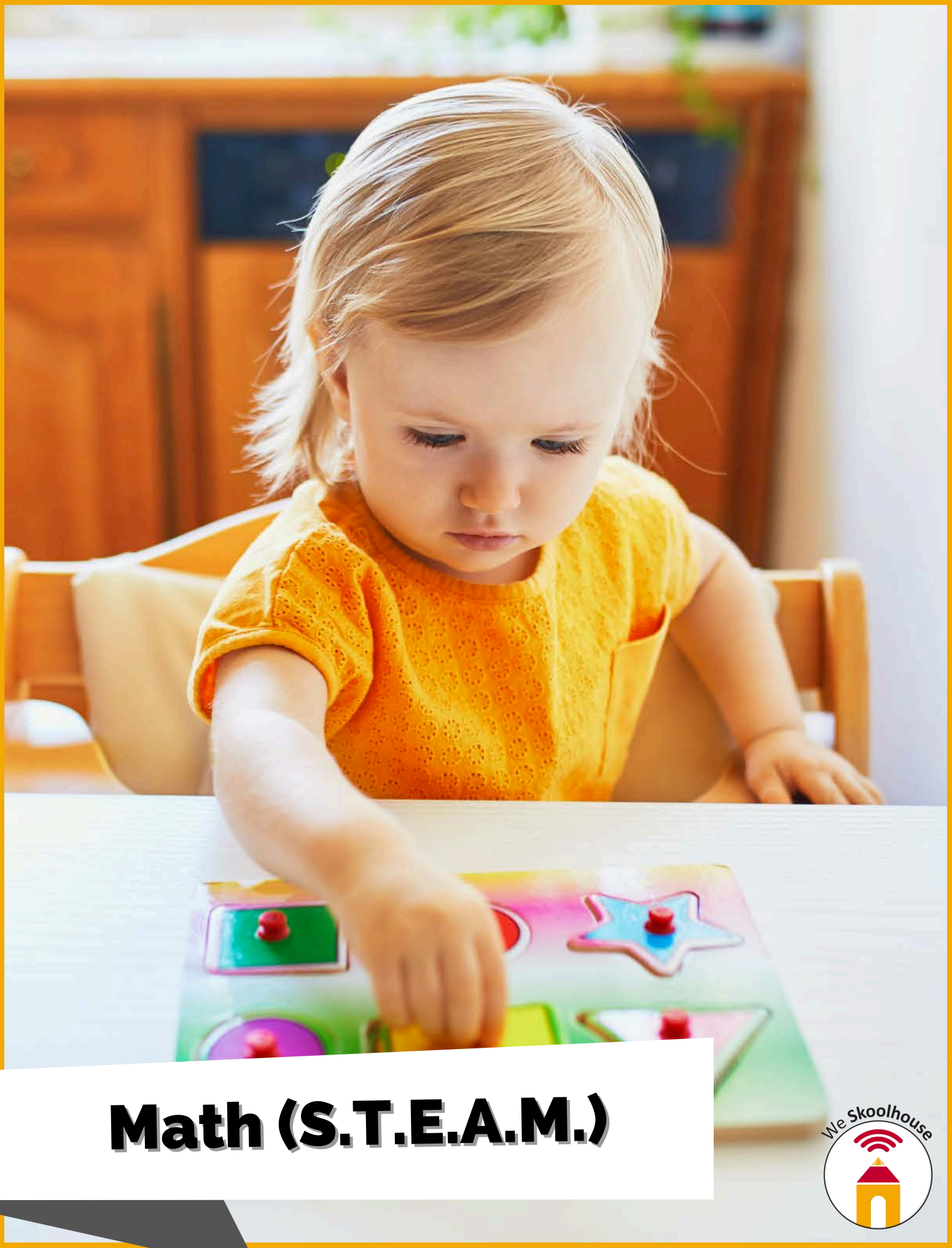


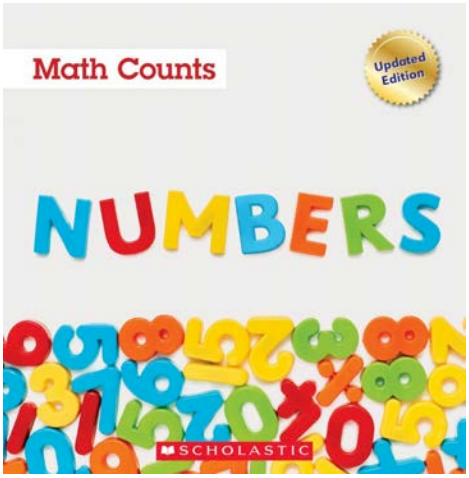
Math (S.T.E.A.M.)

