Dividing Fractions

$$\frac{1}{2} \div \frac{3}{5} = \frac{1}{2} \times \frac{5}{3} = \frac{1 \times 5}{2 \times 3} = \frac{5}{6}$$

Don't change. Multiply. Flip. Flip the second fraction, then multiply.

Mixed numeral

$$3\frac{1}{2} \div 5 = \frac{2 \times 3 + 1}{2} \div \frac{5}{1} = \frac{7}{2} \times \frac{1}{5} = \frac{7}{10}$$

Change the mixed numeral to an improper fraction. Change the whole number to an improper fraction. Improper fraction. Multiply. Flip.

Mixed numeral

$$8 \div 3\frac{1}{2} = \frac{8}{1} \div \frac{7}{2} = \frac{8}{1} \times \frac{2}{7} = \frac{16}{7} = 2\frac{2}{7}$$

Improper fraction. Improper fraction. Flip. Multiply. Improper fraction. Mixed numeral.

Reduce by dividing 7 into 16

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

"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

$$\frac{4}{6} \begin{matrix} \div 2 \\ \div 2 \end{matrix} = \frac{2}{3}$$

fives

$$\frac{15}{25} \begin{matrix} \div 5 \\ \div 5 \end{matrix} = \frac{3}{5}$$

zeroes

$$\frac{10}{20} \begin{matrix} \div 10 \\ \div 10 \end{matrix} = \frac{1}{2}$$

five and zero

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

Improper → 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

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