

Adding & Subtracting Rational Numbers

We are using the same rules of addition and subtraction, but now we are using numbers that are fractions and decimals.

Example 1

$$\begin{array}{r} \frac{3 \cdot 3}{5 \cdot 3} + \frac{1 \cdot 5}{3 \cdot 5} \\ \hline \frac{-9}{15} + \frac{5}{15} \\ \hline \boxed{\frac{-4}{15}} \end{array}$$

Example 2

$$\begin{array}{r} \frac{5 \cdot 2}{6 \cdot 2} + \left(\frac{3 \cdot 3}{4 \cdot 3} \right) \\ \hline \frac{10}{12} + \frac{-9}{12} \\ \hline \boxed{\frac{1}{12}} \end{array}$$

Example 3

$$-\frac{1.7}{4.7} + \left(-\frac{3.4}{7.4}\right)$$

$$\frac{-7}{28} + \frac{-12}{28}$$

$$\frac{-19}{28}$$

Example 4

$$-\frac{7.6}{8.6} + \left(-\frac{1.8}{6.8}\right)$$

$$\frac{-42}{48} + \frac{-6}{48}$$

$$\frac{-50 \div 2}{48 \div 2}$$

$$\frac{-25}{24}$$

Example 5

$$-\frac{7.2}{8.2} - \left(-\frac{3}{16}\right)$$

$$\frac{-14}{16} + \frac{+3}{16}$$

$$\frac{-11}{16}$$

Example 6

$$-\frac{5.5}{9.5} - \left(-\frac{3.9}{5.9}\right)$$

$$\frac{-25}{45} + \frac{+27}{45}$$

$$\frac{2}{45}$$

Example 7

$$-\frac{4 \cdot 8}{3 \cdot 8} + \frac{5 \cdot 3}{8 \cdot 3} + \left(-\frac{7 \cdot 8}{3 \cdot 8}\right)$$

$$\boxed{\frac{-32}{24}} + \frac{15}{24} + \boxed{\frac{-56}{24}}$$

$$\frac{-88}{24} + \frac{15}{24}$$

$$\boxed{\frac{-73}{24}}$$

Example 8

$$\frac{5 \cdot 2}{8 \cdot 2} + \left(-\frac{3 \cdot 4}{4 \cdot 4}\right) + \frac{15}{16}$$

$$\boxed{\frac{10}{16}} + \frac{-12}{16} + \boxed{\frac{15}{16}}$$

$$\frac{25}{16} + \frac{-12}{16}$$

$$\boxed{\frac{13}{16}}$$

Example 9

$$-\frac{12}{3} + \left(-\frac{51}{5}\right)$$

$$-\frac{5 \cdot 5}{3 \cdot 5} + \frac{26 \cdot 3}{5 \cdot 3}$$

$$\boxed{\frac{-25}{15}} + \frac{78}{15}$$

$$\boxed{\frac{53}{15}}$$

Example 10

$$4\frac{7}{8} + \left(-7\frac{1}{3}\right)$$

$$\frac{39 \cdot 3}{8 \cdot 3} + \frac{-22 \cdot 8}{3 \cdot 8}$$

$$\boxed{\frac{117}{24}} + \frac{-176}{24}$$

$$\boxed{\frac{-59}{24}}$$

$$\begin{array}{r} 39 \\ \times 3 \\ \hline 117 \end{array}$$

$$\begin{array}{r} 122 \\ \times 8 \\ \hline 176 \end{array}$$

Example 11Evaluate $y - \frac{4}{9}$

if $y = -\frac{5}{6}$

$$-\frac{5 \cdot 3}{6 \cdot 3} - \frac{4 \cdot 2}{9 \cdot 2}$$

$$\frac{-15}{18} - \frac{8}{18}$$

$$\frac{-23}{18}$$

Example 12Evaluate $\frac{3}{4} - y$

if $y = -\frac{7}{12}$

$$\frac{3 \cdot 3}{3 \cdot 4} - \left(-\frac{7}{12} \right)$$

$$\frac{9}{12} + \frac{7}{12}$$

$$\frac{16 \div 4}{12 \div 4}$$

$$\frac{4}{3}$$