Vision Empower & XRCVC

Teacher Instruction KIT

Patterns

Syllabus: Karnataka State Board
Subject: Mathematics
Grade: III
Textbook Name: Mathematics Textbook cum Workbook
Chapter Number & Name: 12, Patterns

1. OVERVIEW

1.1 OBJECTIVE AND PREREQUISITES

Objective

Students will be able to:

- identify the simple symmetrical shapes and patterns.
- make patterns and designs from straight lines and other geometrical shapes.
- identify odd and even number patterns along with the additional operation.
- identify different number patterns.
- identify patterns of objects based on shape colour and size in their surroundings.4
- identify patterns in multiplication tables.

Prerequisite Concept

- Understanding of pattern

TIK_MATH_G2_CH13_Patterns

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*Kindly Note: Activities marked with * are mandatory*

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2. LEARN

2.1 KEY POINTS

- Symmetry means dividing an image into 2 halves to form two mirror images.
- Number patterns can be formed by arranging the numbers in a particular way.
- Patterns having odd numbers are called odd numbers patterns.
- Patterns having even numbers are called even number patterns.
- By adding 2 to odd numbers we get odd number patterns.

2.2 LEARN MORE

3. ENGAGE

3.1 INTEREST GENERATION ACTIVITY

PATTERN

Activity 1: Shape pattern

Materials Required: Cutouts of different shapes (square, triangle, rectangle, circle)
Prerequisites: None

Activity Flow

- *Give each child a handful of shapes to sort.*
- *Engage children in a conversation about their groupings.*
    - *How many children are sorted by shape?*
- *Next ask them to choose two or three shapes and create a simple pattern such as triangle, square, circle, triangle, square, and circle.*
- *Ask children to choose the shape that would come next.*
- *Invite everyone to extend the pattern.*
- *Now invite children to work as a group to create a pattern. Then, ask them to use the shapes to create their own pattern. Encourage children to notice how their patterns are alike and how they differ.*

Activity 2: Size pattern
Materials Required: Cutouts of different shapes (square, triangle, rectangle and circle) in two different sizes (small and big).
Prerequisites: None

Activity Flow
- *Give children the set of shapes that vary in size.*
- *Ask them to explain similarities and differences. Engage them in the same process presented in the previous activities.*
- *First, let them sort the shapes based on their size. Next, ask them to create a simple pattern.*

3.2 CONCEPT INTRODUCTION ACTIVITIES

NUMBER PATTERNS
Activity 3: Number patterns
Materials Required: None
Prerequisites: Number sense, addition, subtraction.

Activity Flow

- *Discuss the following questions with the students.*

a) 1, 2, 3, 4, 5, 6 ,?

    - *What comes next? How do you know it?*
    - *Answer:*

$1+1=2$

$2+1=3$

$3+1=4$

$4+1=5$

$5+1=6$

$6+1=7$

- *In the given sequence, all numbers follow the same rule which is adding 1 to the previous number to get the next number.*

b) $5,\ 10,\ 15,\ 20,?$

- *What comes next? What is the rule or pattern followed in the above sequence?*
- *Numbers in sequence increase by 5.*
- $5+5=10$

  $10+5=15$

  $15+5=20$

  Similarly , $20+5=25$ *. So the next number will be 25.*
- *Here, this sequence follows the rule which is that the numbers in the sequence increase by 5.*

Find the next two numbers in the following patterns.

c) 2, 4, 6, 8, __ , __

d) 3, 6, 9 , 12, 15 , __ , __

e) 10, 20, 30, 40, 50, __ , __

- *Encourage the child to find the next two numbers in the above pattern.*
- *Explain the number patterns can be formed by arranging the numbers in a particular way.*

Activity 4: Different types of number patterns

Materials Required: Taylor frame, bowls and pebbles.

Prerequisites: Number sense, addition, subtraction.

