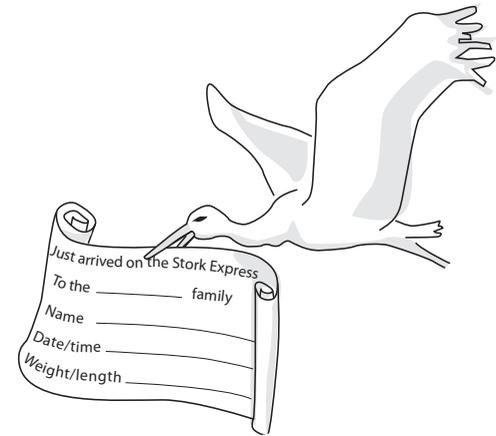


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Getting Started Counting

When a baby is born, we count her fingers and toes and measure her weight and length. Within moments of birth, numbers are a vital part of a child's life. As she grows, she will need to understand and use numbers in an endless variety of ways. Her natural curiosity, her desire to do what big people do, and her innate sense of numbers will lead her to recite numbers long before she knows what they mean. Children are fascinated by numbers. As a parent, you are in a position to foster that interest, even if your knowledge of mathematics is minimal. This is because math is everywhere, and numbers are familiar to everyone. A child's math life begins with the magic words *one, two, three* . . . At first these words make little sense to her. Only gradually, with many repetitions, will they take on meaning. By counting with your child, from infancy onwards, you can give her a healthy start to her math life. Counting is the introduction to numbers and to the whole field of mathematics.

As you enter into your life of math with your child, it will be both easier and more challenging than you expect. This is even true of counting. We learn to count at such a young age that most adults forget just how much work was required to learn it. In order to count, we must—



From the moment of birth, numbers are important in a child's life.

A mathematical relationship with your child begins with counting together. Click on the video “We Begin by Counting” to listen to the author.

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... two little, ...

- memorize words;
- say them in a certain order;
- connect each number-word to an object to be counted (this is called “one-to-one” counting);
- recognize the increasing pattern of the numbers;
- understand that the final number that we say represents the total quantity in the group;
- see that the order in which we count the objects does not affect the total; and
- understand that the number of objects in a group remains the same, no matter how the objects are placed (this is called “conservation of number”).

This is an impressive list and does not even include the need to recognize written numbers.

This chapter offers ways that you can help your child learn to count, and it includes activities that will help you create a positive mathematical relationship with your child.

Memorizing Number Words and Saying Them in the Right Order

Throughout the world, people play counting games with babies:

*One, two, three, four, five,
Once I caught a fish alive.
Six, seven, eight, nine, ten,
Then I let it go again.*

They usually touch a finger as they say each number. This universal action reinforces the child’s learning by combining sound and touch. It is not a coincidence that the word “digit” refers to both fingers and numbers in many languages. These games can be the beginning of playing with math with your child. You can make up your own family versions, such as this one:

*One little, two little, three little toesies,
Four little, five little, six little toesies,
Seven little, eight little, nine little toesies,
Ten toesies in the bathtub!*

Even though your infant or toddler cannot yet understand the meaning of numbers, she is beginning to make sense of her world and make connections between things she hears, sees, and feels.

Numbers are abstract things. It may be more difficult to memorize the names for the numbers than for objects that babies can see and touch, like “book,” “blanket,” or “spoon.” The numbers must be said in a particular order. While the same is true of nursery rhymes like “Hickory Dickory Dock,” the numbers have less rhythm and no rhyme. Learning the words for numbers and their order requires many repetitions over a long time. It is helpful to realize that the names of the numbers do not settle down to a fixed pattern until the number 20. The numbers from one through twelve each have their own names. As readers, we recognize the relationship between “two,” “twelve,” and “twenty,” but a child is not aware of this pattern. Thirteen through nineteen form a pattern, but we write thirteen by first drawing a “1” and then a “3.” We say the “three” first when we say “thir-teen” and use “teen” to mean “ten.” For the numbers 20 through 99, however, we say the numbers in the order in which they are written: we write “2,” then “1,” and say “twenty-one.” You see how complicated it is—but we all learned it, and your child will too.

