

Welcome to the STEM early learning lesson series. These kits are designed to help you bring science, technology, engineering, and math (STEM) into your home or classroom. Here are a few basics before you begin.

- **Who are the kits for?** Ready for School with STEM kits are designed for parents, caregivers, and early learning professionals to use with children ages 3–5.
- **How long does a lesson take?** Depending on how many activities you decide to do, each lesson takes between 10 and 30 minutes.
- **What's inside?** Each kit includes easy-to-follow instructions, themed objects (manipulatives) for playing, and 2–4 picture books.
- **Can the kits be modified?** Yes! The kits are designed so that you can also use items you have at home or school with the activities. You can decide to do just part of or the entire lesson plan as well, depending on your child's age and attention span.
- **Do I need to know a lot about STEM?** The lesson plan guides you as you go. You can be an absolute beginner in STEM concepts and still enjoy the kit while learning with your child. Each activity has two levels, "Quick Start" and "Deeper Dive," so you can choose what works best for you and your child.

Elements of each lesson

- **Quick Start:** Short on time? New to STEM? Quick Start is a fast and easy way to share STEM learning with young ones.
- **Deeper Dive:** These activities are perfect for when you're ready to dig a little deeper on STEM concepts. These additional suggestions complement the lesson and will challenge learners.
- **Ask an open-ended question:** Get kids thinking, talking, and exploring by asking engaging questions.
- **Vocabulary builder:** Language is an important part of STEM. Look for the Vocabulary Builder in each lesson for new words you can introduce while you do the activity together.
- **Show me, and show a friend:** Repetition helps learning stick! Encourage your child to show you, a sibling, and/or a friend what they've learned.

Unit Name: Puzzles with Toddlers: Counting and Comparing

What we are doing:

While playing with simple puzzles and books, toddlers practice counting from 1–5 (working their way up to 10) and 1-to-1 correspondence (pointing to one item as they say each number in order to figure out the amount). They also practice comparing by identifying similarities and differences and by playing with the concepts of more and less.

Purpose of this activity:

Puzzles are a fun way to introduce early math skills. Puzzles also help children practice persistence, problem-solving, fine-motor skills, and hand-eye coordination. Between the ages of 0–36 months, toddlers can learn to count out loud from 1–10 and can keep 1-to-1 correspondence for five or less objects in a line. Toddlers can understand the idea of more or less for small collections of items or when there is a large difference between the quantities of items. One-to-one correspondence and the ability to compare groups of items are important early math skills that children need to understand before they can advance to the skills they need to learn to be kindergarten ready. (*Learning Pathways in Numeracy: Addressing Early Numeracy Skills*, Superintendent of Public Instruction for the State of Washington)

Materials provided:

- Melissa and Doug "ABC–123" Chunky Puzzle
- Melissa and Doug "Vehicles" Jumbo Knob Puzzle

What you need to gather:

- Simple toys or toddler-safe objects that can be counted and grouped, such as blocks or Cheerios®

Books for lessons & activities:

Count with Little Fish, by Lucy Cousins

Hide and Seek, by Taro Gomi

Adventure Babies, by Rosamund Lloyd

Vocabulary builder:

Number words from 1–10, more, less, same, different, bigger, smaller

ACTIVITY #1: Counting and 1-to-1 Correspondence

Quick start:

Explore the "ABC–123" puzzle together. Take out the number puzzle pieces and count them. Then count them again as you put them back. Do the same steps with the shape puzzle pieces and the letter puzzle pieces. Each time you count a set of puzzle pieces, point to each puzzle piece one at a time as you say the number and then at the end state the total number of puzzle pieces there are. Children need a lot of practice and repetition in order to learn 1-to-1 correspondence! After you have explored the puzzle together, let your child play with the puzzle on their own.

Ask open-ended questions:

"How many puzzle pieces are green? How do you know?"

"Which two puzzle pieces look the most alike? In what ways are they alike?"

"Which three puzzle pieces are your favorites? Why do you like them?"

Deeper dive:

Now that you have practiced counting objects, read the book *Counting with Little Fish* and practice counting images. As you read, count the fish on each page. Encourage your child to place their finger on each fish as you count. Count several different ways. Sometimes you can count, "1, 2, 3... There are three fish." Then count, "One fish, two fish, three fish... There are three fish." Hearing the same concept different ways can help children begin to understand 1-to-1 correspondence.

Show me, and show a friend:

Take your 1, 2, and 3 puzzle pieces and lay them on the floor in order. Then take out some toys or other objects. Ask your toddler to count one item to go with the number one. Then two items for the number two, and so on.

Deeper dive:

Read the book *Adventure Babies* with your toddler and use objects to help you count. For example, look for the babies on each page of the book. When you find one, have your toddler grab a block. When you are done finding the babies, you can count the blocks they have collected at the end of the page. Counting the blocks can also be a good way to see if you've found all of the babies, since it can be hard to keep track of how many you've found as you're looking. If you only have three blocks, then you know you haven't found all of them yet. Once you have four blocks, you can then re-count the babies on the page. When you are counting the blocks and then counting the babies, you are helping your toddler understand that you can use counting to figure out the amount of items you have.

Other activities to try:

- Play with math while you read other books! You don't need a counting book to count. Get in the habit of looking for items you can count in the pictures of any book you read. If you read several books at a time, count how many you read in a sitting.
- Count cars as they drive by your house. You can use blocks and put one in a bucket or box each time a car drives by and count them when you're done watching.

ACTIVITY #2: Comparing

Quick start:

Explore the "Vehicles" puzzle together. Talk about how the vehicles are the same and how they are different. Ask them to point to any vehicles that fly. As they do, take those pieces and put them in a pile. Next, ask them to point to the vehicles that drive on the road. Take these pieces and put them together in a pile.

Ask your toddler which pile has more pieces. Then count each pile of pieces. If they don't understand the concept of more yet, then you can ask them which pile is bigger and explain that the pile is bigger because it has more pieces and then count the pieces together. You can repeat this activity with different criteria (vehicles with wheels, in the sky, in the water, etc.). Also, try asking which pile is smaller and, if needed, explain the the concept of fewer and that the smaller pile has fewer pieces.

Show me, and show a friend:

Switch places and play the game again. This time, your toddler will put the pieces into piles and ask you which pile has more or less. Then they can count each pile.

Deeper dive:

Read the book *Hide and Seek*. This book challenges your toddler to look for similarities and differences. The ability to compare items will help them as they learn more advanced math concepts later on. Ask them: "Which animals look the same?" "Which animal looks different?"

As you read, also ask them which group has more or less. For example, "Are there more giraffes with candles on their head or more giraffes without candles?" This will be more challenging because the animals won't be divided into two distinct groups. If needed, you can bring out your counting and grouping objects again. Create piles for giraffes with and without candles, and then compare the groups to see which has more and less.

Show me, and show a friend:

Switch places and play the game again. This time, your toddler can put the pieces into piles and ask you which pile has more or less. Then they can count each pile.

Other activities to try:

Play with math while you eat! Ask if there is more food on your plate or theirs. Let them make piles of Cheerios or other food and compare which pile has more or less.

Let your toddler help you sort socks. They will need to compare size, patterns, and so on to find the right matches. At the end, you can sort the piles by family member. Who has the most?