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.

Amistad Integration

Amistad Integration Document

The Girl With a Mind for Math: The Story of Raye Montague by Julia Finley Mosca

SOC.5-8.1.3.1	Compare and contrast differing interpretations of current and historical events.
SOC.5-8.1.3.2	Assess the credibility of sources by identifying bias and prejudice in documents, media, and computer-generated information.

Holocaust/Genocide Education

- Teach district mandated diversity lessons
- Incorporate Responsive Classroom Program into classroom community

SOC.5-8.1.1.1	Construct timelines of the events occurring during major eras including comparative events in world history for the different civilizations.
SOC.5-8.1.1.2	Explain how major events are related to one another in time.

Interdisciplinary Connections

3.1 – Art

Revisiting Fraction Circle Pieces. TM 219, MM 79 Students draw and color visual models to represent fair share number stories.

3.5 – ELA
Game Strategies TM 246-255 Students construct a detailed open response to open response problem. Peers edit and groups revise.

Technology Standards

Digital Resources:

https://www.mathplayground.com/grade_5_games.html

https://www.khanacademy.org/math/cc-fifth-grade-math/5th-volume

http://newtech.coe.uh.edu/

TECH.8.1.5.A	Technology Operations and Concepts: Students demonstrate a sound understanding of technology concepts, systems and operations.
TECH.8.1.5.A.4	Graph data using a spreadsheet, analyze and produce a report that explains the analysis of the data.
TECH.8.1.5.B.CS1	Apply existing knowledge to generate new ideas, products, or processes.

TECH.8.1.5.C.CS4	Contribute to project teams to produce original works or solve problems
TECH.8.1.5.F.CS1	Identify and define authentic problems and significant questions for investigation.

21st Century Themes/Careers

Through the integration and interdisciplinary connections in each unit, students will develop the understanding that math relates to the individual and global society.

Activity cards and enrichment activities provide a variety of options for developing computational strategies.

The following site provides access to real life collaborative math projects.

http://mathwire.com/problemsolving/probs58.html

CAEP.9.2.8.B.1	Research careers within the 16 Career Clusters ® and determine attributes of career success.
CAEP.9.2.8.B.4	Evaluate how traditional and nontraditional careers have evolved regionally, nationally, and globally.

Financial Literacy Integration

Making a Difference

Essential Question: How can sharing with others improve our community and the lives of people throughout the world?

Objective: Create colorful, persuasive posters that entice others to support a charity of each student's choice.

http://www.scholastic.com/browse/article.jsp?id=3758472

9.1.8.A.1 Explain the meaning and purposes of taxes and tax deductions and why fees for various benefits (e.g., medical benefits) are taken out of pay.

9.1.8.A.2 Relate how career choices, education choices, skills, entrepreneurship, and economic conditions affect income. 9.1.8.A.3 Differentiate among ways that workers can improve earning power through the acquisition of new knowledge and skills.

9.1.8.A.4 Relate earning power to quality of life across cultures.

9.1.8.A.5 Relate how the demand for certain skills determines an individual’s earning power.

9.1.8.A.6 Explain how income affects spending decisions.

9.1.8.B.1 Distinguish among cash, check, credit card, and debit card.

9.1.8.B.2 Construct a simple personal savings and spending plan based on various sources of income.

9.1.8.B.3 Justify the concept of "paying yourself first" as a financial savings strategy.

9.1.8.B.4 Relate the concept of deferred gratification to [investment,] meeting financial goals, and building wealth.

9.1.8.B.5 Explain the effect of the economy on personal income, individual and family security, and consumer decisions.

9.1.8.B.6 Evaluate the relationship of cultural traditions and historical influences on financial practice.

9.1.8.B.9 Determine the most appropriate use of various financial products and services (e.g., ATM, debit cards, credit cards, check books).

9.1.8.B.10 Justify safeguarding personal information when using credit cards, banking electronically, or filing forms.

9.1.8.D.5 Explain the economic principle of supply and demand.

9.1.8.E.1 Explain what it means to be a responsible consumer and the factors to consider when making consumer decisions. 9.1.8.E.2 Identify personal information that should not be disclosed to others and the possible consequences of doing or not doing so.

9.1.8.E.3 Compare and contrast product facts versus advertising claims.

9.1.8.E.4 Prioritize personal wants and needs when making purchases.

9.1.8.E.6 Compare the value of goods or services from different sellers when purchasing large quantities and small quantities.

9.1.8.E.8 Recognize the techniques and effects of deceptive advertising.

CAEP.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.
CAEP.9.2.8.B.7	Evaluate the impact of online activities and social media on employer decisions.

Instructional Strategies & Learning Activities

Refer to the last page of every lesson additional instructional learning actitivies.

Additional Materials Needed for Advanced Preparation

Fraction circles

scissors

Post-it notes

Index Cards

Poster Paper

string

Game Strategies:

Play a version of Top-It with fractions and devise a rule for making the largest possible fraction.

Discuss whether other students' rules work and revise their own rules.