Things You Can Do to Help Your Child Learn to Count

- Count aloud both with and without objects.
- Count little fingers and toes often, touching one as you say a number.
- Read counting books together.

Sing and chant many number songs and rhymes. See how many you can remember or learn from friends and family. The public library also has songbooks; many are in picture-book

Counting Chants and Songs

One, two, buckle my shoe
Three, four, shut the door
Five, six, pick up sticks
Seven, eight, lay them straight
Nine, ten, a big, fat hen!

• • • • •

One elephant went out to play
In a spider’s web one day.
She had such enormous fun
That she called another elephant to
come.
Elephant! Elephant! [*accompanied by
invitation gestures*]

Two elephants went out to play
In a spider’s web one day.
They had such enormous fun
That they called another elephant to
come.
Elephant! Elephant! [*accompanied by
invitation gestures*]

Three elephants went out to play . . .

13
31

It is difficult for young children to learn which written number is “thirteen” and which is “thirty-one.”



You can count items together as you place them in the cart.

format. Rhymes are especially useful when a child needs to be entertained in a confined space, such as a car, bus, or waiting in line.

How High Should You Count with Your Child?

That depends on the context. Any time you are counting actual objects for a purpose, you will count as high as you need. At those times, make sure to count aloud so that your child both hears and sees you. In this way, the child learns that math is useful.

Saying Numbers Is Different from Knowing Their Meaning

A two-year-old can learn to say *one two three four five*. This skill is different from being able to count objects. Most two-year-olds can count only two objects. **Always remember—each child is different.** At three years of age, the number three usually has meaning, but a three-year-old is likely to be able to *say* the numbers to ten if she has heard them since infancy.

There is a wide range of skills among kindergartners depending on their experience. While teachers have many students to teach, you, as a parent, are in a position to provide appropriate experiences, geared precisely to what your child already knows and needs to learn. If your child does not yet know how to count, begin to count things with her. If she can count to ten, begin working on the names of the numbers above ten. See how many objects she can count accurately and, very gradually, increase the number of items you give her to count, adding only one more to the amount she counts accurately.

What Should You Count with Your Child?

Everything you can think of! Banana slices as you prepare a snack, sections of an orange, the number of eggs to be used for breakfast. Counting food has the extra advantage of contributing the senses of taste and smell to the counting experience. Count silverware and dishes as you set the table, the number of people in the family, legs on a dog, pennies in a penny collection, blocks you can stack in a tower, toys your child wants to put into a pile, trees in your yard, people in line, groceries in your cart, cars.

Sometimes you will count only a few items; other times the count may be quite high. Be on the lookout for things to count and let your child choose things for you to count together—maybe silly things like hiccups. This way it becomes her game, not only yours. You can laugh and do math together!

Counting can actually ease tension instead of causing it. One day, on a family hike, my husband was walking ahead with our older daughter while I was in the rear with a tired, cranky youngster refusing to continue. We needed to climb a long stairway to the top of an overlook where we would picnic and rest—and the ones on top had the food. I proposed that she choose the number of steps we would climb before resting. Expecting something in the neighborhood of 5, I was delighted when she said 30. With both of us counting the steps, in a short time we reached the top, in a good mood, aided by the fact that her guess of the total number of steps was better than mine.

Recognizing the Pattern of the Numbers and Counting past Twenty

Children must recognize the “one” to “nine” pattern that follows twenty (“twenty-one,” “twenty-two,” “twenty-three” . . .). This pattern is usually learned long before counting by tens is memorized in order. This is an important part of learning to count. This means that a child may sometimes remember to say *forty* after *thirty-nine* and sometimes forget and insert *twenty* or *ninety*. **Don’t worry about these errors.** This is a complex process, but with practice, all children master it. To help your child, count out loud together. Practice taking turns saying the numbers. Let your child say *one*, you say *two*, your child says *three*, and so on. If your child begins the count, you will be the one to say the difficult-to-remember numbers: *twenty*, *thirty*, *forty* . . . To help your child memorize those words, you can also practice chanting by tens up to 100.

