CHARACTERIZATION OF THE MAIN CONCEPTS OF THE MATHEMATICS COURSE OF PRIMARY CLASSES, THE SEQUENCE OF THEIR STUDY

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Mathematical objects can be distinguished and grouped according to their various characteristics, properties and signs. Properties of the studied objects 1) individual properties; 2) is divided into two parts with common properties. General properties of objects can be distinctive and non-distinctive.

If a common property of an object is an important property, then it is called a distinguishing property. The form of thinking in which the important properties of the studied object are perceived is called understanding.

If the concept consists of the perception of objects that exist in the real world, that concept is called a correct concept. Concepts can be grouped by content and volume. All distinguishing properties of the concept are called its content. The set of objects given in the concept is called its volume. For example, the content of the concept of "trapezium" consists of the following important properties: 1) its seats are parallel, and the other two sides are not parallel; 2) the middle line is equal to half of the total number of its seats; 3) that the area is equal to the product of the middle line and the height, etc. The volume of the concept of "quadrilaterals" is made up of the following figures: 1) parallelograms; 2) rhombuses; 3) rectangles; 4) squares; 5) trapezoids, etc. The volume and content of the concept have an "inverse" relationship with each other: if the content of the concept increases, its volume decreases, and conversely, if the content of the concept decreases, its volume increases. For example, during generalization, the scope of the concept expands and its content narrows. However, when carrying out specialization, the scope of the concept narrows, and its content expands. The scope of the concept determines its content and vice versa. The indicated dependence between the content and volume of the concept is true if the volume of one concept is a subset of the volume of another concept during the process of changing the content. If the volume of one concept is a subset of the volume of another concept, then the second concept is called a generic concept in relation to the first one, and the first one, in turn, is called a type concept in relation to the second one. For example, a rhombus is a type for a quadrilateral, and a quadrilateral is a genus for a rhombus.

The mathematical term "understanding" is used (in the form of a definition) for the purpose of expressing (in the form of a definition) the copies of a class of objects, objects, processes, relationships, objective realities, objective realities or what we perceive through our thinking.

It is clear that thinking (and mathematical thinking) has three forms, one of which is understanding. These forms are as follows:

a) understanding;

b) judgment;

v) mental output.

Each concept includes a certain class of objects, which is called the scope of the concept.

For example, the concept of "triangle".

Concepts are divided into two parts:

1. Preliminary understandings. 2. Amendments.

a) concepts that are not defined or cannot be defined;

b) understandings formed (defined) by means of initial understandings.

*As an example of initial concepts – point, straight line (in Euclid's own geometry), plane, direction, quantity, set, etc. can be shown.

*Regarding the definitions given (correction), many examples can be given from the school mathematics course: piece, rhombus, trapezium, etc.

Two forms (steps) can be noted in giving explanations:

a) feeling (emotional);

b) logical.

(v) intellectual - intuitive - special form)

Note that mathematical concepts are essentially abstract concepts and for this purpose detailed explanation should be given.

Finally, it should be noted that concepts are defined, and each definition expresses at least one property of the defined concept. Must give an example.

Rhombus –

Term –

Combination of multiples - etc. should give examples like

*Forms of providing understandings:

1. Written agreements. Here is the definition and so on. is intended.

2. Tables of understandings, etc. giving with

3. Symbolic presentation of concepts: ∑, ∫, √, , .

4. Giving concepts with formulas:

For example, K = {x / x€ N, x= 2k- 1}.

* Educational character of understanding.

A square is a rhombus with right angles.

A rhombus is a parallelogram with equal opposite angles and sides.

A parallelogram is a quadrilateral with parallel sides.

Quadrilateral – a polygon with four sides.

Polygonal - plane section (figure) bounded by closed broken lines.

Figure – The geometric locus of a set of points on a plane.

* The following principles should be followed when giving explanations:

a) principle of objectivity - triangle, multitude, ...

b) principle of uniformity - beam, piece, etc. marking.

Methods of providing understandings:

* Meanings can be given by means of different and related meanings.

* It can be given by genetic methods.

* Can be given inductively. (Numerical series, recurring formulas, etc.).

* In abstract form:

* Let's look at another example: Construction of a symmetrical point.

2. Mathematical propositions.

«a+b = b+a»,

Examples from the logic of clauses.

There is a natural number x such that $x > 5$.

Abridged multiplication equalities, etc.

3. Proofs.

* Formal;

* Informal.

Theorem and her serch

Mathematical induction method.

Its correct expression through speech plays a key role in the formation of understanding. A word that expresses a certain concept of science and technology is called a scientific term. For example, the word "rhomb" is a scientific term. In order to determine the content of the concept, it is necessary to show its important properties. They show this in the definition of the concept.

Definition: A quadrilateral with pairs of opposite sides parallel is called a parallelogram. The expression of all properties of the concept that are individually necessary and sufficient together in the form of connected sentences is called the definition of the concept. There should be no more words in the definition of the concept. It is explained to the students that the definition of the concept can be given in different ways without proving it.

