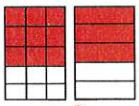
Use common factors to simplify fractions.

1) Find a number that both the numerator and the denominator can be divided by (in this case, 3)

2) Divide both the numerator and denominator by that number.



÷ 3

$\frac{9}{15} = \frac{3}{5}$

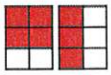
÷ 3

Use multiples to express fractions in the same denominator

1) Find a number that is a common multiple of both denominators (in this case, 6)

2) Multiply both fractions by the relevant multiple to reach the new denominator

$\frac{2}{3}$ x 2 x 2 $\quad \frac{1}{2}$ x 3 x 3



$\frac{4}{6} \quad \frac{3}{6}$

Convert mixed numbers to improper fractions

1) Multiply the denominator by the whole number.

2) Add the numerator

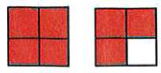
3) Write the answer as a numerator over the existing denominator

add

$1\frac{3}{4}$

multiply

$1\frac{3}{4} = \frac{7}{4}$



1 whole $\frac{4}{4}$ $\quad \frac{3}{4}$

Convert improper fractions to mixed numbers

1) See how many times the denominator will go into the numerator (once, with a remainder of 3)

2) Write the answer (1) as the whole number

3) Write the remainder (3) as the numerator over the existing denominator.

$\frac{7}{4} = 1\frac{3}{4}$

1 whole $\frac{4}{4}$

$\frac{3}{4}$

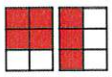
Compare fractions

1) Decide on a common multiple of the two denominators to become the new denominator

2) Convert both fractions to have the same denominator.

3) Decide which symbol to use– which fraction is larger?

$\frac{2}{3} \quad \frac{1}{2}$



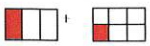
$\frac{4}{6} > \frac{3}{6}$

Add proper fractions

1) Convert both fractions to have the same denominator

2) Add the numerators, but not the denominators.

3) Simplify the answer if you can



$\frac{1}{3} + \frac{1}{6}$

$\frac{2}{6} + \frac{1}{6}$

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

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

Add mixed numbers (method 1)

$1\frac{3}{4} + 1\frac{3}{8}$

1) Change any mixed numbers to improper fractions.

2) Convert both fractions to have the same denominator

3) Add the numerators together.

4) Change any improper fractions back to mixed numbers

5) Simplify the answer if you can.

$\frac{7}{4} + \frac{11}{8}$

$\frac{14}{8} + \frac{11}{8}$

$\frac{14}{8} + \frac{11}{8} = \frac{25}{8}$

$\frac{25}{8} = 3\frac{1}{8}$

Add mixed numbers (method 2)

$1\frac{3}{4} + 1\frac{3}{8}$

1) Add the two whole numbers together.

2) Convert both fractions to have the same denominator.

3) Add the numerators together.

4) Change any improper fractions back to mixed numbers

5) Add together your two answers.

6) Simplify the answer if you can.

1 + 1=2

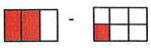
$\frac{6}{8} + \frac{3}{8}$

$\frac{6}{8} + \frac{3}{8} = \frac{9}{8}$

$\frac{9}{8} = 1\frac{1}{8}$

$2 + 1\frac{1}{8} = 3\frac{1}{8}$

Subtract proper fractions



1) Convert both fractions to have the same denominator

2) Subtract the numerators, but not the denominators.

3) Simplify the answer if you can

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

$\frac{4}{6} - \frac{1}{6}$

$\frac{4}{6} - \frac{1}{6} = \frac{3}{6}$

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

Subtract mixed numbers

$2\frac{3}{4} - 1\frac{1}{8}$

1) Change any mixed numbers to improper fractions.

2) Convert both fractions to have the same denominator.

3) Subtract the second numerator from the first.

4) Change any improper fractions back to mixed numbers.

5) Simplify the answer if you can.

$\frac{11}{4} - \frac{9}{8}$

$\frac{22}{8} - \frac{9}{8}$

$\frac{22}{8} - \frac{9}{8} = \frac{13}{8}$

$\frac{13}{8} = 1\frac{5}{8}$

Multiply pairs of proper fractions

$\frac{3}{4} \times \frac{2}{3}$

1) Multiply the numerators

2) Multiply the denominators

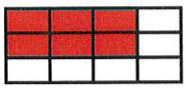
3) Simplify the answer if you can.

$\frac{3}{4} \times \frac{2}{3} = \frac{6}{12}$

$\frac{6}{12} = \frac{1}{2}$

$\frac{3}{4}$

$\frac{2}{3}$

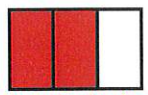


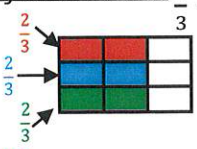
$= \frac{6}{12}$

Divide fractions by whole numbers

$\frac{2}{3} \div 3$

$\frac{2}{3}$





1) Multiply the denominator by the whole number and write the answer as the new denominator.

2) Simplify the answer if you can.

$\frac{2}{3} \div 3 = \frac{2}{9}$

Multiply fractions by whole numbers

$\frac{3}{4} \times 5$

1) Write the whole number as a fraction over 1.

2) Multiply the numerators

3) Multiply the denominators

4) Change any improper fractions back to mixed numbers

5) Simplify the answer if you can

$\frac{3}{4} \times \frac{5}{1}$

$\frac{3}{4} \times \frac{5}{1} = \frac{15}{4}$

$\frac{15}{4} = 3\frac{3}{4}$

Multiply mixed numbers by whole numbers (method 1)

$3\frac{3}{4} \times 5$

1) Change any mixed numbers to improper fractions

2)Write the whole number as a fraction over 1.

3) Multiply the numerators

4) Multiply the denominators

5) Change any improper fractions back to mixed numbers.

6) Simplify the answer if you can.

$\frac{15}{4} \times 5$

$\frac{15}{4} \times \frac{5}{1}$

$\frac{15}{4} \times \frac{5}{1} = \frac{75}{4}$

$\frac{75}{4} = 18\frac{3}{4}$

Multiply mixed numbers by whole numbers (method 1)

$3\frac{3}{4} \times 5$

1) Multiply the two whole numbers together.

2) Multiply the fraction by the whole number.

3) Change any improper fractions back to mixed numbers.

4) Add your two answers together.

5) Simplify the answer if you can.

$3 \times 5 = 15$

$\frac{3}{4} \times \frac{5}{1} = \frac{15}{4}$

$\frac{15}{4} = 3\frac{3}{4}$

$15 + 3\frac{3}{4} = 18\frac{3}{4}$