We Skoolhouse

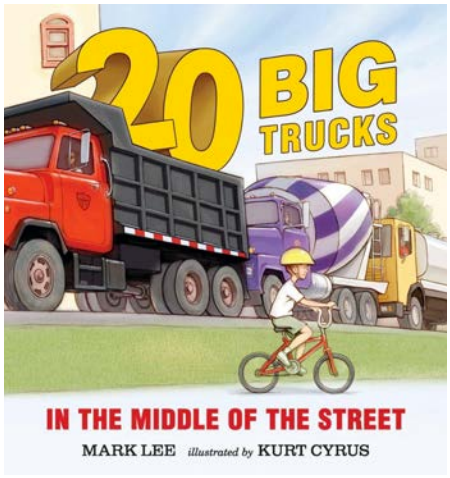
Math

Engaging with mathematics helps children develop logical thinking and problem-solving skills essential for success in various academic and real-world contexts. By exploring patterns, shapes, and numbers, children build a solid foundation for understanding complex mathematical concepts, enhancing their analytical abilities and preparing them for future academic and professional pursuits.

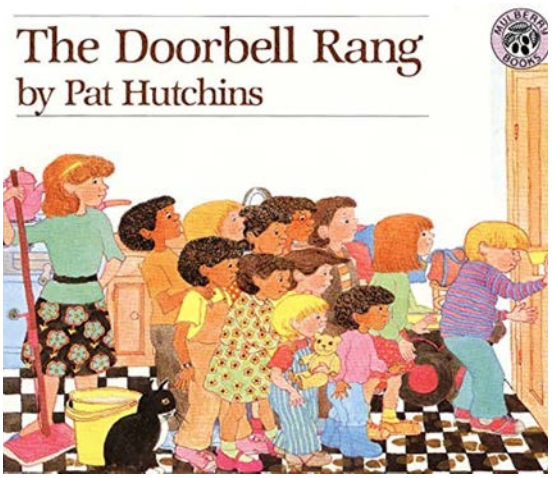
Books We Love That Support Math Concepts:



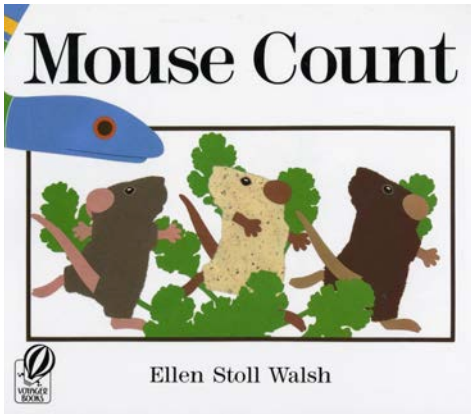
Numbers,
by Henry Pluckrose



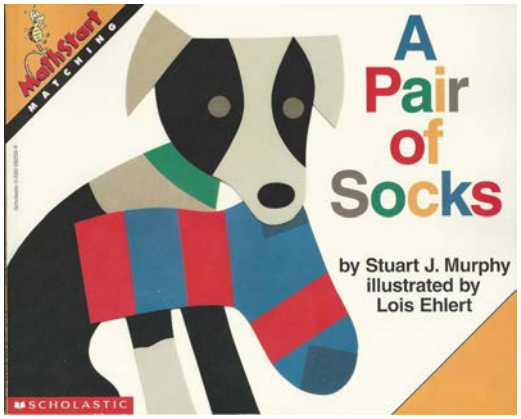
20 Big Trucks In The Middle Of The Street,
by Mark Lee



