



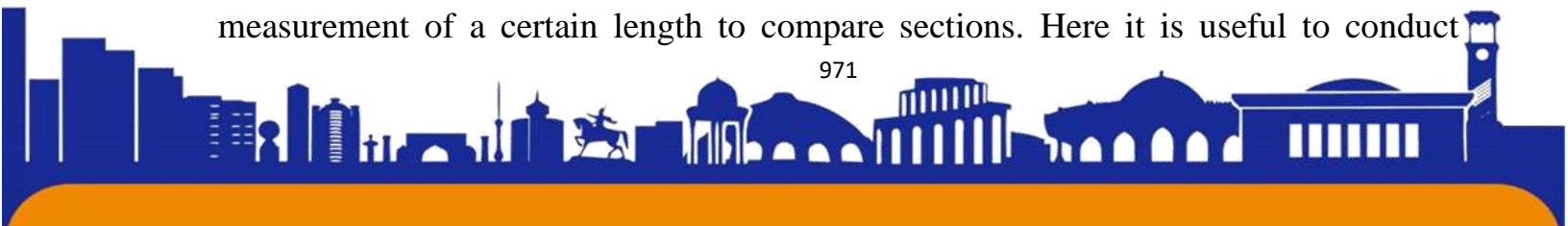
## USING MODELING IN TEACHING LENGTH UNITS TO STUDENTS

**Termiz State university faculty of social sciences primary education  
department 3rd level 220 group student  
Xurramova Sojida Abdunazar qizi**

**Abstract:** In the article, the method of forming the idea of length in students, the method of introducing length with units of measurement, the method of teaching the concept of surface to the future elementary school students is highlighted, and practical recommendations are given for their use.

**Key words:** Section, length, "longer", "shorter", unit of length, sides of a polygon, centimeter, decimeter, ruler, kilometer, geometric figures, surface.

**INTRODUCTION.** Today, time is developing very fast in pictures. In keeping with the times, the consciousness and worldview of young people is being formed. Today's youth should be taught by modern and knowledgeable pedagogues, because they are very smart and clever. In particular, elementary school teachers need to be very knowledgeable and modern. For example, it is appropriate for a teacher to use modeling in the process of teaching length measurement units to elementary school students. The concept of cross-sectional length is introduced based on the comparison of objects by length. For example, the teacher can offer children to compare two pieces of tape, two strips of paper of arbitrary length, etc. Practical work is followed by their expressions with the help of words. The meanings of the words "equal in length" and "unequal in length" are defined by more understandable words such as "the same", "longer", "shorter". After that, on the basis of practical work, for example, with the help of strips, children learn to compare cross-sections, in cases where one of the cross-sections cannot be placed directly on top of the other. For this purpose, students mark the beginning and end of one section with a pencil on the edge of a paper strip, and then place the strip next to another section. It is appropriate to perform the comparison of polygon sides in this way. As a result of performing such exercises, children gain practical experience of comparing cross-sections. Based on this, the teacher leads to the idea that, on the basis of concrete life examples, for example, when it is necessary to buy a tape of a certain length, and in similar cases, it is necessary to use a unit of measurement of a certain length to compare sections. Here it is useful to conduct





practical work under the guidance of the teacher: each student can be offered, for example, to measure the length of a measuring stick. To do this, first you need to choose a measurement (unit cross-section) - a paper strip (a future hemp, tape, etc.). Each student chooses his own measurement from the strips he has. As a result, different numbers are generated because students chose different measurements to find the value of a quantity. Such activities are useful in themselves, because they give children an initial idea about the measurement process and lead them to the conclusion that any cross-sectional length can be obtained as a unit of length.

