

**Fractions**

School grade: K7

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# What are common fractions?

If we have to divide 6 apples equally among 3 children, then we perform the operation:

6 : 3 = 2

this way we know that each child will get 2 apples.

If we have to divide 2 apples equally among 3 children, then the division must be solved:

2 : 3 = ?

this operation has no solution in the set of natural numbers;

however, we will be able to divide the apples using the knife: the amount of apple for each child will be defined using the fraction  2/3

all similar cases lead to fractions.

**Fractions are formed by division:**

each fraction has the form a/b

"a" "a" is the numerator, written above the fraction line;

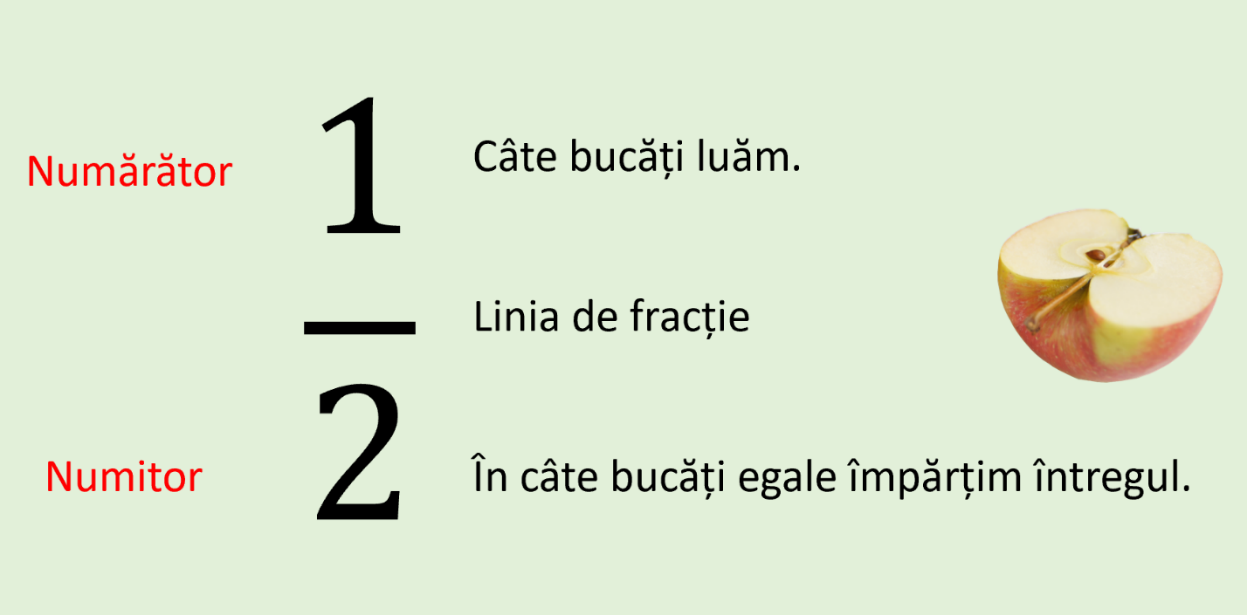
"b" is the denominator, written below the fraction line; "b" cannot be zero;

"b" tells us how many equal parts "a" was divided into;

the value of the fraction is calculated by dividing the numerator, "a", by the denominator, "b":"

a" : "b"

these fractions, where both numerator and denominator are whole numbers, are called ordinary fractions.



# Sign rule when multiplying or dividing

(+)(+) = (+)

(+)(-) = (-); (-)(+) = (-)

(-)(-) = (+)

# Sign of numerators and denominators

The numerators and denominators of a fraction can be positive or negative whole numbers.