The Doorbell Rang,
by Pat Hutchins



Mouse Count,
by Ellen Stoll Walsh

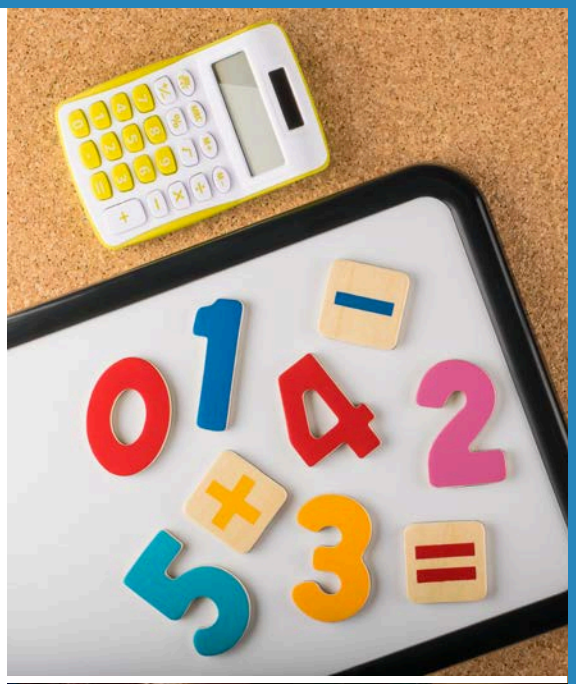


A Pair of Socks,
by Stuart J. Murphy

Tangled,
by Anne Miranda

20 Materials to Support Math Exploration

1. Pattern blocks
2. Geometric solids
3. Math manipulatives (e.g. base-ten blocks)
4. Fraction tiles or circles
5. Wood or magnetic numbers
6. Calculator or toy register
7. Math dice or playing cards
8. Measuring tape
9. Rulers
10. Protractors and compasses
11. Abacus or counting frames
12. Balance scales
13. Loose parts (to weigh and measure materials)
14. Clocks and timers
15. Dominoes or number tiles
16. Dice (standard and polyhedral)
17. Math puzzles
18. Math storybooks
19. Geoboards and rubber bands
20. Building blocks for counting or patterning



Exploring Shapes & Dimensions

MATERIALS

- Geometric shapes
- Magna-Tiles or similar building tiles
- 2 Acrylic mirrors
- Large tray or baskets to store materials.
- Optional:
  - Book: Mouse Shapes, by Ellen Stoll Walsh
  - String lights to add an element of light that may foster concepts of transparency, translucency, and opaque.

DIRECTIONS

- Place one mirror down on the table, and stand the other mirror up.
- Next to the mirrors, place pattern blocks and/or magna tiles and invite children to explore and play.
- If you have the book "Mouse Shapes," you may read before or after their play to connect hands-on experimentation + literacy.

LEARNING OBJECTIVES

- **Shape Recognition:** Support the ability to name various geometric shapes, including squares, triangles, circles, and rectangles.
- **Dimensional Understanding:** Through hands-on exploration, children will develop an understanding of two-dimensional (2D) and three-dimensional (3D) shapes and their properties.
- **Symmetry and Reflection:** Children will explore symmetry and reflections using acrylic mirrors, observing how shapes and patterns are reflected across the mirror's surface.
- **Creative Expression:** Children will express their creativity by building unique structures and patterns using the geometric shapes and Magna-Tiles.

