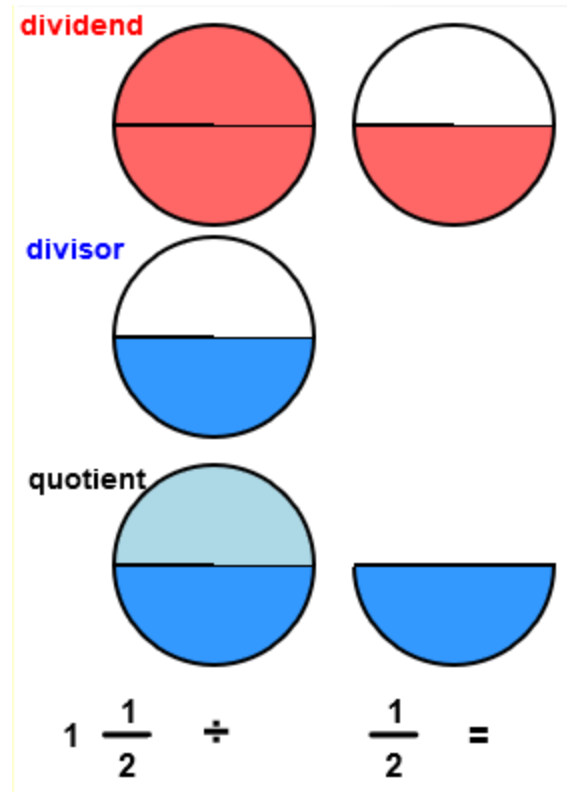


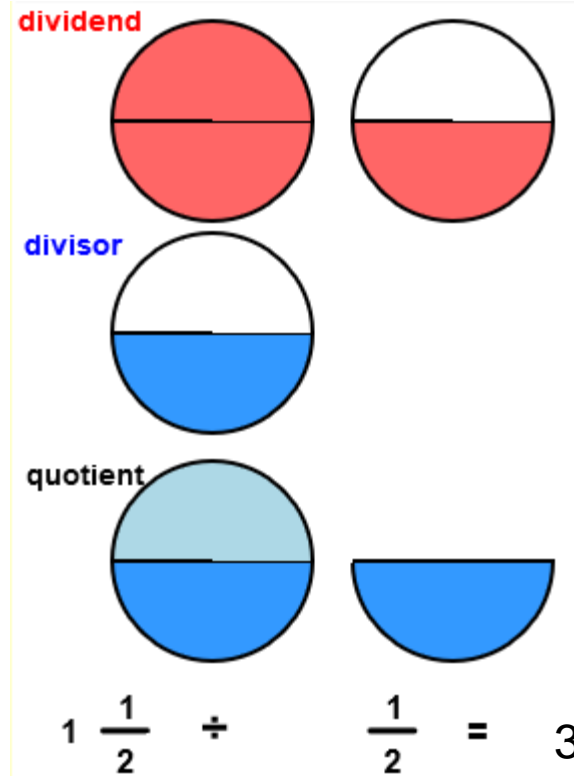
HOW TO DIVIDE FRACTIONS

Introducing:

- dividend
- divisor
- quotient



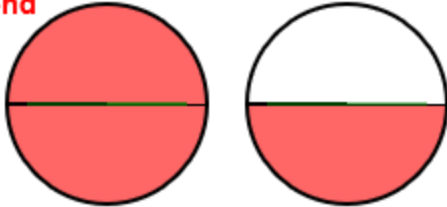
Divide Fractions 1



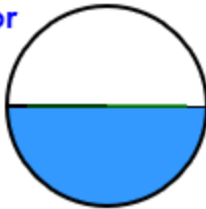
Division is a form of subtraction. This picture shows that the *divisor* $\frac{1}{2}$ can be subtracted 3 times from the *dividend* $1 \frac{1}{2}$. A *quotient* 3 tells us how many times the *divisor* can be subtracted from the *dividend*.

Divide Fractions 2

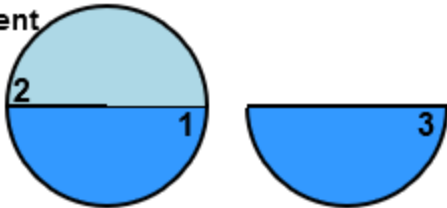
dividend



divisor



quotient



$$1 \frac{1}{2} \div$$

dividend

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

divisor

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

Write in fraction form.

