

How to Subtract Fractions

Introducing:

- minuend
- subtrahend
- difference



$$\frac{3}{5} - \frac{1}{5} = \frac{2}{5}$$

minuend **subtrahend**

Subtract Fractions 1



$$\frac{3}{5} - \frac{1}{5} = \frac{2}{5}$$

minuend **subtrahend**

This picture shows the *minuend*, *subtrahend*, and *difference*. The *difference* is what remains when the *subtrahend* is removed from the *minuend*.

Subtract Fractions 2

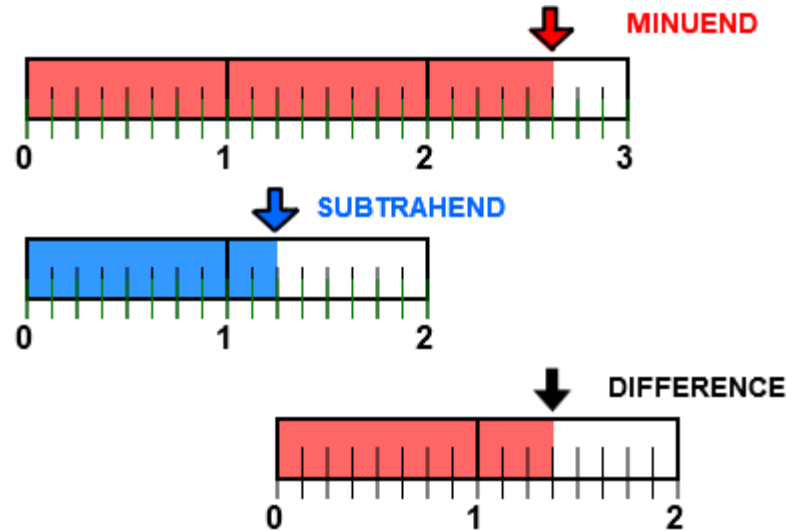


$$\frac{3}{5} - \frac{1}{5} = \frac{2}{5}$$

minuend **subtrahend**

If the minuend and subtrahend have the same denominator, subtract the numerator of the *subtrahend* from the numerator of the *minuend* to get the numerator of the *difference*.

Subtract Fractions 3

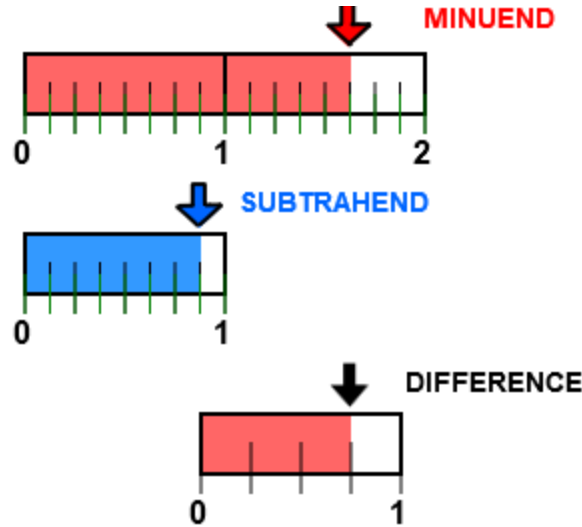


$$2 \frac{5}{8} - 1 \frac{2}{8} = 1 \frac{3}{8}$$

minuend **subtrahend**

The whole number 1 in $1 \frac{2}{8}$ is subtracted from the whole number 2 in $2 \frac{5}{8}$ for a whole number 1 in the *difference*. The fractions $\frac{5}{8}$ and $\frac{2}{8}$ are subtracted for $\frac{3}{8}$ in the *difference*.

