Perimeter and Area

Syllabus: Karnataka State Board
Subject: Math
Grade: 5
Textbook Name: Karnataka State Board
Chapter Number & Name: 9. Perimeter and Area

1. OVERVIEW
1.1 OBJECTIVE & PREREQUISITES

Objective
- To know to find general formulas to find the perimeter and area of square and rectangle.

Prerequisite Concept
- Perimeter and Area
TIK_MATH_G4 _CH1_Perimeter and Area

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*Kindly Note: Activities marked with * are mandatory*

AREA OF SQUARE SHAPES
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2. LEARN
2.1 KEY POINTS
- ● Perimeter: The word perimeter has been derived from the Greek word 'peri' meaning around, and 'metron' which means measure.
  Perimeter is the total length of the sides of a two-dimensional shape.
- ● Area: In geometry, the area can be defined as the space occupied by a flat shape or the surface of an object. The area of a figure is the number of unit squares that cover the surface of a closed figure.

2.2 LEARN MORE

3. ENGAGE
3.1 INTEREST GENERATION ACTIVITY

PERIMETER
Activity 1: To find perimeter of shapes
Materials required: Broom sticks/coconut sticks
Prerequisites: Measure length

Activity Flow

Take coconut sticks of the same length and make shapes like triangle, square and rectangle, and then ask the children to tell the total length of the shape. Example: the perimeter of each shape.
Example:

> *If the length of a stick is 4 cm. Then the perimeter of a triangle formed using the 3 sticks of length 4 cm will be 12 cm.*

Activity 2: Recap of concept of perimeter and area
Materials required: Geometry kit
Prerequisites: Find perimeter and area

Activity Flow

Concept of perimeter and area of simple geometrical figures has been introduced in the 4th grade. So now, as an introduction to this chapter, ask them the following questions.
1. *What is perimeter and area?*
2. *How to find the perimeter and area of Taylor frame, book and slate?*

3.2 CONCEPT INTRODUCTION ACTIVITIES

PERIMETER OF RECTANGULAR SHAPES
Activity 3: To find the perimeter of rectangular shapes
Materials required: Taylor frame, book, tactile ruler
Prerequisites: To find perimeter

Activity Flow

Ask them how they found the perimeter of Taylor frame?
The most obvious approach could be by measuring the length of all 4 sides of the Taylor frame using a tactile ruler and then adding up all the lengths will give the perimeter of a Taylor frame.
Explain to them that, instead of finding the lengths of all sides of a Taylor frame or Slate or book, which are the examples of rectangular shapes in which the opposite sides are equal.
I.e. Any rectangular object has two shorter sides which are called breadth and two longer sides which are called length. Hence it is enough if we can find the length (l) and breadth (b) then add them twice.

I.e. Perimeter of rectangle = 2 lengths $+2$ breadths $= 2(l) + 2(b) = 2(1 + b)$ units

similarly, ask them to find the perimeter of rectangular shapes from their surroundings.

PERIMETERR OF SQUARE SHAPES

Activity 4: To find the perimeter of square shapes

Materials required: Tactile ruler
Prerequisites: To find perimeter

Activity Flow

Ask them to give examples for square shape, and let them find the perimeter of those objects which are in square shape.
Ask them how they found the perimeter of the square object.
We know that adding the length of all sides of a square will give us the perimeter of the square.
We know that all four sides of a square are equal; it is enough if we measure the length of one side and then multiply by four in order to get the perimeter of the square.
I.e. Perimeter of square = 4 lenghts $(1) = 4\,l$ units

Similarly, ask them to find the perimeter of square shapes, square windows.

AREA OF A RECTANGLE

Activity 5: To find the area of a rectangle

Materials required: None
Prerequisites: To find area

Activity Flow

We know that the space occupied by a plane figure is called its area.
Earlier we found the area of rectangular and square shapes with the help of tactile graph sheet and bindis, by counting the number of unit squares in a particular shape.
But now, another easy way to find the area of rectangular shape is to multiply the length and breadth. And its unit will be square units.
Area of rectangle $=$ length $\times$ breadth $= l \times b$ square units

Example:
1. *The length of the desk is 50 cm and the breadth of the desk is 20 cm. What is its area?*
    Answer: Area of desk $= 50$ times $20 = 1000$ square centimeter

Ask them to find the area of the book, Table and geometry box.
2. *A rectangular room's length is 20 meter and its breadth is 11 meter. How many tiles of 2 m times 1 m are required to cover the floor of the room?*

Answer: Area of the rectangular room = 20 times 11 = 220 square metre
Area of single tile = 2 times 1 = 2 square metre
The required number of tiles to cover the rectangular floor is 110.

