

Lesson 11: Different Ways to Subtract

Standards Alignments

Addressing 5.NF.A.1, 5.NF.A.2

Teacher-facing Learning Goals

- Subtract fractions and mixed numbers.

Student-facing Learning Goals

- Let's subtract fractions and mixed numbers.

Lesson Purpose

The purpose of this lesson is for students to subtract fractions with unlike denominators including mixed numbers.

In this lesson, students continue to find differences of fractions with a focus on mixed numbers. There are many ways to find these differences including

- finding equivalent fractions with a common denominator and finding their difference
- adding on, exploiting the whole number parts of the mixed numbers
- using equivalent expressions which help to find a common denominator and deal both with the whole number and fractional parts of the numbers

The second and third strategies have close analogies in arithmetic with whole numbers. One way to find a difference, such as $135 - 28$, is to add on, first 2, then 5, then 100, finding that the difference is 107. For a fraction difference such as $2\frac{3}{8} - \frac{3}{4}$ the corresponding reasoning would be to add $\frac{1}{4}$, then 1, then $\frac{3}{8}$ and find that the difference is $1\frac{5}{8}$. Students could also rewrite the expression $135 - 28$ as $(100 + 20 + 15) - (20 + 8)$ and then find the differences $100 - 0 = 100$, $20 - 20 = 0$ and $15 - 8 = 7$. With the fraction difference, they can rewrite $2\frac{3}{8}$ as $1 + \frac{11}{8}$ and then subtract $\frac{3}{4}$ or $\frac{6}{8}$ from $\frac{11}{8}$, again getting a result of $1\frac{5}{8}$. Students are not expected to bring out these connections but it is important to see that the techniques students used for finding whole number differences can also be used, with appropriate modification, for finding mixed number differences.

Access for:

Students with Disabilities

- Action and Expression (Activity 2)

Instructional Routines

MLR7 Compare and Connect (Activity 1), Number Talk (Warm-up)

Lesson Timeline

Warm-up	10 min
Activity 1	20 min
Activity 2	15 min
Lesson Synthesis	10 min
Cool-down	5 min

Teacher Reflection Question

What connections did students make between the different strategies shared? What questions did you ask to help make the connections more visible?

Cool-down (to be completed at the end of the lesson)

 5 min

Mixed Differences

Standards Alignments

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Student-facing Task Statement

Find the value of each expression. Explain or show your reasoning.

- $2\frac{4}{5} - \frac{3}{10}$
- $1\frac{2}{3} - \frac{3}{4}$

Student Responses

- $2\frac{5}{10}$ or equivalent. Sample response: I rewrote $2\frac{4}{5}$ as $2\frac{8}{10}$ and then subtracted $\frac{3}{10}$.
- $\frac{11}{12}$ or equivalent. I added $\frac{1}{4}$ to $\frac{3}{4}$ to get 1 and then $\frac{2}{3}$ more to get $1\frac{2}{3}$. Then $\frac{2}{3} = \frac{8}{12}$ and $\frac{1}{4} = \frac{3}{12}$.