

Mixed Numbers Conversions and Operations

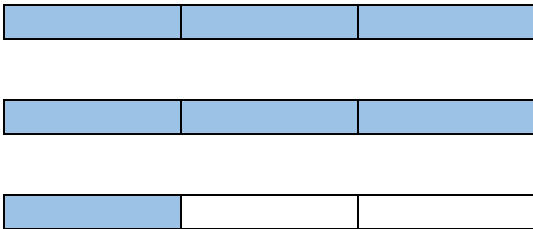
Objective 1: Changing from Mixed Numbers to Improper Fractions & Vice Versa

A fraction is a proper fraction if the numerator is smaller than the denominator.

The numerator in an improper fraction is at least as large as the denominator.

Example: Use the diagram to answer the following:

- Write a mixed number to represent the shaded area.
- Write a fraction to represent the shaded area.



Change a Mixed Number to an Improper Fraction

- Multiply the whole number by the denominator
- Add the result to the numerator
- Denominator stays the same

Change an Improper Fraction into a Mixed Number

- Divide the denominator into the numerator
- Write your answer as $quotient + \frac{remainder}{divisor}$
(the “+” sign is not written, but understood)

Example: Change $5\frac{2}{7}$ to an improper fraction.

Example: Change $4\frac{3}{5}$ to an improper fraction.

Example: Change $\frac{38}{3}$ to a mixed number.

Example: Change $\frac{45}{7}$ to a mixed number.

Questions

1. Change $4\frac{3}{5}$ to an improper fraction.

2. Change $6\frac{2}{7}$ to an improper fraction.

3. Change $\frac{27}{5}$ to a mixed number.

4. Change $\frac{100}{19}$ to a mixed number.

Objective 2: Multiplying and Dividing Mixed Numbers

Multiplying Mixed Numbers

1. Change mixed numbers to improper fractions
2. Reduce if possible
3. Multiply straight across
4. If the answer is an improper fraction change it to a mixed number.

Example: Multiply $\frac{8}{9} \cdot 5\frac{3}{4}$

Example: Multiply $4\frac{1}{2} \cdot 2\frac{2}{3}$

Dividing Mixed Numbers

1. Change mixed numbers to improper fractions
2. Multiply the first fraction by the reciprocal of the second fraction
3. Reduce if possible
4. Multiply straight across
5. If the answer is an improper fraction change it to a mixed number.

Example: Divide $3\frac{1}{9} \div 2\frac{1}{3}$

Example: Divide $4\frac{2}{3} \div 3$

Questions

1. Multiply $\frac{2}{3} \cdot 5\frac{1}{2}$

2. Multiply $3\frac{2}{5} \cdot 3\frac{1}{3}$

3. Multiply $4\frac{4}{5} \cdot 1\frac{5}{6}$

4. Divide $4\frac{2}{5} \div 3\frac{1}{5}$

5. Divide $4\frac{2}{5} \div 8$

Objective 3: Adding and Subtracting Mixed Numbers

Adding Mixed Numbers

1. Add the whole numbers.
2. Add the fractions.
3. If the fraction is greater than or equal to 1
 - Change into a mixed number.
 - Add to the whole number.

Example: Add $4\frac{1}{12} + 2\frac{7}{12}$

Example: Add $9\frac{5}{7} + 2\frac{4}{7}$

Example: Add $5\frac{5}{8} + 2\frac{1}{5}$

Example: Add $3\frac{11}{12} + 1\frac{7}{8}$

Subtracting Mixed Numbers

1. Find the LCD for the fractions & make them into LIKE fractions.
2. If the first fraction is LARGER than the second fraction
 - Subtract whole numbers
 - Subtract fractions
3. If the first fraction is SMALLER than the second fraction
 - Borrow ONE from the whole number
 - Your new numerator is the sum of the numerator & denominator
 - Subtract whole numbers & fractions

Example: Subtract $5 - 1\frac{3}{8}$

Example: Subtract $11\frac{3}{8} - 3\frac{7}{8}$

Example: Subtract $6\frac{1}{10} - 1\frac{8}{15}$

Example: Subtract $12\frac{3}{10} - 4\frac{9}{14}$

Questions

1. Add $12\frac{1}{14} + 3\frac{5}{14}$

2. Add $8\frac{3}{5} + 13\frac{4}{5}$

3. Add $7\frac{7}{9} + 8\frac{5}{6}$

4. Subtract $9 - 2\frac{3}{5}$

5. Subtract $12\frac{1}{5} - 11\frac{2}{7}$

Objective 4: Using a Scientific Calculator to do Operations on Mixed Numbers and Fractions



Many Scientific Calculators have a fraction button on them that helps you to easily work with fractions.

To reduce a fraction to lowest terms, input the numerator, then hit the fraction button, followed by the denominator.

Example: Reduce $\frac{6}{8}$ to lowest terms using the calculator.

Example: Add $\frac{1}{2} + \frac{1}{4}$ on the calculator.

Example: Multiply $2\frac{1}{4} \times 5\frac{2}{3}$

Example: Use a calculator to change $4\frac{2}{3}$ into an improper fraction.

Questions

Use a scientific calculator for each of the following problems.

1. Reduce $\frac{120}{504}$ to lowest terms.

2. Add and simplify: $2\frac{5}{12} - \frac{11}{30}$

3. Change $\frac{46}{21}$ into a mixed number.

4. Change $3\frac{19}{27}$ into an improper fraction.

5. Multiply and simplify: $5\frac{4}{7} \times 2\frac{8}{11}$