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## Lesson plan: Units of measurement for length. Perimeter

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**Teacher:**

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**School:**

Școala Gimnazială Nr.1 Oțelu Roșu

**Grade:**

a V-a B

**Subject:**

Mathematics

**Unit:**

Measurement units

**Title:**

Units of measurement for length. Perimeter

**Type of lesson:**

mixed (acquisition of new knowledge; application of theoretical knowledge in practice)

**Time:**

50 minutes

**General skills:**

1. Identifying some data, quantities and mathematical relations, in the context in which they appear
2. Processing of mathematical data of quantitative, qualitative, structural type, contained in various information sources
3. Use of specific concepts and algorithms in various mathematical contexts
4. Expression in mathematics-specific language of information, conclusions and solutions for a given situation
5. Analyzing the mathematical characteristics of a given situation
6. Mathematical modeling of a given situation, by integrating acquisitions from different fields

**Specific skills:**

- Identification of elementary geometric notions and units of measurement in different contexts;
- Use of geometric instruments to measure or build geometric configurations;
- Characterization by description and drawing of a given geometric configuration.
- Determining the perimeters and expressing them in appropriate units of measurement;
- Translating into geometry-specific language some practical problems related to perimeters using the convenient transformation of units of measurement;
- Interpretation by recognizing the elements, their measures and the relationships between them, of a geometric configuration of a given problem;
- Analyzing and interpreting the results obtained by solving practical problems that include elements of studied geometry, with reference to geometric figures and units of measurement studied.

**Operational objectives**

- O1. Observation of segments on physical models / drawings;
- O2. Exercises to describe and identify some elements of geometric figures: sides or diagonals;
- O3. Exercises for measuring or estimating the lengths of objects in the environment (representing sides of flat geometric figures), by choosing the most appropriate unit of measurement for a given context;
- O4. Measurement of lengths on models or objects from the surrounding reality (using appropriate measuring instruments);
- O5. Applying practical methods for measuring perimeters on models or objects from the surrounding reality;
- O6. Exercises for calculating the perimeter of some geometric figures, intuitively highlighting the perimeter;
- O7. Transformation exercises of standard units of measurement for length, using decimal fractions;
- O8. Comparison of distances / lengths, perimeters expressed by different units of measurement;
- O9. Description of geometric representations in practical / applied situations
- O10. Description of the methods used to verify the collinearity of given points, with segment lengths;
- O11. Activities highlighting the need for an appropriate standard for carrying out measurements;
- O12. Activities that highlight the expression, as a result of a measurement, of the length of segments in standard units (meter with multiples and submultiples thereof) or non-standard units;

**Purpose:**

Development of practical skills; a better correlation between theoretical notions and problems in everyday life; clear understanding of perimeter problems by identifying geometric figures and bodies in surrounding objects.

**Teaching strategy:**

- a) Methods and procedures: conversation, exposition, explanation, exemplification, knowledge transfer, exercise, problematization, learning by discovery, systematic observation, independent work, didactic game;
- b) Forms of organization: frontal, individual;
- c) Resources:
  - a. material: chalk, blackboard, textbook, problem collection, geometry tools, tailoring meter, carpentry meter, roulette, notebooks, evaluation sheet at the end of the class;
  - b. Timing: 50 '
  - c. human: the collective of the 5th grade B

**Expected performance:**

- Raising the level of preparation of students and their learning outcomes
- Improving the skills of measurement, calculation, comparison, application of calculation formulas in problems with practical applications.

**Evaluation indicators:**

-correct identification of geometric figures and bodies, calculation formulas and units of measurement

**Methods of monitoring and evaluation:**

- solving worksheets for each activity
- creating a portfolio

**Evaluation:**

- By oral check
- Verbal assessments
- Systematic observation
- Analysis of the answers received
- Selfassessment
- Solving exercises and problems.

**Bibliography:**

1. Textbook for the 5th grade, Marius Perianu, Cătălin Stănică, Ștefan Smărăndoiu, Art Publishing House;
2. Noua Mate 2000, Workbook, Sorin Peligrad, Parallel Publishing House 45;
3. The Mathematics curriculum, approved by order of the Minister 3393 / 28.02.2017.