Subtract Fractions 4

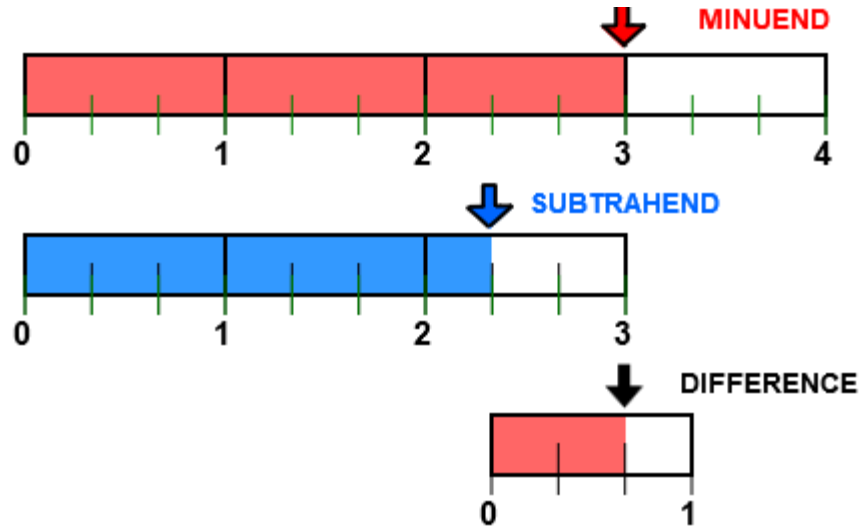


$$1 \frac{5}{8} - \frac{7}{8} = \frac{13}{8} - \frac{7}{8} = \frac{3}{4}$$

minuend *subtrahend*

Here the the *subtrahend* numerator in $\frac{7}{8}$ is larger than the *minuend* numerator in $1 \frac{5}{8}$. To subtract, the *minuend* is renamed as $\frac{13}{8}$. Now the numerators in $\frac{13}{8}$ and $\frac{7}{8}$ can be subtracted. The *difference* $\frac{6}{8}$ is renamed in lowest terms as $\frac{3}{4}$.

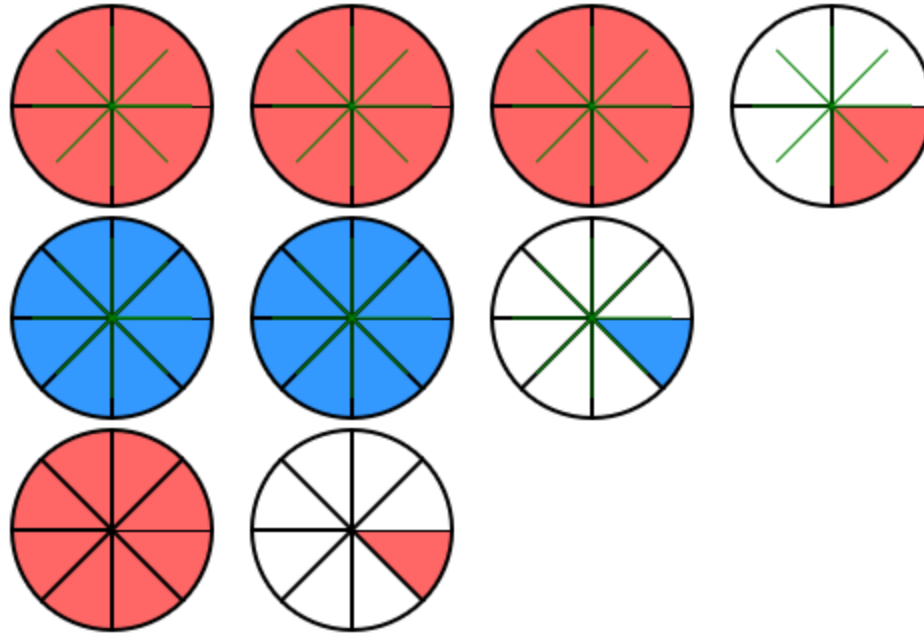
Subtract Fractions 5



$$\begin{array}{ccccccc} 3 & - & 2 \frac{1}{3} & = & 2 \frac{3}{3} & - & 2 \frac{1}{3} & = & \frac{2}{3} \\ \text{minuend} & & \text{subtrahend} & & \text{rename minuend} & & & & \end{array}$$

The *minuend* 3 is renamed as $2\frac{3}{3}$ so that the numerators can be subtracted. This is done by decreasing the whole number 3 by 1 and renaming the 1 as $\frac{3}{3}$. $3 = 2+1 = 2 + \frac{3}{3}$.

