Vision Empower & XRCVC

Teacher Instruction KIT

Patterns

Syllabus: Karnataka State Board
Subject: Mathematics
Grade: Second
Textbook Name: Mathematics-Text cum Workbook(Revised)-Second Standard
Chapter Number & Name: 13. Patterns

1. OVERVIEW

1.1 OBJECTIVE AND PREREQUISITES

OBJECTIVE

- To observe and make patterns in sequence of shapes and numbers.
- To search for patterns in different ways of splitting a number.
- To create block patterns by stamping thumb prints, leaf, prints, vegetable prints etc.
- To create patterns of regular 2D shapes by stamping.

PREREQUISITE CONCEPT

- Number sense, basic arithmetic.

  Refer to **VE_TIK_Math_G1-19-Patterns**

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*Kindly Note: Activities marked with * are mandatory*

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2. LEARN

2.1 KEY POINTS

Children love to find patterns in the world around them as they reinforce feelings of safety and predictability. Studies have shown that encouraging a child's understanding of patterns contributes to the development of various kinds of mathematical thinking, including counting, problem-solving, drawing inferences about number combinations. Patterns are also essential to music education. Additionally, some scientific studies suggest that the inherent relationship between math and music can be fostered at a very young age.

2.2 LEARN MORE
None

3. ENGAGE

3.1 INTEREST GENERATION ACTIVITY

INTRODUCTION TO THE TOPIC

Activity 1: Stand in patterns *

Materials Required: None
Prerequisites: None

Activity Flow

1. Make the kids stand in a big circle holding each other's hand.
2. Sing " Mulberry Bush" and instruct them to move in the circle.
3. Call out a shape suddenly in the middle of the song-audible enough for kids to hear and follow-and ask them to form it with their chain.
4. This activity will not only help kids learn shapes and patterns but will also promote team bonding.

Song:
Here we go round the mulberry bush
The mulberry bush, the mulberry bush

Here we go round the mulberry bush
So early in the morning.
Square, triangle, rectangle.

3.2 CONCEPT INTRODUCTION ACTIVITIES

Patterns around us

Activity 2: Patterns in our surroundings *

Materials Required: commonly available objects like textured rugs, mats, shawls, crochet table cloths, woven baskets.
Prerequisites: basic shapes.

Activity Flow
Begin the session by asking children what a pattern is?
A pattern is an orderly arrangement of design or colours or shapes. We find many patterns in our surroundings.
Teachers need to encourage students to observe the patterns in their surroundings and with a hand over hand technique help students independently understand the patterns followed on a particular object say patterns on grilled doors, windows, textured wall papers, textured Rangoli design, bathroom and kitchen tiles.
Encourage students to feel the different patterns on the commonly available objects and describe it.

Extension of Patterns

Activity 3: Extension of Patterns-making a necklace *

Materials Required: String/wool, straws cut into pieces, beads with large holes/snack food with holes(like fryums)/hollow blocks.
Prerequisites: basic shapes.

Activity Flow
Teachers can first demonstrate the activity to the students by saying that today we are going to design our own necklaces with cut-straws and beads. Here I have a drawstring that is knotted on one side and then by sliding the objects given let us make a beautiful necklace which will have a pattern. Encourage children to make their own patterns using the drawstring and objects. Help children identify the pattern they make.

Activity 4: Extension of Patterns-pebble game pattern *

Refer to the game in the link: [Play Plan : Patterns : Vision Empower (visionempowertrust.in)]

Materials Required: 2-3 different varieties of pebbles or block or any items with different texture (they should not be very small or round), 2-3 bowls and 1 flat tray

Prerequisites: basic shapes.

Activity Flow
The objective of this game is to form the pattern as instructed within a given time. Then the number of pebbles are counted and dropped back to their respective bowls.

Have two bowls with two different varieties of pebbles placed in the right and left hand side of the child and name them as bowl A and bowl B. Let children explore and understand the difference between the two varieties of pebbles. The teacher can start with easy patterns like AB-AB-AB and move on to AAB, ABB and so on. A timer can be set and a start and stop signal can be given. Ask children to form the pattern on the flat tray/plate kept in front of them. Encourage children to count the total number of pebbles used to form the pattern and also encourage them to form their own patterns.

Patterns

Activity 5: Shapes and Patterns *

*Materials Required:*blocks, matchsticks/wiki sticks.

