

Didactic Scenario

1. Title

Mathematics with the Help of Geometric Shapes

2. Keywords

Geometric Shapes, Measurement, Constructing Shapes, Shape Recognition, Mathematical Analysis, Basic Geometry Concepts, Mathematical Understanding, Measuring Sides and Angles

3. Basic information

STEAM Subject: MATHEMATICS

Typical interaction time with the instructional scenario in teaching hours for in-school work:
120 minutes

General description of the scenario:

<u>Phases</u>	<u>Stage</u>	<u>Time</u>
Introduction to Geometry (30 minutes)	Preparatory Stage	30 minutes
Schema Creation and Analysis	Implementation Stage	60 minutes
Presentation and Discussion	Evaluation Stage	30 minutes

Age group: 10-12 years old

Estimated difficulty level:

Very Easy	Easy	Moderate	Challenging	Very Challenging
		X		

Teaching resources

Materials:

- Cardboard boxes
- Wooden or plastic geometric shapes (for samples)
- Rules and angles
- Markers
- Glues
- Scissors

School infrastructure: No special school infrastructure is required other than basic classroom equipment and geometry tools.

Additional material from external sources/online tools:

- GeoGebra (<https://www.geogebra.org/>)
Free math software that provides tools for geometry, algebra, and calculus. Ideal for creating and analyzing geometric shapes.
- Math Playground (<https://www.mathplayground.com/>)
Online platform that offers fun math games and activities, including geometric activities.

Differentiated instruction for students with different abilities and learning styles in the same class:

- Use visual aids (such as bright colors and materials) for students with special support needs.
- Create custom worksheets for students with different math abilities.

Developed by: Development Center of Thessaly

4. Educational Problem

It enhances students' understanding of basic geometric concepts and improves their counting and shape recognition abilities, which are fundamental to developing their mathematical skills.

5. Learning Objective (-s)

1. Students will be able to recognize and construct basic geometric shapes.
2. They will understand and be able to measure sides and angles of geometric shapes.
3. They will apply mathematical concepts in solving problems related to geometric shapes.

6. Phases of the Scenario

Phase 1

Title: Introduction to Geometry

Indoor	Outdoor	Mixed
X		

Phase duration in minutes: 30 minutes

Detailed description of the scenario phase: Students are introduced to the basic concepts of geometry using simple examples and slides showing various geometric shapes. They discuss the properties of shapes (eg, sides, angles).

Activity Sheets:

Worksheet: Sides and Angles

Student Name: _____

Date: _____

1. Exercise: Measure the Sides

Look at the geometric figure below and write how many sides it has:

Number of Sides: _____

2. Exercise: Measure the Angles

Look at the geometric figure below and write how many angles it has:

Number of Corners: _____

Phase 2

Title: Schema Creation and Analysis

Indoor	Outdoor	Mixed
X		

Phase duration in minutes: 60 minutes

Detailed description of the scenario phase: Students use cardboard, rulers and angles to construct their own geometric shapes. They measure sides and angles, record their measurements and compare the results with samples.

Activity Sheets:

Worksheet: Creating and Analyzing Diagrams

Student Name: _____

Date: _____

1. Creating Schemes

Using the paper provided, draw the following geometric shapes:

Cycle

Triangle

Square

Draw the shapes with a pencil and use a ruler to make sure your lines are straight.

2. Pattern Analysis

Based on the shapes you created, fill in the elements: sides, angles, special features next to each shape.

Shape

Circle _____

Triangle _____

Square _____

Instructions:

Measure the sides and angles of the shapes you created.

Note any special features you notice about each shape.

3. Short Questions

How many sides does the triangle you drew have?

What are the main differences between a square and a circle?

Phase 3		
Title: Presentation and Discussion		
Indoor	Outdoor	Mixed
X		
Phase duration in minutes: 30 minutes		
Detailed description of the scenario phase: Students present the geometric shapes they created and their measurements to the class. They discuss the results, identify any errors or omissions and receive feedback from the teacher and their classmates.		
Activity Sheets: N/A		

7. Evaluation Methodology
<p>Geometric Shapes Evaluation Table</p> <ul style="list-style-type: none"> • Pattern Making (40%): Correct construction and use of tools. • Accurate Measurement (30%): Accuracy in measuring sides and angles. • Understanding Concepts (20%): Understanding geometric concepts and properties. • Presentation (10%): Clarity in presentation and explanation of figures.

8. Additional Resources for the teacher
N/A