Subtract Fractions 6

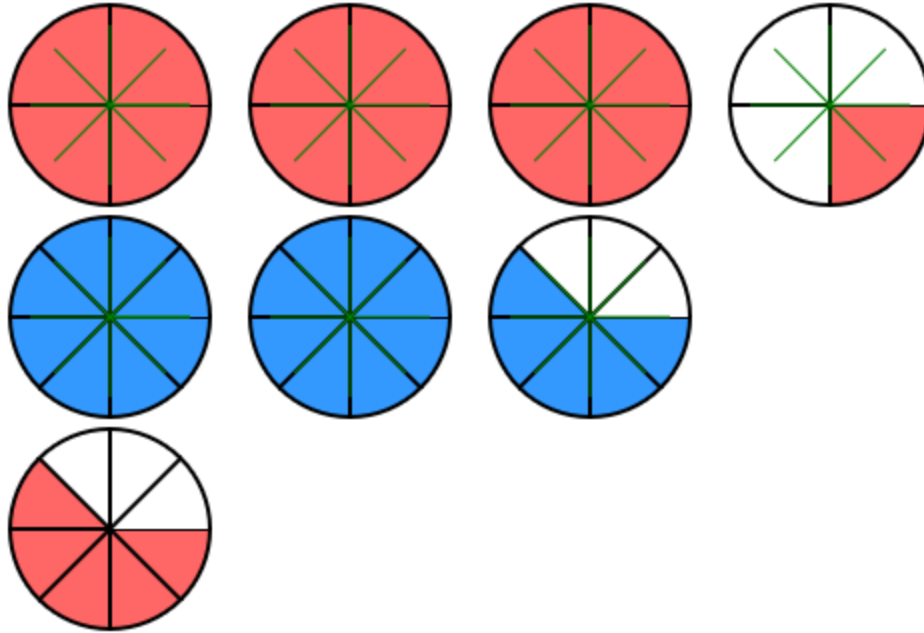


Write with common denominator 8 and subtract whole numbers and numerators.

$$\begin{array}{ccccccc} 3 \frac{1}{4} & - & 2 \frac{1}{8} & = & 3 \frac{2}{8} & - & 2 \frac{1}{8} & = & 1 \frac{1}{8} \\ \text{minuend} & & \text{subtrahend} & & & & & & \end{array}$$

Here, unlike fractions are renamed with a common denominator. The *minuend* $3 \frac{1}{4}$ is renamed as $3 \frac{2}{8}$. Then the whole numbers and numerators are subtracted for a *difference* of $1 \frac{1}{8}$.

Subtract Fractions 7



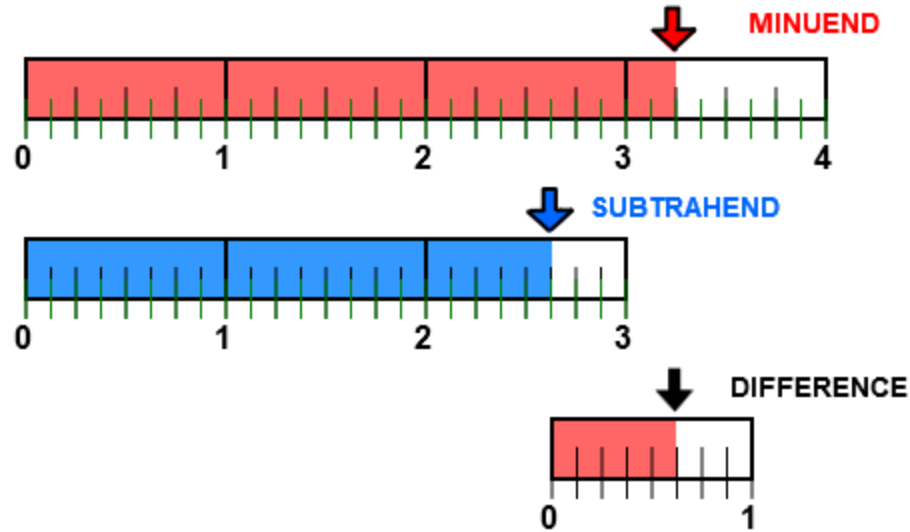
Write with common denominator 8 and subtract whole numbers and numerators.

$$\begin{array}{ccccccc} 3 \frac{1}{4} & - & 2 \frac{5}{8} & = & 3 \frac{2}{8} & - & 2 \frac{5}{8} & = & 2 \frac{10}{8} & - & 2 \frac{5}{8} & = & \frac{5}{8} \\ \text{minuend} & & \text{subtrahend} & & & & & & \text{rename minuend} & & & & & \end{array}$$

$3 \frac{1}{4}$ is renamed as $3 \frac{2}{8}$ to make like fractions. The minuend $3 \frac{2}{8}$ is then renamed as $2 \frac{10}{8}$ so that the numerators can be subtracted.