**Annexes:**

Assessment sheet at the end of the class

### Lesson conduct

Lesson stages	Activity content		Didactic strategy Resources:			Evaluation
	Teacher's activity	Students' activity	Procedural	Material	Classroom management	
1. Organizational moment (3min)	<p>Greets the students. Ensures silence and discipline in order to carry out the activity well. Notes the absences. Checks that all students have all the necessary materials on the desks. Prepare the necessary materials.</p>	<p>They're getting ready for class. They have notebooks, textbooks and a geometry kit on the desks.</p>	Conversation	<p>Catalog Notebooks Textbooks Geometry kit Crayons</p>	Frontal Individual	Verbal appreciations
2. Capturing attention (6 min)	<p>- checking and updating the previously taught knowledge:</p> <p>Of the following geometric figures: point, segment, line, half-line, rectangle, which can be measured and why?</p> <p>The teacher appreciates and corrects the students' answers</p> <p>The teacher evokes to the students different epochs, in which the neighboring communities used various units of measurement: step, palm, elbow, chain, rod, etc.</p> <p>Even today there are people who use inches (2.54 cm) and miles (1.609344 km), hence the need to convert to other</p>	<p>They pay attention to the teacher's explanations and ask for any clarifications during the discussion.</p>	<p>Conversation Explanation Learning by discovery Systematic observation</p>	<p>Crayons Notebooks</p>	Frontal Individual	<p>Verbal appreciations Systematic observation Analysis of the received answers Selfassessment</p>

	<p>units of measurement.</p> <p>That is why the International System of Units was established in Paris, where the standard for meter is kept.</p> <p>The teacher asks the students to measure the length of the desk with a pencil or pen, determining how many times it is included and asks for some determinations.</p> <p>Students will then be instructed to measure the desk with the palm.</p> <p>Hence the students find that segments of equal lengths can have different lengths in different units of measurement.</p>	<p>Students measure and note the result, then respond.</p> <p>Students will be guided to note that although the length of the desk is the same, by measuring with the pencil, they obtained a different number, due to the fact that the pencils used have different lengths.</p> <p>Students will point out that in order not to get different results, the same units must be used when measuring a length, ie standard units.</p>				
<p>3. Communicating the lesson topic and operational objectives (2 min)</p>	<p>Informs students about the lesson. Writes the date and the title of the lesson " Units of measurement for length. Perimeter " on the board Informs students about the main objectives of the lesson</p>	<p>Students write the title of the lesson in the notebooks.</p>	<p>Conversation Explanation</p>	<p>Pencils Notebooks Board Chalk</p>	<p>Frontal Individual</p>	<p>Verbal appreciations</p>
<p>4. Content presentation and learning process (38 min)</p>	<p>Communicates to students that the main unit of length measurement is the meter (m).</p> <p>We also use: Multiples of the meter: decameter</p>	<p>Students pay attention to explanations and then write in notebooks</p>	<p>Explanation Exercise Problematization</p>	<p>Pencils Notebooks Board Chalk</p>	<p>Frontal  Individual</p>	<p>Verbal appreciations Systematic observation Analysis of the received answers</p>

