

Improper Fractions to Mixed Numbers and Back

Objective:

Students will be able to change Improper Fractions to Mixed Numbers, and Mixed Numbers to Improper fractions

Standard: 5th Grade

2.3 Solve simple problems, including ones arising in concrete situations, involving the addition and subtraction of fractions and mixed numbers (like and unlike denominators of 20 or less), and express answers in the simplest form.

2.4 Understand the concept of multiplication and division of fractions.

2.5 Compute and perform simple multiplication and division of fractions and apply these procedures to solving problems.

Prerequisites:

Decompose Fractions, Fractional division

Improper Fraction: the numerator is larger than the denominator

Mixed number: a combination of a whole number and a fraction

Method #2: Decomposition

$$\begin{aligned} \frac{0}{1} &= \frac{+ + + + + + + + +}{1} \\ &= \frac{(+ +) + (+ +) + (+ +) +}{1} \\ &= \frac{+ + +}{1} \\ &= - + - + - + - \\ &= + + + - \\ &= - \end{aligned}$$

Let's start with an equation this time. Write the improper fraction and then we will use decompositions to break apart our fraction. I will ask you to compare to the bar model after we try this methods. I start by decomposing the numerator 10 into ones, how many ones are in 10? [10]

Write the numerator as an addition expression using only

Method #3: Fractional Division

$$\frac{10}{3} = \frac{9}{3} + \frac{1}{3}$$

$$= 3 + \frac{1}{3}$$

$$= 3\frac{1}{3}$$

We will start by writing the improper fraction as an equation. When I decompose the numerator, I want to find a multiple of the denominator. So when I decompose 10, I break it into nine and one because nine is a multiple of three and one is the amount remaining. Then I write the numerator as an addition expression. What expression will I write?
[9+1]

Then I decompose my fraction and give both the addends in the numerator the same denominator. When I look at my new fraction I see nine divided by 3, what is the quotient?
[3]

Then I add the remaining fraction to give me the mixed number three and one-third.

Method #4: Traditional

$$-- = --$$

side work

$$\begin{array}{r} 3 \\ 3 \overline{)10} \\ \underline{-9} \\ 1 \end{array}$$

For this method I divide the numerator by the denominator using the traditional algorithm. The remainder then becomes the numerator over the divisor. So three goes into ten how many times?
[3]

And when we subtract nine from ten the remainder one becomes the numerator over three as the denominator to make the fraction one-third. We now have our mixed number.

Student talk

How do the last two methods compare? What mistakes do kids make with traditional?

**You Try #1,
part 2**

Fractional Division

$$\begin{aligned} \frac{5}{2} &= \frac{4+1}{2} \\ &= \frac{4}{2} + \frac{1}{2} \\ &= 2 + \frac{1}{2} \\ &= 2\frac{1}{2} \end{aligned}$$

Traditional

$$-- = --$$

side work

$$\begin{array}{r} 2 \\ 2 \overline{)5} \\ \underline{-4} \\ 1 \end{array}$$

Method #1: Bar Model

3

3

Method #3: Common Denominator

$$- = - + -$$

$$= -\left(-\right) + -$$

$$= - + -$$

$$= \frac{+}{-}$$

$$= \frac{0}{-}$$

All whole numbers can be

Name: _____

Warm-Up

CST/CAHSEE: NS 2.3

What is $-\frac{1}{2}$ written as a mixed number?

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Current: 4NS 1.9

What is $1\frac{3}{9}$ written as an improper fraction?

*Why would students choose answer A?

*Show a pictorial way to solve this problem.