Example of fractions with positive numerators and denominators: 7/6, 3/4, 13/20

Example of fractions with negative numerators and denominators: -7/-6, -3/-4, -13/-20

Example of fractions with positive and/or negative numerators and denominators: -7/6, 3/-4, -13/-20

# Fraction sign

The numerator and denominator signs of a fraction are taken out in front of it and combined according to the sign rule, above, thus the above fractions become:

-7/-6 = (-)(-)7/6 = (+)7/6 = 7/6

-3/-4 = (-)(-)3/4 = (+)3/4 = 3/4

-13/-20 = (-)(-)13/20 = (+)13/20 = 13/20

-7/6 = (-)(+)7/6 = (-)7/6 = - 7/6

3/-4 = (+)(-)3/4 = (-)3/4 = - 3/4

-13/-20 = (-)(-)13/20 = (+)13/20 = 13/20

# Types of ordinary fractions

**Absolute value** of a number = the numerical value of a number without regard to its sign. For example, the absolute value of the number -7 (written as │-7│) is 7. More examples: |-17| = 17; |10| = 10; |-123| = 123;

**Subunit Fractions:** 2/3, 1/7, 5/9, - 11/13, 10/11, -15/-16 - the absolute value of the numerator is less than the absolute value of the denominator, so the absolute value of the fraction is less than 1.1.

**Subunit Fractions:** 5/5, 11/11, -19/19; the absolute value of the numerator is equal to the absolute value of the denominator, so the absolute value of the fraction is equal to 1.

**Superunit or improper fractions:** 4/3, 16/3, 9/8, 123/-13 - the absolute value of the numerator is greater than the absolute value of the denominator, so the absolute value of the fraction is greater than 1; these fractions are also called improper fractions.

Improper fractions can also be written as mixed fractions:**:**

4/3 = 3/3 + 1/3 = 1 + 1/3, which is written: 1 1/3

16/3 = 15/3 + 1/3 = 5 + 1/3, which is written: 5 1/3

9/8 = 8/8 + 1/8 = 1 + 1/8, which is written: 1 1/8

123/-13 = - 123/13 = - (117 + 6)/13 = - 117/13 - 6/13 = - 9 - 6/13, which is written: - 9 6/13

Note that a mixed fraction consists of a whole and a subunit fraction, both of which have the same sign.

If the numerator of a fraction is equal to the denominator of another fraction and vice versa, then the fractions are called inverse or inverted. Ex: 3/5 și 5/3; 17/6 și 6/17 - the product of a fraction and its inverse is 1.

# Fractions, changes of form, theory

**Shape changes. Amplification and simplification of fractions**

**Shape changes**

If we divide a whole into 3 equal parts and then extract one part, we have the same quantity as if we divided the whole into 6 equal parts and took two parts.

So:

1/3 = 2/6

According to what has been stated, we can write:

2/5 = 4/10

5/3 = 20/12

2/3 = 4/6 = 6/9 = ... = 24/36 = ...

**Common divisor.** The number 2 into which the two numbers that make up the fraction were divided is called the common divisor of the numerator and denominator.

The simplified fraction now has a numerator equal to 6 and a denominator equal to 8.

We further notice that the two new numbers, the new numerator and the new denominator, 6 and 8, are again divisible by 2 without a remainder (they have a common divisor of 2), so we again divide the numerator and denominator of the fraction by 2:

6/8 = (6 : 2)/(8 : 2) = ¾

The value of the fraction 3/4 it calculates like:

3 : 4 = 0,75

The new fraction obtained, 3/4, is therefore a simplified fraction, equivalent to the fractions 12/16 and 6/8

**Irreducible fraction.** In addition, the fraction 3/4 is called an irreducible fraction, that is, it can no longer be simplified, it is in its simplest form, the numbers 3 and 4, the numerator and the denominator of the fraction, being coprime numbers (prime between them), so they have no divisors common except 1.

***How do we simplify the fraction 12/16 to its simplest, irreducible form?***

***Greatest Common Divisor****, CMMDC. To simplify a fraction to its simplest, irreducible form, we must divide both the numerator and denominator of the fraction by their greatest common divisor, cmdc (12; 16).*

***Decomposition into prime factors****. One way to calculate cmmdc is to prime the two numbers and then multiply the common prime factors to the lowest powers, see below.*

***The numerator and denominator****, decomposed into products of prime factors:*

12 = 2 × 2 × 3 = 22 × 3

16 = 2 × 2 × 2 × 2 = 24

The greatest common divisor CMMDC (12; 16) is calculated by multiplying all common prime factors (found in both numerator and denominator) to their lowest powers, as follows::

CMMDC (12; 16) = (22 × 3; 24) = 22 = 4

Finally, to simplify the fraction to its simplest, irreducible form, divide both the numerator and denominator of the fraction by CMMDC:

12/16 = (12 : 4) / (16 : 4) = ¾

**Irreducible fraction.** The fraction thus obtained, 3/4, is called an irreducible simplified fraction (that is, it cannot be simplified further, it is in its simplest form, the numerator and denominator are prime numbers to each other, they have no common divisors other than 1).

