

Learning Goals

1. To understand that the most efficient strategy to multiply or divide two mixed numbers is to perform the operations on their equivalent improper fractions.
2. To understand that you do not need a common denominator to multiply or divide fractions.
3. To understand that when you are asked to divide two fractions you actually end up multiplying by the reciprocal.

1.2 - Multiplying and Dividing Mixed Numbers

Multiplying Mixed Numbers

1. Change mixed number to improper fraction.
2. Multiply the numerators together.
3. Multiply the denominators together.
4. If necessary, change improper fraction back to a mixed number.

**YOU DO NOT NEED A COMMON
DENOMINATOR TO MULTIPLY OR
DIVIDE FRACTIONS!**

Example One

Evaluate.

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

1. Change mixed numbers to improper fractions

$$\frac{8}{3} \times \frac{3}{2}$$

2/3 multiply the tops, multiply the bottoms

$$\frac{24}{6}$$

4. Change back to a mixed number.

$$4$$

Dividing Mixed Numbers

1. Change mixed numbers to improper fractions.
2. Multiply the first improper fraction by the reciprocal (flip) of the second improper fraction.
3. If necessary, change the improper fractions back to mixed numbers.

Example Two

Divide.

$$7\frac{3}{4} \div 1\frac{1}{2}$$

1. Change mixed numbers to improper fractions.

$$\frac{31}{4} \div \frac{3}{2}$$

2. Change division sign to multiplication + flip the second fraction.

$$\frac{31}{4} \times \frac{2}{3}$$

3. Multiply.

$$\frac{62}{12}$$

4. Change back to mixed number.

$$5\frac{2}{12} = 5\frac{1}{6}$$

Example Three

A large bottle holds $1\frac{3}{4}$ times the amount of liquid of a small bottle. Determine the number of large bottles that would hold the same amount as $10\frac{1}{2}$ small bottles.

Solution

1. Determine what operation to use in question

$$10\frac{1}{2} \div 1\frac{3}{4}$$

2. Change to improper fractions.

$$\frac{21}{2} \div \frac{7}{4}$$

3. Multiply by the reciprocal.

$$\frac{21}{2} \times \frac{4}{7} = \frac{84}{14}$$

4. Change back to a mixed number.

$$\frac{84}{14} = 6$$

∴ 6 large bottles are equivalent to $10\frac{1}{2}$ small bottles.

Complete: p. 28 - 29 #2, 4, 7, 10, 13, 14.