TAKE IT TO THE MAT

A NEWSLETTER ADDRESSING THE FINER POINTS OF MATHEMATICS INSTRUCTION

Math Audit Team
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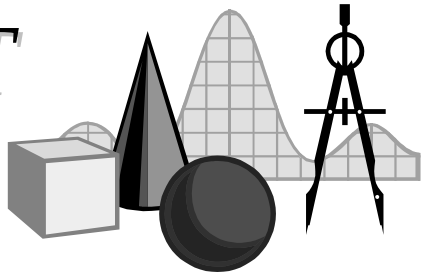

One of the most often used words in the language of mathematics is the word *and*. It has several applications in a variety of branches of math. In logic, *and* indicates that two or more expressions must be considered concurrently. In set theory, it requires that an object be a member of two sets. In probability, *and* requires two or more events to occur simultaneously. In the binary operation addition, it may suggest the summation of two values.

In this issue of *Take It to the MAT*, the word *and* will be examined in the context of the reading of numbers and numerals.

How would you read this numeral? 159

Did you say "one hundred fifty-nine?" Very good, that's right. But if you said "one hundred *and* fifty-nine," you made a very common mistake. When reading numerals (or reporting numbers), we often casually slip that little *and* in there.

And is reserved for the decimal point when reading numerals. Frequently when we read three (or more) digit numbers, we're inclined to use *and* after reading the hundreds. For example, 159.235 is read, "one hundred fifty-nine *and* two hundred thirty-five thousandths." We do not read it, "one hundred *and* fifty-nine *and* two hundred *and* thirty-five thousandths." See how confusing it can be?

When describing numbers, we often abridge our description using *point* and individual digits, such as "one hundred fifty-nine point two-three-five," or "one-five-nine point two-three-five." While the former version is not as objectionable as the latter, neither of these uses mathematical language precisely. While the given examples provide brevity, and are usually acceptable when orally checking student work, students should hear the correct usage as much as possible.

The accurate reading of whole and decimal numbers can be extended to applied numbers, particularly money. When someone describes the amount $1.47, we often hear, "a dollar forty-seven," or "one forty-seven." Said properly, $1.47 would be, "one dollar *and* forty-seven cents." Note the parallelism to "one *and* forty-seven hundredths."

Thus, it does not matter how long the numeral is—the word *and* is reserved for the decimal point.

As an aside, there is one case where *and* may be used twice. When we go to the gas station, we may see the price of a gallon of fuel as 1.34\frac{9}{}$. How is that read? The proper reading of that amount is, "one dollar *and* thirty-four *and* nine tenths cents." That's a mouthful, but it is more accurate than the familiar, "a dollar thirty-four nine." We don't typically refer to the fraction of the dollar as, "three hundred forty-nine thousandths dollars" or "three hundred forty-nine tenths of a cent" due to the nature of our monetary system.

The proper reading (and writing) of numbers is important in mathematics. While we sometimes use imprecise language during casual conversation, it is a thing to be avoided in the classroom.