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

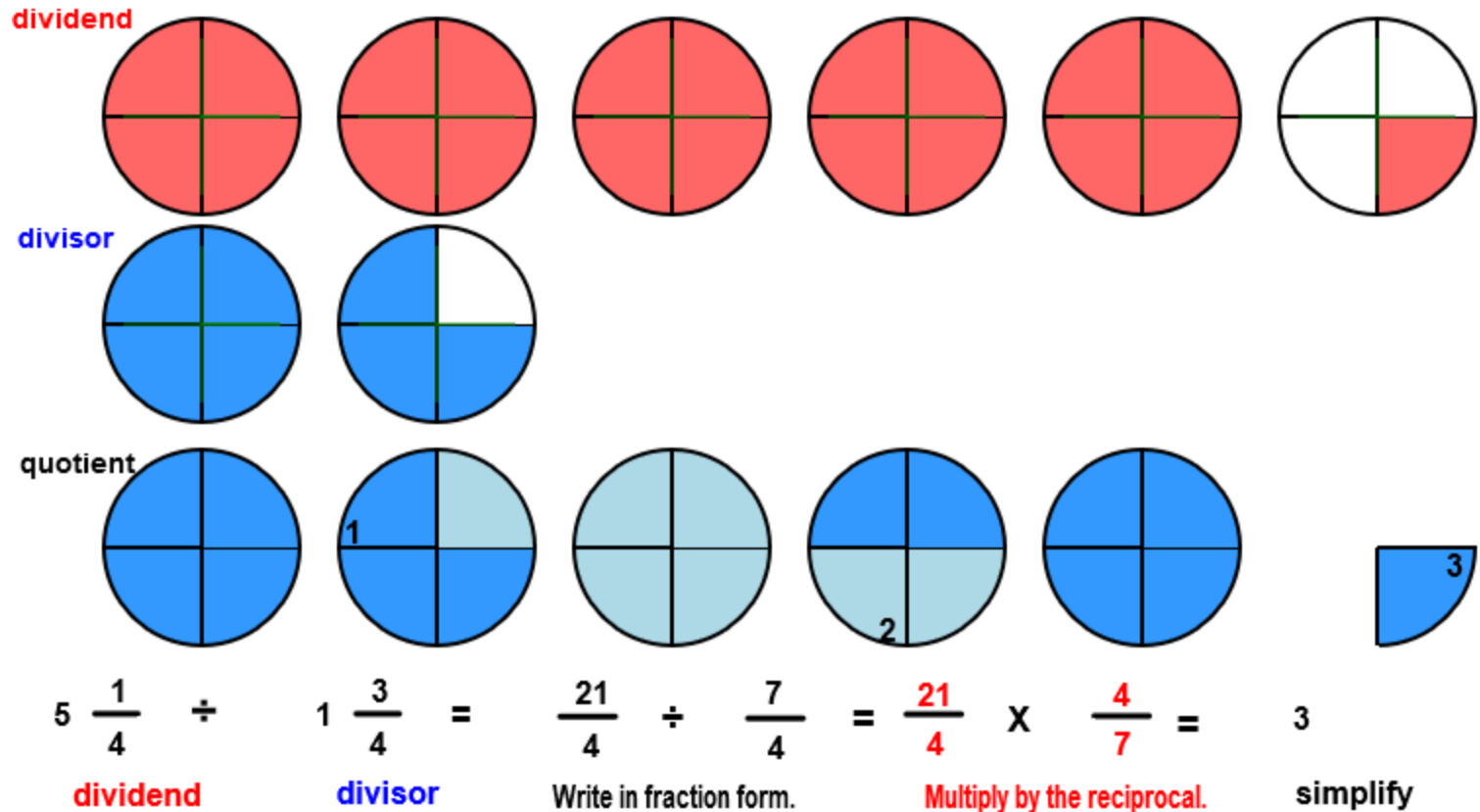
Multiply by the reciprocal.