### LITERATURE ANALYSIS AND METHODOLOGY

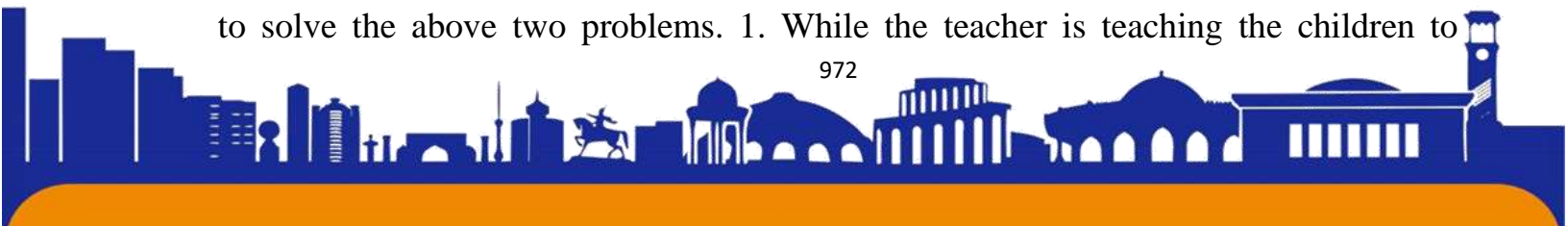
Modeling is the most effective way to teach length units to elementary school students. This is due to the fact that if a student solves a problem or example with the help of pictures and drawings, the example and problem will remain in his memory, besides, it is difficult for children to adapt from play activities to school activities, that is why they are interested in pictures.

1. We will learn to find the lengths of small objects, such as sticks, pencils and other things. The teacher says that the universally accepted unit of length - centimeter is used for this purpose.

2. In order for the students to have a clear idea about the centimeter, they should prepare several models of the centimeter under the guidance of the teacher. For this, they need to cut a long strip from a sheet of checkered paper, the width of which is equal to one square, and then cut a strip of 1 cm from it. Putting the strips on top of each other, the children make sure that they are equal. The teacher says that each of these strips is a model of a centimeter. Using a centimeter model, students can: 1) measure the given section; 2) they should learn to solve the problem of making (drawing) a section of a given length. Two ways of solving these problems can be distinguished.

The first method is the overlay method. The essence of this method is that the section being measured or measured separately is covered with models of centimeters, and then their number is counted. Such work helps children to "notice", "feel" every centimeter. Before introducing this method, it is possible to perform exercises in this form: put two models of centimeters in a row. how long the strip was formed.

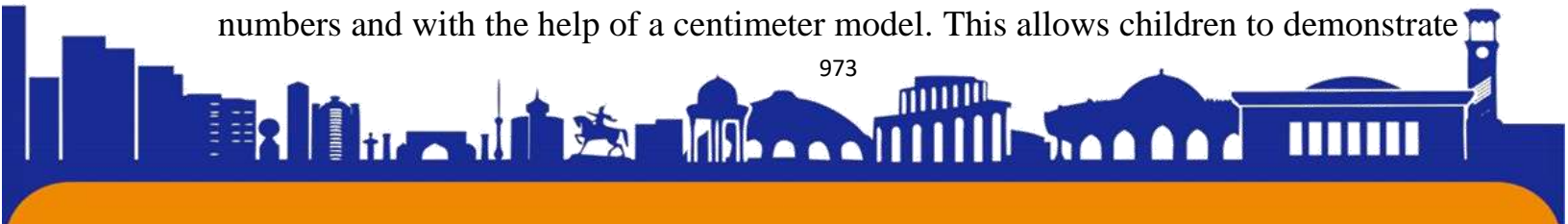
The second method is the method of letting go. Let's see how this method is used to solve the above two problems. 1. While the teacher is teaching the children to





