

10-04-18

Aim: SWBAT convert mixed numbers to improper fractions and review basic addition and subtraction of fractions and mixed numerals.

HW: Packet Page 10

Quiz next week (Conversions and fraction basics)

Do Now: Correct hw & Top of Pg. 7

Converting Improper Fractions to Mixed Numbers

Another way to express the value $\frac{7}{3}$ is to express it as a mixed number. A mixed number consists of a whole number and a fraction. The two are glued together with addition. That means...

$$2\frac{1}{3} = 2 + \frac{1}{3}$$

$$3\frac{3}{4} = 3 + \frac{3}{4}$$

$$-2\frac{1}{3} = -2 + \frac{-1}{3}$$

$$-3\frac{3}{4} = -3 + \frac{-3}{4}$$

Long division is the process used to convert or change an improper fraction to a mixed number. The objective is to find out how many whole times the denominator can go into the numerator. Instead of just writing the remainder as a number, the remainder is written as a fraction.

Express as a mixed number.

$$\frac{7}{3}$$

$$\begin{array}{r} 2 \text{ r } 1 \\ 3 \overline{) 7} \\ \underline{-6} \\ 1 \end{array}$$

$$\frac{7}{3} = 2\frac{1}{3}$$

$$\frac{-9}{4} = -2\frac{1}{4}$$

$$\begin{array}{r} 2 \\ 4 \overline{) 9} \\ \underline{-8} \\ 1 \end{array}$$

$$\frac{24}{10} = 2\frac{4}{10} = \boxed{2\frac{2}{5}}$$

$$\begin{array}{r} 2 \\ 10 \overline{) 24} \\ \underline{-20} \\ 4 \end{array}$$

HOMEWORK

Write each fraction in simplest form.

	A	B	C
1	$\frac{16}{48} \div \frac{16}{16} = \frac{1}{3}$	$\frac{-45}{99} \div \frac{9}{9} = \frac{-5}{11}$	$\frac{-13}{91} \div \frac{13}{13} = \frac{-1}{7}$
2	$\frac{30}{42} \div \frac{6}{6} = \frac{5}{7}$	$\frac{84}{140} \div \frac{2}{2} = \frac{42}{70} \div \frac{2}{2} = \frac{21}{35}$ $\frac{21}{35} \div \frac{7}{7} = \frac{3}{5}$	$\frac{96}{112} \div \frac{2}{2} = \frac{48}{56} \div \frac{2}{2} = \frac{24}{28}$ $\frac{24}{28} \div \frac{4}{4} = \frac{6}{7}$
3	$\frac{52}{78} \div \frac{13}{13} = \frac{4}{6} \div \frac{2}{2} = \frac{2}{3}$	$\frac{62}{-66} \div \frac{2}{2} = \frac{-31}{33}$	$\frac{15}{90} \div \frac{15}{15} = \frac{1}{6}$

Convert each fraction to a whole number or a mixed number in simplest form.

	A	B	C
4	$\frac{-17}{2} = -8\frac{1}{2}$ $\begin{array}{r} 8r1 \\ 2 \overline{)17} \\ \underline{-16} \\ 1 \end{array}$	$\frac{-24}{10} = -2\frac{2}{5}$ $\begin{array}{r} 2r4 \\ 10 \overline{)24} \\ \underline{-20} \\ 4 \end{array} \quad 10\frac{4}{10} = 10\frac{2}{5}$	$\frac{68}{17} = 4$ $\begin{array}{r} 4 \\ 17 \overline{)68} \\ \underline{-68} \\ 0 \end{array}$
5	$\frac{98}{32} = 3\frac{1}{16}$ $\begin{array}{r} 3r2 \\ 32 \overline{)98} \\ \underline{-96} \\ 2 \end{array} \quad 3\frac{2}{32} = 3\frac{1}{16}$	$\frac{-85}{15} = -5\frac{2}{3}$ $\begin{array}{r} 5r10 \\ 15 \overline{)85} \\ \underline{-75} \\ 10 \end{array} \quad 5\frac{10}{15} = 5\frac{2}{3}$	$\frac{162}{24} = 6\frac{3}{4}$ $\begin{array}{r} 6r18 \\ 24 \overline{)162} \\ \underline{-144} \\ 18 \end{array} \quad 6\frac{18}{24} = 6\frac{3}{4}$

Aim: SWBAT convert mixed numbers to improper fractions and review basic fraction addition and subtraction.

Do Now: Write 2 equivalent fractions for each of the following.

1) $-\frac{1}{4}$ $-\frac{2}{8}$ & $-\frac{3}{12}$ 2) $\frac{1}{5}$ $\frac{2}{10}$ & $\frac{3}{15}$

State whether each of the following equal 0 or are undefined.

3) $\frac{0}{12} = 0$ 4) $\frac{-8}{0} = \text{undefined}$

Changing Mixed Numbers to Improper Fractions

Sometimes, it is necessary to turn a mixed number into an improper fraction. The first step is to multiply the denominator and the whole number and add that answer to the numerator. That result is the new numerator. The second step is to keep the original denominator and write it underneath the new numerator.

$$1\frac{3}{8} = \frac{(8 \cdot 1) + 3}{8} = \frac{11}{8}$$

Write each mixed number as a fraction.