3

simplify

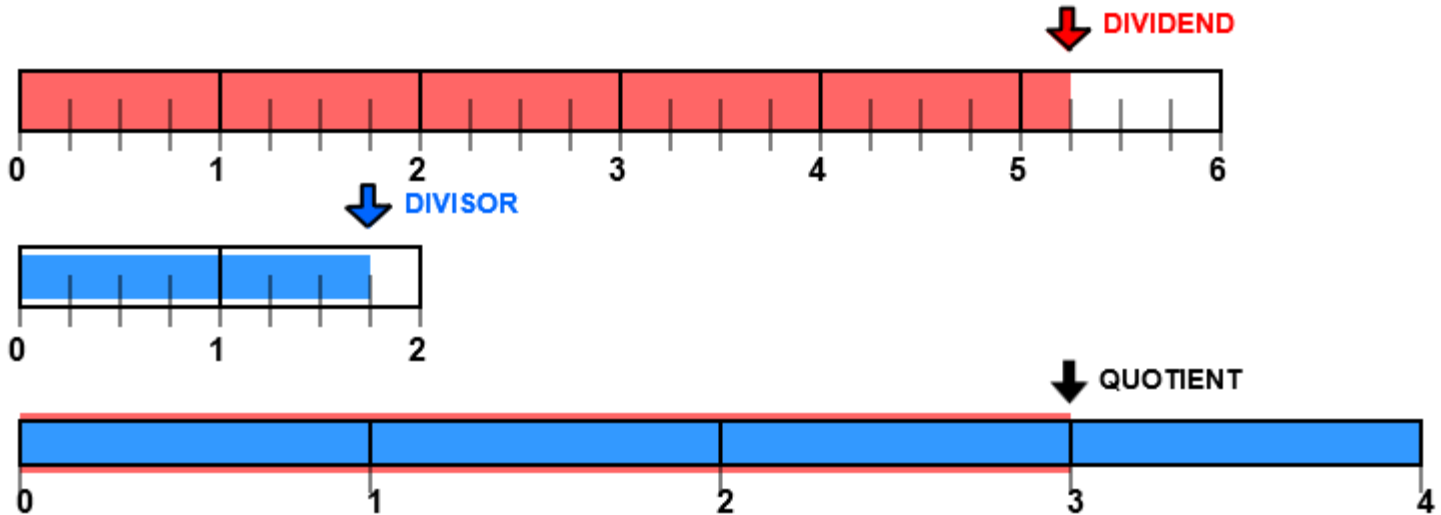
To calculate the *quotient*, first write the *dividend* and *divisor* in fraction form. Then multiply $\frac{3}{2}$ by the inverse of $\frac{1}{2}$. This gives a *quotient* of $\frac{3}{2} \times \frac{2}{1}$ or 3.

Divide Fractions 3



This picture shows that $1 \frac{3}{4}$ can be subtracted from $5 \frac{1}{4}$ three times.

Divide Fractions 4

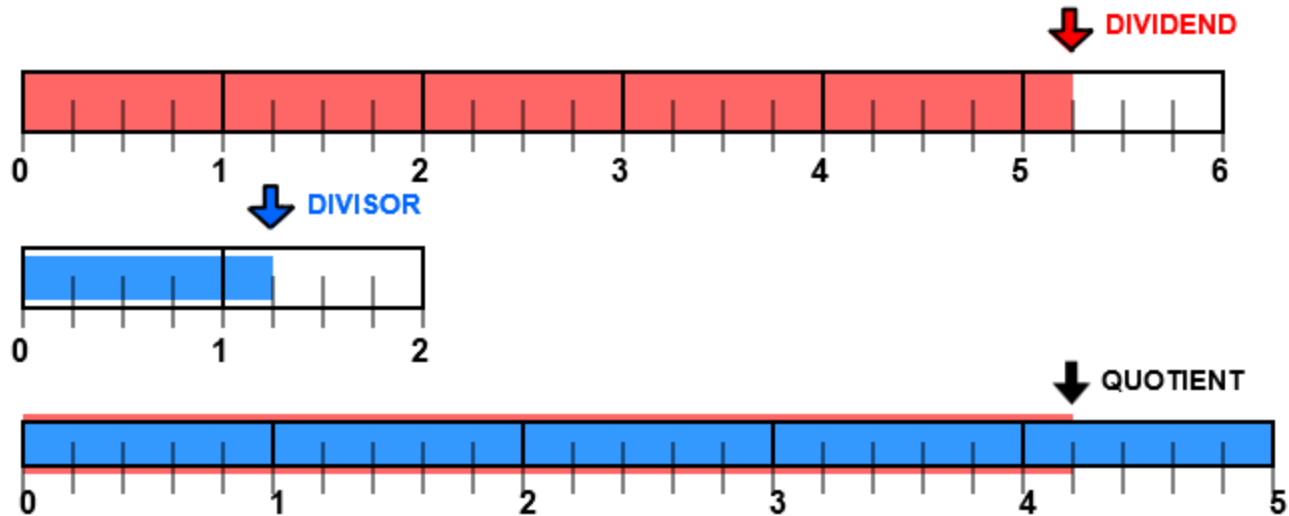


$$5 \frac{1}{4} + 1 \frac{3}{4} = \frac{21}{4} \div \frac{7}{4} = \frac{21}{4} \times \frac{4}{7} = 3$$

dividend **divisor** Write in fraction form. **Multiply by the reciprocal.** **simplify**

The same example with number lines shows that $1 \frac{3}{4}$ fits into $5 \frac{1}{4}$ three times.

