



# METHODS AND TOOLS OF EDUCATIONAL TECHNOLOGIES IN THE FORMATION OF THE CONCEPT OF FIGURE FACE IN STUDENTS

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Article history:	Abstract:
<b>Received:</b> 11 <sup>th</sup> March 2021	This article discusses the theory of sets in modern mathematics to substantiate the concepts of "number", "figure" and others, which in turn creates conditions for the formation of quantitative relations in children and the formation of the concept of natural numbers. The content is illustrated by examples. The Grade 3 math textbook is filled with exercises to deepen and strengthen the concept of the figure's face. Introduction to geometric concepts written in the 4th grade math textbook, concepts such as the perimeter of a polygon, the perimeter of a right rectangle and a square, as well as "units of measure, calculating surfaces using formulas", "calculating the face and perimeter" issues ", solving practical problems of measurement.
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## 1. INTRODUCTION.

Observations and experiments show that most primary school students (even some primary school teachers) do not understand the relationship between the units of surface measurement, the link between the units of length. they make minor mistakes in solving problems related to the calculation of surfaces. The main reason for this is that they do not have a good idea of the face of the figure and do not consciously master the connection between the surface units.

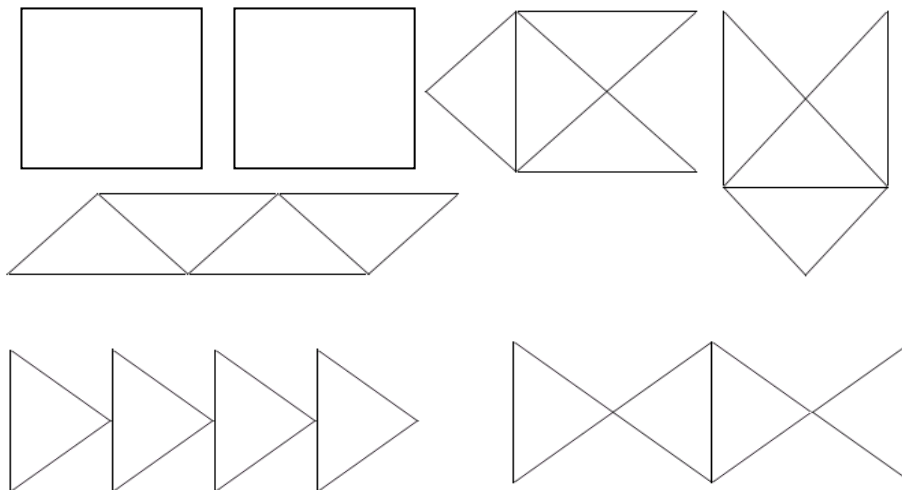
The concept of the face of the figure is included in the curriculum of the second grade, in which students are mainly able to compare the surfaces of different shapes (with the naked eye, on top of each other). rectangular faces, face units, squares are shown to be used.

The Grade 3 math textbook is filled with exercises to deepen and strengthen the concept of the figure's face.

Introduction to geometric concepts written in the 4th grade math textbook, concepts such as the perimeter of a polygon, the perimeter of a right rectangle and a square, as well as "units of measure, calculating surfaces using formulas", "calculating the face and perimeter" issues ", solving practical problems of measurement.

## 2. THE MAIN PART.

In order to introduce the concept of a figure face in Grade 2, the following preparation exercises can be done during the lesson: squares are distributed and folding is suggested to form squares, triangles, or rectangles. By folding the square or pushing the opposite sides towards each other, the children divide it into equal parts. Then they make different shapes out of square pieces.



It should be noted that the faces of all these figures are equal in practice. By doing this, students will come to the conclusion that different figures can have the same surface.

When informing students about the surface of a figure, it is important to focus on the units of surface measurement.

The teacher prepares didactic material for the lesson to introduce children to square centimeters. Makes non-linear sheets of paper and a table with geometric figures for square centimeter models, face measurements, and practical work. This table shows a cut-out figure divided into large squares on one side and small squares on the other.

