

METHODOLOGY FOR STUDYING GEOMETRIC MATERIALS IN PRIMARY GRADES

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Toshmatova U

senior lecturer of

the Department of Primary

Education, Kokand State University

Abstract

The article is devoted to the problem of studying geometric material in primary school. The article focuses on the development of graphic and measurement skills in pupils. The methodology of familiarizing pupils with the properties and units of measurement of geometric quantities, as well as finding the prototypes of geometric shapes in the surrounding world is described. Particular attention is paid to the study of geometric material in the context of the existing curriculum for an initial mathematics course. This is the basis for the relevance of the topic. In a scientific article, in order to consolidate and clarify geometric knowledge, various tasks are presented that have a positive effect on the spatial representations of pupils. The study allowed the author to conclude that the formation of propaedeutic geometric knowledge and skills in primary schoolchildren will help in the future to assimilate more complex geometric material in senior classes.

Keywords

primary school, mathematics lesson, textbook, geometric figure, measurements, linear.

The study of the properties of spatial figures through a geometric line of content, the formation of spatial representations, the analysis and solution of mathematical problems using the properties of geometric figures and geometric methods. In the lower classes, recognition of basic geometric shapes (for example, triangles, circles, squares and cubes) through geometric lines of content. Further studies will be expanded and deepened to study the properties of geometric figures, including various geometric relationships and geometric transformations, as well as a more detailed study of spatial geometry.

Geometric material is an integral part of the mathematics course. It is studied at the level of knowledge - acquaintance. Pupils practically distinguish figures, compare them, draw on paper. In the process of studying geometric material in

mathematics lessons, such mental processes develop as: attention, memory, imagination, perception, logical thinking, spatial orientation, speech. During the study of geometric material, pupils develop the ability to design, transform shapes, develop cognitive interest.

In initial classes are given the opportunity to get acquainted with simple geometric shapes, study the properties of ordinary shapes, measure length, perimeter and area, establish geometric shapes and their similarities in the environment, solve geometric problems.

The technology of studying geometric material in primary school is aimed at development of logical thinking of pupils, instilling in them elementary skills in defining the simplest geometric concepts,

- development of spatial representations;
- familiarization with the simplest deductive reasoning based on observation, comparison, generalization. The concepts of "definition", "theorem", "proof" are not introduced;
- the formation of elementary skills and abilities of performing constructions with the help of basic tools: a compass, a ruler, a square;
- the formation of rational techniques for constructing geometric shapes (on lined paper in a cage);
- the formation of skills and abilities to measure geometric values [3; p.263].

When considering the role of a teacher in teaching geometric material in primary school, it is important to identify a methodology that facilitates the disclosure of geometric content. The main objectives of this study were identified:

- 1) the development of spatial thinking;
- 2) the development of reflective skills;
- 3) understanding the environment from a geometric perspective;
- 4) the formation of ideas about ordinary and spatial figures;
- 5) the willingness to study geometry in senior classes

In the first class, pupils receive information about the polyline. In fact, although a specific name is not being prepared, the concept of a broken line is being prepared. The dashed line consists of several parts: the end of the first part, the beginning of the second, the end of the second, the beginning of the third, etc. is called a figure. These fabrics do not create new fabrics.

Pupils are taught the definition of the following new term: the fractures that make up the broken line are called its sides. If we mark one point into parts, it will divide this part into two parts. But these pieces do not form a broken line. It is important not to show pupils the model of the broken line, but to prepare it for the pupils themselves from soft wire. This model can be made of scratches and plastic

rollers, or by breaking a piece (thin rod) into one or two points. Such illustrations are fully consistent with pupils' ideas about the broken line and are well supported by the term "cliff". It is also important that pupils clearly display closed dashed lines. Closed fractures should be drawn on paper, scraps or wires modeled. This will greatly help pupils become familiar with the training ground in the future. This is because the boundary of the polygon is a closed line.

As a result, pupils of the 1st class should be able to determine the number of fragments that make up the geometric figure, show the number of lines, their sides and numbers in geometry and other figures depicted. 1st grade students learn to answer the question "show pieces in pictures." Pupils can show three or six pieces.

The practice of drawing broken lines on drum paper will not only help to form habits of formation, master the properties and the correct terminology of these figures, but also prepare students for future acquaintance with other geometric figures, including polygons.

Visual memory plays an important role in teaching geometry. Because when students are introduced to a concept for the first time, only students who are familiar with the standard situation cannot go beyond that stereotype. Therefore, in the inclusion of geometric concepts, it is necessary to create a unity of content between words and drawings. Because the definition of the concept expresses its main feature, and this is clearly reflected in the drawing

Primary school children are faced with polygamy in school practice, both in life practice and in the process of teaching parallel disciplines. A study of the appearance and development of geometric images shows that most children are familiar with a form called a circle (capable of distinguishing it from other shapes). The teacher should use this introduction to provide the first information about the training grounds. You should look at the cardboard circle and the polygon, comparing them and displaying them together.

