

Dividing Fractions

$$\frac{1}{2} \div \frac{3}{5} = \frac{1}{2} \overset{\text{Don't change}}{\times} \overset{\text{Flip}}{\frac{5}{3}} = \frac{1 \times 5}{2 \times 3} = \frac{5}{6}$$

Flip the second fraction, then multiply

$$3\frac{1}{2} \div 5 = \frac{2 \times 3 + 1}{2} \div \frac{5}{1} = \frac{7}{2} \overset{\text{Multiply}}{\times} \overset{\text{Flip}}{\frac{1}{5}} = \frac{7}{10}$$

Change the mixed numeral to an improper fraction

Change the whole number to an improper fraction

Improper fraction

$$8 \div 3\frac{1}{2} = \frac{8}{1} \div \frac{7}{2} = \frac{8}{1} \overset{\text{Multiply}}{\times} \overset{\text{Flip}}{\frac{2}{7}} = \frac{16}{7} = 2\frac{2}{7}$$

Mixed numeral

Improper fraction

Improper fraction

Improper fraction

Mixed numeral

Reduce by dividing 7 into 16

$$7 \overline{)16} \\ \underline{-14} \\ 2$$

"Reducing" or "Simplifying" Fractions

The last step in doing a fraction problem is to reduce the answer if possible. Look for two things: if the top is greater than the bottom, or the top and bottom can be divided by the same number.

Easy:

even numbers

$$\frac{4}{6} \div 2 = \frac{2}{3}$$

fives

$$\frac{15}{25} \div 5 = \frac{3}{5}$$

zeroes

$$\frac{10}{20} \div 10 = \frac{1}{2}$$

five and zero

$$\frac{15}{20} \div 5 = \frac{3}{4}$$

Improper \longrightarrow Mixed Numeral

Improper fraction
(the top is greater than the bottom)

Reduce by dividing the bottom into the top

Mixed numeral

$$\frac{16}{7} = 7 \overline{)16} = 2\frac{2}{7}$$

Two steps:

Improper

$$\frac{24}{9} = 9 \overline{)24} = 2\frac{6}{9} \div 3 = 2\frac{2}{3}$$