

# Savory Summertime Estimation

**M**ath is everywhere, even inside a watermelon, as four children discovered at a vacation cabin in the mountains. It all began when a family friend arrived with a plump watermelon from a roadside stand.

Placing it on the dining room table, he wondered aloud, “How many seeds do you think it has?” That simple question led to an unplanned math project more complex and more enjoyable than anyone could have predicted. To start, everyone ventured a guess.

“Ninety-five,” Grace Linderholm, 10, said confidently.

“More,” said her sister, Amelia Gurley, 12. “Way more, like 250!”

Daria and Adam Fixler, 9 and 12 respectively, proffered their own guesses: 65 and 82. Once the adults had piped in, there were nine guesses, ranging from 65 to 280.

“That’s quite a wide range,” observed Grace and Amelia’s dad Owen. “What should we do next?”

“Eat it!” exclaimed Amelia.

Adam and Daria’s mom, Rae, sliced through the melon, revealing its glistening red flesh speckled with seeds. The children were again intrigued by the original question.

“Don’t eat it yet,” Grace implored. “Let’s *estimate* the seeds.”

**G**race understood the distinction between estimating and guessing. When the children had merely looked at the melon and called out numbers, they were guessing. To estimate, they will need more information about the seeds and they will have to apply math.

Estimation is an important math skill used by everyone from young children to advanced students and scientists. Parents can encourage estimation with questions like “How many candies are in the jar?”

or “How many people are in the stadium?” or “What time will we get to Grandma’s?” It’s a good idea to guess first, then discuss possible strategies that would refine the guesses into estimates.

At the cabin, the watermelon project becomes a brainstorming session with each child offering a different strategy for estimating the seeds. All agree on one thing: the process has to include consumption of the melon! Finally, with some

parental persuasion, it is decided that half of the watermelon will be saved in the fridge for tomorrow’s picnic, and the other half will be divided into four wedges, each to be cut into four pieces.



**Kids and adults explore the estimation exercises embedded in a delicious watermelon.**

Everyone will count the seeds in one piece as it is eaten. From this data and a little multiplication, the group can estimate the total for the entire fruit. But some of the kids want to know how close their estimate will be to an actual count. After all, the seeds are not evenly distributed through the melon. Will counting only nine sections be enough? To find out, they also decide to count every seed.

Minutes later, only rind and seeds are left on the plates. The counts for nine sections are averaged, then multiplied by 32 (the number of sections in the whole watermelon). The group arrives at an estimate of 580 seeds for the full watermelon. Everyone is surprised at how much higher

it is than the initial guesses. Tomorrow, once the other half of the watermelon has been eaten and its seeds counted, they will do a reality check on their estimate.

**A**t the picnic, the final count is 640. Some are disappointed that it is 60 seeds more than their estimate, but Daria and Adam’s father, Craig, puts it in perspective: “It’s really not bad. You were off by only 10 percent. Congratulations!” The two older children do some mental math and agree with him before heading off to go swimming.

Craig’s congratulations are certainly deserved and not only because the estimate was close. These kids attacked a simple question – “How many seeds?” – and turned it into a math project that involved high-order thinking, problem-solving and lots of computation. Best of all, they had fun.

Parents on the lookout for Math Moments will find no shortage if they ask questions – realistic or ridiculous – and encourage kids to find answers by estimating. The process can help sharpen math skills – and appetites.

**Math Moments™** creator David Schwartz spends much of his time finding unusual, whimsical ways to make math and science come alive for kids and teachers, both through writing and through speaking at schools and conferences. He has written nearly 50 books for kids, including *How Much Is a Million?* and the “*Look Once, Look Again*” series. For more information about David’s math and science adventures, check out his Web site, [www.davidschwartz.com](http://www.davidschwartz.com).

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