1. The definition of the concept is given according to the following scheme, indicating the difference of close genus and species. Let's give an example of the definition given by showing the difference of close genus and species: "A parallelogram with equal diagonals is called a rectangle." Here, the close genus is a parallelogram, the difference in type is the equality of the diagonals, and the term is a rectangle. If we write according to the above scheme, A= {set of parallelograms}, A1= {set of parallelograms with equal diagonals}, P= «Equalness of diagonals». Definitions given by indicating the difference of close genus and species can be in the following specific forms: 1) definitions given to objects by indicating their characteristic features; 2)

negative definitions; 3) constructive and recursive definitions. Each of these forms can use logical conjunctions (and, or). Therefore, conjunctive and disjunctive definitions are also distinguished in the high school mathematics course. Let's give an example of the definition given to objects by showing their characteristic features: "A quadrilateral located on straight lines whose opposite sides are pairs of parallels is called a parallelogram." In this definition: gender – quadrilateral; type differences – one pair of opposite sides being parallel and the other pair of opposite sides being parallel; the term is a parallelogram. On the other hand, this definition is also a conjunctive definition, since the differences of types are connected by using the logical conjunction "and". Let's show another example: "A fraction smaller than the speed of the denominator or equal to the speed of the denominator is called an improper fraction." In this definition: gender – ordinary fraction; type differences – the denominator is less than the speed or the denominator is equal to the speed; term – improper fraction. In this definition, it is a disjunctive definition, since the differences of types are joined by the logical conjunction "or". A negating definition does not describe the properties of the objects it describes, but the properties that these objects do not have. For example, "Straight lines that do not lie in one plane and do not have a common point are called cross straight lines." In this definition: gender – straight lines; type differences – not being located on the same plane and not having a common point; term – cross straight lines. This definition is also a conjunctive definition. In constructive and recursive definitions, the properties of an object are indicated by the description of its construction. In other words, the distinctions of kind are given through deeds. For example, a function that can be expressed as "$y = kx+b$ is called a linear function, where k and b are known numbers, and x is a free variable." In this definition: gender – function; species differences can be expressed as $y = kx+b$, where x is a free variable and k and b are known numbers; term is a linear function. The actions required for building (construction) of the object can be given in different forms. For example, a recursive definition provides a given base object and a rule that allows constructing new objects with this property. For example, "if each term in a numerical sequence, starting from the second, is equal to the product of the previous term and a number that is constant for this numerical sequence, then this numerical sequence is called a geometric sequence: $an = an-1 \times q$, $n \geq 2$. Two methods are distinguished in the methodology for learning mathematical concepts: 1) concrete-inductive, 2) abstract-deductive. When introducing a mathematical concept using the concrete-inductive method, first examples leading to the concept are shown, then important signs are selected, and finally the concept is introduced. When a mathematical concept is introduced by the abstract-deductive method, the definition of the concept is given first. Then special (or specific) cases are examined; In the next step, concrete examples of the introduced concept are shown. In the last stage, the application of the introduced concept to simple cases is investigated. The idea that the first method should be used in the lower grades and the second method in the upper grades when learning mathematical concepts is wrong. Advanced experience shows that it is effective to study relatively simple concepts in an abstract-deductive way. It is considered convenient to learn relatively complex mathematical concepts by concrete inductive method. The process of learning the concept can be divided into the following stages: 1) preparation for entering the concept; 2) examining the content of the concept and creating an idea about the scope of the concept; 3) acquaintance with the applications of the concept in simple cases; 4) adding the concept to the system of other concepts.

It should be noted that the selection of the appropriate work system at each stage plays a decisive role. Mastering a mathematical concept implies that the student has a clear idea about the content and scope of this concept, as well as being able to apply this concept in his mathematical activity. The student should be able to reveal the familiar concept even in non-standard situations.

The experience gained in the process of solving mathematical problems creates conditions for the development of effective thinking habits and the ability to use methods of expression (brevity, accuracy, completeness, clarity), as well as intuition.

The process of teaching the primary mathematics course in secondary schools reflects the potential at the humanitarian level.

Studying mathematics should help children to develop logical thinking, scientific outlook, increase their understanding, and instill an honest attitude to socially useful work and love for the Motherland.

The positive influence of mathematics on the development of a person's mental abilities is capable of creating effective, concise and unambiguous communication opportunities. With the help of mathematics, it is possible to primitively present a complex problem, clarify events and calculate their consequences in advance. Abstract systems and theoretical models of mathematics are especially widely used in the study of regularities, in detailed and comprehensive analysis of the situation, and in solving problems.

When solving a problem, it is very important to choose a mathematical apparatus suitable for its core and purpose, and if it is not available, to develop it extensively.

It is necessary to create a correct and well-thought-out model of the process or object to be studied, obtain the necessary results by means of the obtained model, and then interpret them.

Mathematics education in primary classes should be closely and interactively connected with the education and development of students. Mathematics contributes to the development of observation abilities of schoolchildren's thinking, increases their ability to express their thoughts concisely, concretely, accurately, clearly and correctly, and creates a solid foundation for the development of their logical thinking. Improving mathematics education and developing students' logical thinking mainly depends on the teacher's level of preparation for the lesson. The main function of the teacher is to make wide use of all opportunities as a facilitator during the teaching of mathematics. In other words, during the teaching of mathematics, focusing on the solution of both practical and scientific problems strengthens the students' motivation and arouses great interest in mathematics. Knowing mathematics means mastering mathematical concepts and procedures and the ability to use them on the spot when solving real problems. and as well as acquiring the necessary abilities to receive and give information using mathematical language and tools in communication technologies.

REFERENCES

1. M.Sh. Hajiyev. Mathematics teaching methodology (general methodology, textbook for mathematics and mathematics-informatics majors). Nakhchivan 2017, 200 pages.

2. F.N. Ibrahimov. Lectures in general pedagogy, Baku, 2010, 390 pages.

3. S.S. Hamidov Methodology of teaching mathematics in elementary school classes. Baku, ADPU, 2008, 332 pages.

4. S.K. Mammadova. A textbook on the general methodology of teaching the elementary course of mathematics. Baku, "Science and Education", 2017, 130 pages