measure the given section, each of them should place the end of the centimeter model exactly on one of the sections being measured; mark the second end of the model with a pencil on the section being measured; follows that they put one of the ends of the model again at the resulting point and put one mark near the intersection (at the second end). The second mark indicates that 2 cm is calculated separately. Similar work (marking every time) is done until the last of the markings overlaps with the next end of the section being measured. In this case, the student counts the number of centimeters placed on the section and finds the whole number of centimeters. If the marks do not overlap, the result of the measurement is expressed as an approximation: about 5 cm, a little less than 5 cm or a little more. Let the line pass; mark a point (one of the cross-section ends) on a straight line and start from this point and put the necessary number of centimeters in a certain direction (marking with a pencil in each case); mark the other end of the cut with a pencil. It should be noted that when measuring a given section (problem 1), there are always more or less significant residuals. This makes it difficult to understand the nature of the work being done. Therefore, it is advisable to start the work by making a section of a given length using the two methods indicated (problem 2). In order to develop accurate cross-sectional measurement skills, children should be trained not only to measure cross-sections drawn on paper, but also to measure other objects, such as pencil cases, notebooks, and other small objects. should also be practiced. It is also very important that the sides of the polygon are measuring objects.

After that, it is recommended to switch from using the centimeter model to using a ruler when solving the two problems mentioned above. To create such a ruler, the teacher cuts several sheets of the checkbook in the form of strips and distributes them to the students, and shows how to mark the centimeters on the strips (in this case, he counts the paper cells one by one or uses a centimeter model for this purpose). A one-centimeter section is placed on this strip 10 times in a row. A paper strip formed by cutting the ends of a strip 1 dm long is a model of a ruler. It is not recommended to mark the centimeter scale divisions of such a ruler with numbers. This is useful for combining counting and measuring processes, and for children to understand the correspondence between the length of a section and the number. Experience shows that it is useful to perform the first measurement exercises with the help of a ruler without numbers and with the help of a centimeter model. This allows children to demonstrate



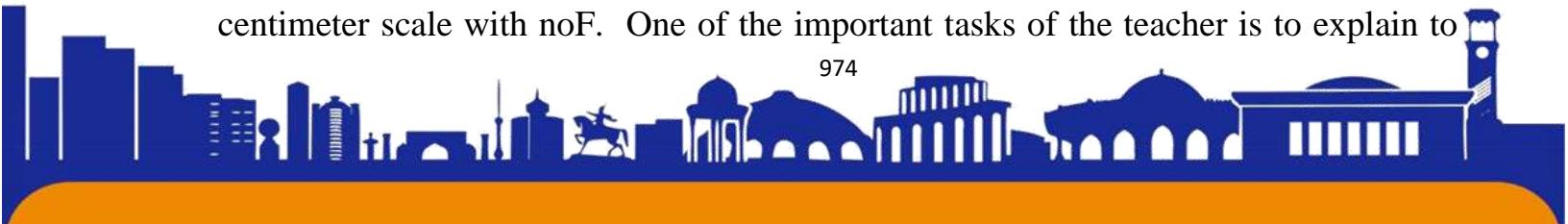


the advantage of using a ruler in practice, making a seamless and completely legal transition from using one model to another. We emphasize that you should not rush to size using a numbered scale ruler. This leads to making such a rare mistake that when making a section or measuring, the count head on the ruler is started from one instead of zero. After that, we emphasize the need to use a centimeter model or a paper strip with a centimeter scale in order to approach students who make mistakes in measuring when working with a ruler with a numbered scale. When students learn to measure not the lines on the ruler, but how many times the measurement is placed on the cross section, centimeter units can be marked with numbers. The teacher draws the students' attention to the fact that it is very inconvenient to count centimeters every time they measure, and asks them the following question: "What should be done to speed up and make the measurement easier?" Children usually give the correct answer: division should be marked with numbers. The teacher emphasizes once again that it is necessary to count sections-centimeters, not lines. The line from which the count begins is marked with the number 0.

When learning to number within 100, a new linear unit - the meter - is learned. A fairly well-known way of introducing this dimension is as follows. The teacher addresses the class with the following question: is it convenient to measure the length and width of the classroom with a centimeter or decimeter model, why is it inconvenient? He says that in such cases a larger linear unit is used, called the meter. The teacher shows a one-meter wooden ruler and says that this ruler is a model of a meter. When introducing a meter, it is important not only to show children a one-meter wooden ruler, but also to show how to measure with it, so that children can independently find the width and height of the classroom, blackboard, door, etc. is important. For this, each of them should have a one-meter paper ruler that they made (in the workshop). In order to create a model of a meter, students take a paper tape with a length of 10 dm under the teacher's guidance and divide it into decimeters. Sections equal to a decimeter are marked with lines. The strip is folded along these lines and folded like a "harmoshka".