The fraction 3/4 is an equivalent fraction to the original fraction 12/16, that is, it represents the same value (or the same proportion). As we saw above::

3/4 = 6/8 = 12/18 - all these are equivalent fractions, obtained by simplification.

Equivalent fractions can be obtained not only by simplifying, but also by amplifying a fraction, that is, by multiplying the numerator and denominator by the same non-zero number, that is, the reverse process of simplification, but this is another discussion.

*Why do fractions simplify?*

Fraction operations often involve bringing to the same denominator (eg adding and subtracting fractions, comparing fractions) and sometimes both the numerators and denominators are large numbers and this involves performing heavy calculations accordingly.

By simplifying a fraction, both the numerator and denominator can be reduced to smaller numbers that are easier to work with, thus reducing the resulting computational effort.

# Learn how to compare ordinary fractions. Steps. Explanations.

1) We simplify fractions to their simplest, irreducible equivalent form:

Fraction 16/24:

Factor the numerator and denominator into prime factors in exponential notation:

16 = 24;

24 = 23 × 3;

Calculates the greatest common divisor, CMMDC, of ​​the numerator and denominator of the fraction, multiply all their common prime factors, to the lowest powers:

CMMDC (16; 24) = CMMDC (24; 23 × 3) = 23;

Divide both numerator and denominator by the greatest common divisor, CMMDC:

16/24 = 24 / (23× 3) = (24 : 23) / ((23× 3) : 23) = 2/3.

Fraction  45/75:

Factor the numerator and denominator into prime factors in exponential notation:

45 = 32 × 5;

75 = 3 × 52;

Calculate the greatest common divisor, CMMDC, of ​​the numerator and denominator of the fraction, multiply all their common prime factors, to the lowest powers:

CMMDC (45; 75) = CMMDC (32 × 5; 3 × 52) = 3 × 5;

Divide both numerator and denominator by the greatest common divisor, CMMDC:

45/75 = (32 × 5) / (3 × 52) = ((32 × 5) : (3 × 5)) / ((3 × 52) : (3 × 5)) = 3/5.

Simplified fractions are:

16/24 = 2/3;

45/75 = 3/5.

Simplified fractions are fractions equivalent to the original fractions, each having the same value as the original fraction.

16/24 ≈ 0,67; 2/3 ≈ 0,67;

45/75 = 0,6; 3/5 = 0,6;

2) We calculate the least common multiple, CMMMC, of ​​all the denominators of simplified fractions.

CMMMC will be the new denominator of the compared equivalent fractions.

To calculate the CMMMC, we factor the denominators of the fractions as products of prime factors in exponent notation and then multiply all their prime factors uniquely to their highest powers.

The denominator of the fraction 2/3 is 3, a prime number, it cannot be decomposed into other prime factors.

The denominator of the fraction 3/5 is 5, prime number, cannot be decomposed into other prime factors.CMMMC (3, 5) = 3 × 5 = 15.

3) We bring the fractions to the same denominator, amplifying them.

Amplification of a fraction = multiply both the numerator and denominator of a fraction by the same non-zero number, called the power factor, to obtain an equivalent fraction.

We calculate the amplification factor by dividing the lowest common multiple, CMMMC, by the denominator of each fraction:

For the first fraction: 15 : 3 = 5;

For the second fraction: 15 : 5 = 3.

Each fraction is amplified with its own "amplification factor", calculated above:

The first fraction becomes: 2/3 = (5 × 2) / (5 × 3) = 10/15;

The second fraction becomes: 3/5 = (3 × 3) / (3 × 5) = 9/15;

As in the case of simplifying a fraction, by amplification the values ​​of the fractions are not changed, but only some equivalent fractions of the same value are obtained

2/3 ≈ 0,67; 10/15 ≈ 0,67;

3/5 = 0,6; 9/15 = 0,6.

4) Compare the numerators of equivalent fractions.

Since the fractions now have the same denominator, all that remains is to compare their numerators.

