

Unit # 3 : Adding and Subtracting Fractions

Content Area: **Mathematics**
Course(s): **College Prep Math 1**
Time Period: **October**
Length: **14 days**
Status: **Published**

Unit Overview

Addition and subtraction of fractions with like and unlike denominators and their applications in the real world will be covered in this unit. Methods for finding the least common multiple of 2 or more numbers will be reviewed and reinforced . Again, the practice and importance with the order of operations will be demonstrated as it applies to the addition and subtraction of fractions. Estimation of fractions as it applies in every day situations will be established and practiced.

Enduring Understandings

- Adding and subtracting fractions are skills that have many real world applications.
- Knowing how to estimate fractions is a life skill.
- The order in which you perform numerical operations affects the result you obtain.

Essential Questions

- Does it matter if I follow order of operations when adding and subtracting fractions ?
- How does estimation of fractions apply to real life ?
- What are the steps required when adding or subtracting fractions with like denominators ?
- What are the steps required when adding or subtracting fractions with unlike denominators ?
- When in my life will I need to know how to add and subtract fractions ?

Standards / Indicators / Student Learning Objectives (SLOs)

- SWBAT add and subtract fractions with like denominators
- SWBAT add and subtract fractions with unlike denominators.
- SWBAT add and subtract mixed numbers
- SWBAT evaluate an expression with grouping symbols.
- SWBAT find the least common multiple (LCM) of two or more numbers.
- SWBAT solve applications involving addition and subtraction of mixed numbers.
- SWBAT use estimation to solve application problems.

MA.K-12.4

Model with mathematics.

Mathematically proficient students can apply the mathematics they know to solve problems arising in everyday life, society, and the workplace. In early grades, this might be

as simple as writing an addition equation to describe a situation. In middle grades, a student might apply proportional reasoning to plan a school event or analyze a problem in the community. By high school, a student might use geometry to solve a design problem or use a function to describe how one quantity of interest depends on another. Mathematically proficient students who can apply what they know are comfortable making assumptions and approximations to simplify a complicated situation, realizing that these may need revision later. They are able to identify important quantities in a practical situation and map their relationships using such tools as diagrams, two-way tables, graphs, flowcharts and formulas. They can analyze those relationships mathematically to draw conclusions. They routinely interpret their mathematical results in the context of the situation and reflect on whether the results make sense, possibly improving the model if it has not served its purpose.

MA.K-12.8

Look for and express regularity in repeated reasoning.

Mathematically proficient students notice if calculations are repeated, and look both for general methods and for shortcuts. Upper elementary students might notice when dividing 25 by 11 that they are repeating the same calculations over and over again, and conclude they have a repeating decimal. By paying attention to the calculation of slope as they repeatedly check whether points are on the line through (1, 2) with slope 3, middle school students might abstract the equation $(y - 2)/(x - 1) = 3$. Noticing the regularity in the way terms cancel when expanding $(x - 1)(x + 1)$, $(x - 1)(x^2 + x + 1)$, and $(x - 1)(x^3 + x^2 + x + 1)$ might lead them to the general formula for the sum of a geometric series. As they work to solve a problem, mathematically proficient students maintain oversight of the process, while attending to the details. They continually evaluate the reasonableness of their intermediate results.

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.

Lesson Titles :

- Adding and subtracting fractions with like denominators
- Adding and subtracting fractions with unlike denominators
- Adding and subtracting mixed numbers
- Common multiples
- Estimation Applications
- Order of Operations with Fractions

Career Readiness, Life Literacies & Key Skills

WRK.K-12.P.4

Demonstrate creativity and innovation.

WRK.K-12.P.5

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

Inter-Disciplinary Connections

LA.RH.11-12.4	Determine the meaning of words and phrases as they are used in a text, including analyzing how an author uses and refines the meaning of a key term over the course of a text (e.g., how Madison defines faction in Federalist No. 10).
LA.WHST.11-12.2.E	Provide a concluding paragraph or section that supports the argument presented.
SCI.HS-ESS1-4	Use mathematical or computational representations to predict the motion of orbiting objects in the solar system.
SCI.HS-LS2-1	Use mathematical and/or computational representations to support explanations of factors that affect carrying capacity of ecosystems at different scales.