Divide Fractions 5

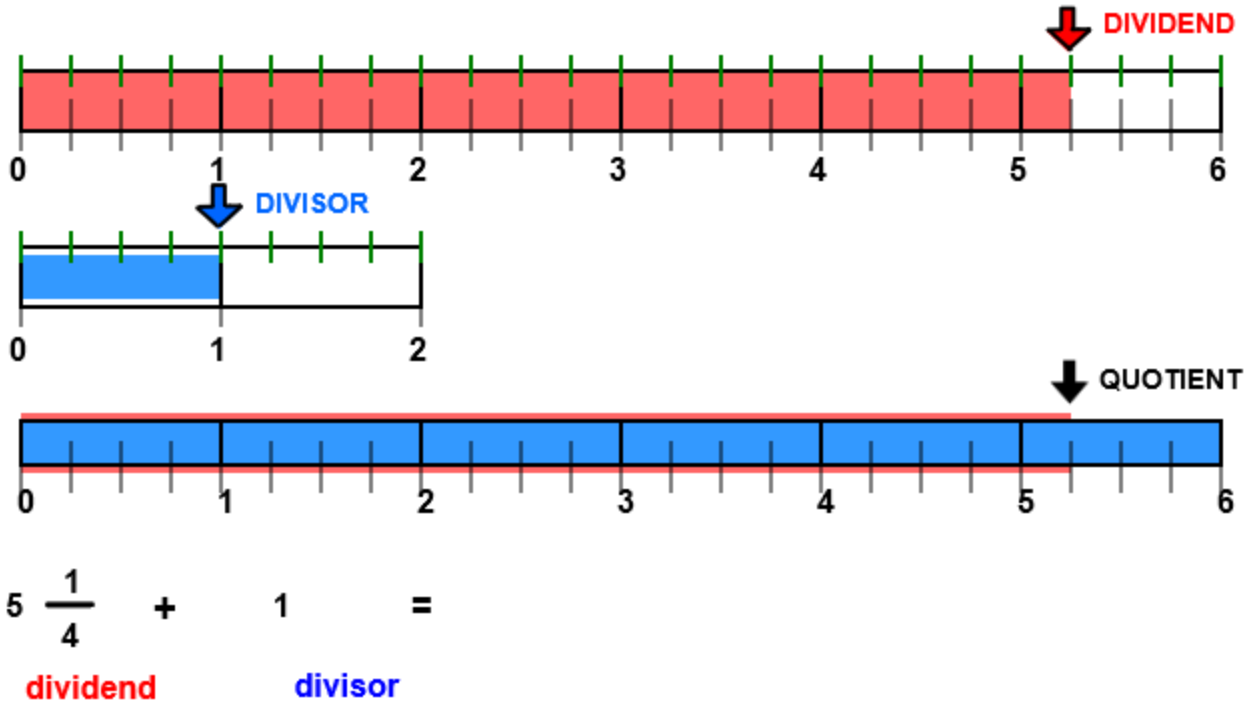


$$5 \frac{1}{4} + 1 \frac{1}{4} = \frac{21}{4} \div \frac{5}{4} = \frac{21}{4} \times \frac{4}{5} = 4 \frac{1}{5}$$