The Final Number Said Is the Total in the Group

An aspect of counting that we take for granted is that the last number said tells us the total amount in the group, not something about the last object counted. This is quite an



Taking turns saying the numbers is a friendly way to practice counting.

Click on the video “Learning the Decades” to listen to the author speak about the counting challenges presented by the tens.

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abstract idea that will develop over time after a child has a great amount of experience participating in useful counting.

The repetition of numbers seems to have an amazing power over young children—they love to count. I have often been in a classroom of unruly first graders who quickly come to attention to join in a chanted count of objects. Part of the excitement is seeing what the final number will be. “Big” numbers seem to have extra power. But children’s concept of “big” may be surprising to you. One afternoon my four-year-old asked to have some M&M’s close to dinner time. I was reluctant to give them to her, but knowing that a child’s idea of “a lot” is different from a grown-up’s, I asked, *How many do you want?* She eagerly responded, *Seven!* I agreed, making us both quite happy. By allowing her to choose the number, she felt powerful. If she had chosen too large a number, I would have asked her to choose a smaller one, because I had not agreed to give her any.

Learn What Your Child Knows, as Well as What She Doesn’t Know

Become familiar with your child’s understanding of numbers so that when you work together, you will know what numbers are appropriate to use. You might want to start a notebook (or put a sheet of paper on the refrigerator) in which you record the date and observations of what your child knows. **It may be hard to resist correcting your child, but let her do the thinking and talking.** This cannot be overemphasized. You need to find out what she knows and needs to learn. Correcting her will interrupt her train of thought and may make her self-conscious about working with you. Notice her errors. Later on you will use the information you gathered to know how high to count or what size numbers to add. You should make sure that she hears the correct numbers and sequence many times.

Find Out What Your Child Knows about Saying Numbers in the Right Order

Begin by finding out how high your child can recite the counting numbers. Have her count aloud without any prompting and without counting objects. If your child can count past 20, notice if she hesitates at numbers after which there are transitions, like

19, 29, and 39. Is she trying to remember what comes next, or is she certain? Remember or write down the last correct number, but **don't interrupt your child**. If you have a feeling that your child wants help, give it, count together, or take turns counting. Remember the highest number your child knows on her own and record that. You can make a separate entry in your notebook for “can count with help” and record the numbers that you had to supply. If you do this every month, making a careful distinction between what your child can do on her own and what you do to help, you will be as aware of her progress as of her errors.

Use what you learned to help your child

Being familiar with what your child knows tells you what to do next. If your child can count to five, make sure to practice counting to ten, but don't push her to learn the numbers after ten yet. If your child can count to ten, begin to work on the numbers between ten and twenty.

When a child can count numbers in the 20s and 30s correctly, another milestone has been reached. For many children, inserting the word “twenty” before the words “one” through “nine” in numbers such as “**twenty**-one,” “**twenty**-two,” “**twenty**-three . . .” causes them to lose track of their place within the sequence. Children must know the count from one to nine very firmly and notice its role in counting beyond twenty. Keeping the one-through-nine pattern in mind while inserting an additional number word, “twenty,” adds another level of difficulty.

If your child is uncertain about what follows 29, 39, 49, and so forth, count by tens together so that the order of the words “ten,” “twenty,” “thirty,” and so on, becomes familiar. Count piles of objects totaling about 100. You can use pennies, blocks, paper clips, or any other convenient object. You can entertain yourself with your child beside you by trying to guess how many are in the group before you count. Say your guess aloud and then, after counting, comment on how well you think you did. This helps your child to see that when we estimate, we do not expect to get the exact number. It eases some of the pressure about always needing to have the one right answer to a math question. These ideas will become important in her future math.



