Letter to the Editor

The Problem With Math

Daniel Shifrin*

To the Editor:

1. The physician has ordered a continuous IV drip of 15 mg/h. The medication is supplied at 43 mg/150 mL. Calculate the flow rate in mL/h.
2. A physician orders a medication for a 5-year-old child. The adult dose is 27 mg. The medication is available as 10 mg/2 mL. What is the dose of medication that should be given to the child?
3. A physician requests a liter solution of 12% dextrose. You have 50% dextrose in the pharmacy. How many milliliters of sterile water would be needed?

I teach students to become pharmacy techs for a living. Previously, I thought that these 3 types of math problems were the hardest that my students would encounter. I was mistaken. They're not having difficulties with flow rates, BSA, or stock solutions. Instead, they falter with basic math.

Most of my students dislike math. With math, you not only have to solve a problem, but you also have to grasp the concept and apply it in order to figure out the next problem.

Math also leaves no room for interpretation. Regardless of how much effort a person puts into solving a problem, there is seldom any partial credit. An answer is either right or wrong.

Furthermore, math problems consistently include additional data. Often these numbers are unnecessary to the problem's outcome. Most times, they are included just to confuse the person solving the problem.

When I grew up, there were no calculators. Instead, I memorized my addition, subtraction, multiplication, and division facts using math tables. These charts would be composed of 100 boxes (10x10), having the digits from 0 to 9 across the top and from 0 to 9 down the left hand side. The numbers would be brought down from the top and from the side, so that there would be 2 digits in each box. The selected math process would then be applied to the 2 numbers in each box.

For example, using the math multiplication table, the boxes for row "4" would read "4x0=0, 4x1=4, 4x2=8..." all the way through "4x9=36." It was a tedious process to memorize the math facts for each number. I particularly hated the "7" times table. But in the end, you knew your math.

Calculators, computers, spreadsheets, and even cash registers have ruined the thought process. They provide an answer without any explanation as to how it has been derived. Furthermore, people have become complacent with these devices. They often assume that whatever answer is obtained is the correct one.

Recently, my students were dealing with a problem in which they had to divide 250 by 82. Before I entered the numbers into my calculator, I estimated the problem. I figured that 240 divided by 80 was "3," so that my answer should be approximately "3" as well.

One of my students entered the numbers into the calculator and came up with the answer "47." When I asked him how he came up with the answer "47," he stated that he wasn't sure, but that's what the calculator said.

In 2009, when I first started teaching my pharmacy tech course, we had a 16-session pharmacy certification class. We devoted only 6 sessions to math. I was amazed when my class struggled with long division when it came to fractions. I worked with the school and developed a 12-session class on math for pharmacy techs. I started with the basics and worked up to the difficult problems. Often, I wish the class had more sessions, but at least it provides a foundation for understanding.

Currently, pharmacists are responsible for checking technician work. They check all aspects of the product, including calculations. However, with tech-check-tech on the forefront and many certified techs already working, it can only be hoped that the techs' math skills are precise. After all, it's one thing to make a mistake on a math problem, but a mistake can't be made on a patient's dose. ■

*Pharmacy Instruction, Union County College, 1033 Springfield Avenue, Cranford, New Jersey 07016; phone: 908-709-7600; e-mail: rpdanny@aol.com