

Adding Fractions

with the Unlike Denominator, Requires Simplifying

The diagram shows the following steps for adding $\frac{1}{3} + \frac{1}{6}$:

- Initial problem: $\frac{1}{3} + \frac{1}{6}$
- Conversion: $\frac{1}{3} = \frac{2}{6}$ and $\frac{1}{6} = \frac{1}{6}$. A bracket labeled "same" indicates that both fractions now have a denominator of 6.
- Addition: $\frac{2}{6} + \frac{1}{6} = \frac{3}{6}$. A bracket indicates the addition of the numerators (2 + 1 = 3).
- Simplification: $\frac{3}{6} = \frac{1}{2}$. A bracket indicates the simplification of the fraction.

a.
$$\begin{array}{r} \frac{2}{2} \\ + \frac{2}{1} \\ \hline \end{array}$$

b.
$$\begin{array}{r} \frac{1}{3} \\ + \frac{2}{2} \\ \hline \end{array}$$

c.
$$\begin{array}{r} \frac{1}{1} \\ + \frac{5}{5} \\ \hline \end{array}$$

d.
$$\begin{array}{r} \frac{2}{6} \\ + \frac{4}{2} \\ \hline \end{array}$$

e.
$$\begin{array}{r} \frac{3}{1} \\ + \frac{7}{4} \\ \hline \end{array}$$

f.
$$\begin{array}{r} \frac{1}{2} \\ + \frac{1}{4} \\ \hline \end{array}$$

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

h.
$$\begin{array}{r} \frac{4}{2} \\ + \frac{3}{1} \\ \hline \end{array}$$

i.
$$\begin{array}{r} \frac{3}{1} \\ + \frac{2}{2} \\ \hline \end{array}$$

g.
$$\begin{array}{r} \frac{5}{5} \\ + \frac{1}{1} \\ \hline \end{array}$$

k.
$$\begin{array}{r} \frac{1}{2} \\ + \frac{2}{3} \\ \hline \end{array}$$

l.
$$\begin{array}{r} \frac{4}{1} \\ + \frac{2}{2} \\ \hline \end{array}$$

m.
$$\begin{array}{r} \frac{3}{4} \\ + \frac{1}{2} \\ \hline \end{array}$$

n.
$$\begin{array}{r} \frac{1}{2} \\ + \frac{2}{8} \\ \hline \end{array}$$

o.
$$\begin{array}{r} \frac{1}{6} \\ + \frac{2}{3} \\ \hline \end{array}$$

p.
$$\begin{array}{r} \frac{2}{1} \\ + \frac{2}{5} \\ + \frac{2}{2} \\ \hline \end{array}$$

q.
$$\begin{array}{r} \frac{2}{9} \\ + \frac{1}{9} \\ + \frac{1}{1} \\ \hline \end{array}$$

r.
$$\begin{array}{r} \frac{2}{4} \\ + \frac{1}{1} \\ + \frac{1}{4} \\ \hline \end{array}$$

s.
$$\begin{array}{r} \frac{1}{6} \\ + \frac{1}{6} \\ + \frac{1}{3} \\ \hline \end{array}$$

t.
$$\begin{array}{r} \frac{3}{4} \\ + \frac{2}{1} \\ + \frac{2}{2} \\ \hline \end{array}$$

Adding Fractions ANSWER KEY

With the Unlike Denominator, Requires Simplifying

$$\begin{array}{r} \frac{1}{3} \\ + \frac{1}{6} \\ \hline \end{array}$$

$$\frac{1}{3} = \frac{2}{6}$$

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$$\frac{1}{3} = \frac{2}{6}$$

$$\frac{1}{6} = \frac{1}{6}$$

$$\frac{3}{6} = \frac{1}{2}$$

a. $\frac{2}{2} = \frac{2}{2}$

$$\begin{array}{r} \frac{2}{2} = \frac{4}{2} \\ + 1 = \frac{2}{2} \\ \hline \frac{6}{2} = \frac{3}{1} \end{array}$$

b. $\frac{1}{3} = \frac{2}{6}$

$$\begin{array}{r} \frac{2}{2} = \frac{6}{6} \\ + 2 = \frac{6}{6} \\ \hline \frac{8}{6} = \frac{4}{3} \end{array}$$