## DISCUSSION AND RESULTS

It is interesting for children to mention that in some countries, for example, Czechoslovakia, a special ruler is used that does not mark the starting line of the centimeter scale with noF. One of the important tasks of the teacher is to explain to





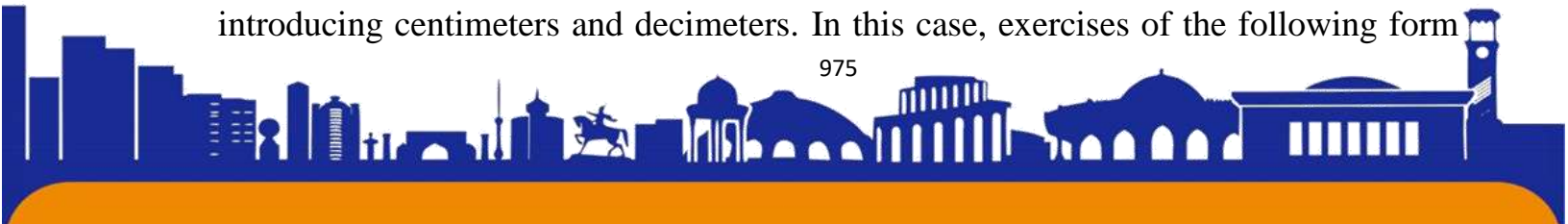


children the rule of using a ruler: the edge of the ruler with divisions is used only for measurements, and the opposite edge to the scaled edge is used to draw straight line sections. The drawing should be done only with a pencil so that the line does not become dirty, and the cut to be made is clear. The ruler should be placed on the paper in such a way that the section being measured or drawn is on the side of its illuminated edge. The teacher should explain to the students that the drawing tools should be kept in order: the ruler and the pencil should be clean, the divisions of the ruler should be clearly visible, and the ends of the pencils should be sharpened. must Acquaintance of students with a new unit of length - decimeter begins with the study of the second decimal. The ruler (paper strip) seen above is actually an unnumbered paper model of the decimeter. it is important that each student makes several such models. Students measure and make the same things with the decimeter model as they do with the centimeter model. Here are some exercises on measurements using the densitymeter model:

1. Line up the three models of the decimeter. how long the strip was formed.
2. Measure a piece of paper tape (string or hemp) with a length of 3 dm (or any other number) and cut this part of the strip.
3. Starting from the given point on the straight line, put a decimeter twice and put another point, tell the length of the resulting section.
4. Find the width and height of the desk, the length of the portfer. If the decimeter is not placed a whole number of times during the measurement, the result of the measurement is expressed approximately: less than 3 dm, a little more than 5 dm, or a little less. The next step in the work is to make and measure sections using centimeter and decimeter models. Here these exercises will be appropriate:

1. How many centimeters is 2 dm 4 cm
2. How many centimeters is a cross-section with a length of 7 dm (2 dm).
3. How many decimeters and centimeters will be the cross-section with the length of 86 cm, etc.

A paper meter is created. After that, it is useful to tell the students the following information: the distance from the paw of one hand to the elbow of the other hand is one meter when the arms are extended to both sides; the distance from the floor to the chest of an 8-9-year-old student is one meter. After that, the work will continue as when introducing centimeters and decimeters. In this case, exercises of the following form