dividend divisor Write in fraction form. Multiply by the reciprocal. simplify

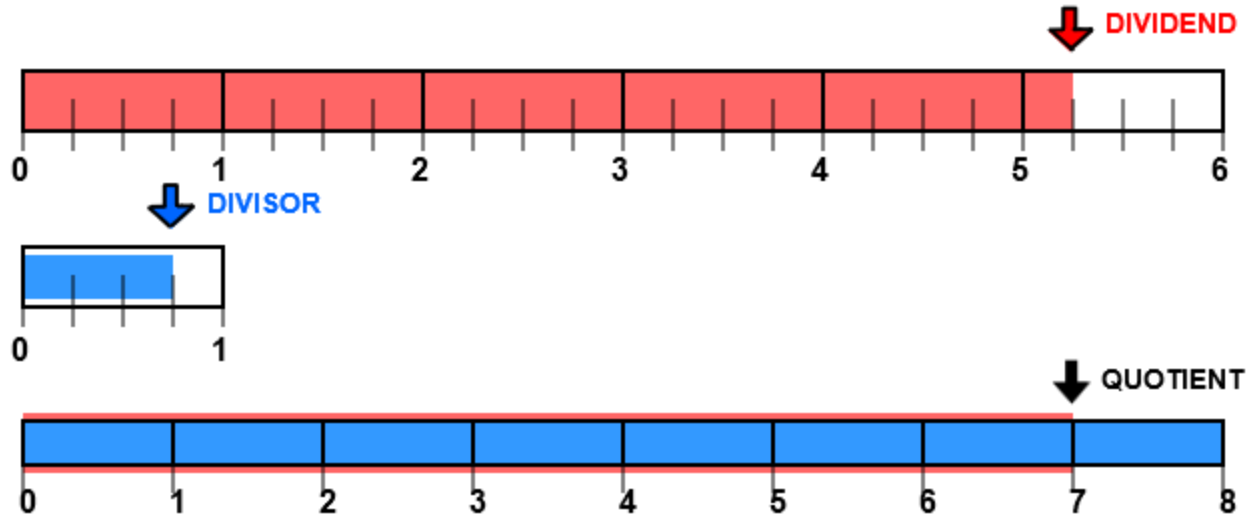
The *divisor* has been decreased to $1 \frac{1}{4}$. Notice the *quotient* is increased to $4 \frac{1}{5}$. As the *divisor* decreases, the *quotient* increases.

Divide Fractions 6



The *divisor* has been decreased to 1. Notice the *quotient* is increased to $5\frac{1}{4}$. Dividing by 1 gives a *quotient* equal to the *dividend*.

Divide Fractions 7

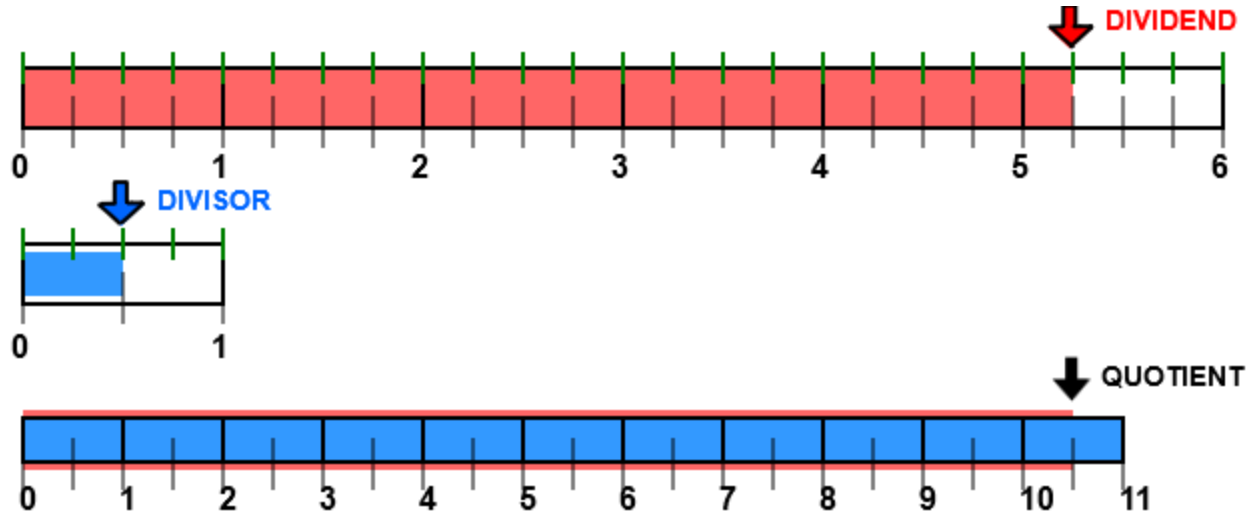


$$5 \frac{1}{4} + \frac{3}{4} = \frac{21}{4} \div \frac{3}{4} = \frac{21}{4} \times \frac{4}{3} = 7$$

dividend **divisor** Write in fraction form. **Multiply by the reciprocal.** **simplify**

When the *divisor* is less than 1, the *quotient* is larger than the *dividend*.