10 > 9 => 10/15 > 9/15 => 16/24 > 45/75

# Adding Fractions: Theory, Steps and Practical Example, Explained. How are ordinary fractions added?

There are two cases regarding denominators when adding ordinary fractions:

A. fractions have equal denominators;

B. fractions have different denominators.

How do you add ordinary fractions that have the same denominator?

Simply add the numerators of the fractions.

The denominator of the resulting fraction will even be the common denominator of the fractions.

Simplify the resulting fraction.

An example of adding fractions that have equal denominators, with explanations

3/18 + 4/18 + 5/18 = (3 + 4 + 5)/18 = 12/18;

I simply added the numerators of the fractions: 3 + 4 + 5 = 12;

The denominator of the resulting fraction is: 18;

Simplify the resulting fraction: 12/18 = (12 : 6)/(18 : 6) = 2/3.

***To add fractions that have different denominators, the fractions must be brought to the same denominator. How come?***

1. Simplify fractions to their simplest equivalent form:

Factor both the numerator and denominator of each fraction into prime factors.

Calculate the CMMDC, the greatest common divisor of the numerator and denominator of each fraction.

The CMMDC is obtained as the product of all common prime factors of the numerator and denominator, to the lowest powers.

It then divides both numerator and denominator by the greatest common divisor, cmmdc - after this operation the fraction is simplified to its simplest equivalent form.

2. Calculate the least common multiple, CMMMC, of ​​the new denominators of the simplified fractions:

CMMMC will be the common denominator of the added fractions

Prime all new denominators of simplified fractions.

The least common multiple CMMMC is obtained by multiplying all the unique prime factors that appear in the denominator decomposition to the highest powers

3. Calculate the amplification factor of each fraction:

The multiplier is a non-zero natural number that will be used to multiply both the numerator and the denominator of each separate fraction to bring all the fractions to the same common denominator.

Divide the least common multiple CMMMC calculated in the previous point by the denominator of each individual fraction, thus obtaining a number for each individual fraction, the "amplification factor".

4. Amplify each fraction:

Multiply both the numerator and denominator of each fraction by the "amplification factor".

After amplification, the fractions are brought to the same denominator.

5. Add the fractions:

To add the fractions add the numerators of all the fractions.

The denominator of the resulting fraction will be equal to the common denominator of the added fractions, that is, the lowest common multiple of the denominators, calculated above.

6. Simplify the resulting fraction, if necessary.

***An example of adding fractions that have different denominators, with explanations***

6/90 + 16/24 + 30/75 = ?

1. Simplify fractions to their simplest equivalent form:

[6/90](https://ro.fractii.ro/calculator-cum-se-simplifica-fractia-la-forma-cea-mai-simpla.php?numarator=6&numitor=90)= (2 × 3) / (2 × 32× 5) = ((2 × 3) : (2 × 3)) / ((2 × 32× 5) : (2 × 3)) = 1 / (3 × 5) = 1/15

[16/24](https://ro.fractii.ro/calculator-cum-se-simplifica-fractia-la-forma-cea-mai-simpla.php?numarator=16&numitor=24)= 24 / (23× 3) = (24 : 23) / ((23× 3) : 23) = 2/3

[30/75](https://ro.fractii.ro/calculator-cum-se-simplifica-fractia-la-forma-cea-mai-simpla.php?numarator=30&numitor=75)= (2 × 3 × 5) / (3 × 52) = ((2 × 3 × 5) : (3 × 5)) / ((3 × 52) : (3 × 5)) = 2/5

Simplified fractions: 6/90 + 16/24 + 30/75 = 1/15 + 2/3 + 2/5

2. Calculate the least common multiple, CMMMC, of ​​the new denominators of the simplified fractions:

Decompose the new denominators of simplified fractions and multiply all contained unique prime factors to their highest powers.

15 = 3 × 5

3 is a prime number, it cannot be decomposed into other prime factors

5 is a prime number, it cannot be decomposed into other prime factors

CMMMC (15, 3, 5) = CMMMC (3 × 5, 3, 5) = 3 × 5 = 15

3. Calculate the amplification factor of each fraction:

Divide the least common multiple, CMMMC, by the denominator of each fraction

For the first fraction: 15 : 15 = 1

For the second fraction: 15 : 3 = 5

For the third fraction: 15 : 5 = 3

4. Amplify each faction:

Multiply the numerator and denominator of each fraction by its own "magnification factor"..

