

CORE SKILL: THINK – MATH

Patterning



What You Need to Know

Classification refers to sorting or grouping based on common traits or characteristics. Young children enjoy sorting and classifying items. You may see them grouping together a particular type of toy, or arranging objects by color or shape. With practice, children can begin to classify based on more complex traits. For example, moving from sorting animals vs. not animals to sorting land animals vs. water animals. Patterns rely on the skills of classification and sorting in that children have to understand a variety of traits or characteristics in order to create patterns. A pattern is a predictable sequence that results from applying a particular rule. Young children are often able to identify patterns focused on a number of different characteristics, including visual (e.g., repeating sequence of colors, shapes, or sizes of objects), auditory (e.g., patterns of hand clapping or drum playing), and movement (e.g., hop, hop, pause, hop, hop, pause). There are also different types of patterns. For example, there are repeating patterns (e.g., yellow, yellow, orange, yellow, yellow, orange) and increasing/decreasing patterns (e.g., AB, ABB, ABBB, or 10, 8, 6, 4). As they begin to learn about simple patterns, children will learn that there is always an element that should come “next” that can be figured out through the pattern, and that patterns can go on indefinitely.

Things to Consider

Classification and sorting help children make sense of their world and attend to the various traits or characteristics of objects. Keep in mind that classifying and sorting, along with all other math skills, are best learned when they are part of a child’s everyday life. Children need to see math being used in the real world. For example, when they clean up toys or help put away laundry at home, they are sorting. Note that classifying and patterning are both much more challenging when there are two overlapping rules, such as colors and shapes (e.g., red square, yellow triangle, red square, yellow triangle).

Development of Patterning

Between 36 and 48 months, children may:	Between 48 and 60 months, children may:
Classify by putting like items together and naming the group/classification.	Begin to classify based on more complex traits, or by more than one trait at a time.
Recognize a simple pattern.	Create, identify, extend, and duplicate simple repeating patterns of different forms (e.g., object patterns, number patterns, sound patterns, or movement patterns).
With adult assistance, fill in the missing element of a pattern, such as cat, dog, ____, dog.	Independently fill in missing elements of simple patterns.
Duplicate and/or extend patterns.	Begin to extend more complex patterns, such as ABBABB by adding on several ABB units to the end of the pattern.

Setting the Stage

Create opportunities for children to sort and classify objects and call attention to classification as it happens spontaneously:

- ◆ **Routines, Transitions, and Meals:** challenge children to classify the items in their lunchboxes, separating foods by color or category (e.g., fruit, cracker, etc.). Children can also classify as they clean up, or even sort themselves as they determine where they would like to play in the classroom (e.g., “If you want to play in housekeeping, stand here. If you want to play in blocks, stand here.”).
- ◆ **Choice and Outdoor Time:** while outside, encourage children to classify types of “nature objects” by making a pile of sticks, a pile of rocks, and a pile of leaves.

Create patterns and attend to patterns during play, meals, and routines:

- ◆ **Routines, Transitions, and Meals:** during meals, encourage children to sit in a boy, girl, boy, girl pattern, calling attention to the pattern throughout the meal, or challenge them to create patterns with their snacks. When students line up to transition, use things such as the color of their shirts to create a pattern.
- ◆ **Choice and Outdoor Time:** children can create patterns out of blocks, counters, and any number of other classroom materials. While outside, encourage children to collect and create or repeat patterns using “nature objects.”



Intentional Teaching Practices That Build Patterning Skills

OBSERVE	<p>Observe</p> <p>Observe children as they play to see whether any are beginning to naturally sort or classify toys or objects in the learning environment based on their characteristics or uses (e.g., sorting dishes vs. pretend food in the kitchen during pretend play). Related to patterning, observe whether children are able to follow clapping or stomping patterns during music and movement, or whether they begin to independently create patterns with colors in their artwork.</p>
FOCUS	<p>Label Patterns and Object Characteristics</p> <p>Call attention to the characteristics of objects in order to support children’s classification efforts.</p> <ul style="list-style-type: none"> “I see blocks of many different shapes here. We have blocks like this that are rectangles, and here is a block that is a triangle – it has three sides. We also have square blocks, where each side is the same length.” <p>Call attention to naturally occurring patterns or patterns that you create, modeling for children as you duplicate and extend patterns.</p> <ul style="list-style-type: none"> “I see that these cubes are connected in a pattern. Blue cube, blue cube, red cube, red cube, blue cube, blue cube, red cube, red cube. The colors repeat in that order over and over. So, I know that a blue cube will come next.”
SCAFFOLD I	<p>Prompt Children to Identify, Repeat, or Extend Patterns</p> <p>Create patterns of all types, encouraging children to figure out the sequence, create a matching pattern, or repeat the pattern you have created. For additional support, start with simple patterns and with limited distractions within the environment.</p> <ul style="list-style-type: none"> “I’m making a necklace with these beads. Do you notice that I’m making a pattern with my beads? What colors are the beads? What pattern am I making on my necklace?” “Wow, look at the numbers on the front of our school. Our school’s address is 3232. That looks like a pattern! If we kept that number pattern going, which number would come next?” “This group of our friends decided to sit at their table in a boy, girl, boy, girl pattern. Which other groups would like to sit in a pattern like this? How can you make the same pattern at your table?”
SCAFFOLD II	<p>Prompt Children to Sort (or Compare) Objects by Characteristics</p> <p>Support children as they classify by sorting and comparing.</p> <ul style="list-style-type: none"> “Let’s sort the toys into the right bins to put them away. What different types of toys do we need to put away? Can you start making piles of the different types of toys?” <p>Challenge children to change the characteristic by which they are sorting.</p> <ul style="list-style-type: none"> “First, we sorted all of the paintbrushes based on the color of their handles, now let’s re-sort them and think about size. Can you make a pile of long paintbrushes and another pile of short paintbrushes?” <p>Children who have difficulty with cognitive flexibility may also find classification/sorting challenging. Support children who may be rigid in their classification of objects by sorting the <i>same</i> objects in <i>different</i> ways. For example, you can sort a stuffed teddy bear and a stuffed elephant into the ‘stuffed animals’ group, or separately into the ‘forest animals’ group and ‘zoo animals’ group.</p>
KEEP IT GOING	<p>Consider what you learned from observing children on Monday as well as their reaction to your Focus and Scaffolds. Find ways to build the activities from Setting the Stage into your regular routines.</p>