Differentiated Instruction

See pages inTeacher's Manual p. 219, 225, 233, 239, 247, 257, 262, 269, 275, 281, 286, 293, 299, 305 for Readiness Activities, Enrichment and Extra Practice

- Use data from Tech-Exit Tickets, Exit Slips, and Progress Monitoring to group students for each skill
- Student "may-do" activities
- sentence and discussion stems
- visual anchor charts for previous, current, and next lessons

Formative Assessments

Exit tickets

math message

journal pages, home links

Open Response

EDM4 Games

Power Up
Prism Pile Up

Multiplication Top It

Build It
Fraction Spin

Rename that Mixed Number

Division Dash

Fraction Capture

Fraction of
Number Top It

Summative Assessment

Unit 3 Progress Check and open ended response

Quizzes

Assessment Check in

Benchmark Assessments

Beginning of the year benchmark assessment.

Alternate Assessments

Progress monitoring by standard on Link it.

Resources & Technology

https://www.ixl.com/math/grade-5

BOE Approved Texts

McGraw Hill Education - Everyday Math Manual - Volumes 1 and 2

Closure

- Gallery Walk - On chart paper, small groups of students write and draw what they learned. After the completed works are attached to the classroom walls, others students affix post-its to the posters to extend on the ideas, add questions.
- Low-Stakes Quizzes - Give a short quiz using technologies like Kahoot or a Google form.
- Have students write down three quiz questions (to ask at the beginning of the next class).
- Question Stems - Have students write questions about the lesson on cards, using question stems framed around Bloom's Taxonomy. Have students exchange cards and answer the question they have acquired.
- Kids answer the following prompts: "What takeaways from the lesson will be important to know three years from now? Why?
- Have students dramatize a real-life application of a skill.
- Ask a question. Give students ten seconds to confer with peers before you call on a random student to answer. Repeat.
- Have kids orally describe a concept, procedure, or skill in terms so simple that a child in first grade would get it.
- Direct kids to raise their hands if they can answer your questions. Classmates agree (thumbs up) or disagree (thumbs down) with the response.
- Have kids create a cheat sheet of information that would be useful for a quiz on the day's topic.

At Risk/504, Gifted and Talented, ELL, Special Education

Struggling Learners/504

- behavior management support
- Have student restate information
- preferential seating
- extended time on tests and assignments
- reduced homework or classwork
- Have student restate information
- Lab and math sheets with highlighted instructions
- Graph paper to assist in organizing or lining up math problems
- Use of manipulatives
- No penalty for spelling errors or sloppy handwriting
- Follow a routine/schedule
- each time management skills
- Verbal and visual cues regarding directions and staying on . task

Gifted and Talented Students (Challenge Activities)

- Offer the Most Difficult First
- Pretest for Volunteers
- Offer choice
- Speak to Student Interests
- Allow G/T students to work together
- Tiered learning
- Focus on effort and practice
- Encourage risk taking .

- Adjusted assignment timelines
- Visual daily schedule
- Immediate feedback
- Work-in-progress check
- Pace long-term projects

3.1 – Revisiting Fraction Circle Pieces MM 79	3.1 – Looking for Patterns in Fair Share Number Stories MM 78	3.1 – Vocabulary Activity p. 219	3.1 – Solving Fair Share Number Stories Activity Card 28
3.2 - Reviewing the meaning of operations activity p. 225	3.2 – Exploring relationships in number stories MM 81	3.2 – Vocabulary Activity p. 219	3.2 – Writing Fraction Number Stories. Activity card 29, MJ 75, MM TA11
3.3 – Modeling Fractional remainders p. 233	3.3 – Share a cost MM 85	3.3 – Vocabulary Activity p. 233	3.3 –Activity Card 30 Remainder Tic-tac Toe
3.4 – Building Number Lines MM 87	3.4 – Exploring Fractions of a Ruler MM 88	3.4 – Find and Locate vocabulary p. 239	3.4 – Renaming and Comparing Fractions and Mixed Numbers Activity Card 31
3.6 – Developing Fraction Number Sense SRB XXX-XXX	3.6 – Increase-Decrease Activity Card 32	3.6 – Calculator Practice p 257	3.6 – Identifying unreasonable answers MM 95
3.7 – Using fraction circles to place fractions on a number line. MM97	3.7 – Playing Fraction Top-It Activity Card 33	3.7– Using think aloud statements activity pp. 263	3.7 – Using benchmarks to estimate sums and differences. MM 98
3.8 – Renaming Whole Numbers activity p. 269	3.8 – Finding a rule for number names. MM 100	3.8 – Vocabulary Activity p. 269	3.8 – Renaming mixed numbers. Activity Card 34
3.9 - Counting by unit fractions activity p. 275	3.9 – Writing fraction stories MM TA11	3.9 – Fraction vocabulary activity p. 275	3.9 – Solving Fraction number stories. Activity Card 35
3.10- Representing fractions with fraction circle pieces activity p. 281	3.10 – Finding fractions that sum to 1. Activity card 36 and MM 105	3.10- Using think alouds activity p. 281	3.10- Finding fraction problems that do not belong. MM 106
3.11 – Writing fractions as sums of unit fractions activity p. 287	3.11- Playing Break it Up! Activity card 27.	3.11 Vocabulary activity p. 287	3.11 – Breaking apart fractions. Activity card 28.
3.12 – Creating a menu of fraction operations. MJ 1-back pages Unit 3	3.12 – Working backward to write fraction number stories. Activity card 39,	3.12 – Number story discussion p. 293	3.12 – Making Minestrone activity MM 109 and TA 20
3.13 - Reviewing flexibility of the whole activity p. 299	3.13 – Interpreting representations. MM 111	3.13 – Vocabulary activity p. 299	3.13- Solving Fraction-Of problems. Activity Card 40.