Activity Flow:

- *Divide the students into groups of 3.*
- *Give 2 bowls and 10 pebbles in a tray to each group.*
- *Ask the children to take 5 pebbles and to find the way to distribute those 5 pebbles among the 2 bowls.*
- *Ask each group, how they split the 5 pebbles.*
  - *For example, 4 in one bowl and 1 in another bowl.*

- *2 in one bowl and 3 in another bowl.*
- *Ask them to observe the pattern carefully.*

$1+4,\ 2+3,\ 3+2$ and $4+1$

- *Now ask them to take 10 pebbles and to find out the way to distribute those 10 pebbles among 2 bowls. Tell them to write it down on the Taylor frame.*
- *It can be split into: 9+1, 8+2, 7+3, ___ , ___*
- *Ask them to find the remaining pattern in the given sequence.*

Similarly, explain to them that 10 can be split in the following way using subtraction.

$10 = 20 - 10$

$10 = 30 - 20$

$10 = 40 - 30$

$10 = 50 - 40$

SYMMETRY

Activity 5: Symmetry

Materials Required: cutouts of triangles, squares, rectangles, circles with a tactile symmetrical line, leaf.

Prerequisites: None

Activity Flow:

Symmetry: Imagine that you folded the figure along the symmetry line. Then both sides would exactly meet.

- *Distribute the cutouts to the students. Let them explore the shape and the dotted line (symmetrical line on the shapes).*
- *Tell them to fold the paper cutouts along the dashed line. If both the sides exactly meet then the dashed line is called a symmetrical line.*
- *Give them a leaf, ask them to fold the leaf along the vertical line and explain the symmetry to them.*
- *The images which can be divided into identical halves are called symmetrical. The images that cannot be divided into identical halves are asymmetrical.*
- *Any line splitting a shape into two parts such that the two parts are the same is called a line of symmetry. These parts are also said to be symmetrical to each other.*

3.3 LET'S DISCUSS: RELATE TO DAILY LIFE*

Real-life examples of symmetry:

- The wings of most butterflies are identical on the left and right sides.

- Some human faces are the same on the left and right side.
- People can also have a symmetrical moustache.

4. EXERCISES & REINFORCEMENT

4.1 PRACTICE EXERCISES

Activity 6: Practice problems

Materials Required: None

Prerequisites: None

Activity Flow

1. *Complete the number pattern: (Find the next three numbers in the following sequence)*
    a. *3, 6, 9, 12, 15, ___ , ____ ,___*
    b. *40, 36, 32, 28, ___ , ____ ,___*
    c. *5, 10, 15, 20, 25, ___ , ____ ,___*
    d. *60, 54, 48, 42, ___ , ____ ,___*
    e. *100, 90, 80, 70, 60___ , ____ ,___*
2. *For each given number, write the division form of subtraction.*
    a. $25 = 50 - 25,\ 60 - 35,\ ?$
    b. $35 = 100 - 65\ ,\ 90 - 55\ ,\ ?$
3. *For each of the given numbers write the three number division form of addition.*
    a. $35 = 17 + 18, ?\ ,\ ?\ ,\ ?$
    b. $40 = 20 + 18\ ,\ ?\ ,\ ?\ ,\ ?$
    c. $45 = 25 + 20\ ,\ ?\ ,\ ?\ ,\ ?$
4. *Write the constructed logic for the following patterns as shown below.*
    a. *Model: 11, 12, 13, 14, 15, ___ , ____ ,___*
    b. *Constructed logic: Numbers increase by 1 in the pattern.*
    c. *2, 12, 22, 32, ___ , ____ ,___*
    Logic:
    d. *10, 12, 14, 16. 18, ___ , ____ ,___*
    Logic :
    e. *5, 10, 15, 20, 25, ___ , ____ ,___*
    Logic :
5. *A ___ is formed by arranging the numbers in a particular way.*

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

Reference

1. Scholastic. Retrieved from https://www.scholastic.com/teachers/lesson-plans/teaching-content/activity-plan-3-4-so-many-patterns/

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