Sensory-rich Number Exploration

MATERIALS

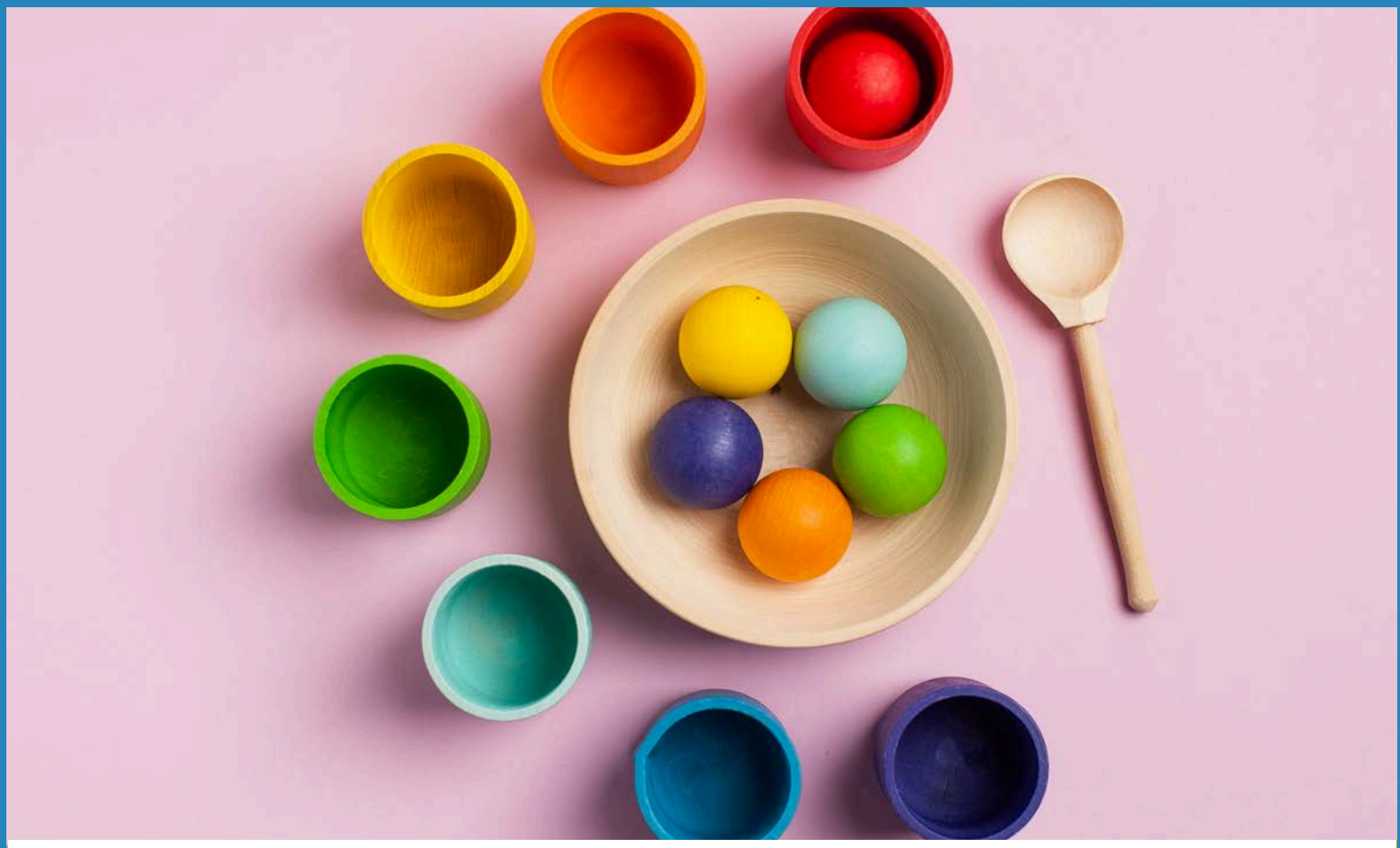
- Large plastic bin or container
- Uncooked rice
- Plastic, magnetic or foam numbers
- Scoops, spoons, or small containers for scooping and pouring
- Optional: small toys or objects related to counting or numbers (e.g., toy cars, animal figurines)

DIRECTIONS

- Fill the plastic bin or container with uncooked rice until it is about halfway full.
- Mix in the numbers throughout the rice, burying them slightly so they are partially hidden.
- Add scoops, spoons, etc. to the sensory bin to encourage scooping and pouring activities.
- Place the sensory bin on a large mat or towel to contain any spills and provide a designated play area, allowing your child to freely explore.

LEARNING OBJECTIVES

- **Sensory Exploration:** Children will engage in sensory exploration as they touch, feel, and manipulate the rice, experiencing its texture, weight, and temperature.
- **Numeracy Skills:** By interacting with tangible numbers, children will develop early numeracy skills such as number recognition, counting, and numeral identification.
- **Fine Motor Skills:** Scooping, pouring, and manipulating the rice and numbers with small tools will help children develop fine motor skills and hand-eye coordination.
- **Vocabulary Development:** Children may begin to label and describe their sensory experiences, promoting language development and vocabulary acquisition.
- **Problem-Solving:** Children may engage in problem-solving as they search for and identify numbers hidden within the rice, developing critical thinking skills and spatial awareness.