	<p>(dam), hectometer (hm), kilometer (km)  Submultiples of the meter: decimeter (dm), centimeter (cm), millimeter (mm).</p> <p>Then s/he draws units of measurement for length on the board</p> <p>S/He informs them that the following rules are used to transform from one unit of measurement to another:</p> <p>Large units are transformed into small units by multiplying by <math>10^n</math>, <math>n</math> being the number of steps that go down</p> <p>Small units turn into large units by dividing by <math>10^n</math>, <math>n</math> being the number of steps that go up</p> <p>Lengths are measured with various instruments: graduated ruler, ordinary meter, carpenter's meter, tailoring meter, roulette, caliper, micrometer, chain, etc.</p> <p>Measurement errors can occur in any instrument, any measurement requires an approximation.</p> <p>Then the teacher asks students to express values for various lengths (notebook width, distance from</p>	<p>Students pay attention to explanations and then write in notebooks</p>	<p>Explanation  Exercise  Problematization</p>	<p>pencils  notebooks  Board  Chalk  Geometry kit</p> <p>Pencils  Notebook</p>	<p>Selfassessment</p> <p>Solving exercises and problems</p>
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	<p>Bucharest to Timisoara, etc.) and to observe the need to use multiples and submultiples. The teacher draws the scale of multiples and submultiples of the meter on the board.</p> <p>The teacher asks students to appreciate concrete lengths (own height, class length, notebook length, road to the city center)</p> <p>It offers students exercises for transforming units of measurement.</p> <p>The teacher tells the students a situation in which a person has to determine the length of the fence needed to fence a field.</p> <p>Then writes the definition on the board: The perimeter of a geometric figure bordered by right segments is equal to the sum of the lengths of these segments. It is denoted by P.</p> <p>The perimeter of a square with side length equal to l is <math>P = 4l</math>. The perimeter of a rectangle with side lengths equal to L (for length) and l (for width) is <math>P = 2 \cdot (L + l)</math>.</p>	<p>Students pay attention to the explanations and then write in notebooks They answer questions</p> <p>The students pay attention to the transformations</p> <p>Solve the topics on the received handouts.</p>	<p>Written assessment</p>	<p>Board Chalk</p> <p>Evaluation handout</p>		<p>Test paper</p>
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	<p>The perimeter of a triangle with the length of the sides a, b, c is <math>P = a + b + c</math>.</p> <p>Then the perimeter of the board is determined, and the assessment sheets will be solved for 10 minutes, the requirements will be explained and the students will be supervised during the solving of the sheets.</p> <p>In the last 10 minutes we will move on to an activity that will take place in the school yard.</p>	<p>Teams of 4-5 students are formed. Each team is given a field to be drawn, measured and divided into geometric figures: square, rectangle. Students calculate perimeters in units of measurement set by the teacher. The applied math problems in the worksheet will be solved.</p>				
<p>4. Homework(1 min)</p>	<p>Communicates homework Exercises will be dictated for the topic in the book, which contains problems similar to those solved in class</p>	<p>Write down the homework.</p>	<p>Conversation</p>	<p>Notebooks</p>	<p>Frontal</p>	<p>Verbal appreciation</p>



EVALUATION SHEET  
UNITS OF MEASUREMENT FOR LENGTH. CHANGE

1. Turn:

- a.  $3 \text{ km} = \dots\dots\dots \text{ m}$ ; f  $3.4 \text{ m} = \dots\dots\dots \text{ mm}$ ;
- b  $400 \text{ cm} = \dots\dots\dots \text{ m}$ ; g  $5400 \text{ m} = \dots\dots\dots \text{ km}$ ;
- c  $2.5 \text{ hm} = \dots\dots\dots \text{ m}$ ; h  $35000 \text{ cm} = \dots\dots\dots \text{ hm}$ ;
- d  $450 \text{ mm} = \dots\dots\dots \text{ dm}$ ; i  $0.5 \text{ dam} = \dots\dots\dots \text{ m}$ ;
- e.  $250 \text{ dm} = \dots\dots\dots \text{ dam}$ ; j.  $350 \text{ mm} = \dots\dots\dots \text{ cm}$ .

2. Turn:

- a.  $2 \text{ m}^2 = \dots\dots\dots \text{ dm}^2$ ;
- b  $5000 \text{ cm}^2 = \dots\dots\dots \text{ m}^2$ ;
- c.  $4 \text{ ha} = \dots\dots\dots \text{ m}^2$ ;
- d  $525 \text{ dm}^2 = \dots\dots\dots \text{ m}^2$ ;
- e  $17500 \text{ m}^2 = \dots\dots\dots \text{ ha}$ .

- 3. Calculate the perimeter of a square with a side of 15 cm.
- 4. Calculate the perimeter of a rectangle 24 cm long and 16 cm wide.
- 5. A rectangle has a perimeter equal to 120 cm and a length 10 cm greater than its width.
  - a. Determine the dimensions of the rectangle.
  - b. The rectangle is divided into squares with a side of 5 cm. How many squares are obtained?
- 6. A yard has the shape of a rectangle 12 m long and 7.5 m wide.  
How many meters of fence are needed to fence the yard?

## WORKSHEET

Team no .....

Students: 1. ....  
2.....  
3.....  
4.....  
5.....

### TASKS:

1. Make a sketch of the terrain
2. Measure the sides of the field in meters and write them down.
3. Calculate the perimeter of the land
4. Find out how many meters of wire are needed to surround it with 5 rows of wire
5. Find out how much the wire surrounding the land would cost, if 1 m of wire costs 2 lei.