are appropriate: measure a 3 m (4 m) long rope (tape, etc.) using a paper model of the meter, its height according to the plinth of the classroom floor topiig, making a chalk mark after each measurement. In order for this work to interest students, it is necessary to combine it with exercises related to visual measurement of dimensions with a meter. Children roughly measure the given distance in their eyes, and then they measure the actual distance in meters. In this way, children will not only acquire the skill of visualizing the distance, but also practice measuring with a meter. Such questions are also useful: "Is the dining table higher or lower than one meter?", "How high (higher or lower than one meter) are the reclining chairs or stools from the floor?", "How long is a normal bed, etc.?" In the 2nd grade, familiarization with units of length is continued: children get acquainted with millimeters, and later with kilometers. Introducing students to millimeters is the most difficult part of introducing students to length measurements. It is necessary to begin the introduction by showing that the introduction of a new unit of measurement, much smaller than the centimeter, is a requirement of practice. This can be done by asking the students to measure the cross-sections, for example, 8 cm 7 mm and 9 cm 2 mm, which have been drawn on sheets of paper in advance using strips of paper divided into centimeters. The cross-sections are marked and are clearly not the same. In addition, length in centimeters is represented by a single number, which is approximately 9 (in which students are not yet familiar with millimeters). The following conclusion can be drawn from this: for more accurate measurements, a smaller scale than a centimeter is needed. Usually, looking at the divisions on the scale ruler, the teacher says that one small division, that is, one section between two lines of the ruler, is called a millimeter. Children are clearly convinced that there are 10 mm in 1 cm. After that, students move on to dimensions. They measure the sections given in the textbook and the sides of the figures drawn in the textbook. First, one basic operation - division calculation is mastered. The teacher explains that the student's ruler has a larger line every 5 mm, just like the one-meter ruler (which has a longer line every 5 cm to make counting easier). The most important thing is that students should acquire the skill of correct eye placement while counting. In order to eliminate the effect of the parallax phenomenon when overlapping the zero point with the end of the section and taking into account millimeter divisions, it is necessary to look with the eye in such a way that both in this case and in this case the eye is directed to the section being measured, this it is necessary to sew to the





perpendicular passed through the end of the section. This is an important and difficult to explain element of the work. How important this is can be seen from the fact that when measuring with millimeter rulers, the deviation of the eye from the perpendicular by 5 cm causes an error of 0.6 mm. The difficulty of explanation is that students are not yet familiar with the concept of perpendicular. For this reason, the student has to give a little "hirarog", scattered instructions. For example, "focus your eyes on this point when looking at the end of the cut", "do not look from the side when counting millimeter divisions", etc. k.

When introducing a new unit of length measurement - the kilometer, it is recommended to carry out practical work on the ground in order to form an idea about this unit of length measurement. For this purpose, it is useful for students to cover a distance of 1 km (equivalent to 500 m) under the guidance of the teacher and to determine how long they covered this distance. They measure the distance traveled either with steps (approximately 2 steps equal 1 m), or with a roulette wheel, or a tape measure. Along the way, students practice estimating some distances by sight. If possible, excursions to the bus station or the railway station will be conducted in order to find out information about the distances to the nearest inhabited points and cities. This material will later be used to create problems in classes, in the III grade, students' knowledge of the relationship between units of length measurements will be strengthened, and a table of length measurements will be introduced:

$$1 \text{ km} = 1000 \text{ m} \quad 1 \text{ m} = 10 \text{ dm}$$

$$1 \text{ m} = 100 \text{ cm} = 1000 \text{ mm.} \quad 1 \text{ dm} = 10 \text{ cm} \quad 1 \text{ cm} = 10 \text{ mm.}$$

Students should remember this table. Children should use their knowledge of the table of length measurements in performing various exercises. In this case, the following exercises are appropriate:

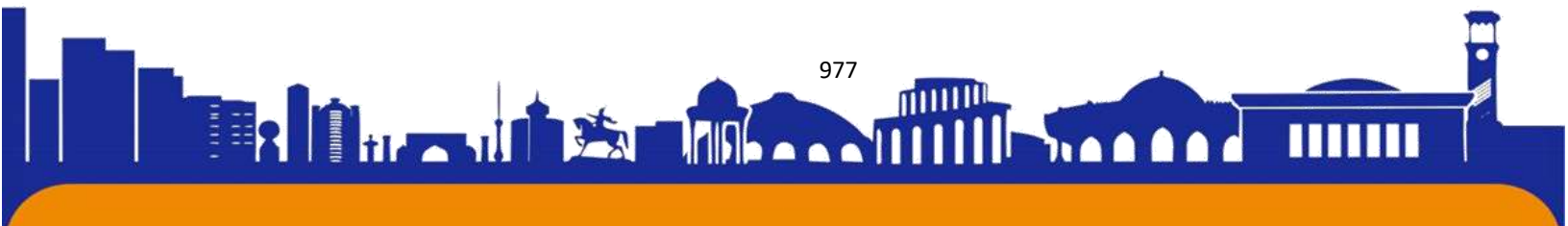
a) How many times is 1 m greater than 1 cm, how many times is 1 dm less than 1 m, and h. k.

b) What fraction of a centimeter is 1 mm, i

What fraction of a meter is 1 dm (1 cm, 1 mm), etc.

c) Express numbers in kilometers and meters: 36647 m; 3807 m and so on.

When performing the last exercise, the children think about the following: "You need to know how many thousands and ones are in the number 36647. This number has 36





thousands and 647 units, 1 km is 1000 m, so 36 thousand meters is 36 km; 36647 m is equal to 36 km 647 m” and so on.

Methodology of teaching concepts about the surface of geometric figures. Knowledge about the surface is studied in the fourth grade mathematics on the topic of "surface", "units of the surface". But preparation for this concept starts from I-II class. For example, in labor classes, they will learn how to cut figures with a surface from paper, and to paint some figures in fine art classes, what depends on whether more or less paint is used. By drawing, they delimit a figure with closed lines, learn to compare faces with large, equal relationships based on knowing whether the paper has gone too much or too little. They draw figures such as triangles, squares, circles, and rectangles related to geometric figures and cut them out of paper. In labor lessons, they connect the concept of surface with the fact that a lot of fabric is lost when sewing.

In the 1st-2nd grades, exercises are given on counting the cells in the figures, making a figure from the cells, cutting out the figures, and comparing the figures by putting them on top of each other. The topic "Faces of Figures" is taught based on the following plan:

1. To find out which figure occupies more space by matching.
2. Using the unit square, to know the large and small surface of the figures, to get acquainted with kb.cm.
3. Count the faces of various figures with square meters, palette.
4. Calculating the area of a rectangle in square centimeters.
5. Calculation of the area of a rectangle in Kv.dm.
6. Calculation of the area of a rectangle in square meters.

To measure the area, you need to start by entering the area unit kb.cm. A square is drawn with a side length of 1 cm or a length equal to the length of 2 squares on the notebook. There will be 4 cells in this square. After that, you need to start measuring the face of the notebook.

1) if there are 30 cells in length and 40 cells in length,  $30 \cdot 40 = 1200$  cells. If all four are 1 sq. cm.,  $1200 : 4 = 300$  sq. cm. can be calculated.

2) if the width is 15 cm and the height is 20 cm, then  $15 \cdot 20 = 300$  square cm.

It is necessary to teach the use of a pallet when calculating arbitrary faces, other than the calculation of rectangular faces. A pallet is a transparent plate divided into squares. Such tools can be made in labor classes. The easiest way is to draw the given