Sorting Colors

MATERIALS

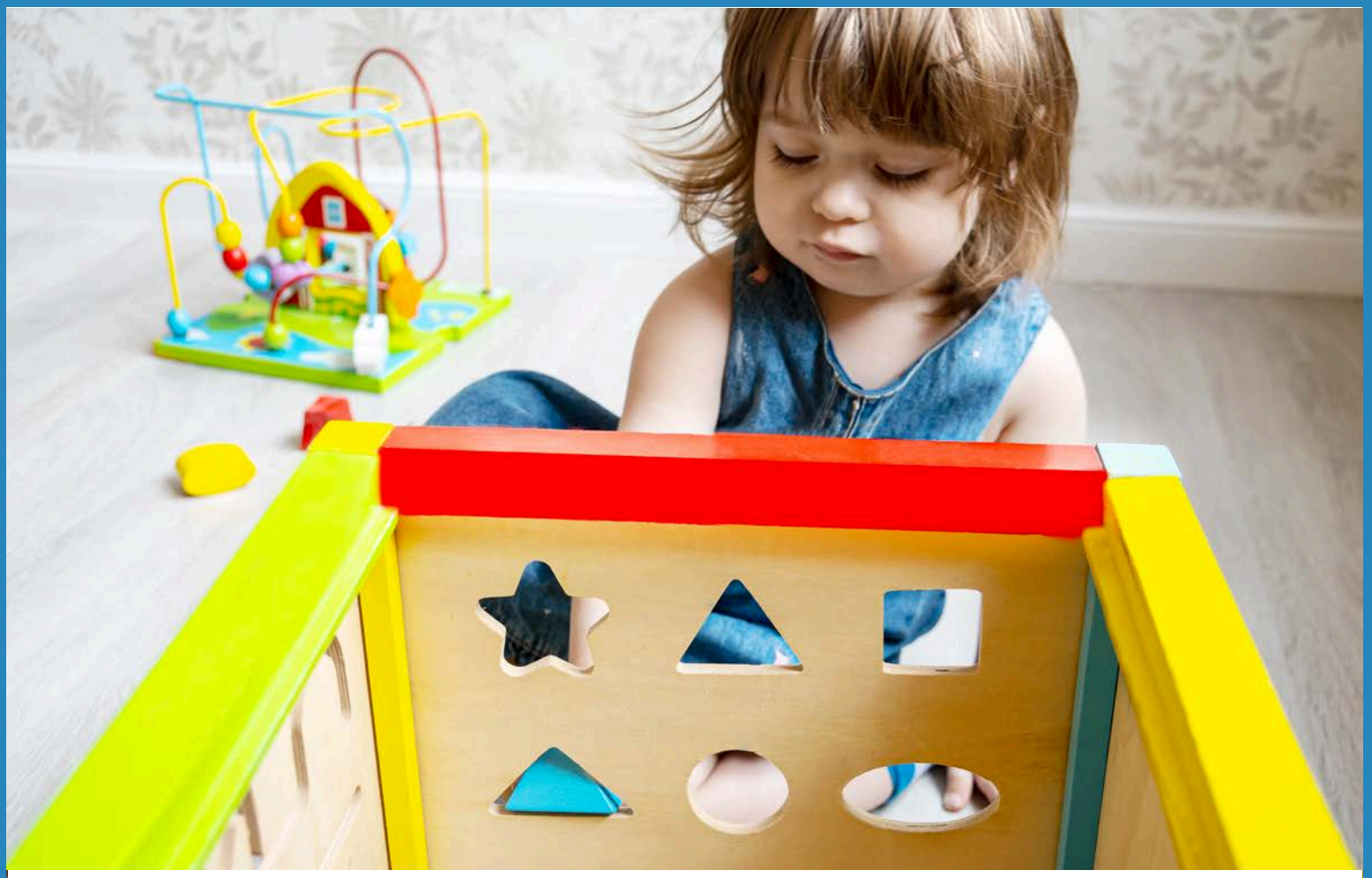
- Assorted objects or items in different colors (e.g., colored blocks, balls, pom-poms, plastic animals, fabric scraps)
- Sorting trays, bowls, or containers in corresponding colors
- Large mat or designated play area