The first fraction remains unchanged: 1/15 = (1 × 1)/(1 × 15) = 1/15

The second fraction become: 2/3 = (5 × 2)/(5 × 3) = 10/15

The third fraction become: 2/5 = (3 × 2)/(3 × 5) = 6/15

5. Add the fractions:

Simply add the numerators of the fractions.

6/90 + 16/24 + 30/75 = 1/15 + 2/3 + 2/5 = 1/15 + 10/15 + 6/15 = (1 + 10 + 6) / 15 = 17/15

6. Simplify the resulting fraction, if necessary.

In this case, there was no need to simplify the resulting fraction, since the numerator and denominator are coprime numbers (prime to each other, they have no common divisors).

7. Extra step - rewrite the resulting fraction:

Because the resulting fraction is superunitary, or also called an improper fraction, i.e. the absolute value of the numerator is greater than the absolute value of the denominator, we can write it in the form of a mixed fraction:

17/15 = (15 + 2)/15 = 15/15 + 2/15 = 1 + 2/15 = 1 2/15, that is, one whole and two fifteenths.

# Learn How to Subtract Fractions: Theory, Steps, Complete Example. Subtraction of fractions with equal or different denominators

Theory and practical example, explained: subtracting fractions - how do you subtract ordinary fractions?

There are two cases regarding the denominators when we subtract ordinary fractions:

A. fractions have equal denominators;

B. fractions have different denominators.

A. How do you subtract ordinary fractions that have the same denominator?

It simply subtracts the numerators of the fractions.

The denominator of the resulting fraction will even be the common denominator of the fractions.

Simplify the resulting fraction.

An example of subtracting fractions that have equal denominators, with explanations

3/18 + 4/18 - 5/18 = (3 + 4 - 5)/18 = 2/18;

We simply subtracted the numerators of the fractions: 3 + 4 - 5 = 2;

The denominator of the resulting fraction is: 18;

Simplify the resulting fraction: 2/18 = (2 : 2)/(18 : 2) = 1/9.

*B. To subtract fractions that have different denominators, the fractions must be brought to the same denominator. How come?*

1. Simplify fractions to their simplest equivalent form:

Factor both the numerator and denominator of each fraction into prime factors.

Calculate the CMMDC, the greatest common divisor of the numerator and denominator of each fraction.

The CMMDC is obtained as the product of all common prime factors of the numerator and denominator multiplied to the lowest powers.

It then divides both numerator and denominator by the greatest common divisor, cmmdc - after this operation the fraction is simplified to its simplest equivalent form.

2. Calculate the least common multiple, CMMMC, of ​​the new denominators of the simplified fractions:

CMMMC will be the common denominator of the added fractions.

Prime all new denominators of simplified fractions.

The least common multiple CMMMC is obtained by multiplying all the unique prime factors that appear in the decomposition of the denominators multiplied to the highest powers.

3. Calculate the amplification factor of each fraction:

The multiplier is a non-zero natural number that will be used to multiply both the numerator and the denominator of each separate fraction to bring all the fractions to the same common denominator.

Divide the least common multiple CMMMC calculated in the previous point by the denominator of each individual fraction, thus obtaining a number for each individual fraction, called the "amplification factor".

4. Amplify each fraction:

Multiply both the numerator and denominator of each fraction by the "amplification factor".

After amplification, the fractions are brought to the same denominator.

5. Subtract fractions:

To subtract fractions subtract the numerators of all the fractions.

The denominator of the resulting fraction will be equal to the common denominator of the added fractions, that is, the lowest common multiple of the denominators, calculated above.

6. Simplify the resulting fraction, if necessary.

*An example of subtracting fractions that have different denominators, with explanations*

6/90 + 16/24 - 30/75 = ?

**1. Simplify fractions to their simplest equivalent form:**

6/90 = (2 × 3) / (2 × 32× 5) = ((2 × 3) : (2 × 3)) / ((2 × 32× 5) : (2 × 3)) = 1 / (3 × 5) = 1/15

16/24 = 24 / (23× 3) = (24 : 23) / ((23× 3) : 23) = 2/3

30/75 = (2 × 3 × 5) / (3 × 52) = ((2 × 3 × 5) : (3 × 5)) / ((3 × 52) : (3 × 5)) = 2/5

**Simplified fractions: 6/90 + 16/24 - 30/75 = 1/15 + 2/3 - 2/5**

**2.** Calculate the least common multiple, CMMMC, of ​​the new denominators of the simplified fractions:

Decompose the new denominators of simplified fractions and multiply all contained unique prime factors to the highest powers.

