Lesson Guide
In
Elementary Mathematics
Grade 6

Chapter III
Geometry

DEPARTMENT OF EDUCATION
BUREAU OF ELEMENTARY EDUCATION
in coordination with
ATENEO DE MANILA UNIVERSITY

2010

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Lesson Guides in Elementary Mathematics
Grade VI

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### III. GEOMETRY

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INTRODUCTION

The Lesson Guides in Elementary Mathematics were developed by the Department of Education through the Bureau of Elementary Education in coordination with the Ateneo de Manila University. These resource materials have been purposely prepared to help improve the mathematics instruction in the elementary grades. These provide integration of values and life skills using different teaching strategies for an interactive teaching/learning process. Multiple intelligences techniques like games, puzzles, songs, etc. are also integrated in each lesson; hence, learning Mathematics becomes fun and enjoyable. Furthermore, Higher Order Thinking Skills (HOTS) activities are incorporated in the lessons.

The skills are consistent with the Basic Education Curriculum (BEC)/Philippine Elementary Learning Competencies (PELC). These should be used by the teachers as a guide in their day-to-day teaching plans.
### III. GEOMETRY

#### A. Comprehension of Spatial Figures

<table>
<thead>
<tr>
<th>COMPETENCIES</th>
<th>VALUES INTEGRATED</th>
<th>STRATEGIES USED</th>
<th>MULTIPLE INTELLIGENCES TECHNIQUES</th>
<th>With HOTS</th>
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<tr>
<td>1. Draw different spatial figures</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.1 Visualize the different spatial figures, cube, rectangular prism, cylinder, sphere, pyramid, cone, etc.</td>
<td>Appreciation of various spatial figures in the environment</td>
<td>Modeling, Real objects, List/chart/tables, Games</td>
<td>Cooperative groups, Real world connections</td>
<td></td>
</tr>
<tr>
<td>1.2 Describe the different spatial figures</td>
<td>Resourcefulness</td>
<td>Use of tables</td>
<td>Games, Group work</td>
<td></td>
</tr>
</tbody>
</table>
Visualizing Spatial Figures

I. Learning Objectives

Cognitive: Visualize the different spatial figures
Psychomotor: Draw different spatial figures
Affective: Appreciate the various spatial figures in the environment

II. Learning Content

Skill: Visualizing spatial figures
Reference: BEC PELC III.A.1.1
Materials: paper robot, ball, funnel, art paper, scissors, real objects
Value: Appreciation of various spatial figures in the environment

III. Learning Experiences

A. Preparatory Activities

1. Mental Computation: Solving for Perimeter and Area

   Game 1
   a) Divide the class into 6 groups. (per column)
   b) Teacher provides an illustration board for each group.
   c) Teacher flashes a picture of a plane figure with given measurements of sides.

   Ex. 5 m 6 cm 14 cm

   d) The first student from each group solves for the perimeter and area of the given figure.
   e) The first to give the correct answers (with the proper labels) and raises his/her board first,
      gets 2 points.
   f) Continue the game until everyone in the column has participated.
   g) The group with the most number of points wins.

2. Review

   Review the previous lesson. Give 2 examples.

3. Motivation

   Play the "Concentration Game."
   a) Teacher prepares 12 cards consecutively numbered.
      At the back of each number card are the following:

   1. cube 2. 3. rectangular prism
   4. 5. cylinder 6. pyramid
   7. sphere 8. 9.
   10. cone 11. 12.
b) Teacher divides the class into 2 groups.
c) A student from a group chooses 2 numbers, say 1 and 9.
d) Teacher opens the number cards and finds out if the drawing and word match. If they match, another student from the same group chooses another pair of numbers and so on.
e) If the contents of the numbers don’t match, the teacher flips the cards again to show the numbers (not the word or drawing). Then a player from another group chooses the next pair of numbers, and so on.
f) The group with the most number of correctly matched pairs wins.

B. Developmental Activities

1. Presentation
   a. Activity 1
      1) Introduce the different spatial figures. Let the students describe the characteristics of each figure.
      2) Ask what is common among all the spatial figures?
      3) Present a paper robot whose parts are made up of spatial figures.
      4) Ask the students to identify the spatial figures represented by each part by completing the chart below.

<table>
<thead>
<tr>
<th>Parts of the Robot</th>
<th>Spatial Figures Represented</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head</td>
<td>Ex.: cube</td>
</tr>
<tr>
<td>Body</td>
<td>Rectangular prism</td>
</tr>
<tr>
<td>Arms</td>
<td></td>
</tr>
<tr>
<td>Legs</td>
<td></td>
</tr>
<tr>
<td>Feet</td>
<td></td>
</tr>
<tr>
<td>Hands</td>
<td></td>
</tr>
<tr>
<td>Mouth</td>
<td></td>
</tr>
<tr>
<td>Nose</td>
<td></td>
</tr>
<tr>
<td>Eyes</td>
<td></td>
</tr>
<tr>
<td>Ears</td>
<td></td>
</tr>
</tbody>
</table>

b. Activity 2 – Use of Real Situation Problem

1) Bring the students outside the classroom.
2) Let them observe their surroundings and jot down the different spatial figures they see.
3) Let them tabulate the answers.
   Ex.