AREA OF SQUARE SHAPES
Activity 6: To find the area of square shapes
Materials required: None
Prerequisites: To find area

Activity Flow

Square has all sides of equal length.
When the two equal lengths are multiplied, we get the area of a square.
Area of square = length × length *= l times l square units.*
Example:
   1. *The length of the square floor is 6m. What is its area?*
Answer: Area of the floor = 6 times 6 = 36 square metres.
   2. *The length of a square room is 500 m. How many square tiles of 10 m in length, are*
      required to cover the floor of the room.
      Answer: Length of square room = 500 m
      Number of tiles of 10 m in length are 50.
Similarly, ask them to solve the exercises in the book.

3.3 LET'S DISCUSS: RELATE TO DAILY LIFE*
   ● Fencing off an area to plot a crop. Since fences cost money for a given area you
     would want to minimize the perimeter.
   ● Planning the construction of a house. Since you have to pour a concrete foundation,
     within the housing constraints you want to maximize the area within the constraints
     which are related to the perimeter
   ● Wood. If you buy wood for a construction project (door, window, slabs, decor items)
     but the width and length of the different width boards while in the same area have a
     different price based on the perimeter.
   ● Building a swimming pool, Race course.
   ● The entire residential world--housing--lives and dies on "area," from the square
     footage / meters of your home, which determine price, to the size of the land your
     home sits upon, which determines how much property tax you pay.
   ● Parking lots are sized depending on the area of the associated building.
   ● Building lobbies are designed to provide enough area for the people who will be
     passing through, and lingering.

● Airports are designed to provide enough area for the planes to get to the gates without bumping into each other.
● Ports and docks are designed so ships can be tied up without bumping into each other.

4. EXERCISES & REINFORCEMENT

4.1 PRACTICE EXERCISE

HOMEWORK PROBLEMS

Activity 7: Homework problems

Materials required: None

Prerequisites: To find perimeter and area of rectangular and square shapes

Activity Flow

1. *A rectangular room measures 6 m in length and 4 m in breadth. Find the perimeter of the room.*
2. *A rectangular field has a length of 150 m and breadth 120 m. Find the perimeter of the field.*
3. *Srilatha, during her morning walk, goes round a rectangular park 3 times. If the length and breadth of that park are 320 m and 210 m respectively, calculate the distance she has covered.*
4. *Rama runs 4 times around a square park of length 85 m. What is the total distance he covers?*
5. *The length of a square room is 15 m. find its perimeter.*
6. *A carpet is needed to cover the entire area of a room. If the length of the room is 16 m and breadth 5 m, find the area of the carpet required.*
7. *An auditorium measures 25 m in length and 18 m in breadth. How many slabs of stones of 3 m× 1 m are required to cover the floor of the auditorium?*
8. *The length of a square room is 6 m. What is the area of the floor of the room?*
9. *The length of a square room is 400 cm. How many square tiles of 10 cm in length, are required to cover the floor of the room.*
10. *The length of a square paper is 21 cm. What is its area?*

4.2 IMPORTANT GUIDELINES*

Exercise Reading

It is very important that the children practice their learnings as well as their reading. Hence have the children read out the newly learned concepts from their textbooks or other available resources.

Perform Textbook Activity

It is good practice to have the children perform the textbook activities. Your textbook activities might not be accessible hence go through this resource to learn how to make textbook content accessible

Provide Homework

To evaluate their understanding and to help the student revise and implement the new learnt concept ensure to provide them with homework. Students should perform one or two of the questions mentioned above or from the textbook exercises with the teacher in Class and the remaining may be given for homework. Also, ensure that the student knows their special skills linked to independently using their accessible books as it will be critical to doing homework independently

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