15 = 3 × 5

3 is a prime number, it cannot be decomposed into other prime factors

5 is a prime number, it cannot be decomposed into other prime factors

CMMMC (15, 3, 5) = CMMMC (3 × 5, 3, 5) = 3 × 5 = 15

**3. Calculate the amplification factor of each fraction::**

Divide the least common multiple, CMMMC, by the denominator of each fraction..

For the first fraction: 15 : 15 = 1

For the second fraction: 15 : 3 = 5

For the third fraction: 15 : 5 = 3

**4. Amplify each faction:**

Multiply the numerator and denominator of each fraction by its own "magnification factor"..

The first fraction remains unchanged: 1/15 = (1 × 1)/(1 × 15) = 1/15

The second fraction becomes: 2/3 = (5 × 2)/(5 × 3) = 10/15

The third fraction becomes: 2/5 = (3 × 2)/(3 × 5) = 6/15

**5. Subtract fractions:**

It simply subtracts the numerators of the fractions.

6/90 + 16/24 - 30/75 = 1/15 + 2/3 - 2/5 = 1/15 + 10/15 - 6/15 = (1 + 10 - 6) / 15 = 5/15

**6. Simplify the resulting fraction, if necessary.**

5/15 = (5 : 5)/(15 : 5) = 1/3

# Learn how to multiply fractions

**Multiplication of fractions. How do you multiply ordinary fractions? Steps. Example.**

**How do you multiply two fractions?**

**After multiplying ordinary fractions, the resulting fraction will have:**

**as the numerator, the result of multiplying the numerators of the fractions,**

**as the denominator, the result of multiplying all the denominators of the fractions.**

a/b × c/d = (a × c) / (b × d)

a, b, c, d are integers;

if the pairs (a × c) and (b × d) are not coprime numbers, that is, they have common prime factors, the resulting fraction must be simplified.

**How do you multiply ordinary fractions? Steps.**

If necessary, simplify each fraction.

Prime the numerators and denominators of simplified fractions.

At the numerator of the resulting fraction we will write the numerators of all fractions, decomposed into prime factors, in the form of multiplication, but without performing the operation.

In the denominator of the resulting fraction we will write the denominators of all the fractions, decomposed into prime factors, in the form of multiplication, but without performing the operation.

Simplify the common prime factors that appear in the numerator and denominator of the resulting fraction.

Performs the multiplication of the remaining prime factors of the numerator.

Multiply the remaining prime factors in the denominator.

The resulting fraction does not need to be simplified anymore, since we have already simplified all the common prime factors.

If the resulting fraction is overunit (regardless of the sign, the numerator is greater than the denominator), it can be rewritten as a mixed fraction, consisting of a whole and a subunit fraction of the same sign.

*An example of multiplying three ordinary fractions, with explanations:*

6/90 × 80/24 × 30/75 = ?

We prime the numerators and denominators of the fractions and simplify the initial fractions.

6/90 = (2 × 3) / (2 × 32× 5) = ((2 × 3) : (2 × 3)) / ((2 × 32× 5) : (2 × 3)) = 1/(3 × 5) = 1/15

80/24 = (24 × 5) / (23× 3) = ((24 × 5) : (23)) / ((23× 3) : (23)) = (2 × 5)/3 = 10/3

30/75 = (2 × 3 × 5) / (3 × 52) = ((2 × 3 × 5) : (3 × 5)) / ((3 × 52) : (3 × 5)) = 2/5

At this point, the fractions are simplified and the numerators and denominators decomposed into products of prime factors:

6/90 × 80/24 × 30/75 = 1/(3 × 5) × (2 × 5)/3 × 2/5

We multiply the numerators and denominators of the fractions, respectively, eliminating the common prime factors:

1/(3 × 5) × (2 × 5)/3 × 2/5 =

= (1 × 2 × 5 × 2) / (3 × 5 × 3 × 5)

= (1 × 2 × 2 × 5) / (3 × 3 × 5 × 5)

= (~~1~~ × 2 × 2 × ~~5~~) / (3 × 3 × 5 × ~~5~~)

= (2 × 2) / (3 × 3 × 5)

= 4/45

# Fractions, theory: rational numbers

Fractions and rational numbers Q

The connection between fractions and rational numbers Q

All the fractions 3/4, 6/8, 9/12, ... 27/36, ... obtained by simplification (or amplification), are equivalent fractions, that is, they represent the same quantity, the unique rational number:

3/4 = 3 : 4 = 0,75.

