Dividing Fractions

To divide one fraction by a second fraction, invert the second fraction (that is, flip the numerator and denominator) and then multiply.

Example: $\frac{1}{2} \div \frac{3}{5}$

1. Invert the second fraction ($\frac{3}{5}$): $\frac{5}{3}$. This is called the reciprocal of $\frac{3}{5}$.
2. Change the division sign ($\div$) to a multiplication sign ($\times$).
3. Multiply the first fraction by the reciprocal of the second fraction: $\frac{1}{2} \times \frac{5}{3} = \frac{1 \times 5}{2 \times 3} = \frac{5}{6}$

To divide a fraction by a whole number, first change the whole number to a fraction by putting it over 1. Then follow the division steps.

Example: $\frac{3}{5} \div 2 = \frac{3}{5} \div \frac{2}{1} = \frac{3}{5} \times \frac{1}{2} = \frac{3 \times 1}{5 \times 2} = \frac{3}{10}$

When the division problem has a mixed number, convert it to an improper fraction and then divide as usual.

Example: $2\frac{3}{4} \div \frac{1}{6}$

1. Convert $2\frac{3}{4}$ to an improper fraction: $\qquad 2\frac{3}{4} = \frac{2 \times 4 + 3}{4} = \frac{11}{4}$

2. Divide $\frac{11}{4}$ by $\frac{1}{6}$: $\qquad \frac{11}{4} \div \frac{1}{6} = \frac{11}{4} \times \frac{6}{1}$

3. Flip $\frac{1}{6}$ to $\frac{6}{1}$, change $\div$ to $\times$, cancel, and multiply: $\qquad \frac{11}{\underset{2}{4}} \times \frac{\overset{3}{6}}{1} = \frac{11 \times 3}{2 \times 1} = \frac{33}{2}$