

Grade 5 - Fractions as Division - Lesson

Common Core 5.NF.B.3 · maths-pdf.fr/en/

A fraction is a division problem: the numerator divided by the denominator. So $\frac{3}{4}$ means 3 divided by 4, which is how much each person gets when 3 items are shared equally by 4 people. When the numerator is larger, the quotient is a mixed number: 7 divided by 3 is $\frac{7}{3}$, or $2\frac{1}{3}$.

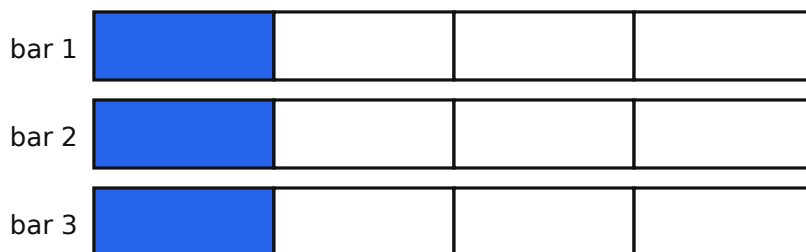
Grade 5 · Common Core State Standards: **5.NF.B.3**

Key facts

- The fraction $\frac{a}{b}$ means a divided by b .
- The numerator is the amount shared. The denominator is the number of equal groups.
- If a is less than b , the quotient is less than 1.
- If a is greater than b , write the quotient as a mixed number: whole part plus remainder over divisor.
- Check with a picture or a number line.

What does a fraction mean as division?

A fraction tells how many equal parts are shared. It also tells a division problem. The top number is what gets shared. The bottom number is how many equal groups share it. Four friends share 3 bars equally. Each friend gets $3 \div 4 = \frac{3}{4}$ of a bar.



Each of the 4 friends gets one fourth of every bar, which is 3 fourths in all.

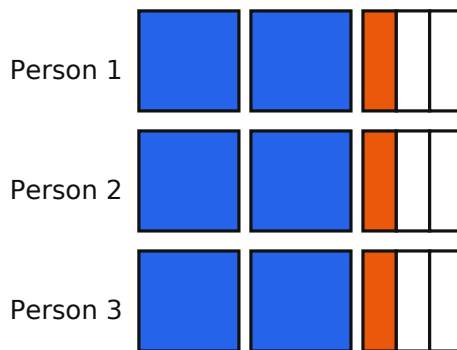
Fractions and division

For whole numbers a and b (b is not 0), $\frac{a}{b} = a \div b$. The numerator is the dividend and the denominator is the divisor.

How do you share whole objects equally?

1. Write the division problem. The amount to share goes first.
2. Write the quotient as a fraction: the amount shared is the numerator, and the number of groups is the denominator.
3. If the numerator is greater than the denominator, rewrite the fraction as a mixed number.
4. Simplify if you can.
5. Check that the answer makes sense with a picture.

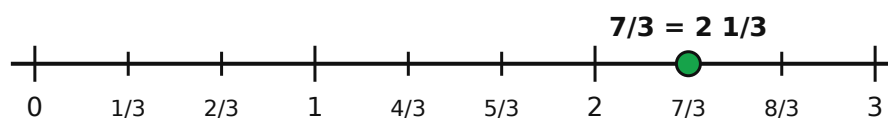
Worked example: Share 7 squares of chocolate among 3 people. $7 \div 3$ means 7 shared in 3 equal groups. Each person gets 2 whole squares. The 1 square left over is cut into 3 equal pieces, and each person gets 1 piece. So each person gets $2\frac{1}{3}$ squares.



Seven squares shared by 3 people: each person gets 2 whole squares and $\frac{1}{3}$ of a square.

How do you write a quotient as a mixed number?

Divide the numbers. The quotient is the whole number part. The remainder becomes the numerator, and the divisor stays the denominator. For example, $7 \div 3 = 2 \text{ R } 1$, so $\frac{7}{3} = 2\frac{1}{3}$. On a number line, $\frac{7}{3}$ is the point that lies between 2 and 3.

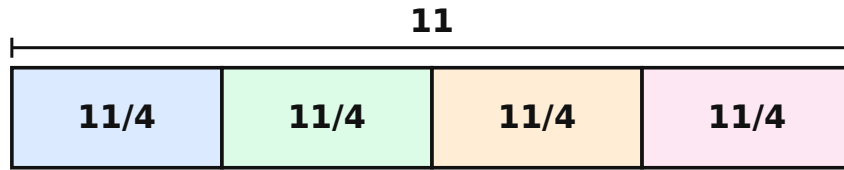


Seven divided by 3 is the same point as $\frac{7}{3}$ on the number line.

Why can a quotient be greater than 1?

When the amount shared is greater than the number of groups, every group gets more than 1

whole. Eleven shared by 4 gives $\frac{11}{4} = 2\frac{3}{4}$. Each part is between 2 and 3.



Eleven shared into 4 equal parts: each part is $\frac{11}{4}$, or $2\frac{3}{4}$.

Division	Fraction	Mixed number
$1 \div 2$	$\frac{1}{2}$	less than 1
$5 \div 4$	$\frac{5}{4}$	$1\frac{1}{4}$
$9 \div 2$	$\frac{9}{2}$	$4\frac{1}{2}$
$10 \div 3$	$\frac{10}{3}$	$3\frac{1}{3}$

Questions about fractions as division

Why is 3 divided by 4 the same as the fraction $\frac{3}{4}$?

If 3 bars are shared among 4 friends, each friend gets one fourth of each bar. That makes 3 fourths, or $\frac{3}{4}$. So 3 divided by 4 equals $\frac{3}{4}$.

Which number is the numerator when I write a division as a fraction?

The number being divided, called the dividend, is the numerator. The number you divide by, called the divisor, is the denominator. For 5 divided by 8, write $\frac{5}{8}$.

How do I turn a quotient like 7 divided by 3 into a mixed number?

Divide to get a whole number and a remainder: 7 divided by 3 is 2 remainder 1. Write the remainder over the divisor as the fraction part. The answer is $2\frac{1}{3}$.

Can a quotient be a fraction greater than 1?

Yes. When the number being shared is larger than the number of groups, each group gets more than one whole. For example, 5 divided by 4 is $\frac{5}{4}$, which is $1\frac{1}{4}$.

What happens when the division comes out even?

The quotient is a whole number. For example, 12 divided by 4 is 3, and $\frac{12}{4}$ is just another way to write 3.