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All About Shapes

What Are Spatial Skills (Including Shape Skills)?

Spatial skills involve thinking about objects and the space around them. You can think about spatial skills as thinking about the "what" and the "where" of objects. The "what" of spatial skills includes understanding:

- Physical characteristics of objects, such as size and shape
- What objects look like from different angles
- How things look when transformed, such as being turned, cut in half, or fit together with other things.

To learn more about the "where" part of spatial skills, see our toolkit article on space and location.

Why Are Spatial Skills (and Shape Skills) Important?

Spatial skills help us every day as we:

- Pack a suitcase or lunchbox to fit in as much as possible.
- Figure out how to cut a pie into equal pieces for the whole family.
- Fit shapes together to make something like a piece of furniture or a design.

Children's spatial skills may even help them think about numbers and solve math problems by picturing the problems in their minds. In fact, children with strong spatial skills tend to do better in science, technology, engineering, and math (known as STEM) classes, and are more likely to succeed in STEM jobs, too.

What Do Children Need to Know to Support Their Shape Knowledge?

Names and properties of shapes, including:

- Common shape names (circle, triangle, square).
- Features that define different shapes. This knowledge helps children recognize all kinds of examples of that shape – even examples that aren't typical—as well as what shapes are not part of the category.

Shape language, including:

- Words for parts of shapes, like **corner, side, angle, edge.**
- Words that describe properties, like **tall, curved, narrow.**
- Children can use these words as tools that help them solve spatial reasoning problems, like imaging how objects would look if rotated or put together with other objects.

How Can We Support Children's Development of Shape Knowledge?

Our world is made up of shapes! Families can point these out to children by describing shapes they see—in buildings, pictures, or objects around the home. These words can describe two-dimensional shapes (for example, circles, squares) and three-dimensional shapes (for example, spheres, cubes). When children hear these words, it helps them develop a strong spatial vocabulary and build their spatial skills. Use shape names, and describe parts and qualities of shapes. Using spatial language in whatever language or languages are spoken at home is very helpful.

Here are suggestions for things to do that promote children's shape skills:

Babies and Toddlers

- Talk about shapes: Even before babies start talking, families can start talking about shapes with babies. For example, describe shapes in storybook pictures. Say, "This snowman is made of **circles**. And his carrot nose looks like a **triangle**." or "This house is a **square**. Let's count the **sides**: one, two, three, four!"
- Keep talking about shapes: With toddlers, families can keep describing the shapes all around them. For instance, during snack and meal times, discuss shapes of different food items:
    - "Your Cheerios are a **circle—**they are **round.** The Cheerios have an even **smaller circle inside**!"
    - "This graham cracker is not **round**, it's a **big rectangle**. And if we break it in half, now we have two **special rectangles that are called squares**. And if we break those in half, we have four **smaller rectangles**!

Preschoolers and Older Children

- Play guessing games that use shape language when on the go: For example, say, "I'm thinking of a shape that has **four equal sides**." Take turns with children, giving them a chance to be the guesser and to be the one who provides the clues!
- Work on puzzles together: Allow children to experiment putting pieces together and talk about why something fits or doesn't fit. "How did you know that piece would fit there?" or "Hmm, I think we need a **corner** piece here. A corner piece has two **flat edges.** Can you find a piece that has two **flat, straight edges**?" or "What happens if we **turn** this piece?" Asking questions like this helps children learn to think spatially.
- Mix blocks together that vary by dimension (smaller and larger cubes) and shape (cylinders, triangular blocks): Experiment with seeing which blocks can be stacked on each other. If it doesn't work the first time, encourage children to turn

the blocks to see if they can stack them in another way. Family members can take turns building a simple structure and seeing if someone else can copy it. Try to create new shapes by putting several blocks together—what shapes do you end up with?

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