DIRECTIONS

- Set out the sorting trays, bowls, or containers in a row or circle, each labeled with a different color (e.g., red, blue, green, yellow).
- Place the assorted objects or items in a pile in the center of the play area or table.
- Allow children to sort objects by color, exploring and discovering the various colors represented in the items.

LEARNING OBJECTIVES

- **Color Recognition:** Children will develop color recognition skills as they identify and sort objects by their respective colors.
- **Fine Motor Skills:** Manipulating and placing objects into sorting containers will help children refine their fine motor skills and hand-eye coordination.
- **Cognitive Skills:** Sorting objects by color involves cognitive processes such as categorization and classification, helping children develop logical thinking and problem-solving skills.
- **Language Development:** Encourage children to verbally label the colors of the objects as they sort them, promoting language development and vocabulary acquisition.
- **Sensory Exploration:** Sorting colors provides a sensory experience as children touch and examine different objects, enhancing their sensory awareness and perception.



Sorting Shapes

MATERIALS

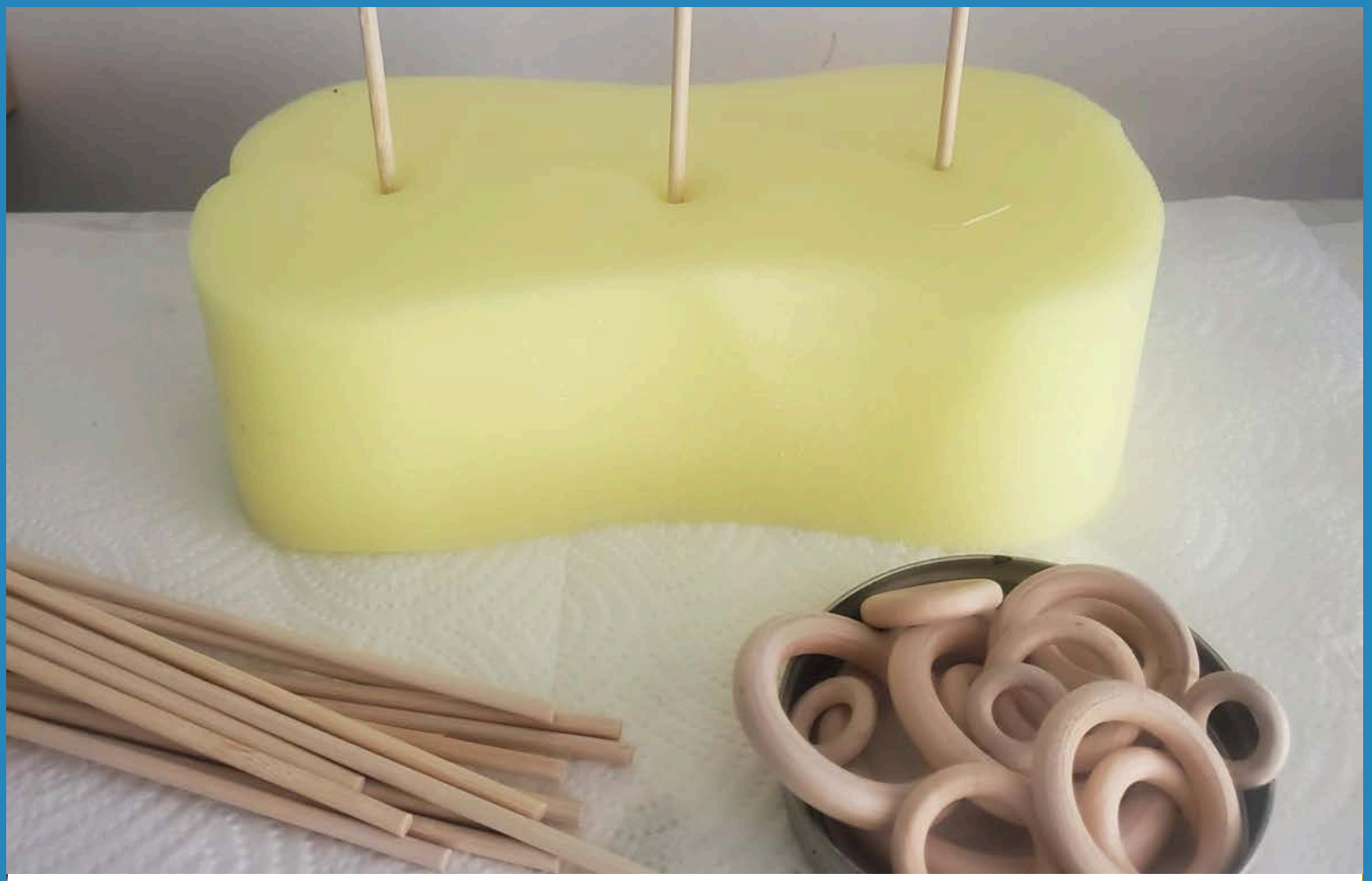
- Shape sorter toy with various shapes (circles, squares, triangles, etc.)
- Open space for play