To explain the concept of a polygon, pupils should use geometric shapes known as dots, fabrics, and broken lines. The article provides instructions for drawing a polygon and modeling. In this case, it is recommended to use wetter paper. Let's give an example. Children (the teacher can also dictate) perform the following book in the book of veins: "Mark the point where two straight lines intersect. Pay attention to the second point after six checkers. Point the checkpoint four points below the second point and the third point to the right of the three checkers. Connect all three points in one piece." As a result, all students should get the same or triangular shape. The teacher re-draws the drawing board and repeats the procedure for drawing a triangle with students. This is a closed line.

When constructing polygons, it is wrong to limit their actions only by drawing clear images. From drawings of various shapes, for example, a description of the State Emblem of the Republic of Azerbaijan, which is presented on the front pages of all textbooks (mathematics, life sciences, native language, etc.). Pupils need to be taught how to create polygons of various shapes, using As a result of proper work, pupils should be able to answer the following questions in the picture. a) What are the numbers in the picture? 1 - curved line, 2 - straight line, 3 - point, 4 - fold curved line, 5 - circle, 6 - point dotted line, 7- rectangle, 8 - triangle, 9 - hexagon, 10 - straight line broken line.

b) How many sides of the polygon have hills 7, (8, 9)? How many sides of the broken line are 6 (11)?

Gradually, pupils can complete tasks related to the formation of complex figures. Children answer (and point out) the question "What forms do you recognize?", When it comes to environmental objects in different disciplines, this should be associated not only with the form (appearance), but also with the determination of the number (number of digits, number parts).

In the process of drawing fragments and polygons, children get acquainted with the relations "large", "small", "equal", starting from the first class. Using a simple task system, children also gain experience comparing works. For example, pupils use a large number of objects using notebooks: top or middle; They try to determine which one is the smallest or the next: The lengths of the above and subsequent passages are called equal parts, because they are equal.

Pupils are then asked to identify and present equal parts to more complex versions, such as polygons. Such tasks are expected, and paper strips or ropes are used to verify the results. Pupils mark dots on a piece of paper and compare them by placing them on another sheet. The second piece is larger than the fourth (this is clearly visible). It's a little difficult to compare the first and third parts. On a strip of paper, mark the end points of the first piece and place it (these points) on the third so that the first is less than the third.

It is not recommended for children of the first class who do not have sufficient experience comparing fittings to provide information on "equal" and "unequal" sections. Children should first have a detailed experience comparing works. As you gradually move to high school, you will have to move on to comparing works presented in more complex forms in other textbooks. At this time, comparing fragments with linear, roller, curtain, etc. is practiced.

In the first class, pupils become familiar with the measurement of line segments, which allows you to establish a relationship between a line and a number. Acquaintance with the measurement of segments allows you to visually

illustrate ideas about a natural number, a decimal number system (centimeter - one, decimeter - one hundred, kilometer - one thousand), about operations on numbers [6].

For younger pupils it is very important to get acquainted with the size of the works and their comparisons. Since this concept is used in the teaching of all disciplines, it is more appropriate to formulate and consolidate all disciplines. Therefore, the methodological direction that we are going to interpret can be attributed to all subjects of parallel education of primary classes. This approach is due to the fact that the geometric concept of fragment length is the first step in forming the general idea of quantitative measurements, as well as the importance of measuring fragmentation. At the first stage, a clear understanding of the size of the pieces should be formed.

Practice shows that at the first stage, such tasks can be difficult for students. This is due to the fact that the pupils do not yet have a small centimeter pattern and the ability to work with pencils (finger muscles are not trained enough). These tasks should be repeated for a long time and systematically when performing practical tasks while teaching other parallel disciplines.

At a later (more) stage in the formation of fragment measurement skills, questions similar to the two above are solved by using a non-numeric scale in other disciplines, especially in the process of learning technology. As instructed by the teacher, pupils mark the line with a centimeter model on a thick paper strip.

There are simple but very important tasks that help strengthen and form the initial skills of measuring pieces: "Measure the length of a sheet of paper." For this, the student must "read" each centimeter from one end to the other and read.

After developing the skills of measuring fragments on a drum and a smooth sheet, children should first be taught how to measure environmental objects using a centimeter model, and then a linear scale with their own design. It can be used as measuring objects with notes, notebooks, cyberspace, pencils and other small objects. It is recommended that particular attention be given to measuring the sides of the polygon. For example: "Find any triangular shape (rectangle, etc.) given in the textbook and measure the length of its sides."

You do not need to rush to use the scale ruler with a numerical scale for measurement. Because, as can be seen from the study, pupils often make the worst mistakes when using such an incubator. One of the reasons students make mistakes is because they do not pay attention to the initial move (which is always on the edge of the line). The pupils overlap the point where the point is not the starting line of the scale and make a mistake. After the correct measurement of fragments has been mastered, the aforementioned approach to weighing fragments with its

amplification will avoid such errors. If some students find such errors, it is necessary to return to centimeters and paper strips in order to measure the pieces again.