$$3 \frac{2}{8} = 2 + 1 + \frac{2}{8} = 2 + \frac{8}{8} + \frac{2}{8} = 2 \frac{10}{8}$$

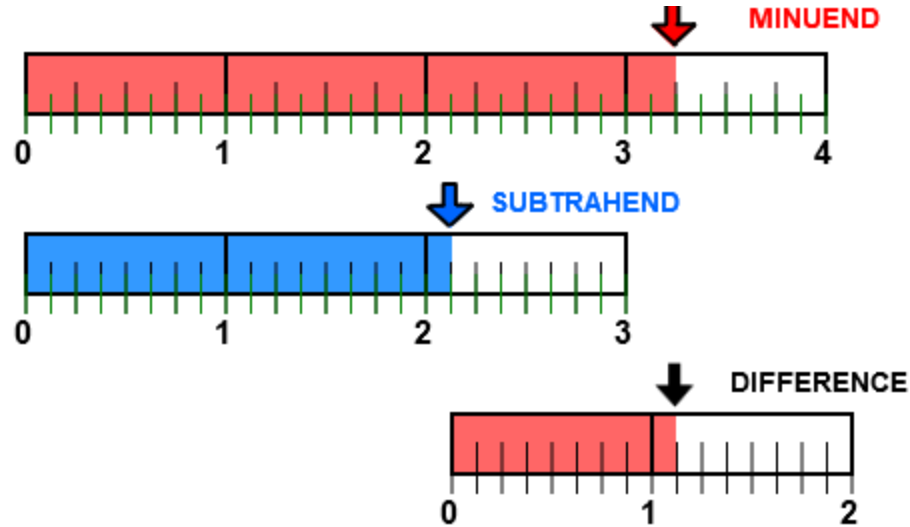
Subtract Fractions 8



$$\begin{array}{ccccccc} 3 \frac{1}{4} & - & 2 \frac{5}{8} & = & 3 \frac{2}{8} & - & 2 \frac{5}{8} & = & 2 \frac{10}{8} & - & 2 \frac{5}{8} & = & \frac{5}{8} \\ \text{minuend} & & \text{subtrahend} & & & & & & \text{rename minuend} & & & & \end{array}$$

The same example with number lines shows that the *minuend* $3 \frac{1}{4}$ is $\frac{5}{8}$ larger than the *subtrahend* $2 \frac{5}{8}$.

Subtract Fractions 9



$$\begin{array}{ccccccc} 3 \frac{1}{4} & - & 2 \frac{1}{8} & = & 3 \frac{2}{8} & - & 2 \frac{1}{8} & = & 1 \frac{1}{8} \\ \text{minuend} & & \text{subtrahend} & & & & & & \end{array}$$

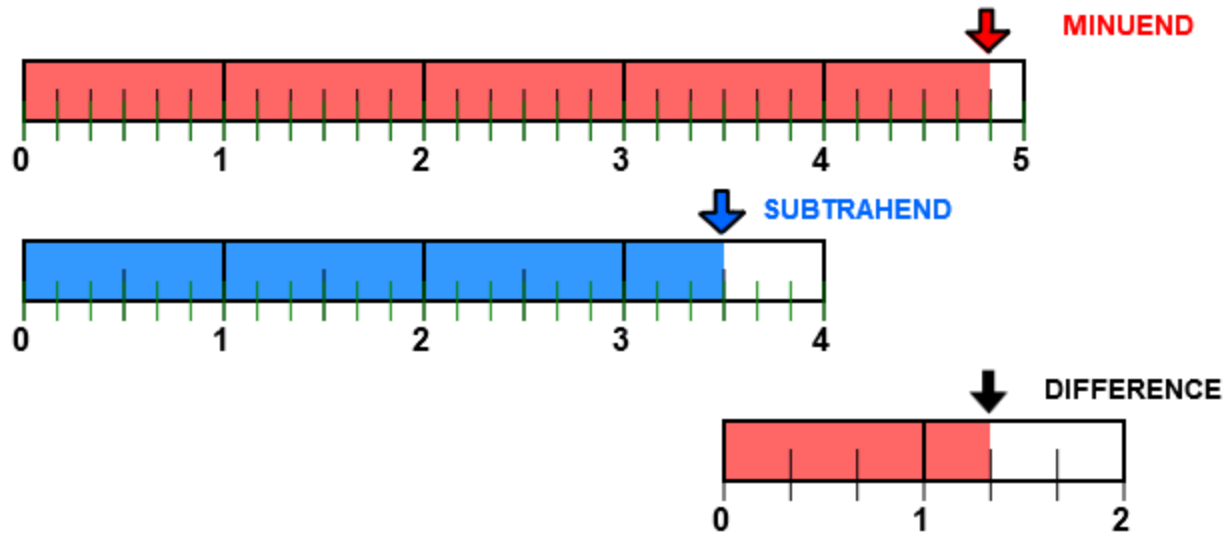
Decreasing the *subtrahend* to $2 \frac{1}{8}$ from the previous example increased the *difference* to $1 \frac{1}{8}$. The smaller the *subtrahend* the larger the *difference*.