Divide Fractions 8

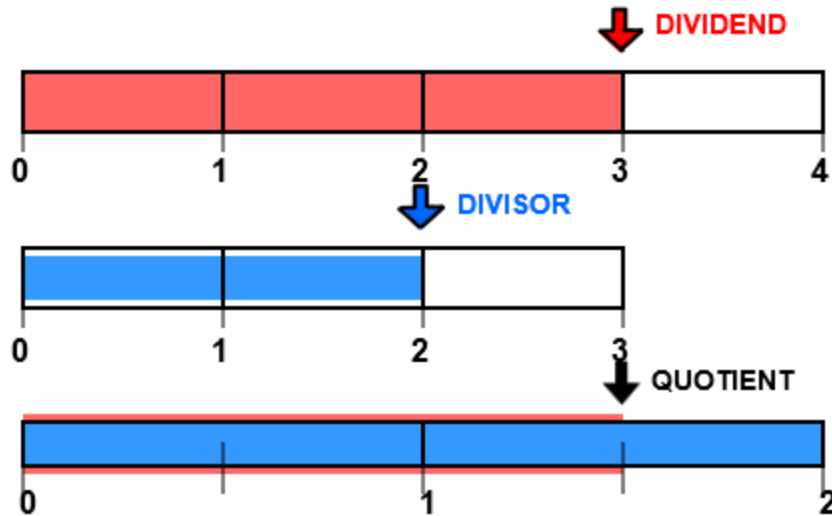


$$5 \frac{1}{4} \quad + \quad \frac{1}{2} \quad = \quad \frac{21}{4} \quad \div \quad \frac{1}{2} \quad = \quad \frac{21}{4} \quad \times \quad \frac{2}{1} \quad = \quad 10 \frac{1}{2}$$

dividend
divisor
Write in fraction form.
Multiply by the reciprocal.
simplify

Decreasing the *divisor* to $1/2$ increases the *quotient* to $10 \frac{1}{2}$.

Divide Fractions 9

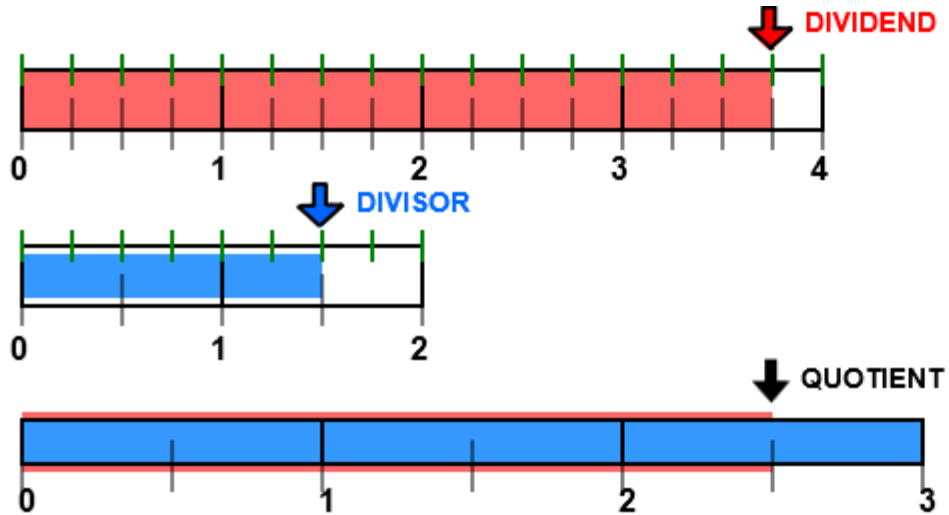


$$3 \quad + \quad 2 \quad = \quad \frac{3}{1} \div \frac{2}{1} = \frac{3}{1} \times \frac{1}{2} = 1 \frac{1}{2}$$

dividend **divisor** Write in fraction form. **Multiply by the reciprocal.** **simplify**

When the *divisor* is smaller than the *dividend*, the *quotient* is more than 1.