c. $\frac{1}{1} = \frac{5}{5}$

$$\begin{array}{r} \frac{5}{5} = \frac{5}{5} \\ + 5 = \frac{5}{5} \\ \hline \frac{10}{5} = \frac{2}{1} \end{array}$$

d. $\frac{2}{6} = \frac{2}{6}$

$$\begin{array}{r} \frac{4}{4} = \frac{12}{6} \\ + 2 = \frac{6}{6} \\ \hline \frac{14}{6} = \frac{7}{3} \end{array}$$

e. $\frac{3}{1} = \frac{12}{4}$

$$\begin{array}{r} \frac{7}{7} = \frac{7}{4} \\ + 4 = \frac{4}{4} \\ \hline \frac{19}{4} \end{array}$$

f. $\frac{1}{2} = \frac{2}{4}$

$$\begin{array}{r} \frac{1}{1} = \frac{1}{4} \\ + 4 = \frac{4}{4} \\ \hline \frac{3}{4} \end{array}$$

g. $\frac{5}{3} = \frac{10}{6}$

$$\begin{array}{r} \frac{2}{2} = \frac{6}{6} \\ + 2 = \frac{6}{6} \\ \hline \frac{16}{6} = \frac{8}{3} \end{array}$$

h. $\frac{4}{2} = \frac{4}{2}$

$$\begin{array}{r} \frac{3}{3} = \frac{6}{2} \\ + 1 = \frac{2}{2} \\ \hline \frac{10}{2} = \frac{5}{1} \end{array}$$

i. $\frac{3}{1} = \frac{6}{2}$

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

j. $\frac{5}{5} = \frac{5}{5}$

$$\begin{array}{r} \frac{1}{1} = \frac{5}{5} \\ + 1 = \frac{5}{5} \\ \hline \frac{10}{5} = \frac{2}{1} \end{array}$$

k. $\frac{1}{2} = \frac{3}{6}$

$$\begin{array}{r} \frac{2}{2} = \frac{4}{6} \\ + 3 = \frac{6}{6} \\ \hline \frac{7}{6} \end{array}$$

l. $\frac{4}{1} = \frac{8}{2}$

$$\begin{array}{r} \frac{2}{2} = \frac{2}{2} \\ + 2 = \frac{2}{2} \\ \hline \frac{10}{2} = \frac{5}{1} \end{array}$$

m. $\frac{3}{4} = \frac{3}{4}$

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

n. $\frac{1}{2} = \frac{4}{8}$

$$\begin{array}{r} \frac{2}{2} = \frac{2}{8} \\ + 8 = \frac{8}{8} \\ \hline \frac{6}{8} = \frac{3}{4} \end{array}$$

o. $\frac{1}{6} = \frac{1}{6}$

$$\begin{array}{r} \frac{2}{2} = \frac{4}{6} \\ + 3 = \frac{6}{6} \\ \hline \frac{5}{6} \end{array}$$

p. $\frac{2}{1} = \frac{10}{5}$

$$\begin{array}{r} \frac{2}{5} = \frac{2}{5} \\ + 5 = \frac{5}{5} \\ \hline \frac{14}{5} = \frac{7}{3} \end{array}$$

q. $\frac{2}{9} = \frac{2}{9}$

$$\begin{array}{r} \frac{1}{9} = \frac{1}{9} \\ + 1 = \frac{9}{9} \\ \hline \frac{12}{9} = \frac{4}{3} \end{array}$$

r. $\frac{2}{4} = \frac{2}{4}$

$$\begin{array}{r} \frac{1}{1} = \frac{4}{4} \\ + 4 = \frac{4}{4} \\ \hline \frac{10}{4} = \frac{5}{2} \end{array}$$

s. $\frac{1}{6} = \frac{1}{6}$

$$\begin{array}{r} \frac{1}{6} = \frac{1}{6} \\ + 3 = \frac{6}{6} \\ \hline \frac{4}{6} = \frac{2}{3} \end{array}$$

t. $\frac{3}{4} = \frac{3}{4}$

$$\begin{array}{r} \frac{2}{1} = \frac{8}{4} \\ + 1 = \frac{4}{4} \\ \hline \frac{19}{4} \end{array}$$