HOW TO PLAY: PATTERN BLOCK PUZZLES AND WHAT IS MY PATTERN?

Materials
- Pattern Blocks (set of 250 preferred)
- Pattern Block Animal Puzzles (9 designs, 18 pages—cat, dog, caterpillar, snake, giraffe, turtle, fish, dragonfly, rabbit)
- Pattern Block Simple Geometric Puzzles (6 pages)
- Pattern Block Puzzles: “How many ways can you make a….triangle, hexagon, rhombus, parallelogram, and star” (5 pages)
- Index cards or felt or something to cover part of your pattern

Suggested Plan for Guided Math Groups, please modify for your class.

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Feel free to vary the order of the games, repeat games, or use them more often.

Free Play (focus on getting familiar with materials)

1. Allow children to explore freely with the materials and notice what they do.
   - Do they make designs?
   - Do they pile them on top of each other?
   - Do they use the shape names or the color names to identify shapes?

2. Introduce vocabulary:
   - Triangle, square, rhombus, trapezoid, hexagon
   - Sides (length, how many?)
   - Angles/corners (bigger, smaller)

About the learning in free play. Allowing the children to explore the materials gives you a chance to see what students know and are ready to learn. It also gives you a chance to introduce vocabulary—shape names, sides, angles—in a play context. As you introduce the language notice what attributes they are focusing on—color, size, number of sides, length of sides, size of angles, etc. See if they identify shapes correctly even if the orientation of the shape is different (e.g. an ‘upside down’ triangle or a square on its corner).
### Pattern Block Puzzle Templates: Geometric Puzzles

1. Children choose a geometric puzzle and fill in the outline with the pattern blocks.
2. Watch out—a few of these puzzles look 3D and can trick kids but they are fun to figure out.

**About the learning in this game.** The simple geometric puzzles are a good place to begin to see if children are manipulating the pattern blocks as individual shapes or ready to combine them to make more complex pictures. Notice whether they fit the blocks into the boundaries or lay blocks that go over the lines. A few of these puzzles look three-dimensional and can be particularly hard to figure out. If you hold your hands over the other shapes so they are just looking at the outline of one shape at a time it can be easier for them to see.

### Pattern Block Puzzle Templates: Animal Puzzles

1. Children choose an animal puzzle and fill in the outline with the pattern blocks.
2. The outlines with colored shapes are the easiest because children can match color and shape. Then the puzzles with the shapes all outlined, then the puzzles with just the outside line. Challenge children to fill in the blank outline in different ways—see how many ways they can come up with.

**About the learning.** The animal puzzle templates are designed with scaffolding so children can begin by matching the pattern blocks by color and move on to the other outlines when they are ready. As children play, notice if they are able to fit the blocks into the puzzle or if they don’t pay attention to whether or not they fit exactly. Notice if they know ahead of time which block to get or if they use trial and error to find ones that fit. Notice if they rotate and flip the shapes to make them fit.

### *Pattern Block Puzzle Templates: How Many Ways Can You Make A..?*

2. At first children may fill in all the shapes the same way. Encourage them to explore different combinations of pattern blocks they can use to complete the designs. See who can find the most.

**About the learning in this game.** Children may begin by ‘solving’ the puzzle the same way each time. As they get more comfortable, challenge them to see how many different combinations of blocks they can use to fill in the designs. These puzzles are designed to give children practice in thinking about how shapes can be put together and taken apart and are particularly fun for children who are ready for a challenge.
What Is My Pattern?

1. Lay out 2 different shapes (e.g., circle and square) in an ABABAB pattern.

2. Ask the children what they notice about what you did. Is it a pattern? How do you know? What is a pattern? If you have already read the pattern book they may recognize this as a pattern. They will likely have lots of other comments about the line of shapes that are not mathematical, that is normal.

3. Ask the children to help you figure out what comes next. For example: circle, square, circle, square, circle, square... What do you think comes next? (circle) Why does that shape come next? What happens if we put a square next instead of a circle? (It breaks the pattern.)

4. Have children make their own repeating patterns and recognize the repeating unit. Challenge them to do different types of pattern.
   - AB
   - ABB
   - AAB
   - ABC

5. You can also build growing patterns in which one unit grows in each repetition of the pattern such as: ABABBABBBABBBBBA... Or growing patterns where each successive unit is larger or smaller using blocks or other materials in your classroom.

6. Challenge: You (or a child) create a pattern and hide some of the shapes with a paper, cloth, or your hand—have children guess which shapes you are hiding by the pattern. Or take out one or two shapes from the middle of the pattern and have them figure out what belongs. Children could also work in pairs; one child could build a pattern and the other child could guess which shape comes next.

About the learning in this game. Mathematics is the study of pattern—of patterns and structure in numbers and patterns and structure in geometry. Pattern is everywhere in our world—the routines that organize our day, stories, songs, rhythms, clothes, in numbers, and in nature. Talk about these patterns with children and help bring their attention to noticing them. As you and the children build patterns with the pattern blocks ask them: What comes next? How do you know? Identifying, copying, creating, and extending patterns are important mathematical skill.

-“The Shape of It”
-large dice. Roll the big die and find the matching card.
- Took out dominoes, replicate dominoes pic on the card.
- Which one doesn’t belong—give kids fly swatters to hit the one that didn’t belong.
- Treasure Hunt Matching game: Draw the dot pattern on the blocks in their block area and then have kids find the matching dot pattern
- Roll the die and do that number of jumping jacks. Add the 5 and 2 and do 7 jumping jacks.
- Bingo Douber – at art table.