

A TEACHER REFLECTS



“I’m done!” Louis called out. “What do you want me to do?” I suggested he try one of the extensions I had written on the board. The question he chose required him to create some addition and subtraction problems and then figure out a way to solve them using his Mystery Device.

“Okay, watch this,” he said, using his trademark phrase. As I watched, he wrote down $29 + 29$. He started by making 29 with his system, sliding 2 large and 9 small beads from the outer edge into the center. “In the system you created, it looks like your big beads are worth ten,” I remarked. “Yeah, and the little beads are ones,” he replied. When he started to make the next 29, he stopped, puzzled. He tentatively pushed 2 tens into the center of his device, then pushed them back and sat there staring at it. “I don’t have enough ones beads left to make another 29!” he exclaimed. “What are you going to do?” I asked.

He sat there for a moment, not answering. “I need ones to add 29,” he muttered. “Okay, if I start with 30 instead of 29, then I just have to remember to take away one extra at the end.” He pushed the 9 small beads back and added another large bead. Then he added 2 tens and 9 ones. “Gotta remember that extra one,” he muttered, and removed one small bead.

I wondered whether I should say something to him about the inefficiency of having to remember to take away the extra bead at the end, but decided to remain silent. When I looked back

later, I saw the problem $132 - 19$ written at the top of his paper. I smiled to myself, wondering if he could get himself out of this one!

The next day, I was greeted by a very excited Louis. “Hey, watch this!” he cried. “Okay,” he said. “You know how I was doing subtraction yesterday? Well, I couldn’t figure out how to do $132 - 19$ because I made 132 like this...” He quickly pushed 13 large beads toward the center, then added two small ones. “Except then I couldn’t take away 19 because there’s no 9—there aren’t enough beads. But I CAN take away 20!” He pushed 2 tens back to the edge. “But then I’ve taken away too much. So since I took away one extra, I should put one back,” and he pushed 1 small bead back into center. “What do I have?” he demanded excitedly. I read his number off the device. “Forty...eighty...one hundred ten...one hundred thirteen,” I answered. He grabbed his calculator, punched in the problem, and looked up proudly, displaying his answer.

“Louis! This is great!” I exclaimed. “Does your method work on other problems?” “Yeah! I already tried it. Watch this!” he said, and wrote down $29 + 29$. “You can do this for adding too! Yesterday when I did it, I made the 29 into a 30 because I needed ones. But if I use this new way, I don’t need all the ones to add 29!” He pushed 3 more tens into the center and took away a one. “It works! It’s sort of like what I did yesterday with adding, except I don’t have to change the first number. I can trade the beads around instead!”