



TAKE IT TO THE MAT

A NEWSLETTER ADDRESSING THE FINER POINTS OF MATHEMATICS INSTRUCTION



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Welcome back to another year of *Take It to the MAT*, the RPDP newsletter focusing on mathematics instruction from Kindergarten through 12th grade.

Vocabulary and notation are very important in mathematics. In fact, mathematics is a language all its own, and proper understanding of its terminology is critical to mathematical achievement.

A group of words that are often confused and used interchangeably are *simplify*, *solve*, and *evaluate*. This is especially true in Algebra classes. Many times one of these words is used when another is required; that switch takes place because of unfamiliarity with distinctions between them.

Evaluate: To find the value of an expression, sometimes by substitution of values for given variables.

Simplify: The process of reducing an expression to a briefer form or one easier to work with.

Solve: To find a set of values for the variable(s) that satisfy the given equation(s). This set of values is called the *solution* or *solution set*.

For example, student may see the following exercises:

1. Evaluate: $3 + 4 - 5$
2. Evaluate: $x^2 + 2x$, for $x = 3$
3. Simplify: $x^2 + 2x - 4 + 3x + 3$
4. Solve (for x): $6x - 4 = 20$

In exercises 1 and 2, the value of the expression is desired, with substitution required in exercise 2. In exercise 3, collection of like terms is warranted to make the expression easier to read or with which to work. Finally, exercise 4 calls for the value of x that makes the equation true.

Notice that exercises 1, 2, and 3 are expressions; only exercise 4 is an equation. Plainly, *expressions* are evaluated or simplified; only *equations* are solved. While the case can be made to *simplify* in exercise 1, none of the first three questions fit the direction given in the definition of *solve*. Each of the words *evaluate*, *simplify*, and *solve*, is a verb directing its own unique action. Using these words in proper context serves to build students' mathematics vocabulary and reduces the risk of future confusion.

Sometimes, teachers will say: "Evaluate just means to solve it." "Simplify means get the answer." Very often, these statements are made because it is felt that teaching the proper meanings of the words may confuse students. Others believe teaching proper definitions will make students apprehensive about math. In truth, not teaching the correct meaning of words in the beginning results in greater anxiety later when students are expected to know what they mean.