DIRECTIONS

- Introduce the shape sorter toy to the children, showing them the different shapes and the corresponding slots.
- Allow children to explore and play with the shape sorter independently, offering praise and encouragement as they successfully fit shapes into the sorter.

LEARNING OBJECTIVES

- **Introduce Mathematical Concepts:** Sorting shapes lays the foundation for understanding mathematical concepts such as classification, seriation, and patterning. Children learn to classify objects based on specific criteria, such as shape or size, which is a fundamental aspect of mathematical thinking.
- **Encourage Critical Thinking:** Sorting shapes encourages children to think critically and problem-solve as they determine the criteria for sorting and decide how to categorize the objects. They must use logical reasoning and observation skills to make decisions and complete the task.
- **Spatial Awareness:** Playing with the shape sorter encourages children to understand spatial relationships as they maneuver shapes to fit into specific slots.



Stacking and Counting

MATERIALS

- A base to hold sticks. Consider A large sponge, clay, or play dough
- Sticks - Consider toothpicks or wooden skewers)
- Rings to stack. Consider cheerios or small wooden rings

DIRECTIONS

- Stick several wooden sticks into a base (pointy side down).
- With the "rings" of choice nearby, invite children to stack them on the sticks.
- To increase mathematical awareness, you can count the rings on each stick out loud. Highlight which stick has the most rings/which has the least amount, etc.
- If using edible rings such as cheerios, you can offer this activity during a snack time!

LEARNING OBJECTIVES

- **Mathematical concepts** such as 1:1 correspondence, counting, more than/less than, and quantity are naturally embedded in their exploration and experience.
- **Fine motor skills, depth, perception, and hand-eye coordination** are all embraced as children have to grip small objects and fit the small openings through the thin sticks.
- Utilizing edible circles **adds an extra sensory component to the experience.** The more senses stimulated, the greater the connection building/learning.

Ice Shapes and Colors

MATERIALS

- Silicone ice molds
  - One circular mold pack
  - One square mold pack
- Natural/organic food coloring
- Water
- Large sensory bin or container

DIRECTIONS

- Fill the silicone trays with water and add food coloring to each section.
  - You only need very little food coloring per mold!
- Put the filled silicone trays in the freezer and bring out the following day.
- Remove tray from freezer and take out the frozen, colored cubes.
- You may add the cubes to a bin with or without water based on your preference.

LEARNING OBJECTIVES

- **Scientific concepts:** Exploring different states of water (liquid and solid), making observations such as cause-and-effect, and predictions.
- **Mathematics:** Exploring and feeling different shapes support tangible experiences to foster shape recognition, as well as color recognition and differentiation.
- **Social Emotional:** Sensory-rich experiences help regulate children based upon their mood, while prompting decision-making and autonomy.
- **Focus and attention:** As children continue to explore and play with the various shaped cubes, they are simultaneously increasing their ability to focus and attention span.