

Adding Fractions with the Same Denominators

The answer to an addition problem is called the **sum** or **total**. You know that the sum of a quarter and another quarter is two quarters, or $\frac{1}{2}$ dollar.

To add fractions with the same denominators, add the numerators, and put the total over the denominator.

EXAMPLE $\frac{2}{7} + \frac{3}{7} =$

STEP 1 Add the numerators. $2 + 3 = 5$

STEP 2 Put the total, 5, over the denominator 7.

$$\begin{array}{r} \frac{2}{7} \\ + \frac{3}{7} \\ \hline \frac{5}{7} \end{array}$$

Add.

$$\begin{array}{r} 1. \quad \frac{2}{9} \\ + \frac{3}{9} \\ \hline \end{array} \quad \begin{array}{r} \frac{3}{7} \\ + \frac{1}{7} \\ \hline \end{array} \quad \begin{array}{r} \frac{4}{8} \\ + \frac{3}{8} \\ \hline \end{array} \quad \begin{array}{r} \frac{5}{12} \\ + \frac{2}{12} \\ \hline \end{array} \quad \begin{array}{r} \frac{4}{13} \\ + \frac{6}{13} \\ \hline \end{array}$$

$$\begin{array}{r} 2. \quad \frac{3}{11} \\ + \frac{1}{11} \\ + \frac{2}{11} \\ \hline \end{array} \quad \begin{array}{r} \frac{5}{9} \\ + \frac{2}{9} \\ + \frac{1}{9} \\ \hline \end{array} \quad \begin{array}{r} \frac{2}{15} \\ + \frac{7}{15} \\ + \frac{4}{15} \\ \hline \end{array} \quad \begin{array}{r} \frac{8}{17} \\ + \frac{2}{17} \\ + \frac{5}{17} \\ \hline \end{array} \quad \begin{array}{r} \frac{2}{19} \\ + \frac{9}{19} \\ + \frac{5}{19} \\ \hline \end{array}$$

With mixed numbers, add fractions and whole numbers separately.

$$\begin{array}{r} 3. \quad 4\frac{2}{5} \\ + 3\frac{1}{5} \\ \hline \end{array} \quad \begin{array}{r} 6\frac{3}{10} \\ + 8\frac{6}{10} \\ \hline \end{array} \quad \begin{array}{r} 5\frac{4}{11} \\ + 4\frac{5}{11} \\ \hline \end{array} \quad \begin{array}{r} 8\frac{7}{13} \\ + 6\frac{4}{13} \\ \hline \end{array}$$

$$\begin{array}{r} 4. \quad 3\frac{2}{9} \\ + 5\frac{1}{9} \\ + 4\frac{5}{9} \\ \hline \end{array} \quad \begin{array}{r} 6\frac{4}{11} \\ + 9\frac{2}{11} \\ + 2\frac{3}{11} \\ \hline \end{array} \quad \begin{array}{r} 7\frac{2}{7} \\ + 8\frac{2}{7} \\ + 5\frac{2}{7} \\ \hline \end{array} \quad \begin{array}{r} 9\frac{3}{10} \\ + 2\frac{5}{10} \\ + 4\frac{1}{10} \\ \hline \end{array}$$

Sometimes the total of an addition problem can be reduced.

EXAMPLE 2 $\frac{5}{12} + \frac{1}{12} =$

STEP 1 Add the numerators. $5 + 1 = 6$

STEP 2 Place the total over the denominator. $\frac{6}{12}$

STEP 3 Reduce the answer. $\frac{6 \div 6}{12 \div 6} = \frac{1}{2}$

$$\begin{array}{r} \frac{5}{12} \\ + \frac{1}{12} \\ \hline \frac{6}{12} = \frac{1}{2} \end{array}$$

Add and reduce.