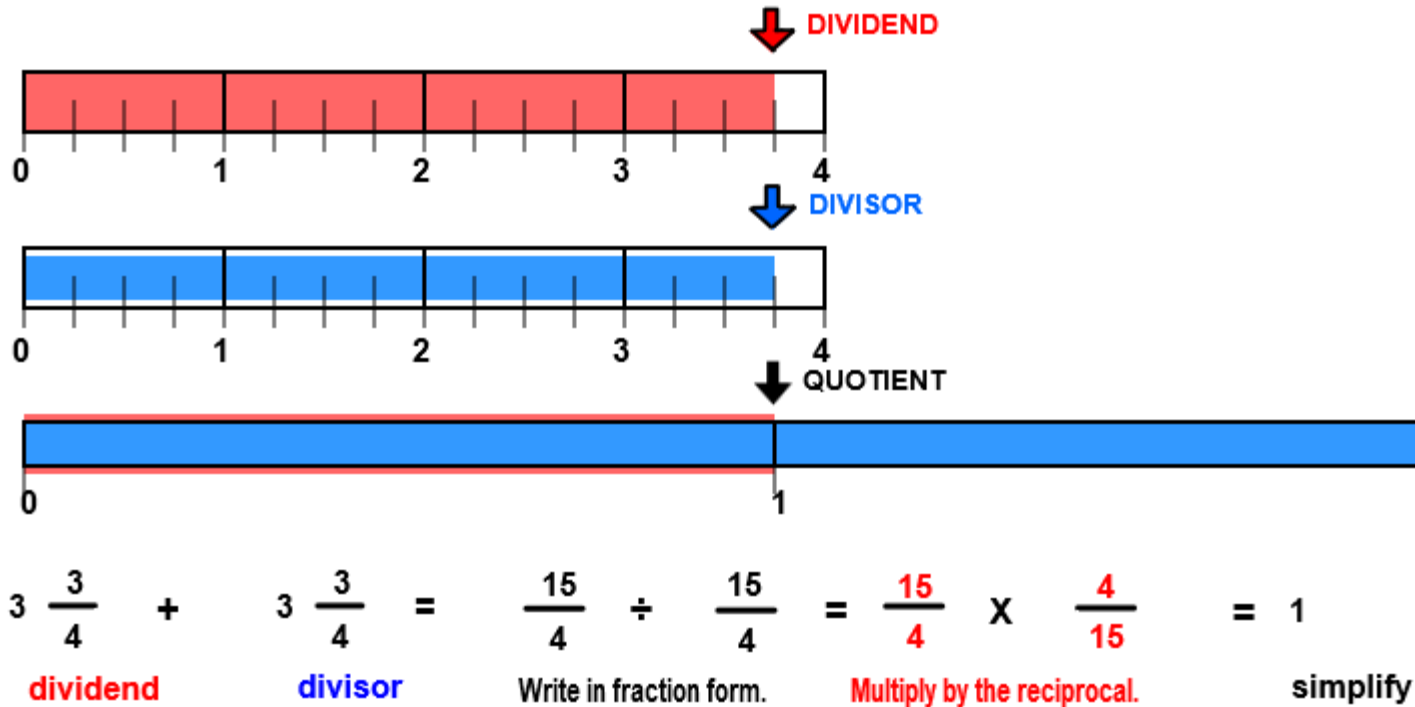
Divide Fractions 10



$$\begin{array}{ccccccc}
 3 \frac{3}{4} & + & 1 \frac{1}{2} & = & \frac{15}{4} \div \frac{3}{2} & = & \frac{15}{4} \times \frac{2}{3} & = & 2 \frac{1}{2} \\
 \text{dividend} & & \text{divisor} & & \text{Write in fraction form.} & & \text{Multiply by the reciprocal.} & & \text{simplify}
 \end{array}$$

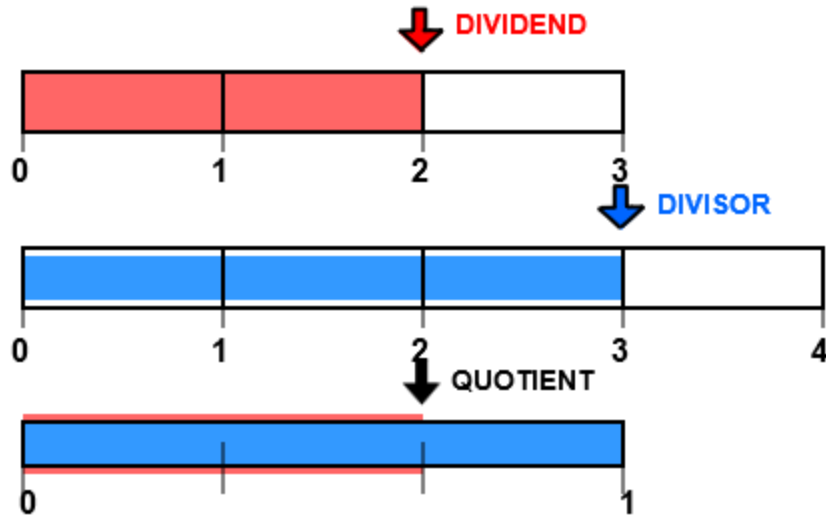
Another example where the *divisor* smaller than the *dividend*.

Divide Fractions 11



When the *divisor* is the same size as the *dividend*, the *quotient* is 1.

