# Complex Pattern
# Lesson Plan: Class 04 / PS / 08

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| **Overall goal of the lesson** | Children learn to observe, recognize and create complex patterns. |
| **Prior knowledge required** | Knowledge of simple patterns. |

**MODULE 1:** **Module time:** 35 minutes (2 sessions)

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| **Goal:** | To practice pattern observation building on previous session, and study some more types of patterns. |
| **Description:** | Children will learn to look for patterns in a group of things or in sequences or in visual designs. |
| **Material required:** | **Physical:**<br>1. One copy of the worksheet per child.<br>2. Writing material to solve the worksheet: pencil and eraser.<br>3.<br>Optional: Cut outs of shapes used to create patterns – 4 octagons<br><br>**Electronic:**<br>PPT Presentation |
| **Procedure Summary:** | 1. Run through the presentation.<br>2. Do all the activities that are in the presentation.<br>3. Distribute the worksheets.<br>4. Let children try to solve them in class and help them with the answers. |
| **Procedure Details:** | **1. Slide 2 & 3:**<br>Ask the children to look outside and examine a leaf of some tree or their clothes or your sari. Ask them to describe what they see. Ask them what happens to the temperature in December, March and July? When do they see raincoats in shops and when do they see sweaters? And so on. You can take your own examples or use the ones on the slide.<br>Apple Pomegranate Cherry Papaya Beetroot:<br>They all have seeds except beetroot. They all grow above the ground except beetroot. They are all fruits except for beetroot. They're all a shade of red except papaya which is yellow.<br>2. **Slide 4:**<br>Recap of pattern definition – as much as possible point out things within the classroom to explain.<br>3. **Slide 5:**<br>If you can bring a rubber seal to the class you can explain the idea of a template. You can explain the points using actual examples: say, there are only 3 kgs of apples for sale. There are a lot of people who are very eager to buy apples. If I increase the price of 1 kg by Rs.10, will I still be able to sell?<br>OR, I have 100 kgs of apples but there are very few customers wanting apples. If I increase the price of 1 kg by Rs.10 will I be able to sell? In this way you can explain how demand-supply impacts price.<br>Before every new school year, what all does your mother buy for you? (School bag, lunch box, stationery, black shoes, etc.) So when should shop keepers stock |

"back-to-school" kits?
And so on…

4. **Slide 6:**
   What we plan to cover in this lesson
5. **Slide 7: A few examples for practice:**
   The first one is a black square followed by a white square. This is the motif and it is repeated horizontally.
   The next example - each item rotates the previous one by 45 degrees to the right. So answer is -

**Odd man out:**

1. Cobra (all others are marine). 2. Everest (all others are rivers).
3. Watermelon (all others are grains). 4. Wood (all others a clothing material). 5. ½ (all others are whole numbers). 6. Pretty (all others are action words or verbs). 7. Kanyakumari (all others are capital cities).
8. Prawn (all others are names of colours).

6. **Slide 8:**
   The names of some common print designs.
7. **Slide 9:**
   Just a fun activity for them to try. They can also try with a few triangles or circles. If you can do this with actual chart paper cutouts it will be clearer!

8. **Slide 10:**
   Continuation of the previous type of exercise but now the focus is on the empty space enclosed by solid shapes.
9. **Slide 11-13:** Rhymes
   Revise the concept of rhyming words by explaining that these are words which 'sound' alike, they are not necessarily spelled alike. E.g., boy and toy, sack and back, etc. Also explain that bear and care rhyme but bear and dear don't.
   Read each poem out loud. Try to read it with emphasis on the rhyming word so they can hear the rhyme sounds clearly and can match rhyming lines.
   Explain that when two lines end in rhyming words we denote that by the same letter. Thus, we write a letter for each line and creating a pattern like AABB or ABAB.
10. **Slide 14-17:** Symmetry
    Here, it would be best if you can bring an example of a symmetric pattern on a paper and then fold it half so that they can see for themselves what is meant by symmetry. Similarly show that it is impossible to do that with an asymmetric design.
    Now explain that there is a mirror in between the sets of pegs and one side is a reflection of the other. Demonstrate to the class what happens in a reflection – e.g., you raise your right hand but the person in the mirror raises her left hand.
11. **Slide 18-23:**
    Exercises in symmetric patterns – these are quite easy and they should be able to do them.
12. **Slide 24:**
    Recap symmetry and asymmetry.

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| | Explain that for numbers and strings we can't really look in a mirror because the image of each letter / number also gets reversed in the mirror. But the 'order' is a mirror image.<br>13. Recap and on to the worksheet |
| **Assessment:** | Answer questions on the activity sheet |

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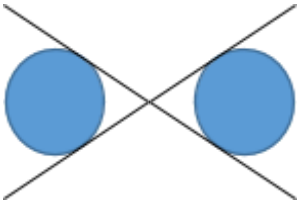
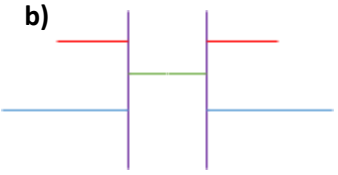
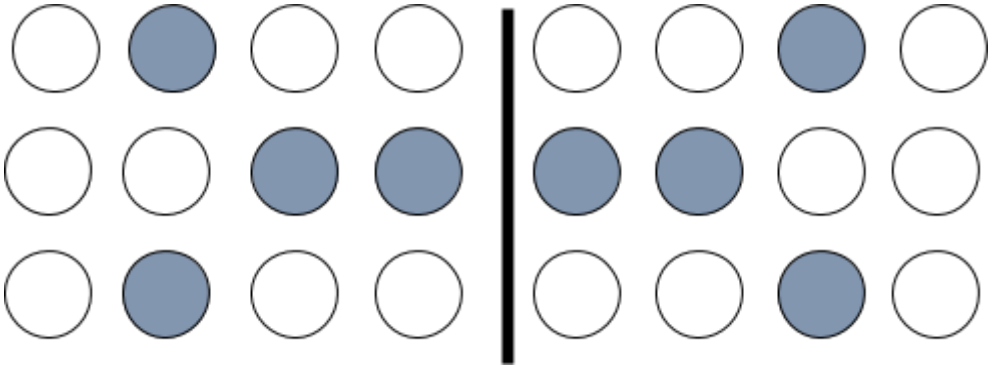
| **Answers to questions** | **1. What is the missing item in the list?**<br>a. 3, 6, 9, **12**, 15, 18<br>b. aab, bbc, ccd, dde, **eef**, ffg<br>c. 1, 2, 2, 4, 8, 32, **256** (each number is the product of the two preceding numbers)<br>d. 5, 7, 9, **11**, 13, 15<br>e. 8, **16**, 24, 32, 40<br><br>**2. Identify the rhyming pattern in the following:**<br>a. ABBA b. AABB c. ABAB<br><br>**3. Odd man out**<br>a. Hydrogen (all others are forms of water)<br>b. Coal (all others are colour names)<br>c. Anita (all others are boys)<br>d. 12 (all others are odd)<br>e. Pumpkin (all others are fruits)<br>f. Paper (all others are material for clothing)<br><br>**4. a)**  **b)**  <br>**c)**  <br><br>**5. Symmetric sequences**<br>a. Fill in the right side to make a symmetric sequence<br>Hello \| olleH<br>b. Fill in the blanks to make a symmetric sequence<br>opopopq \| qpopopo<br>c. Fill in the blanks to make a symmetric sequence |

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