Instructional Strategies, Learning Activities, and Blooms/DOK:

- Explanation , examples, and practice with adding and subtracting fractions with like denominators and related applications
- Explanation , examples, and practice with adding and subtracting fractions with unlike denominators and related applications
- Explanation , examples, and practice with adding and subtracting mixed numbers and related applications
- Explanation , examples, and practice with estimation of fractions and their applications.
- Explanation , examples, and practice with finding common multiples and the greatest common multiple
- Explanation , examples, and practice with order of operations with fractions
- Tutoring during Delsea One

Modifications

ELL Modifications

- Alternate assessment options....physical demonstration
- Be flexible with time frames and deadlines
- Offer alternate/or modify assessments
- Tap prior knowledge

IEP and 504 Modifications

- Allowing student to take notes in class for reinforcement but also providing a copy of completed/correct notes to study from
- Less questions per page (so not visually overwhelming)
- Math tests could have formula's available on the test and/or sample problems

- Modeling and showing lots of examples
- Providing study guides that don't lead the student to study too much extraneous information (less unnecessary details)/scaffolded study guides

G & T Modifications

- Additional reinforcement activities soliciting a deeper understanding of curriculum
- Different test items.
- Math- provide additional rigorous challenge problems for advanced students
- Peer leadership or mentoring.

At Risk Modifications

- Modeling and showing lots of examples
- Review, restate, rAdditional help during tutoring/Delsea One/Academic Enrichment
- Guided notes
- Hands-on Instruction
- Review, restate, reword directions
- Study guides
- Tutoring during Delsea One
- Visuals

Formative Assessment

- Accuplacer Practice Problem
- Begin the homework assignment and periodically check answers together
- Class discussions
- Graded classwork
- Graded homework
- Guided practice
- Individual practice
- Oral questioning
- Oral response
- Teacher observation
- Warm up - "Check Yourself" problems on adding 2 or more fractions with unlike denominators
- Warm up - "Check Yourself" problems on adding 2 or more mixed numbers
- Warm up - "Check Yourself" problems on adding a group of like fractions
- Warm up - "Check Yourself" problems on adding and subtracting 2 like fractions
- Warm up - "Check Yourself" problems on comparing the size of 2 fractions

- Warm up - "Check Yourself" problems on evaluating an expression with grouping symbols and containing fractions
- Warm up - "Check Yourself" problems on finding the LCM of a group of numbers
- Warm up - "Check Yourself" problems on finding the least common multiple
- Warm up - "Check Yourself" problems on solving an application that involves addition or subtraction of mixed numbers
- Warm up - "Check Yourself" problems on solving an application that involves evaluating a fractional expression
- Warm up - "Check Yourself" problems on subtracting 2 fractions with unlike denominators
- Warm up - "Check Yourself" problems on subtracting 2 mixed numbers
- Warm up - "Check Yourself" problems on using estimation to solve application problems
- Written work

Summative Assessment

- Accuplacer Practice Test
- Accuplacer Test
- Quiz on adding and subtracting fractions with like and unlike denominators, least common multiples, and, adding and subtraction mixed numbers (sections 3 - 1 through 3 - 4)
- Unit Test on Adding and Subtracting Fractions

Resources & Materials

- Warm up problems (see formative assessment section)
- Computer Generated Warm Ups
- Internet worksheets (see formative assessment section for specific topics)
- Teacher made worksheets (see formative assessment section for specific topics)
- Text: Basic Mathematical Skills with Geometry (2008)

Technology

- Chrome book
- Internet Sources: <http://accuplacer.collegeboard.org/students>

- Math XL
- Smart Board

TECH.8.1.12.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.

TECH.8.1.12.D.CS2

Demonstrate personal responsibility for lifelong learning.