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Representation of decimal fractions as simple fractions in elementary grades

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Annotation: In this article, we will analyze how ordinary fractions are converted to decimal fractions, and also consider the reverse process - the conversion of decimal fractions to ordinary fractions.

Key words: Common fraction, repeating decimals, the operation on the repeating decimals, generalization, efficient calculation

At present, the problems of teaching mathematics at school have become to pay more attention. This is due to scientific and technological progress and the development of science-intensive industries. Technical sciences, among which, in recent times, are developing rapidly and have a huge practical value, such as information technology, electronics, etc., unthinkable without mathematical apparatus. The basis for mathematical literacy is laid in school, therefore, the study of issues related to this process is given close attention. Mathematics is one of the core subjects schools. It provides study of other disciplines. Requires students volitional and mental efforts, developed imagination, concentration attention, mathematics develops the personality of the student. In addition, the study of mathematics significantly contributes to the development of logical thinking and broadens the horizons of schoolchildren. A fraction is a representation of a number in mathematics, in which a and b are numbers or expressions. In fact, this is just one of the forms in which a number can be represented.

The material studied during this period is of great importance in school course of mathematics, tk. concepts introduced in grade IV are basic for the formation of students' understanding of the subject of mathematics in the future. That is why the importance of this issue should not be underestimated.

The success of teaching mathematics, as well as other subjects of the school curriculum, is determined by many factors, among which, as the main one, the choice of teaching methods is distinguished. It is from the correct choice of methods and techniques of teaching each topic of the course and their successful combination that the level of understanding, ultimately, by students of the material depends.

There are two recording formats:

ordinary view - ½ or a / b,

decimal form - 0.5.

In an ordinary fraction, it is customary to write the dividend above the line, which becomes the numerator, and below the line there is always a divisor, which is called the denominator. The line between the numerator and denominator means division. In decimal, the denominator is always 10, 100, 1000, 10000, etc. Basically, a decimal is what you get when you divide the numerator by the denominator. The decimal fraction is written on a line separated by commas to separate the integer part from the fractional part. Like this: 0.8, 7.42, 9.932

A finite decimal is a fraction in which the number of digits after the decimal point is precisely defined. An infinite decimal is when the number of digits after the decimal point is infinite. For convenience, mathematicians agreed to round these numbers to 1-3 after the decimal point. The main property of a decimal fraction is as follows: if one or more zeros are added to the decimal fraction on the right, its value will not change. This means that if your fraction has a lot of zeros, you can simply discard them. For example:

0.600 = 0.6

21.10200000 = 21.102

Basic properties

The fraction does not matter, provided that the divisor is zero. A fraction is zero if the numerator is zero and the denominator is not.

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Two fractions a/b and c/d are called equal if a * d = b * c.
If the numerator and denominator are multiplied or divided by the same natural number, then we get an equal fraction Common fraction and decimal fraction are old friends. Here is how they are connected:
The integer part of a decimal is equal to the integer part of a mixed fraction. If the numerator is less than the denominator, then the integer part is equal to zero.
The fractional part of a decimal fraction contains the same digits as the numerator of the same fraction in its ordinary form.
The number of digits after the decimal point depends on the number of zeros in the denominator of an ordinary fraction.
Already in the fifth grade, math problems hint that fractions are somehow related to percentages. And this is true: a percentage is one hundredth of any number, denoted by the % sign.
1% = 1/100 = 0.01
To learn how to convert percentages to fractions, you need to remove the % sign and divide our number by 100, as in the example above. And to convert a decimal fraction to a percentage, we multiply the fraction by 100 and add the% sign. Let's take an example:
0.15 = 0.15 100% = 15%.
Expressing a fraction as a percentage is simple: first, turn it into a decimal fraction, and then apply the previous rule.
2/5 = 0.4
0.4 100% = 40%
8/25 = 0.32
0.32 100% = 32%
To cut the cake into equal pieces and not offend the guests, you just need to remember the ratio of the parts and the whole.
Decimal conversion Quick reminder:
A decimal is a number with a remainder where the remainder comes after the integer part and is separated by a comma. A mixed fraction is also a number with a remainder, but the remainder is written as a simple fraction (with a dash).
To convert decimals to mixed fractions, you do not need to memorize special algorithms. It is enough to understand the definitions and read the given fraction correctly - this is what schoolchildren.
Some regular fractions need "preliminary preparation" before converting to decimals. This applies to ordinary fractions, the number of digits in the numerator of which is less than the number of zeros in the denominator. For example, the common fraction 2/100 must first be prepared for conversion to a decimal fraction, but the fraction 9/10 does not need to be prepared. The “preliminary preparation” of correct ordinary fractions for conversion to decimal fractions consists in adding so many zeros to the left in the numerator so that the total number of digits there becomes equal to the number of zeros in the denominator. For example, a fraction after adding zeros will look like . After preparing the correct ordinary fraction, you can begin to convert it to a decimal fraction.
In order to multiply a decimal fraction by 10, 100, 1000, and so on, it is necessary to move the comma to the right in this fraction, respectively, by 1, 2, 3, and so on, the numbers. Therefore, if the comma is moved to the right by 1, 2, 3 and so on numbers, then the fraction will increase by 10, 100, 1000 and so on times, respectively. To multiply two decimals:
• multiply them as natural numbers, ignoring the commas;
• in the resulting product, separate as many digits with a comma on the right as there are after the commas in both factors together.
There are cases when the product contains fewer digits than required to be separated by a comma, the required number of zeros are added to the left before this product, and then the comma is moved to the left by the required number of digits. Consider examples: 2 * 4 = 8, then 0.2 * 0.4 = 0.08; 23 * 35 = 805, then 0.023 * 0.35 = 0.00805.
There are cases when one of the factors is equal to 0.1; 0.01; 0.001 and so on, it is more convenient to use the following rule. To multiply a decimal by 0.1; 0.01; 0.001 and so on, it is necessary to move the comma

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to the left in this decimal fraction, respectively, by 1, 2, 3 and so on numbers. Consider examples: 2.65 * 0.1 = 0.265; 457.6 * 0.01 = 4.576.

The multiplication properties of natural numbers hold for decimal fractions as well.

• ab = ba is the commutative property of multiplication;

• (ab) c = a (bc) is the associative property of multiplication;

• a (b + c) = ab + ac is the distributive property of multiplication, with respect to addition.

The main property of a fraction is introduced using the example of dividing a circle into equal parts. The rule is formulated for both multiplication and division, but the rule is written in literal form only for multiplication. When reducing fractions, GCD is not used. The system of exercises contains tasks for reduction to a given denominator. Bringing fractions to a common denominator. The authors say that when solving many problems involving fractions with different denominators, one has to replace equal fractions with the same denominators.

Fraction comparison. The explanatory text contains the rules for comparing fractions with equal denominators, with different denominators, comparison of additions to one, comparison with one, part of one. There are no tasks for comparing fractions with equal numerators.

Natural numbers and fractions. With the help of the problem, the concept of a fraction as a quotient of two natural numbers is introduced.

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