Early Family Math

GEOMETRY – LEVEL 1: PATTERNS

Materials:

7 containers with tiles, or any objects such as Lego Bricks, in 7 different shapes and colors.

Instructions:

Lay a pattern on the table and ask your child to continue the pattern.

Repeat this with different patterns, and once your child gets the idea, make the patterns more difficult (say square, circle, circle, or red, green, red, blue). Then let your child come up with a pattern and you continue the pattern. Make a mistake here and there, your child will love correcting you!

Questions and discussion points:

- What color is this tile? What shape is this tile?
- How many corners does this shape have?
- Do you notice the pattern? If your child doesn't, point at the tiles while you describe the color or shape. For example: blue, red, blue, red (or square, triangle, square, triangle).
- How long is the pattern? Count how many tiles before the pattern repeats.

Thoughts to take home:

It is exciting to identify patterns in real life. Your clothing might have a pattern, buildings often have patterns. There are so many activities you can do with patterns. Make a patterned necklace with fruit loops or beads, create patterns with goldfish and raisins, make patterns with Legos or blocks.

Clapping patterns are always fun:

- clap – – clap – –
- clap – – clap-clap
- clap-clap – – clap

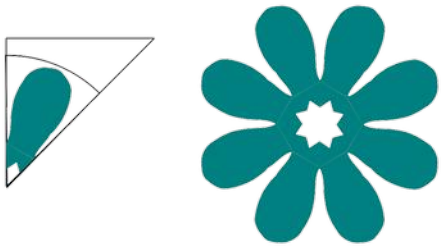
GEOMETRY – LEVEL 2: CUTTING SYMMETRIC SHAPES

Materials:

Colored (or white) paper

Child-safe scissors

Pencils with erasers



Instructions:

Choose something symmetrical that your child can draw easily (for example a butterfly, ladybug, star, flower, tree, heart). Fold a piece of paper in half and draw half of the drawing along the fold. Then, cut along the lines and unfold the paper. You now have a complete drawing.

After your child understands how this works, play with what happens when you make 2 or 3 folds. This makes it easy to create designs such as flowers, snowflakes, stars, and abstract designs. You might have to help your child, or make your own so your child starts getting the idea of how this works.

Questions and discussion points:

- What do you notice about the two sides (they are the same)?
- What do you think your design will look like if we fold a piece of paper twice?
- What if we fold a piece of paper 3 times?
- Our design fell apart into two pieces, I wonder why that happened. Which way do we need to cut it so that that won't happen again?

Thoughts to take home:

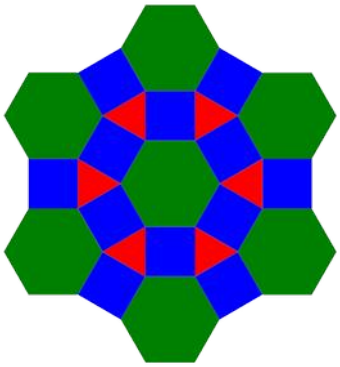
Once your child understands how folding and cutting works, experiment with other folds: fold the paper like an accordion, and make cuts. How does this design look different from the other designs you made?

GEOMETRY – LEVEL 3: SHAPES WITH BEAUTIFUL SYMMETRY

Materials:

7 containers with tiles in 7 different shapes and colors

Symmetry sheets 1, 2 and 3



Instructions:

Put one shape on the table (in the example above it is the green hexagon in the middle) and have your child add shapes to make a design. The sides of the shapes have to fit. You can also make a design alongside your child. Your child might be perfectly happy making pretty designs this way, they are learning symmetry naturally! If they are looking for the next challenge, use one of the Symmetry Sheets. The rule for these Symmetry Sheets is that the design has to be the same on each side of the line(s).

Questions and discussion points:

- How are our designs different/the same? Does your design look the same on both sides?
- When your design looks the same after you flip or turn it, your design is symmetrical!
- Do you see symmetry around you?

Thoughts to take home:

Challenge your child to find symmetry at home, on a walk, during a car ride, etc. Butterflies, ladybugs, faces, bodies, flowers, leaves, stars, tires, ferris wheels all have symmetry.