3/4 has a double meaning: it represents a fraction and a rational number, that is, it represents all the fractions obtained from 3/4 by amplification, but at the same time it represents the rational number 0.75.

And the fractions with the denominator 1 and those obtained by their amplification are also contained in the set of rational numbers; for example.

3/1 = 6/2 = 9/3 = ... = 27/9 = ...

They can be substituted for each other, being equivalent.

The integer 0 can be replaced by an infinite set of fractions having the numerator 0:

0/1 = 0/2 = 0/3 = ... 0/125 = ...

The denominator 0 is excluded. There can be no such fraction:

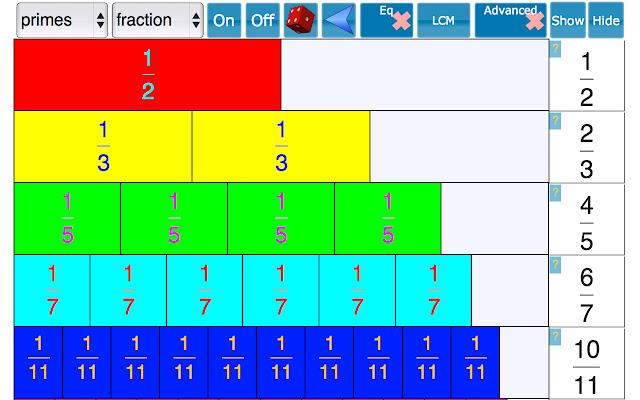
0/0 sau 9/0 sau 200/0...

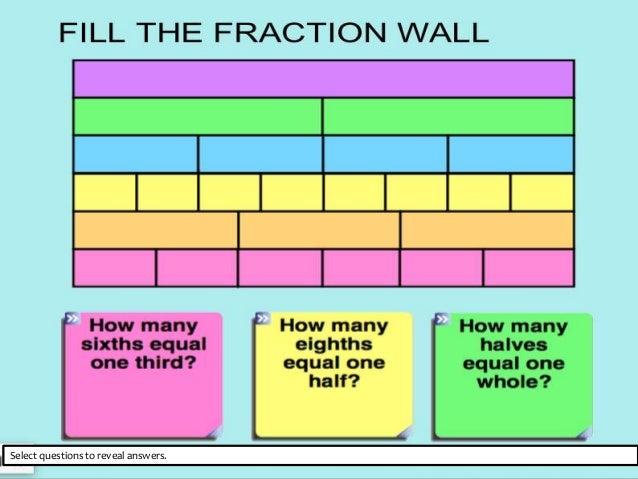
*A rational number has no predecessor and no unique successor.*

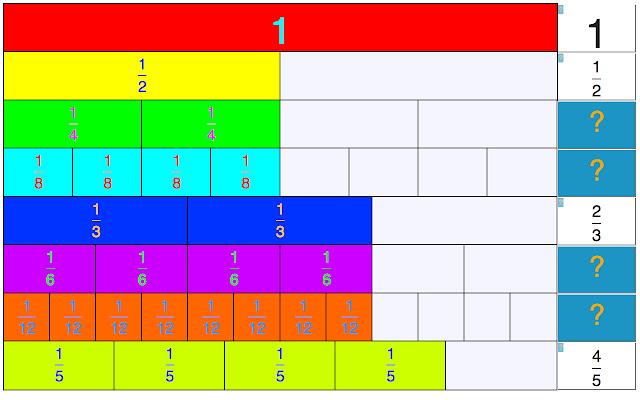
Between two rational numbers r1 and r2 there is an infinite set of rational numbers r:

