

A TEACHER REFLECTS

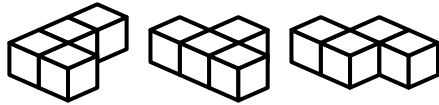


Figure 1: Examples of Elena's one-story houses

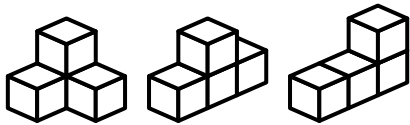


Figure 2: Examples of Elena's two-story houses

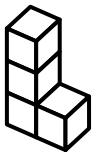


Figure 3: Example of Elena's three-story house



Figure 4: Example of Elena's four-story house



Finding all the modular houses that could be made with four cubes provided an engaging challenge for my students. They spent a whole period searching for the combinations and then recording them on isometric dot paper. The next day, I handed back their representations of the combinations of cubes and distributed cubes. “How do you know you’ve found all of the possible combinations?” I asked.

Elena used a systematic approach. First, she found all of the houses that were one story high. (See Figure 1.) Next she found all of the ones that had two stories. (See Figure 2.) She continued and found all of the houses that could be made with three stories, and finally four stories. It added up to fifteen possible houses.

I was impressed with Elena’s method, since it allowed her to find all of the combinations in a short amount of time and with very little repetition. However, I held off praising Elena on her system. I wanted other students to share their strategies without feeling like Elena’s was the “right one.” And I wanted my students to see that there are many ways that this problem can be solved successfully.

So I asked: “Did anyone find any other possible combinations?”

Moises demonstrated his strategy, in which he used one cube and found all the houses that could be built off one face of that cube. Then he put two cubes down and found all the combinations that could be built off each cube. He continued until he found all fifteen combinations. When Moises finished explaining his method, he said that although he was able to find all the possibilities, his method was more time-consuming than Elena’s.

Like Elena’s, Moises’s method was systematic. His was based on a geometric pattern involving the surface area of the cubes. I was impressed with his strategy and his recognizing that it took more time.

I was excited about the different strategies my students used. I was also glad that they understood that “fifteen” was only part of the answer—that communicating how they got their answer was important as well.