One student divides this figure into large squares. How many are they? (7) The second student divides this figure into smaller figures. How many are they? How do you know? (Each large square has less than 4 squares, i.e.  $4 \cdot 7 = 28$ ). True, the face of the figure should be divided into any squares, but this is inconvenient. Therefore, it is necessary to get a fully defined square, not any square. Remember how sections are measured (centimeters, decimeters, meters). Centimeters, decimeters, meters are called linear measurements. They are length measurements. A square centimeter is a square decimeter, and a square meter is a hundred. Today we are introduced to square centimeters. What do you think? What is a square centimeter? After the children (or teacher) say that a square centimeter is a square equal to one centimeter, students are asked to draw a square centimeter in their notebooks and write 1 cm<sup>2</sup>. Students then find a square centimeter model on their desks. Then they do the practical work on a pre-given line of non-linear paper.

The teacher organizes the work on each figure in sequence.

Find the figure 1 on the sheet and cover it with square centimeters (the children place a square centimeter model on the figure. They put the squares side by side and make sure there are 5 squares). How many square centimeters are there in Figure 1? In this case, the face of Figure 1 is said to be 5 cm<sup>2</sup>. Explain what it means that the face of Figure 1 is 5 cm<sup>2</sup> (This means that Figure 1 has 5 square centimeters). What is a square centimeter? (This is a square with sides equal to 1). On the sheet, the children write 5 cm<sup>2</sup> under the first figure.

Students measure the faces of both figures using square centimeter models and write the result below it. After doing this, the teacher says that such a measurement of the face takes a long time and is difficult. Using a ruler and pencil, divide the face of the figure into square centimeters and count them. To determine the face of Figure 3, students draw square centimeters inside it (to do this, they place dots on each side of the figure for every centimeter. Through these points, straight lines form the desired square centimeters). These square centimeters are counted and the result is written at the bottom of the figure.

By checking that the task is done correctly, the teacher not only asks how many faces there are, but also what the face of the figure means, for example, 12 cm<sup>2</sup> (which means that the figure has 12 square centimeters, i.e. the side is 1 cm. equal, which means that there are 12 squares).

Hence, a unit square is a square whose side length is taken as a unit. The length of this unit can be 1 mm, 1 cm, 1 dm, 1 m, 10 m, 100 m, 1 km, depending on the content of the problem.

The area of a unit square is equal to the square of the length of its side, that is, to calculate the area of a unit square, you need to multiply the length of its side by itself.

Students will be asked to measure a given square centimeter using a ruler. They know that all sides of a square are equal. They find that the face of a square of length 1 cm is 1 cm<sup>2</sup> = 1 cm · 1 cm.

In this way, students become familiar with one hundred units of measurement.

1 mm · 1 mm = 1 mm<sup>2</sup> = 1 sq. M. mm 1 cm · 1 cm = 1 cm<sup>2</sup> = 1 sq. m. see  
 1 dm · 1 dm = 1 dm<sup>2</sup> = 1 sq. M. dm 1 km · 1 km = 1 km<sup>2</sup> = 1 sq. km. km

Of course, from the models of face units it is possible to show a square of 1 mm<sup>2</sup>, 1 cm<sup>2</sup>, 1 dm<sup>2</sup>, 1 m<sup>2</sup>. But squares of 1 km<sup>2</sup>, 100 m<sup>2</sup>, 10m<sup>2</sup> are understood as an abstract concept, that is, through the thinking of the reader.

Students should learn to select facial units based on a figure. For example, when measuring the surface of notebook paper cm<sup>2</sup> (sq.cm), desk surface, dm<sup>2</sup> when measuring the surface of the board (sq.dm), floor surface, m<sup>2</sup> (sq.m) when measuring the wall surface, They know that km<sup>2</sup> (sq.km) should be used when measuring. Students will also be introduced to the units of face used per hectare, ar (sotih). The area of a square with sides of 10 m is called 1 ar (satih).

$$1 \text{ ar} = 10 \text{ m} \cdot 10 \text{ m} = 100 \text{ m}^2$$

$$1 \text{ ar} = 100 \text{ m}^2$$

A square with a side length of 100 m has an area of 1 hectare.

$$1 \text{ ga} = 100 \text{ m} \cdot 100 \text{ m} = 10000 \text{ m}^2$$

$$1 \text{ ga} = 100 \text{ ar}$$

The study of the relationship between surface units has been instrumental in shaping students' knowledge and skills in finding the face of a figure. Therefore, students are introduced to the following table.