Prerequisites: NA

Activity Flow
Teacher can make a few patterns using a circular and triangular block on the table/tray laid in front of the student and ask them what comes next? Like for example circle, triangle, circle, triangle, what comes next. Encourage students to pick the right shape and place what comes next.
Using two match sticks form a hill shaped structure and ask the student what comes next?
Encourage children to observe the same shape repeating in a pattern. Repetition of the same shapes at regular intervals is called a pattern.
In the same way, ask them to find the missing shape in the pattern. For example: rectangle, rectangle, triangle, triangle, ?, rectangle, triangle, ?. Teacher needs to arrange the blocks and encourage children to find the missing shape to complete the pattern. In a similar way patterns can be made using matchsticks/wiki sticks and ask children to continue the pattern or find the missing pattern.

Activity 6: Number patterns *

*Materials Required:*None

Prerequisites: Basic shapes

Activity Flow

Teachers can ask children if they can find a pattern in the series of numbers 1,2,3,4,5, 6, 7, 8, 9, 10 or 2,4,6,8,10, 12, 14, 16, 18, 20. Inform children that in every group of numbers we can notice a definite rule that is followed.
In 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, starting from 1, the next number is obtained by adding 1. In 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, starting from 2, the next number is obtained by adding 2. This method of writing the numbers in an order is called number pattern.
Give more examples to work out. Give them the number series and the student should tell out the rule and the number that comes next or the missing numbers in the series.

1. 15,20,25,30,35,?.The Rule-?
2. 15,13,11,9,?.The Rule-?
3. 22, 32, ? ,52,? . The Rule-?

Create patterns using cut vegetables

Activity 7: Patterns using cut vegetables*

Materials Required: Cut vegetable slices of Onion, Ridge gourd, Carrot, Pointer gourd, Bitter gourd.
Prerequisites: Shapes, counting

Activity Flow

The concept that 'Patterns are created when one or more number, shape or colour repeats themselves in the same order' can be explained orally and with sufficient patterning examples.

Keep the cut pieces of vegetables in separate bowls. The teacher can demonstrate to the class; how different patterns can be created using cut vegetables. For example, one piece of Onion, below it three pieces of ridge gourd in a row, followed by 5 pieces of carrot followed by 7 pieces of bitter gourd. Ask students if they can find any number and shape patterns. Ask them to see the shapes in the next row. Guide them to identify the pattern in each row.

Encourage students to make their own patterns using the cut vegetables. The vegetable printing can be replaced with making imprints on playdough. Similarly encourage children to make patterns using leaves, thumbprints and handprints.

Activity 8: Patterns with 2D shapes*

Materials Required: Tangrams
Prerequisites: Shapes, counting

Activity Flow
https://docs.google.com/document/d/1cxrQ-3h0anyt7sh8z-3u_bLpvY1P3ViH/edit
Refer to the above play plans to play the game with Tangrams

With the help of tangrams demonstrate how two equal triangles can be joined to form a square and then show them how the same triangles can be arranged to form a rectangle. Encourage children to count the number of triangles used to form a rectangle. Demonstrate how using the same triangles different patterns can be made.

3.3 LET'S DISCUSS: RELATE TO DAILY LIFE

Patterns are easy to find in our daily lives and we can use those that we come across as teaching tool at any time. Following are few ideas:

1. At the park, lay out a rock, a flower, and a twig and then ask children to continue the pattern.
2. In the kitchen, teach children to set the table with playing utensils in the correct order.

4. EXERCISES & REINFORCEMENT

4.1 REINFORCEMENT

Activity 9: Making patterns with fruits *

Materials Required: Fruits-Banana, Apples, Oranges, Guava, plates.
Prerequisites: Counting, number sense, shapes.

Activity Flow

Let children first sort out the different fruits and place them in different plates. Encourage them to make their own patterns using fruits. Note: Children to wash their hands before handling the fruits so that they can then eat the fruit at the end of the activity.

After they are finished making a pattern, let each child describe the pattern they have made and also encourage them to discuss among themselves as to how many fruits they have used to make a pattern, how many of each kind were used in creating the pattern and so on.

Activity 10: Complete the number pattern *

Materials Required: Braille number cards 1-100.
Prerequisites: Counting, number sense, Basic arithmetic

Activity Flow

Inform students that the first pattern which comprises three number cards would be a complete pattern and based on the complete pattern they need to complete the next two patterns.

Teaching Tips:

If there are any additional teaching tips then utilize this section to mention them.

References

https://www.verywellfamily.com/ways-to-teach-patterns-2086667
https://www.themeasuredmom.com/simple-ways-teach-patterns-preschoolers/
https://www.jumpstart.com/common/stand-in-patterns-view

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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