In the I class, it is better to use a unit of length (cm) as a numerical material when forming a measurement tool using a linear scale, but also use a linear scale as an illustration, and then as a computing tool for collecting and subtracting numbers. For example: "A part is divided into dots. Measure the length of each piece using a linear scale. Is it possible to find the full length of a piece without measuring? Check with measurement." Using a linear scale, pupils combine numbers with this rule. You need to find: $2 + 4$. Initially, "2" is written on the scale (two centimeters correspond to 2 units). At this point, the pupil counts 4 cm and writes "6". According to this rule, the sum of numbers is replaced by the sum of the lengths of the pieces. Pupils are encouraged to move in the same direction (from start to right), collecting both pieces.

Then it is necessary to continue the relevant tasks in teaching the topics "collection and deduction of units" [7, p. 53-59]. At this stage, it is recommended that the student make a decision: "Solve $3 + 6$ examples using the axis." Solution: note the large assembly (6) on the readings of the modules. Then count the new one 3 steps forward until you collect the small one (3). Take 9 on the axis of the number. For example, $3 + 6 = 9$. This method can also be used in preparing the shipment. With the collection, it's more convenient to view the results at the same time. For example, you need to follow the withdrawal procedure: $8-5$. "8" is recorded on a linear scale. This corresponds to a unit of 8 cm - 8 digits. Then the pupil counts up to 5 cm from this point to the left. This can be done sequentially, counting 1 cm or in groups. The student falls on the sign "3". One might ask: "How can you choose from 5 units, reducing 8 units to 2 units, 2 units and 1 unit?" As you can see, the lining of the scales (25 cm long) can be used for a long time as a "counting machine" (until the student has mastered the collection schedule completely). The study showed that it is desirable to begin the acquaintance of the student with a new unit of measurement, a descriptor, while studying the numbers of the second decade.

Information about the angles of pupils in I-IV classes should not be tiring. In the first lesson, during extracurricular activities or in technology lessons, pupils are encouraged to first show broken triangles and a rectangle without corners. In this case, the polygon must be divided so that each of these parts has a hill and two sides of the hill.

It should be clarified here that a hexagonal hill is also a (corresponding) hill. When doing this work in the learning process, it is advisable to first introduce

students to the corner models made of paper. Children divide a paper polygon into pieces. Creating the right impression on pupils depends on their ability to represent them correctly.

To do this, place the pointer on the large end of the pole and rotate the pointer from one side to the other, rotating it with “special movements”. It is also possible that the content will be unlocked through movement: “corner” (small) and “growing” (large). For this purpose, a model developed by the pupils themselves (in technology lessons or at independent time) (two thin plastic plates fastened with plastic) can be used. Pupils are informed that the closer we are to the edges of the corner (models are shown), the smaller the angle, and the more we mix it, the larger the angle. The initial ideas related to the concept of angles are reinforced and formed in these practical exercises.

The interpretation of rectangular images should be carried out through the interaction of mathematical knowledge and skills that children still have with them, observation data collected from observations, and illustrated teaching materials on parallel subjects. One, two, three, and so on. It is better to start with a review of polygons with rectangles and illustrations in various illustrations from textbooks. It is also advisable to use linear vector lines to construct a rectangle with a rectangle in the

Thus, it is necessary to draw two parts from this point:

- 1) take a right angle between them;
- 2) the length of one piece is 4 cm and the other 2 cm.

With the help of dams, children build a rectangle (this can be done without using scale, since the pupils already know that they are two centimeters). The three points obtained are the three points on the hill of the rectangle. By measuring drops without measurement, pupils find the fourth point of the hill. It connects the points of the hill in series (with a line) and sticks to a colored pencil. Pupils build a rectangle 4 cm long and 2 cm wide. This work continues in extracurricular activities in various disciplines and in the form of practical tasks of a different nature.

In the first year of study, geometric shapes and objects were used as graphs. Later elements such as objects (polygon sides, angles, height) are also used. In the first class, pupils become acquainted with the measurement of a work, which allows them to establish contact between the subject and the subjects. Familiarity with the measurement of the product provides a visual representation of them (children) about natural numbers, the decimal number system (cm-unit, dm-centimeter, km-thousand)

Studies show that geometric skills acquired in mathematics are determined by other disciplines. Such related training can continue to work in the recognition of

objects of various shapes, including character shapes, from objects of colorful geometric shapes, data in life and in other textbooks. Because these actions help develop appropriate skills and strengthen relevant mathematical knowledge. The formation of initial geometric knowledge and skills in primary school pupils will help in the future to master more complex geometric material in senior classes. At the same time, measurements, construction and cutting work in primary classes have a positive impact on the development of students' life skills.

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