<table>
<thead>
<tr>
<th>Object</th>
<th>Spatial Figure Represented</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basketball</td>
<td>Sphere</td>
</tr>
<tr>
<td>Water jug</td>
<td>Cylinder</td>
</tr>
</tbody>
</table>

4) Afterwards they go back to the classroom and share what they have listed on paper.
5) Discuss the importance of being aware of different spatial figures as seen and experienced through the environment.

2. Fixing Skills

Identify the spatial figure represented by the following:
1) ball   2) globe   3) funnel   4) test tube   5) tent   6) dice

3. Generalization

What are the different spatial figures. Describe each one.
What are their common characteristics?
Give examples of real life objects that represent each spatial figure.
C. Application

Give 5 objects that are models of the following spatial figures:
1) cone  
2) cylinder  
3) cube  
4) prism  
5) sphere

IV. Evaluation

A. Draw in your notebook objects that resemble the following space figures.

1)  
2)  
3)  
4)  
5)  

B. Name the spatial figures that resemble the following objects below:
1) box  
2) ball  
3) dice  
4) ice cream cone  
5) globe  
6) tin can  
7) camping tent  
8) funnel  
9) water pipe  
10) glass

V. Assignment

Construct each spatial figure using art paper.
1) blue pyramid  
2) black cone  
3) yellow cube  
4) green rectangular prism  
5) red cylinder  
6) violet sphere

Describing Spatial Figures

I. Learning Objectives

Cognitive: Describe the different spatial figures
Psychomotor: Create spatial figures out of used folders
Affective: Use one’s resourcefulness in creating new things

II. Learning Content

Skill: Describing spatial figures
Reference: PELC III A.1.2
Materials: cartolina, pair of scissors, paste, flash cards, spatial figures, handkerchief
Value: Resourcefulness

III. Learning Experiences

A. Preparatory Activities

1. Mental Computation Drill: Solving for Perimeter/Area of Plane Figures

Traveling Game
1) Teacher shows a picture of a plane figure with given dimensions.
2) The first two students from the 1st column solve mentally what is being asked. The first to give the correct answer with the proper label is challenged by the next student in the column.
3) Continue the game until everyone in class has participated.
4) The student who has beaten most of his/her classmates is the winner.

2. Review: Identifying Spatial Figures

What are the different spatial figures?
Give examples of real objects that are models of spatial figures.

3. Motivation

1) Group the pupils into Learning Barkadas.
2) Provide each group pieces of used folders, pair of scissors, and paste.
3) Let them make some spatial figures out of these materials.
4) The first to make 3 will be declared winner.

B. Developmental Activities

1. Presentation

Present the lesson through this activity:
   a. Call the winners.
      1) Let them show their finished products to the class.
      2) Have them describe each and identify its parts.
   b. Call the 2nd placer.
      1) Let them show the spatial figures they made that are different from the first group.
      2) Have them describe each and identify its parts.
   c. Do the same with the other group.

   *Valuing: Did you make use of your materials wisely? How?
   What are the things you have that can still be recycled? Why? In what way can you recycle them?

   d. Matching Game
      1) Divide the class into 2 groups.
      2) The first group will be given activity cards with the name of spatial figures.
      3) The second group will be given activity cards with descriptions of particular spatial figures.
      4) Let the activity card holders raise the activity cards they are holding.
      5) Each of them will try to find their partner.
      6) The first to match their cards correctly wins.
      7) Let each pair stand in front and read their activity cards.

   e. Matching Game
      1) Blindfold a volunteer pupil.
      2) Let him/her hold a spatial figure.
      3) Let him/her identify and describe it.

2. Fixing Skill

Identify the following nets as cube, rectangular prism, cylinder, or a pyramid.
3. Generalization
What is a prism? What are the kinds of prisms? Describe each.
What is a pyramid? What are the kinds of pyramids? Describe each.
C. Application
Match Column A with Column B.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td>____</td>
<td>1) The base is a polygon and its faces are triangles.</td>
</tr>
<tr>
<td>____</td>
<td>2) A spatial figure with a polygonal base whose edges meet at a common vertex.</td>
</tr>
<tr>
<td>____</td>
<td>3) A spatial figure having a circular base and one vertex.</td>
</tr>
<tr>
<td>____</td>
<td>4) A spatial figure with 2 parallel congruent faces called bases and the other faces are parallelograms.</td>
</tr>
<tr>
<td>____</td>
<td>5) A spatial figure with 2 circular bases, no edge, and no vertex.</td>
</tr>
</tbody>
</table>

IV. Evaluation

Complete the table.

<table>
<thead>
<tr>
<th>Spatial Figure</th>
<th>No. of Faces</th>
<th>No. of Edges</th>
<th>No. of Vertices</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. cube</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. rectangular prism</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. sphere</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. cylinder</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. triangular pyramid</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. rectangular pyramid</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. cone</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

V. Assignment

Cut out pictures of objects from newspapers or magazines that are models of spatial figures. Describe each.