People typically have 10 fingers and 10 toes. They might also have 10 aunts and uncles and perhaps even 50 cousins, but do they have 100 of something? Two hundred? One thousand? As numbers get larger, they get harder and harder to picture and understand. Giving your child experiences with large numbers can make this basic idea of mathematics — what numbers represent — more real.

Here's what you need:

A clear glass jar filled with a common small item — pennies, rice, paper clips, small beans, small pasta — anything small and uniform in size

Here's what you do:

Ask your child to guess how many of the items are in the jar and write down the number. Remind her to estimate; for example, around 80. It doesn’t have to be exact.

Next have your child remove a portion of the item, say in a scoop or small cup. Talk to her about the relationship of the small amount removed to the total. You can ask, “How many small scoops would it take to empty the jar? How many times is the whole jar of items compared to the amount you took out? Ten times as much? Twenty times? Fifty times?”

Ask your child to count how many of the items are in the portion removed and use this information to make a new estimate. For example, if your child guessed that the jar holds 20 times the amount removed and the removed amount has 126 items, the new estimate is found my multiplying 20 times 126. How does this new estimate compare to the original one? (In making this comparison, you are highlighting how there are tools one can use to estimate more precisely.)

Finally, ask your child to count all of the items. It's easy to lose track when counting such a large number of things. Help her set up a system to keep track of the counting that makes use of our place-value system.

For example, you can take a sheet of paper and mark off 10 squares (by drawing a line straight down the middle and 4 lines straight across). In each square your child can count out 10 of the items until he has filled up the entire paper with 100. Your child can count by 10’s to confirm that there are indeed 100.

On another sheet, your child can record hundreds with other markers, tallies, or numerals. Every time 100 is recorded, the first sheet can be wiped clean and used again. If it looks like the number is going higher than 1,000, your child might make groups of 10 hundreds as well such that each larger group then equals 1,000.
Eventually, your child should have three numbers:

First estimate

Second, more informed estimate

Actual count

Ask your child to compare these three numbers with such questions as:

How close were your estimates to the actual number?

Which estimate was closer?

Why do you think the estimates were different from the actual number?

Can you do anything differently to get a closer estimate next time?

Keep going...

You may want to repeat this activity several times using different objects and different-size jars. You can also use containers that aren’t made of clear glass to add to the mystery. Can your child estimate the number inside without looking, by knowing that this jar of a particular size is full and seeing the size of one item?

Here are some other estimate questions you can ask your child when going around town:

About how many people do you think are in this car of the train? If there are 8 cars, about how many people are in the whole train?

About how many pigeons are in the park?

About how many doughnuts (muffins, cookies) are in the bakery?

About how many oranges are piled in this bin at the grocery?

These activities will give your child a strong sense of how large numbers are recorded in our place-value system.