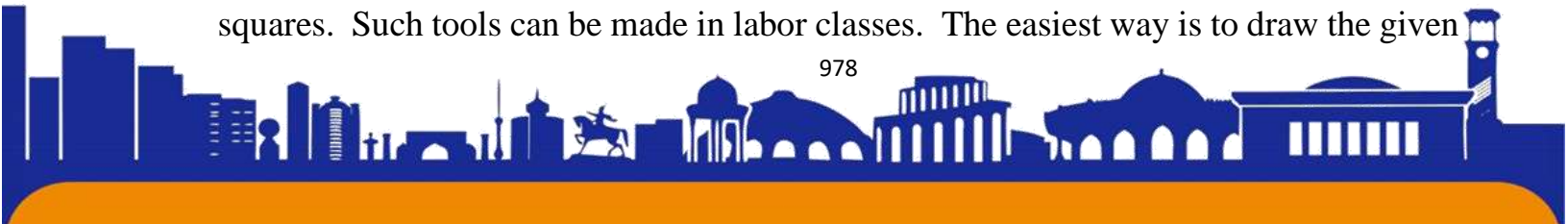






figure on a checkered notebook. Let there be 52 full cells.  $52:4=13$  sq. cm. Counting the empty cells, we get half of them.  $24:2=12$  kb.cm We turn 12 squares into kb.cm  $12:4=3$  sq.cm Total:  $13+3=16$  sq.cm.

**CONCLUSION.** In conclusion, we should use different methods to teach length units to primary school students. For example, units of measurement such as kb.<sup>m</sup> kb.m similar to the above can be entered consecutively. In order for the student to get an idea of the size of these surfaces, squares with lengths of 1 cm, 1 dm, 1 m are drawn, if possible, they are drawn on paper and cut out. It is necessary to give an understanding of paper with mm. Now, as a practical task, they measure the width and height of boards, tables, etc. in cm or dm units, and calculate their faces based on their multiplication, and calculating the faces of notebooks, books, etc. is given as an independent task. Now the task is to convert sq.dm to sq.cm and sq.cm to sq.dm. For this, the following issues can be resolved.

1. Measure the length and width of the cover of the mathematics textbook in cm and express the face in gM.

2. Measuring the length and width of a newspaper page in dm and expressing its surface in cm. Based on similar exercises, the conversion of the surface in small units to the large unit and vice versa, based on this, an understanding of the table of surface units is given. Now we move on to measuring larger faces. It measures the surface of the classroom, the plot of land and other surfaces. So, in this way, students are taught to determine the amount of surfaces of different shapes.

### REFERENCES

1. Bikboeva.N.U. 4- sinf matematika darsligi.Toshkent."O,qituvchi" 2017 yil.
2. Jumayev M.E. Bolalarda boshlang'ich matematik tushunchalarni rivojlantirish nazariyasi va metodikasi Oquv qo'llanma. (KHK uchun ) Toshkent. "Ilm Ziy" 2013 yil.
3. Jumayev E.E, Boshlang'ich matematika na'zariyasi va metodikasi. (KHK uchun) Toshkent. " Turon-iqbol," 2012 yil.
4. Axmedov M., Abduraxmonova N.Jumayev M.E. Birinchi sinf matematika darsligi. Toshkent. "Turon-iqbol" 2017 yil., 160 bet
5. Abduraxmonova N., O'rinboyeva L. 2-sinf matematika darsligi. Toshkent," Yangiyo'l Poligraf Servis", 2018 yil,208 bet.





ISSN (E): 2181-4570

6. Burxonov S. Va boshqalar. 3-sinf matematika darsligi. Toshkent, “Sharq” 2015.
7. Jumayev M.E, Boshlangi’ch sinflarda matematika o’qitish metodikasidan praktikum. (O 0’Y uchun o’quv qo’llanma) Toshkent. “O’qituvchi” 2004 yil.
8. Jumayev M.E, Boshlangi’ch sinflarda matematika o’qitish metodikasidan laboratoriya mashg’ulotlari. (O 0’Y uchun o’quv qo’llanma) Toshkent. “Yangi asr avlodi” 2006 yil.
9. Jumayev M.E. va boshq. Birinchi sinf matematika daftari. Toshkent. “Turon -Iqbol,” 2015 yil., 64 bet
10. Tadjiyeva Z.G. Boshlang’ich sinflarda matematikadan dars samaradorligini oshirishda tarixiy materiallardan foydalanish. Toshkent. “TDPU” 2008 yil. B 96
11. Jumayev M.E, Tadjiyeva Z.G’. Boshlangi’ch sinflarda matematika o’qitish metodikasi. (O 0’Y uchun darslik.) Toshkent. “Fan va texnologiya” 2005 yil.