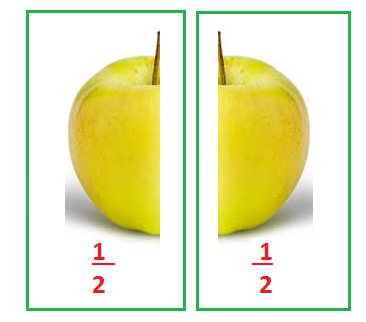
r1 < r < r2 or r1 > r > r2

# Fractions by Pictures

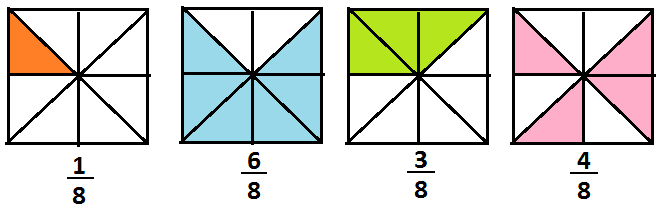




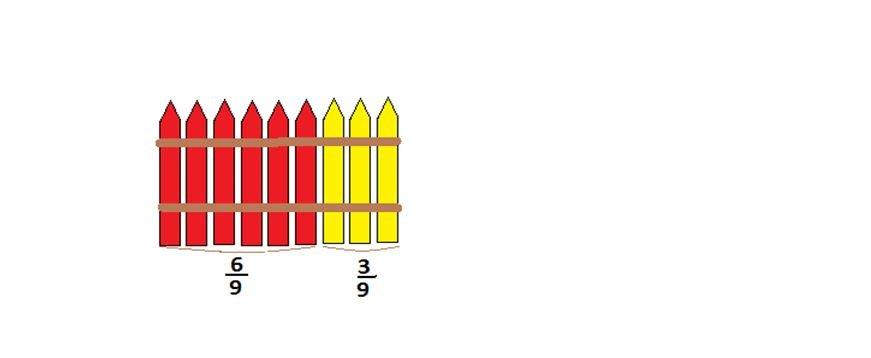




1/2 of an apple is a fractional unit of the (whole) apple that has been divided into 2 equal parts.



Two good friends, Lara and Alexia, painted the fence attached to the dollhouse as follows: 6/9 with red color and 3/9 with yellow color, as in the following representation:



We notice from the drawing that the surface of the fence colored with red color is larger than the yellow surface. We can say that the fractional number 6/9 is greater than 3/9.

We will write like this: 6/9 > 3/9 . In this case, we compared equal parts of the same whole (the fence).

Next I will compare equal parts that do not belong to the same whole. Two brothers, Vlad and Radu, prepared two identical pizzas, then sat down at the table. Each pizza was cut into 8 slices of equal size. Here is how much each boy ate after a quarter of an hour:



Look at the picture and say who ate less. The 3 slices eaten by Vlad, i.e. 3/8 of the pizza, is less than the 5 slices, i.e. 5/8 that Radu ate.

So 3/8 < 5/8. In this case equal parts of identical wholes were compared.

If the wholes are not the same size, we cannot compare their corresponding fractions. Observe this in the following representation:



Together we discovered that:

Of two fractions with the same denominator, the fraction with the larger numerator is greater.

We can compare two fractions only if they are equal parts of the same whole or equal parts of identical wholes.

Rodica helped her grandfather plant vegetables in the garden. The vegetables were distributed according to the following scheme:



We note that:

on 2/10 of the garden surface they planted beans,

tomato, on 4/10 of the entire garden,

1/10 of the surface is occupied by peppers,

on 3/10 of the garden area they planted cabbage.

The largest area is cultivated with tomatoes (4/10), and the smallest area with peppers (1/10).

Here is how we sort the fractions corresponding to the areas cultivated with vegetables in ascending order::



# Sources

<https://mquest.ro/home/learnunitnew?id=32>

<https://mquest.ro/home/ch?c=6>

<https://www.scoalaintuitext.ro/blog/matematica-clasa-a-iii-a-2/>

# Exercises and problems

Write, then compare the represented fractions, using relationship signs (<, >, = ) :



2. Complete the fractions so that the following equations are true:



3. Write a fraction less than and a fraction greater than the given ones:



4. Write all fractions less than or equal to 5/8.

5. Write the fractions represented by coloring in ascending order:



6. Put the fractions between 2/7 and 6/7 in descending order.

7. Sort fractions with denominator 8 and numerator an odd number less than 6 in ascending order.