Children often mix up the decades (20, 30, 40, ...). Click on the video “A Five-Year-Old Counts” to witness this confusion, and then click on “Help Your Child to Count Better” for a stress-free strategy to alleviate it.

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One-to-One Counting—Connecting Exactly One Number Word to Each Object to Be Counted

To count objects, we must attach one number to each object, and each object must be counted exactly once. This is referred to as “one-to-one counting.” A child must be able to count one-to-one before any arithmetic can be understood. When you chant number songs that involve touching one finger or toe as each number is said, you are demonstrating one-to-one counting. Model one-to-one counting by moving objects as you count them. Don’t get upset when your child counts the same object over again, says the numbers out of order, or makes up number names—“eleventeen, twelveteen,” and “twenty-nine, twenty-ten” are common errors. These are all normal for children learning this complex system. Count together so that she hears the sequence correctly.

Here is a surprising fact: when a child can count five objects accurately, it does not mean that she can count twelve objects. It seems to us that once a person knows that each object must be counted exactly once, it holds true for any amount, but that is not the case. It is usual for a child to first learn one-to-one counting of a small number of objects but to lose track of the count when there are more objects. After one-to-one counting is generally understood, she is still likely to make errors in counting amounts in the teens or over 20. It is hard to remember to say the next number as well as to keep track. If your child is aware of losing track of the count, suggest moving the objects to a new location as each one is counted. Children who are ready for one-to-one counting and understand the need to keep track appreciate the suggestion if it is offered in a friendly manner and quickly adopt this method. Even though your child may have seen you keeping track while counting objects, it is not until the significance of doing so is meaningful to her that she adopts this method herself.

Is all of this more work than you remembered? When you are aware of the complexity, it is easier to be sympathetic and patient while your child learns. It is important to listen to your child while she is counting, just to observe, without correcting every time.

Find Out How Many Objects Your Child Can Count

Give your child some objects to count. Does she know to say one number for each object, or are some objects counted more than once, or some numbers said without

being attached to an object? Again, you may have to use self-control to resist telling her to move the objects while counting. You can do that afterwards, but first find how many objects your child can correctly count one-to-one. If she cannot count the amount you give her, try a smaller amount the next time. She may be able to count accurately to 7 but may get mixed up when there are 23 objects in the pile. This is normal for young children. Just see what you can find out about what your child knows so far.

Use what you learned to help your child

Ask your child to count amounts that are a little larger than the number she counts accurately. Gradually expand the number of objects that she can count, and make sure that she knows the names and order of the larger numbers. It is usual for a child to begin to understand the need to count just one object at a time around age 5½, but it still takes time to learn to do so accurately.

The Order in Which We Count Does Not Affect the Total

While the order in which we say the numbers is important, the order in which we count objects to find the total is not. Here is yet another aspect of counting that children need to learn. Some young children seem to think that the numbers are like names. They always start at the same finger as if the numbers were the names of the fingers. Because numbers are used in so many different contexts to count different things, children eventually understand the idea of quantity instead of names. *Make sure to change the order* in which you count a group so she will learn this, too.

Conservation of Number—the Amount Stays the Same When Objects Are Rearranged

The awareness that a group of objects contains the same number of objects even if it is moved around is called “conservation of number.” If your child counts a group of objects and gets different amounts each time, it is important to observe whether or not this troubles her. If it doesn’t, try having her count fewer objects. A child may be able to conserve a group of 3 objects but not a group of 27. This is a very difficult thing for grown-ups to realize; it seems to us that once the child knows that the number of objects stays the same, the idea should be understood for any size group.

Learning to count is hard work. Click on the video “A Four-Year-Old Counts” to watch a child who has difficulty. Then click on “Help Your Child to Count” to see how a parent provides a tension-free way for him to learn the correct number sequence.

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