5.	$\frac{5}{8}$	$\frac{4}{9}$	$\frac{3}{12}$	$\frac{7}{15}$	$\frac{3}{16}$
	$+ \frac{1}{8}$	$+ \frac{2}{9}$	$+ \frac{5}{12}$	$+ \frac{3}{15}$	$+ \frac{5}{16}$
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6.	$\frac{2}{10}$	$\frac{6}{15}$	$\frac{7}{20}$	$\frac{9}{24}$	$\frac{8}{27}$
	$\frac{3}{10}$	$\frac{2}{15}$	$\frac{3}{20}$	$\frac{7}{24}$	$\frac{4}{27}$
	$+ \frac{3}{10}$	$+ \frac{4}{15}$	$+ \frac{4}{20}$	$+ \frac{2}{24}$	$+ \frac{6}{27}$
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7.	$5\frac{2}{6}$	$7\frac{5}{12}$	$10\frac{5}{14}$	$13\frac{8}{15}$
	$+ 6\frac{1}{6}$	$+ 9\frac{3}{12}$	$+ 8\frac{7}{14}$	$+ 29\frac{2}{15}$
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8.	$9\frac{2}{9}$	$6\frac{3}{10}$	$10\frac{5}{16}$	$12\frac{3}{8}$
	$8\frac{1}{9}$	$7\frac{2}{10}$	$4\frac{3}{16}$	$9\frac{1}{8}$
	$+ 7\frac{3}{9}$	$+ 4\frac{3}{10}$	$+ 3\frac{4}{16}$	$+ 10\frac{2}{8}$
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If the total of an addition problem is an improper fraction, change the improper fraction to a mixed number. (See page 19.)

EXAMPLE 3 $\frac{5}{8} + \frac{7}{8} =$

STEP 1 Add the fractions. $\frac{5}{8} + \frac{7}{8} = \frac{12}{8}$

STEP 2 Change $\frac{12}{8}$ to a mixed number. $\frac{12}{8} = 1\frac{4}{8}$

STEP 3 Reduce $1\frac{4}{8}$. $1\frac{4 \div 4}{8 \div 4} = 1\frac{1}{2}$

(In the last step, you could reduce $\frac{12}{8}$ first. $\frac{12}{8} = \frac{3}{2} = 1\frac{1}{2}$)

$$\begin{array}{r} \frac{5}{8} \\ + \frac{7}{8} \\ \hline \frac{12}{8} = 1\frac{4}{8} = 1\frac{1}{2} \end{array}$$

Add and reduce.

9. $\frac{4}{5}$
 $+ \frac{3}{5}$

$\frac{6}{8}$
 $+ \frac{5}{8}$

$\frac{7}{10}$
 $+ \frac{6}{10}$

$\frac{8}{9}$
 $+ \frac{5}{9}$

$\frac{3}{6}$
 $+ \frac{3}{6}$

10. $\frac{11}{12}$
 $+ \frac{5}{12}$

$\frac{9}{14}$
 $+ \frac{7}{14}$

$\frac{7}{8}$
 $+ \frac{5}{8}$

$\frac{11}{15}$
 $+ \frac{7}{15}$

$\frac{9}{16}$
 $+ \frac{15}{16}$

11. $\frac{5}{9}$
 $\frac{7}{9}$
 $+ \frac{8}{9}$

$\frac{6}{7}$
 $\frac{5}{7}$
 $+ \frac{3}{7}$

$\frac{7}{10}$
 $\frac{3}{10}$
 $+ \frac{5}{10}$

$\frac{9}{12}$
 $\frac{11}{12}$
 $+ \frac{7}{12}$

$\frac{6}{8}$
 $\frac{5}{8}$
 $+ \frac{7}{8}$

12. $8\frac{3}{8}$
 $3\frac{7}{8}$
 $+ 5\frac{5}{8}$

$9\frac{5}{6}$
 $2\frac{1}{6}$
 $+ 6\frac{4}{6}$

$5\frac{7}{10}$
 $4\frac{9}{10}$
 $+ 7\frac{5}{10}$

$2\frac{7}{12}$
 $8\frac{8}{12}$
 $+ 6\frac{9}{12}$