$$1 \text{ cm}^2 = 1 \text{ cm} \cdot 1 \text{ cm} = 10 \text{ mm} \cdot 10 \text{ mm} = 100 \text{ mm}^2$$

$$1 \text{ dm}^2 = 1 \text{ dm} \cdot 1 \text{ dm} = 10 \text{ cm} \cdot 10 \text{ cm} = 100 \text{ cm}^2$$

$$1 \text{ m}^2 = 1 \text{ m} \cdot 1 \text{ m} = 10 \text{ dm} \cdot 10 \text{ dm} = 100 \text{ dm}^2$$

$$1 \text{ m}^2 = 1 \text{ m} \cdot 1 \text{ m} = 100 \text{ cm} \cdot 100 \text{ cm} = 10000 \text{ cm}^2$$

$$1 \text{ km}^2 = 1 \text{ km} \cdot 1 \text{ km} = 1000 \text{ m} \cdot 1000 \text{ m} = 1000000 \text{ m}^2$$

$$1 \text{ ga} = 100 \text{ m} \cdot 100 \text{ m} = 10000 \text{ m}^2$$

$$1 \text{ ar} = 10 \text{ m} \cdot 10 \text{ m} = 100 \text{ m}^2$$

$$1 \text{ ga} = 100 \text{ ar}$$

The purpose of the following task is to teach students to distinguish between the unit of length and the unit of surface, to teach how to find the unit of surface if a unit of length is given, and to strengthen the preparation to derive 2 units of surface from one unit of surface:

Follow the schedule carefully.

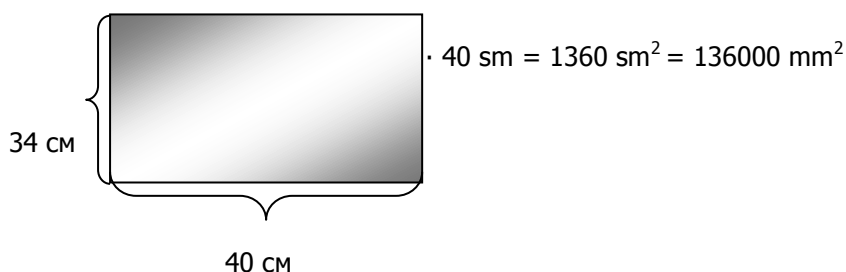
First row	1 m	1 sm	1 dm	1 m	10 m	100 m	1 km
Second row	1 mm <sup>2</sup>	1 sm <sup>2</sup>	1 dm <sup>2</sup>	1 m <sup>2</sup>	1 ar	1 ga	1 km <sup>2</sup>

a) How many times must the unit of length in the first row of the table be added to the unit of length in the next row?

b) How many times do you have to add the hundredths of a row to the next hundredths of a row?

In Exercise 2 on this topic, the teacher not only strengthens students' knowledge of finding the face of a figure, but also strengthens their knowledge of the connections between surface units.

Assignment 2. Calculate the face of the computer screen and express the result in square millimeters.

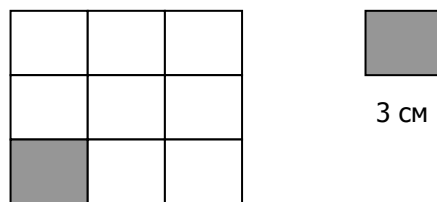


Task 3 on page 89 of the textbook deals with the relationship between surface units, in which the transition from a small surface unit to a large unit of measurement and vice versa, from a large unit of measurement to a unit of small surface area knowledge of the connection between the surface units of the bird is strengthened.

Task 4 on this page of the textbook is practical and requires a creative approach from the student.

Assignment 4. Cut out a few squares, each 1 cm<sup>2</sup> in size (students will be told how many squares to make) and make different shapes out of them.

Assignment 5. Let the unit square be 3 cm long. How many units of a square are there in a square with side 9 cm?



This exercise is one of the exercises that prepares students to find a rectangular face.

### 3.CONCLUSION.

The concept of the face of the figure is included in the curriculum of the second grade, in which students are mainly able to compare the surfaces of different shapes (with the naked eye, on top of each other). rectangular faces, face units, squares are shown to be used. Observations and experiments show that most primary school students (even some primary school teachers) do not understand the relationship between the units of surface measurement, the link between the units of length. they make minor mistakes in solving problems related to the calculation of surfaces. The main reason for this is that they do not have a good idea of the face of the figure and do not consciously master the connection between the surface units.

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