Divide Fractions 12

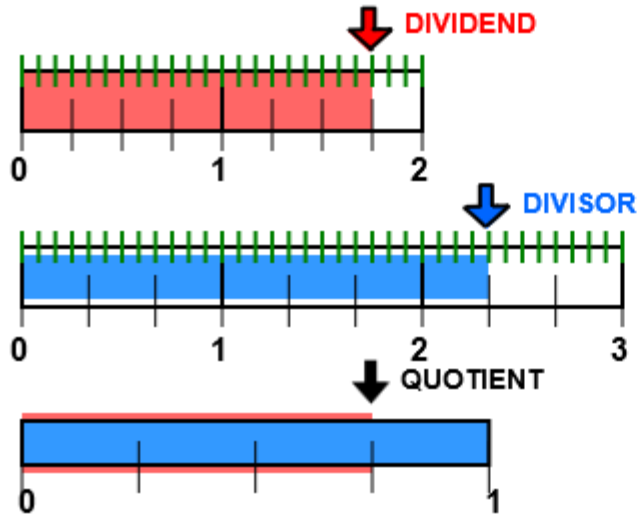


$$2 \quad + \quad 3 \quad = \quad \frac{2}{1} \div \frac{3}{1} = \frac{2}{1} \times \frac{1}{3} = \frac{2}{3}$$

dividend **divisor** Write in fraction form. **Multiply by the reciprocal.** **simplify**

When the *divisor* is larger than the *dividend*, the *quotient* is less than 1.

Divide Fractions 13



$$1 \frac{3}{4} \div 2 \frac{1}{3} = \frac{7}{4} \div \frac{7}{3} = \frac{7}{4} \times \frac{3}{7} = \frac{3}{4}$$

dividend
divisor
Write in fraction form.
Multiply by the reciprocal.
simplify

Another example where the *divisor* is larger than the *dividend*.

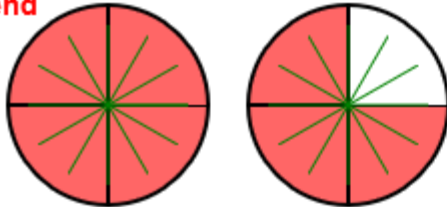
Divide Fractions 14

What is the *quotient* of $1 \frac{3}{4}$ divided by $\frac{2}{3}$?

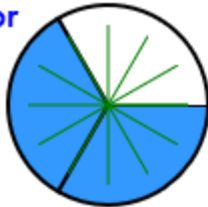
$$1 \frac{3}{4} \div \frac{2}{3} = ?$$

Divide Fractions 15

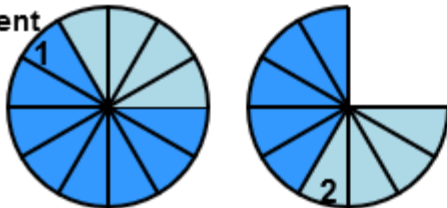
dividend



divisor



quotient



$$1 \frac{3}{4} \div$$

dividend

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

divisor

$$\frac{7}{4} \div \frac{2}{3} =$$

Write in fraction form.

$$= \frac{7}{4} \times \frac{3}{2} =$$

Multiply by the reciprocal.

$$2 \frac{5}{8}$$

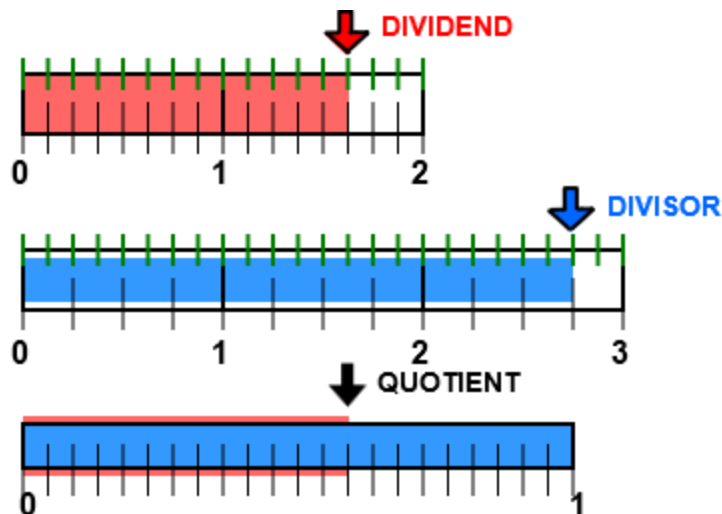
simplify

Divide Fractions 16

What is the *quotient* of $1 \frac{5}{8}$ divided by $2 \frac{3}{4}$?

$$1 \frac{5}{8} \div 2 \frac{3}{4} = ?$$

Divide Fractions 17



$$1 \frac{5}{8} + 2 \frac{3}{4} = \frac{13}{8} \div \frac{11}{4} = \frac{13}{8} \times \frac{4}{11} = \frac{13}{22}$$

dividend divisor Write in fraction form. Multiply by the reciprocal. simplify