

## 2.2 Adding Fractions

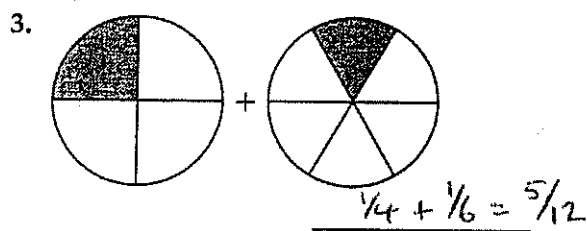
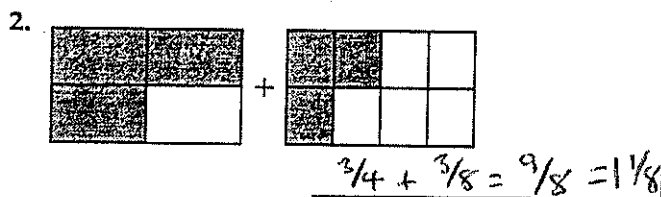
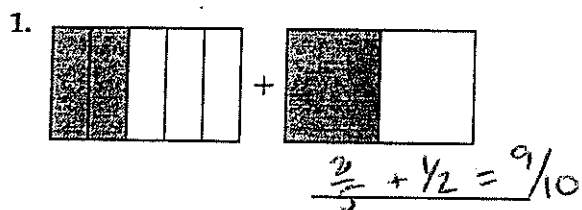
MATHPOWER™ pp. 48-49

To add fractions with different denominators, write equivalent fractions with the lowest common denominator.

$$\begin{aligned} \frac{1}{3} + \frac{3}{5} &= \frac{5}{15} + \frac{9}{15} \\ &= \frac{14}{15} \end{aligned}$$

Express all answers in lowest terms.

Write the addition indicated by each diagram and find the sum.



Add.

4.  $\frac{1}{3} + \frac{1}{3} = \frac{2}{3}$       5.  $\frac{5}{8} + \frac{1}{8} = \frac{6}{8} = \frac{3}{4}$

6.  $\frac{3}{5} + \frac{2}{5} = \frac{5}{5} = 1$       7.  $\frac{7}{12} + \frac{1}{12} = \frac{8}{12} = \frac{2}{3}$

Add.

8.  $\frac{5}{6} + \frac{1}{3} = 1\frac{1}{6}$       9.  $\frac{3}{8} + \frac{1}{2} = \frac{7}{8}$

10.  $\frac{1}{3} + \frac{3}{4} = 1\frac{1}{12}$       11.  $\frac{1}{3} + \frac{1}{2} = \frac{5}{6}$

12.  $\frac{3}{5} + \frac{3}{4} = 1\frac{7}{20}$       13.  $\frac{7}{9} + \frac{2}{3} = 1\frac{4}{9}$

Estimate, then add.

14.  $1\frac{7}{9} + 2\frac{5}{9} = 4\frac{1}{3}$       15.  $4\frac{1}{10} + 3\frac{7}{10} = 7\frac{4}{5}$

16.  $2\frac{5}{6} + \frac{1}{6} = 3$       17.  $5\frac{2}{3} + 3\frac{2}{3} = 9\frac{1}{3}$

Estimate, then add.

18.  $2\frac{1}{2} + \frac{3}{4} = 3\frac{1}{4}$       19.  $1\frac{1}{6} + 2\frac{5}{8} = 3\frac{19}{24}$

20.  $4\frac{2}{7} + 3\frac{1}{2} = 7\frac{11}{14}$       21.  $3\frac{1}{3} + 1\frac{1}{4} = 4\frac{7}{12}$

22.  $5\frac{4}{5} + 2\frac{2}{3} = 8\frac{7}{15}$       23.  $1\frac{7}{8} + 3\frac{1}{12} = 4\frac{23}{24}$

Estimate, then add.

24.  $\frac{1}{6} + \frac{1}{4} + \frac{7}{8} = 1\frac{7}{24}$       25.  $\frac{2}{3} + \frac{1}{6} + 1\frac{5}{6} = 2\frac{2}{3}$

26.  $\frac{5}{8} + \frac{1}{2} + 3\frac{3}{4} = 4\frac{7}{8}$       27.  $4\frac{1}{4} + \frac{4}{5} + 2\frac{7}{10} = 7\frac{3}{4}$

28. Complete the squares by adding across and down.

a)

$\frac{1}{4}$	$\frac{4}{5}$	$1\frac{1}{20}$
$\frac{1}{3}$	$\frac{1}{2}$	$\frac{5}{6}$
$\frac{7}{12}$	$1\frac{3}{10}$	$1\frac{53}{60}$

b)

$2\frac{1}{2}$	$\frac{1}{3}$	$2\frac{1}{6}$	5
$2\frac{5}{6}$	5	$\frac{5}{12}$	$8\frac{1}{4}$
$1\frac{1}{3}$	$3\frac{1}{12}$	$1\frac{5}{6}$	$6\frac{1}{4}$
$6\frac{2}{3}$	$8\frac{5}{12}$	$4\frac{5}{12}$	$19\frac{1}{2}$

