Begin by looking over these two pages to see what's happening. Part I reviews fraction rules. These rules have been applied in Part II. First read the rule, then look down to see it applied. Both charts should be studied across and down.



# Review 3 Fractions

## I. Definitions and Procedures

| | Units 9 and 11<br>Like Fractions | Units 10 and 11<br>Unlike Fractions | Units 12 and 13<br>Mixed Numbers |
|---|---|---|---|
| **Key Feature** | Same denominator | Different denominators | A whole number with a like or unlike fraction |
| **Operation** | | | |
| **Addition** | Add numerators<br>Same denominator | Convert to LCD<br>Same as like fractions | Convert unlike denominators to LCD<br>Add or subtract the fractions<br>You may need to carry or borrow<br>Add or subtract the whole numbers |
| **Subtraction** | Subtract numerators<br>Same denominator | | |
| **Multiplication** | Cancel if possible<br>Multiply numerators<br>Multiply denominators | Same as like fractions | Convert to fractions<br>Same as like fractions |
| **Division** | Invert divisor<br>(what you are dividing by)<br>Cancel if possible<br>Multiply | | |

**Note: Always reduce answers to lowest terms!**

## II. Example

| | Like Fractions | Unlike Fractions | Mixed Numbers | |
|---|---|---|---|---|
| **Key Feature** | **Same Denominator** | **Different Denominators** | **Whole Numbers with** | |
| **Operation** | | | **Like Fractions** | **Unlike Fractions** |
| **Addition** | $\frac{3}{5}+\frac{1}{5}=\frac{4}{5}$ | $\frac{2}{3}+\frac{1}{2}$<br>$\frac{2}{3}=\frac{2\times2}{3\times2}=\frac{4}{6}$<br>$+\frac{1}{2}=\frac{1\times3}{2\times3}=+\frac{3}{6}$<br>$\frac{7}{6}=1\frac{1}{6}$ | $4\frac{3}{5}+2\frac{1}{5}$<br>$4\frac{3}{5}$<br>$+2\frac{1}{5}$<br>$6\frac{4}{5}$ | $4\frac{1}{2}+2\frac{2}{3}$<br>$4\frac{1}{2}=4+\frac{1\times3}{2\times3}=4\frac{3}{6}$<br>$+2\frac{2}{3}=2+\frac{2\times2}{3\times2}=+2\frac{4}{6}$<br>$6\frac{7}{6}=7\frac{1}{6}$ |
| **Subtraction** | $\frac{3}{5}-\frac{1}{5}=\frac{2}{5}$ | $\frac{2}{3}-\frac{1}{2}$<br>$\frac{2}{3}=\frac{2\times2}{3\times2}=\frac{4}{6}$<br>$-\frac{1}{2}=\frac{1\times3}{2\times3}=-\frac{3}{6}$<br>$\frac{1}{6}$ | $4\frac{3}{5}-2\frac{1}{5}$<br>$4\frac{3}{5}$<br>$-2\frac{1}{5}$<br>$2\frac{2}{5}$ | $4\frac{1}{2}-2\frac{2}{3}$<br>$4\frac{1}{2}=4+\frac{1\times3}{2\times3}=4\frac{3}{6}=3\frac{9}{6}$<br>$-2\frac{2}{3}=2+\frac{2\times2}{3\times2}=-2\frac{4}{6}=-2\frac{4}{6}$<br>$1\frac{5}{6}$ |
| **Multiplication**<br>**Remember, canceling is allowed.** | $\frac{3}{5}\times\frac{1}{5}=\frac{3}{25}$ | $\frac{2}{3}\times\frac{1}{2}$<br>$=\frac{2\times1}{3\times2}=\frac{2}{6}$<br>reduce $\frac{2\div2}{6\div2}=\frac{1}{3}$ | $4\frac{3}{5}\times2\frac{1}{5}$<br>$=\frac{23}{5}\times\frac{11}{5}=\frac{23\times11}{5\times5}$<br>$=\frac{253}{25}=10\frac{3}{25}$ | $4\frac{1}{2}\times2\frac{2}{3}$<br>$=\frac{\overset{3}{\cancel{9}}}{\underset{1}{\cancel{2}}}\times\frac{\overset{4}{\cancel{8}}}{\underset{1}{\cancel{3}}}=\frac{12}{1}=12$ |
| **Division**<br>**Remember, canceling is allowed after inversion.** | $\frac{3}{5}\div\frac{1}{5}$<br>$=\frac{3}{\underset{1}{\cancel{5}}}\times\frac{\overset{1}{\cancel{5}}}{1}$<br>$=\frac{3}{1}=3$ | $\frac{2}{3}\div\frac{1}{2}$<br>$=\frac{2}{3}\times\frac{2}{1}$<br>$=\frac{4}{3}=1\frac{1}{3}$ | $4\frac{3}{5}\div2\frac{1}{5}$<br>$=\frac{23}{5}\div\frac{11}{5}=\frac{23}{\underset{1}{\cancel{5}}}\times\frac{\overset{1}{\cancel{5}}}{11}$<br>$=\frac{23}{11}=2\frac{1}{11}$ | $4\frac{1}{2}\div2\frac{2}{3}$<br>$=\frac{9}{2}\div\frac{8}{3}=\frac{9}{2}\times\frac{3}{8}$<br>$=\frac{27}{16}=1\frac{11}{16}$ |