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METHODOLOGY FOR STUDYING FRACTIONS IN PRIMARY SCHOOL

Khusanov Khamrokul
Senior Lecturer JSPU

Kodirova Sevinchhon
JSPU Student

Annotation
This article contains a fairly detailed explanation of the methodology for teaching fractions in elementary school.

Keywords: methodology, teaching, fractions, integers, numerator, denominator.
A technique is a procedure for carrying out any targeted action.

Learning is a complex process that involves the learning activities of both the student and the teacher.
When we were all in elementary school, we all studied (passed) the topic "Fractions". And starting from the 3rd grade, we begin to fully teach on the topic "Fractions".
To date, there are a large number of new models in the field of education in primary school, and each of which has its own view on its point of view on this topic. For example, let's take the system of L. V. Zankov: here great importance is given to an ordinary fraction, its addition and subtraction. In the developing system of education of Elkonin-Davydov, along with an ordinary fraction in the 4th grade, children get acquainted with decimal fractions and the rules for their addition and subtraction.
To start studying the topic "Fractions" students need to be taught to distinguish between fractions and fractions. So what is a "share"? And what is "fraction"?
A share is a division into parts of something, and a fraction is a finding of the order and amount of this share.
To acquaint students with the concept of "share", you can teach them to form shares on their own practically, that is, on visual aids. For example, to get one fourth of a circle, you need to divide the circle into 4 equal parts and take one such part; to get one fifth of a segment, you need to divide this segment into 5 equal parts and take one such part of the segment.
Depending on the preparation of the class for the study of the "Fractions" section, 7 or 8 lessons can be separated. Moreover, the lessons in which children get acquainted with new material for them - fractions, include (up to 50%) current material related to improving the technique of calculations, solving equations, solving problems.

When studying this topic, students should:

1. Be able to name and show shares, with a denominator less than 10, know the names of such fractions as 1/2; 1/3; 1/4 (half, third, quarter);
2. Be able to read and write shares, with a denominator less than 10;
3. Be able to compare, based on the figure, the above fractions;
4. Be able to solve problems for finding a fraction of a number and a number by its fraction, and also be able to find fractions of a number.

If a given object (object, set of objects) can be divided into several equal parts, then each of them is called a share of the object (object, set of objects).

Shares are written using two natural numbers and a line: 1/3; 2/3; 3/5 and so on.

What are natural numbers anyway?

Natural numbers are numbers that we use to count.

The number under the line shows how many equal parts the object is divided into, the number above the line shows that one such part (share) is taken.

A fraction is a pair of natural numbers, one of which, written under the line, shows how many equal parts the object is divided into, and the other above the line, how many shares are formed in total: 3/5; 9/10 and so on.

Previously in use, we deliberately did not use the words "Numerator" and "Denominator", since they are not used in the primary class.

Writing fractions with a dash and reading them, for example, "two truti", "five-eighths" and so on, was adopted as early as the 8th century AD in India, later in Uzbekistan, and only then passed to Europe (in the 12th-13th centuries .).

The most common mistake young teachers make is explaining, "What do the entries mean: 1/2; 1/3; 1/9;

Very often teachers say that only one subject is divided into three (four, five, and so on) parts. Already in the future, such an explanation makes it difficult to understand the record: 4/5, also conducting this topic should give examples from life.

For example, if you remove the peel of an orange, you can see that it is divided into several parts (cloves), and if you peel the garlic, you can see that it is divided into several "cloves".

This means that in nature the whole object is divided into several parts. And sometimes in labor activity people have to divide (break, cut) one object into several equal parts. For example, a carpenter, having several boards, is forced to divide into several identical and equal parts.

And, of course, splitting into parts is not always feasible.

For example, a teapot or a bowl cannot be divided into equal and identical parts. But on the other hand, you can cut an apple, pear, potato, roll, and so on into equal parts.

Familiarity with fractions can also be carried out at labor lessons, too, by performing application work under the guidance of a teacher.

The main thing when solving problems is that the teacher himself is not in a hurry with general conclusions and does everything in stages:

1. Find "one share";
2. Find the whole fraction of a number.

For example, given a segment with a length of 10 cm and we are asked to find 3/5 of this segment. To solve this problem, we need to perform 2 steps:

1. Find 1/5 of the segment. To do this, we must divide 10 by 5, that is, by the denominator, and we get 2 cm.
2. Find the length of 3/5 of the given segment. To do this, we need 3, that is, the numerator, and we get 6 cm.

This means that 3/5 of a segment from 10 cm is 6 cm. Already in the future, after a good mastery of this method, it can be slightly simplified and written as follows:

(10:5)×3=6 cm.

In order for children in the primary grades to form the correct idea of fractions, it is necessary to show them examples in reality. It is important that both the teacher and the student have visual aids (geometric shapes, segments, and so on). It is then that the students form the correct idea of fractions, when they themselves receive a share from these segments and geometric figures, and so on.

Fraction comparison.

1. Comparison of fractions with the same denominators.

In order to compare fractions with the same denominators, you need to pay attention to the numerator, i.e. In fractions with the same denominator, the larger fraction is the fraction with the larger numerator, and the smaller fraction is the fraction with the smaller numerator.

For example, given two fractions 4/7 and 6/7 and you need to compare them.

We see that the denominators are the same, so we must pay attention to the numerator. We start comparing the numerator 4<6; 6>4.

It means that:

$$4/7<6/7$$

2. Comparison of fractions with the same numerators.

In order to compare fractions with the same numerators, you need to pay attention to the denominator, i.e. In fractions with the same numerator, the larger fraction is the fraction with the smaller denominator, and the smaller is the fraction with the larger denominator.

For example, given two fractions 5/9 and 5/11 and you need to compare them.

We see that the numerator is the same, so we start comparing the denominators: 9<11; 11>9.

So 5/9<5/11.

3. Comparison of fractions with different numerators and different denominators.

To compare fractions with different denominators, you need to reduce the fractions to a common denominator, and then compare the numerator.

For example, given two fractions 4/7 and 1/2 and you need to compare them.

First of all, we need to reduce the fractions to a common denominator.

In order to reduce to a common denominator, you need to find the LCM of two numbers, i.e. denominators:

LCM(7;2)=7×2=14

So, we brought to a common denominator and we got it 14.

1) 14÷7=2

2) 14÷2=7

And we multiply these resulting numbers by the numerator of fractions.

Those. 4/7=4×2/7×2=8/14

1/2=1×7/2×7=7/14

8/14>7/14 - fractions with the same denominators.

Addition of fractions.

In order to add two fractions, it is necessary to bring these fractions to a common denominator, and if the fraction has the same denominators, then they do not need to be reduced to a common denominator, and then you just need to add the two numerators.

For example, 1) 5/7+1/7=5+1/7=6/7

2) 5/7+1/2=(5×2/7×2)+(1×7/2×7)=10/14+7/14=10+7/14=17/14

Mixed fractions.

To convert a mixed fraction to an improper fraction:

1. An integer must be multiplied by the denominator;

2. The resulting result adds to the numerator.

For example, 3 2/5= 3×5+2/5=17/5

Fraction calculation.

In order to calculate two fractions, it is necessary to reduce the fractions to a common denominator, and if the fractions have the same denominators, then they do not need to be reduced to a common denominator, and then you just need to subtract two numerators.

For example, 1) 5/7-1/7=5-1/7=4/7.

2) 5/7-1/2=(5×2/7×2)-(1×7/2×7)=10/14-7/14=3/14

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