Subtract Fractions 10

$$4 \frac{5}{6} - 3 \frac{1}{2} = ?$$

Find the *difference* between $4 \frac{5}{6}$ and $3 \frac{1}{2}$

Subtract Fractions 11



Write with common denominator 6 and subtract whole numbers and numerators.

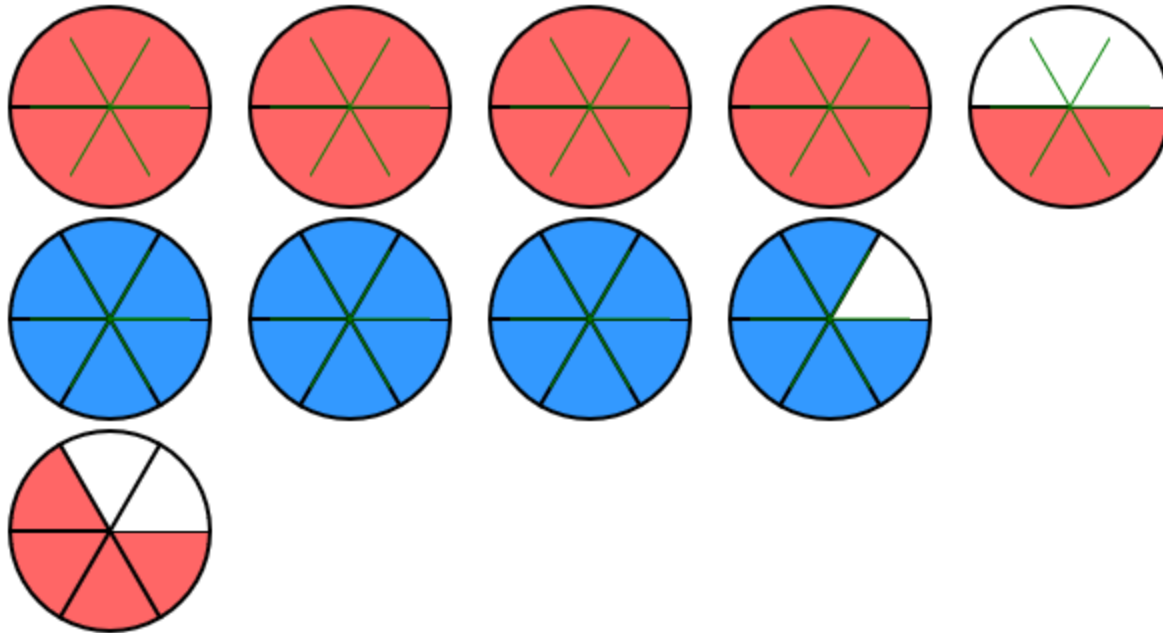
$$\begin{array}{ccccccc} 4 \frac{5}{6} & - & 3 \frac{1}{2} & = & 4 \frac{5}{6} & - & 3 \frac{3}{6} & = & 1 \frac{1}{3} \\ \text{minuend} & & \text{subtrahend} & & & & & & \end{array}$$

Subtract Fractions 12

$$4 \frac{1}{2} - 3 \frac{5}{6} = ?$$

Find the *difference* between $4 \frac{1}{2}$ and $3 \frac{5}{6}$.

Subtract Fractions 13



Write with common denominator 6 and subtract whole numbers and numerators.

$$\begin{array}{ccccccc} 4 \frac{1}{2} & - & 3 \frac{5}{6} & = & 4 \frac{3}{6} & - & 3 \frac{5}{6} & = & 3 \frac{9}{6} & - & 3 \frac{5}{6} & = & \frac{2}{3} \\ \text{minuend} & & \text{subtrahend} & & & & & & \text{rename minuend} & & & & \end{array}$$