

## The Mathematical Art of Guessing, Part II

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In part one of this series on estimation, I not only explained what estimation is and why it is an important skill for everyone to learn, but also why parents and guardians are in a better position than teachers to teach their children how to estimate. Learning the skill of estimation requires multiple opportunities and different situations, many more than can be found in a classroom. If you want your children to learn this essential skill, YOU are in the best position to teach it. Luckily, estimation games and activities are things that you and your children can have fun with while learning.

Getting started with estimation is not hard. You do not need a blackboard, flash cards, or practice worksheets—that is not how anyone learns how to estimate. The best advice is: Start young, keep it simple, and make it fun for both you and your children!

### Start Young

Children as young as three can estimate—if children can talk and count, they can often estimate. Young children even have an advantage since they are not afraid to guess or to make wrong guesses. But you must start with small numbers and things they like. A good example would be to estimate animal crackers: put a row of five to ten crackers in a row in front of your child and ask him/her to guess how many there are.

Now count the crackers with your child (read how in the article “Counting and Young Children” in the June 2012 issue of the *ComMuniCator*). Then say, “Good guess.” Always compliment your child for making an estimate. After you estimate and count, eat the crackers—the mini-estimation lesson is over. Do not be surprised in the beginning if your children make wild guesses: twenty, a hundred, a million. That is okay; while there are good estimates and not-so-good estimates,

ANY estimate is acceptable in the beginning. The learning comes when your children find out afterwards how close their estimate was.

You have planted the seed, but for the plant to grow, you must water it everyday! That night, or the next day—with animal crackers, fish crackers, small cookies, or any other fun, small treat—do the mini-lesson again with a different number of “counters.” Do this often enough and your children will get better at estimation right before your eyes. Just remember, do this little estimation game before you count, and only if your children enjoy it—and never with admonishment for the “wrong” answer. Always accept your children’s estimates cheerfully. After you find out the actual answer, always say something like, “Wow, you guessed 100 and there were five cookies.”

To make this work with young children, heed this advice:

- ✓ Find lots of fun things to estimate and count—not always food—but make sure they are the same kind of object. Do not mix different kinds of “counters,” or you may mix up your children.
- ✓ Keep the numbers of objects small, and only increase them very gradually as your children’s estimates get better.
- ✓ Put things in nice, easy to view rows at first; piles come later when estimating rows becomes too easy.
- ✓ If it is not fun for your children, do not do it; you will send the wrong message to your children if you force them to play this game.

As children get older, they can begin to estimate higher numbers, and in LOTS of different, more interesting situations, both inside and outside the home. If you start your children estimating when they are young, then estimations that require more thinking

and mathematics will be challenging—and welcome—as they get older! Check out the list of estimation challenges at the end of this article, but remember to keep it fun.

### What Makes for a Good Estimation Activity?

Not every mathematics situation is a perfect situation for estimation. For example, you do not want to estimate when you do your taxes—the IRS likes exact answers. But you can estimate BEFORE you file your taxes. If you want to help your children learn to estimate, you have to choose the estimation situations carefully. Here are some qualities of mathematics situations that are ripe for estimating:

- ✓ The numbers must be accessible to your children—do not ask your children to estimate the national debt. Estimate numbers that are within the range of your children’s understanding and comprehension.
- ✓ The estimation situations have to be interesting to your children. Things that are important in their lives, such as cookies for young children and numbers of text messages in a month for teens, create both interest and a desire to estimate.
- ✓ There must be a way to find the exact answer to every situation your children estimate; no one can hone their estimation skills unless they can see how “close” their estimate was. By all means be creative in finding interesting and challenging estimation situations for your children, but make sure that either you or your children can somehow find the exact answer to compare with their estimate.

Always remember: there are wild guesses, rough estimates, and close estimates, but never wrong estimates. Children must learn that you do not estimate to find the right answer; the exact answer comes with the mathematics you do after you estimate. As children get older, they sometimes become afraid to estimate (to guess). Your attitude as a parent about your children’s estimations is critical to their willingness to estimate and to improving this important skill. Make it fun for your children; make it challenging, and encourage your children on their estimates!

### Things You Can Estimate with Your Children

- ✓ The amount of spare change in their pockets (or yours)—without taking it out of the pockets
- ✓ The books in your bookshelf—by only counting the first ten books before making the estimate
- ✓ The number of M & M’s (Skittles, etc.) in an unopened bag—by only feeling the bag before making the estimate
- ✓ The number of raisins in a box of Raisin Bran—by only counting the raisins in a single cup
- ✓ The time on your car’s clock when you reach Grandma’s house by car—after you have made the trip a few times
- ✓ The number of footsteps (paces) from your home to school—after you count paces on a trip around the block
- ✓ The number of glasses of milk in a milk carton—you can always pour the milk back into the carton later
- ✓ The weight of a batch of popped popcorn—compared to its weight BEFORE it was popped
- ✓ The number of words in a book (article, newspaper, etc.)—after only counting the words in one paragraph
- ✓ The number of beans in an unopened bag of dried beans—by reading any and all the information on the bag
- ✓ How long a minute is, with your eyes closed—while someone else times you (this is as hard to do for adults as children)
- ✓ The temperature outside by stepping out the door—and before looking at the thermometer

### Reference

Giganti, Paul, Jr. “Counting and Young Children.”  
*ComMuniCator* 36 (June 2012): 20–21. 

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