## 2.3 Subtracting Fractions

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To subtract fractions with different denominators, write equivalent fractions with the lowest common denominator.

$$\begin{aligned}
 3\frac{1}{3} - 1\frac{1}{2} &= 3\frac{2}{6} - 1\frac{3}{6} \quad \leftarrow 2 < 3, \text{ so rewrite the first mixed number.} \\
 &= 2\frac{8}{6} - 1\frac{3}{6} \quad \leftarrow \text{Subtract whole numbers, then fractions.} \\
 &= 1\frac{5}{6}
 \end{aligned}$$

Express all answers in lowest terms.

Find the difference.

1.  $\frac{7}{8} - \frac{3}{8} = \underline{\frac{4}{8}}$       2.  $\frac{9}{10} - \frac{1}{10} = \underline{\frac{8}{10}}$   
 3.  $\frac{3}{5} - \frac{1}{5} = \underline{\frac{2}{5}}$       4.  $\frac{7}{12} - \frac{5}{12} = \underline{\frac{2}{12}}$

Subtract.

5.  $\frac{7}{9} - \frac{2}{9} = \underline{\frac{5}{9}}$       6.  $\frac{7}{8} - \frac{1}{4} = \underline{\frac{5}{8}}$   
 7.  $\frac{9}{10} - \frac{2}{5} = \underline{\frac{4}{10}}$       8.  $\frac{3}{4} - \frac{2}{3} = \underline{\frac{1}{12}}$   
 9.  $\frac{7}{8} - \frac{5}{6} = \underline{\frac{1}{24}}$       10.  $\frac{3}{5} - \frac{1}{3} = \underline{\frac{4}{15}}$

Estimate, then subtract.

11.  $3\frac{4}{7} - \frac{1}{7} = \underline{3\frac{3}{7}}$       12.  $2\frac{8}{9} - \frac{4}{9} = \underline{2\frac{4}{9}}$   
 13.  $4\frac{4}{5} - 1\frac{2}{5} = \underline{3\frac{2}{5}}$       14.  $5\frac{1}{6} - 2\frac{5}{6} = \underline{2\frac{2}{6}}$   
 15.  $2\frac{5}{8} - 1\frac{3}{8} = \underline{1\frac{2}{8}}$       16.  $6\frac{7}{10} - 4\frac{3}{10} = \underline{2\frac{4}{10}}$

Estimate, then subtract.

17.  $4\frac{1}{2} - 1\frac{2}{5} = \underline{3\frac{1}{10}}$       18.  $3\frac{3}{4} - \frac{5}{12} = \underline{3\frac{3}{4}}$   
 19.  $3\frac{2}{3} - 1\frac{1}{4} = \underline{2\frac{5}{12}}$       20.  $4\frac{7}{10} - 3\frac{2}{3} = \underline{1\frac{1}{30}}$   
 21.  $5\frac{1}{3} - 2\frac{1}{6} = \underline{3\frac{1}{6}}$       22.  $2\frac{3}{5} - 2\frac{1}{10} = \underline{\frac{1}{2}}$

Estimate, then subtract.

23.  $4\frac{1}{6} - 2\frac{1}{3} = \underline{1\frac{5}{6}}$       24.  $3 - 1\frac{7}{8} = \underline{1\frac{1}{8}}$   
 25.  $5\frac{1}{2} - 2\frac{7}{12} = \underline{2\frac{11}{12}}$       26.  $1\frac{3}{8} - \frac{5}{6} = \underline{1\frac{13}{24}}$

27. Complete the squares by subtracting across and down.

a)

$\frac{5}{6}$	$\frac{1}{3}$	$\frac{1}{2}$
$\frac{5}{12}$	$\frac{1}{4}$	$\frac{1}{6}$
$\frac{5}{12}$	$\frac{1}{12}$	$\frac{1}{3}$

b)

$3\frac{2}{3}$	$1\frac{5}{6}$	$1\frac{5}{6}$
$1\frac{3}{5}$	$1\frac{1}{3}$	$\frac{4}{15}$
$2\frac{1}{15}$	$\frac{1}{2}$	$1\frac{17}{30}$

c)

$6\frac{1}{2}$	$3\frac{1}{3}$	$3\frac{1}{6}$
$2\frac{1}{4}$	$1\frac{5}{6}$	$\frac{5}{12}$
$4\frac{1}{4}$	$1\frac{1}{2}$	$2\frac{3}{4}$

28. Write 2 fractions that have different denominators and a difference of  $\frac{3}{5}$ .

ex.  $\frac{3}{4} + \frac{3}{5} = \frac{27}{20}$

so  $1\frac{7}{20}$  and  $\frac{3}{4}$  differ by  $\frac{3}{5}$