

Think Like a Scientist

All About Patterns

My Homeschool Classroom Concept: Introduction to Patterns

- A *pattern* is a design that follows a rule or plan.
- Some *patterns* repeat in a predictable way. That means that you can guess what comes next.
- *Patterns* can be found in nature, in numbers, and in words.
- A repeating *pattern* can be extended.

Key Vocabulary

- pattern
- predict

Lesson Options: Select lesson elements to create a single-day or multi-day lesson.

Lesson Elements

Digital Playlist: Generally children will complete the Digital Playlist first, then follow up with some or all of the activities described below. As you select and do those activities with your child you may wish to reassign some or all of the digital activities for additional practice.

Explore Activity: This follow-up is designed to be used closely with the Digital Playlist to help your child understand the topic.

Dig Deeper Activity: This offline activity provides an additional learning experience with the same topic.

Extend Activity: This offline activity extends the child's understanding and application of the same topic.

Explore Activity

Set Up

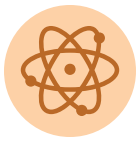
1. Gather the materials in the list.

Procedure

1. Watch *Patterns 1* with your child.
2. Show your child the objects with *patterns* that you gathered from around the house. Say: *All of these objects have patterns.*
3. Model how to select an object and draw the *pattern* on paper.
 - a. Ask: *What is one pattern that you see?*
Sample answer: "The shirt has a *pattern* of blue and white stripes."
 - b. Say: *Let's draw it on the paper.* Help your child copy the *pattern* on the paper.

Materials

- Household objects that have easy-to-see *patterns*, such as striped or polka-dotted clothing, jewelry with repeating colors or shapes, and decorative pillows
- Blank white paper
- Crayons or markers



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4. Model how to continue the *pattern* and describe it with words.
 - a. Say: *Patterns repeat in a way that you can guess what's coming next. Without looking at the object can you continue this pattern?* Help your child extend the *pattern* they drew.
 - b. Describe what your child did. For example, say: *You saw that the shirt has a pattern of blue, white, blue, white. You drew blue and white lines in the same order as the shirt. You knew what came next! More blue and white lines.*
5. Have your child draw and extend the *patterns* of the other household objects. Use one paper per object.
6. Create a *pattern* gallery. Display the objects with the drawings next to them.
7. Have your child walk the gallery and look at all the *patterns*. As you walk, describe the *patterns* they drew.
8. Discuss what a *pattern* is (*a design that follows a plan*) and explain that there are different types of *patterns*.
 - a. *color patterns*
 - b. *shape patterns*
 - c. *patterns* in words, such as rhymes
 - d. *patterns* in nature, such as stripes or spots
 - e. *patterns* in music

Dig Deeper Activity

Set Up

1. Gather the materials in the list.
2. If using blocks:
 - collect twenty or more blocks with the same shape and different colors (e.g., all rectangles in different colors).
 - collect twenty or more blocks with the same color and different shapes (e.g., all red in different shapes).
3. If using construction paper:
 - cut ten squares of three different colors (e.g., ten red squares, ten blue squares, ten purple squares).
 - cut ten circles, ten triangles, and ten rectangles of the same color.

Materials

- Paper
- Blocks of different shapes and colors, or pieces of construction paper cut into different shapes and colors

Procedure

1. Watch *Patterns 1* with your child.



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2. Remind your child that a *pattern* is a design that follows a plan and that *patterns* are everywhere. There can be different kinds of *patterns*, such as color *patterns*, shape *patterns*, *patterns* in nature, and *patterns* in music.
3. Demonstrate how to create a *pattern* using.
 - a. Sample color *patterns* with blocks:
 - i. yellow, red, yellow, red, yellow red
 - ii. purple, purple, red, purple, purple, red
 - iii. green, blue, blue, orange, green, blue, blue, orange
 - b. Sample shape *patterns* with blocks:
 - iii. square, circle, square, circle
 - iv. circle, triangle, square, circle, triangle, square
 - v. star, heart, heart, star, heart, heart
4. Have your child identify each *pattern*. Have your child *predict* what will come next and extend the *pattern* by adding more.
5. Have your child create their own *pattern* using blocks.
6. Have your child identify the *pattern* they created and tell you what will come next.
7. Optionally, have your child follow other types of *patterns*, such as actions. Have your child repeat a simple *pattern* that you act out.
 - a. Step forward, step back, step forward, step back
 - b. Hop, hop, spin, hop, hop, spin
 - c. Spin, step left, spin, step right

Extend Activity

Set Up

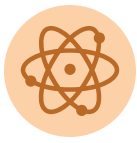
1. Gather the materials from the list.

Procedure

1. Watch *Patterns 1* with your child.
2. Remind your child that a *pattern* is a design that follows a plan and that *patterns* are everywhere. There can be different kinds of *patterns*, such as color *patterns*, shape *patterns*, *patterns* in nature, and *patterns* in music.

Materials

- Nature picture books (the pictures should include animals or plants with *patterns*)
- Paper
- Markers or crayons



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3. Tell your child that today you are going to talk about *patterns* in nature. Look through the nature picture books with your child and have them identify any *patterns* that they see. Help your child identify patterns if necessary.
 - a. Ask: *What patterns do you see?*
Sample answer: “I see black and white stripes on a zebra.”
 - b. Ask: *Can you predict what would come next in the pattern?*
Sample answer: “black stripe, white stripe, black stripe, white stripe”
4. Have your child create their own nature-*pattern*.
 - a. Say: *Now you are going to create your own pattern. You are going to pick an animal and design a new pattern for its fur, feathers, shell, or scales.*
 - b. Have your child draw the outline of an animal of their choice or help them by outlining the animal for them.
 - c. Say: *Remember, a pattern is a design that repeats.*
 - d. When your child is finished, ask: *What is your pattern?*
5. Optional: If weather and time allow, take your child outside to identify and *predict patterns* in nature.

MODIFICATIONS

Beginning Learner	Advanced Learner
Your child will benefit from focusing on simple AB types of <i>patterns</i> for which there are only two colors or shapes that repeat. Incrementally increase <i>pattern</i> expectations by adding more steps to the <i>pattern</i> as your child demonstrates understanding.	Challenge your child to identify and create more advanced <i>patterns</i> with multiple shapes and colors. They can even challenge a friend or family member to repeat or extend the <i>patterns</i> that they create.

Signs of Success and Needs

One sign that your child understands *patterns* is if they can extend *patterns*. They should be able to *predict* what comes next.

Some children may have difficulty identifying more advanced *patterns*. If your child struggles with this, you can have your child use objects that can be moved around to create *patterns*, such as colored *pattern* blocks, colored popsicle sticks, or different shapes of pasta.

Some children may struggle to understand how *patterns* in nature repeat themselves, such as leaf *patterns* or scales. Explicitly state that sometimes *patterns* in nature are harder to see right away. They rarely look exactly the same, but the design follows the same rules. Go on a nature walk and collect multiple leaves from the same tree. Study the leaves to see how the design is similar despite variation from leaf to leaf.

Our activities are designed to be safe with adult supervision. Please follow directions carefully.