5) $3\frac{2}{7} = \frac{23}{7}$ $\frac{(7 \cdot 3) + 2}{7}$ 6) $-2\frac{4}{7} = \frac{-18}{7}$ $\frac{(7 \cdot 2) + 4}{7}$

7) $-5\frac{4}{9} = \frac{-49}{9}$ $\frac{(9 \cdot 5) + 4}{9}$ 8) $10\frac{3}{5} = \frac{53}{5}$ $\frac{(5 \cdot 10) + 3}{5}$

Adding and Subtracting Fractions Review

In math, the only types of terms that can be combined are like terms. The method(s) used to complete those operations depend on what kinds of numbers are in the problem. In the case of fractions, their denominators are required to be alike or the same before any addition or subtraction can occur.

The Least Common Denominator (LCD) is the Least Common Multiple of the denominators. It is what should be used to help make the fractions "alike" so that addition and subtraction can occur. To find the LCD, check if the smaller denominator can divide out of the larger denominator evenly. If so, the larger denominator is the LCD. If that does not occur, check if the smaller denominator divides out of the largest denominator's next multiple. Continue this process until the smaller denominator divides out evenly. The first multiple that allows the division to occur evenly is the LCD.

In other words, **the LCD is the largest denominator or a multiple of it.**

Do not compute! State the Least Common Denominator (LCD).

$$\frac{1}{6} + \frac{2}{3}$$

$$\frac{5}{6} - \frac{2}{5}$$

$$\frac{3}{4} + \frac{7}{6}$$

$$\frac{2}{3} - \frac{1}{3}$$

LCD: 6
 $3 \overline{)6}$

LCD: 30
 ~~$5 \overline{)6}$~~ ~~$5 \overline{)12}$~~ ~~$5 \overline{)18}$~~
 ~~$5 \overline{)24}$~~ $5 \overline{)30}$

LCD: 12
 ~~$4 \overline{)6}$~~
 $4 \overline{)12}$

LCD: 3

Evaluating Fractions and Mixed Numbers

- Step 1) Eliminate double signs and make all terms fractions.
- Step 2) Find the LCD and make equivalent fractions.
- Step 3) Use integer rules to compute the numerator. Keep the denominator.
- Step 4) Write the answer in simplest form.

Evaluate each of the following.

$$13) \frac{4}{5} + \frac{2}{5} = \frac{6}{5} \text{ or } 1\frac{1}{5}$$

$$14) \frac{1}{6} + \frac{2}{3} = \frac{5}{6}$$

$$15) \frac{5}{6} - \frac{2}{5} = \frac{13}{30}$$

$$\frac{1}{6} + \frac{4}{6}$$

$$\frac{5}{6}$$

$$\frac{25}{30} - \frac{12}{30}$$

$$\frac{13}{30}$$

$$16) \frac{3}{4} + \frac{7}{6} = \frac{23}{12}$$

$$17) \frac{2}{3} - \frac{1}{3} = \frac{1}{3}$$

$$13) \frac{1}{6} + \frac{2}{3} = \frac{5}{6}$$

$$\frac{9}{12} + \frac{14}{12}$$

$$\frac{23}{12}$$

$$\frac{1}{6} + \frac{4}{6}$$

$$\frac{5}{6}$$

$$14) \frac{5}{8} - \frac{1}{2} = \frac{1}{8}$$

$$15) 2\frac{3}{4} + \frac{7}{8} = \frac{29}{8}$$

$$16) 2\frac{5}{8} - 1\frac{1}{4} = \frac{11}{8}$$

$$\frac{5}{8} - \frac{4}{8}$$

$$\frac{1}{8}$$

$$\frac{11 \cdot 2}{4 \cdot 2} + \frac{7}{8}$$

$$\frac{22}{8} + \frac{7}{8}$$

$$\frac{29}{8}$$

$$\frac{21}{8} - \frac{5 \cdot 2}{4 \cdot 2}$$

$$\frac{21}{8} - \frac{10}{8}$$

$$\frac{11}{8}$$

HOMEWORK

Change each mixed number to an improper fraction in simplest form.

1) $2\frac{1}{4} = \underline{\hspace{2cm}}$

2) $-2\frac{3}{4} = \underline{\hspace{2cm}}$

3) $-8\frac{1}{3} = \underline{\hspace{2cm}}$

4) $9\frac{3}{5} = \underline{\hspace{2cm}}$

Change each improper fraction to a mixed number in simplest form.

5) $\frac{30}{7} = \underline{\hspace{2cm}}$

6) $\frac{-18}{5} = \underline{\hspace{2cm}}$

7) $-\frac{38}{7} = \underline{\hspace{2cm}}$

8) $\frac{67}{9} = \underline{\hspace{2cm}}$

Write each fraction in simplest form.

9) $\frac{4}{84} \quad \underline{\hspace{2cm}}$

10) $\frac{140}{200} \quad \underline{\hspace{2cm}}$

11) $-\frac{33}{96} \quad \underline{\hspace{2cm}}$

12) $\frac{77}{88} \quad \underline{\hspace{2cm}}$

14) Both the numerator and the denominator of a fraction are even. Can you tell whether the fraction is in simplest form? Explain your answer.

15) When creating equivalent fractions you must multiply the numerator and denominator by the same number. Which property allows you to do this? Explain.