



# Friday Focus

## CARTER COUNTY SCHOOLS

Volume 2, Issue 15

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### Calendar of Events:

Jan 23 4-6 Academy

Dec 19—Jan 2  
Christmas Break

ACTC Science Fair  
Feb 7

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## What Does It Mean to “Do Math?”

If you were to take the time to write a few sentences about what it means to know and do math based on your own learning experiences, it would probably be a much different description than what is going on in classrooms today. “Doing math” today has taken on a much deeper meaning than following a standard algorithm to solve a set of equations. In modern classrooms, doing mathematics means generating strategies for solving problems, applying those approaches, seeing if they lead to solutions, and checking to see if your answers make sense. When student “do math” today, teachers are asking them to build, draw, and write models of their work. Teachers want students to think about strategies they are using in hopes that they will

be able to provide an accurate justification for those strategies.

There are three stages of problem solving students can use: **building, drawing, and writing.**

**Build It:** Students are provided with manipulatives to demonstrate the work. For example, students may be given counters to represent the equation shown to the right. Start with three counters, add three more, and add three more. Count the counters to see a total of nine counters.

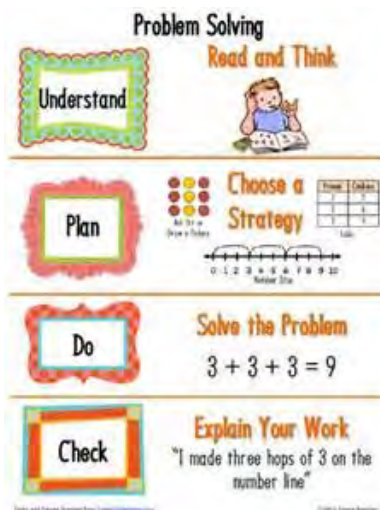
**Draw It:** Students draw a model of the work. In this case, a child could draw symbols for counters, or a child could draw a number line, as shown to the right, and make hops of three to the right until arriving at nine.

**Write It:** Students write the number symbols for the problem.  $3+3+3=9$

Having students solve problems in all three ways provides them with

multiple strategies and multiple representations.

If we want students to be able to justify their work, they must have a strong conceptual understanding of the underlying mathematics. When they are given many entry points to the work, this provides them a clearer understanding of how to “do math.”



## Components of a Balanced and Effective Math Program

Three components of a balanced and effective math program are conceptual understanding, problem solving opportunities, and explicit vocabulary instruction.

Mathematical concepts, while critical to understanding, are often the most challenging to teach. Students frequently progress through school with an inaccurate understanding of basic concepts which can lead to struggles in higher mathematics. Teachers can help bridge the gap by using visual and concrete models, use of literature, and student-teacher discussions of mathematical ideas with appropriate terminology.

Problem solving is another vital piece of effective math instruction. Students often struggle to understand which pieces of information are needed to answer questions, translate a situation into mathematical number sentences, and/or represent the situation visually. Because of these weaknesses, students are unable to recognize if their calculations are reasonable. Quality problem-solving lessons should provide students with opportunities discuss their reasoning, create visual and mathematical representations, and analyze their responses through discussion with their teacher and their peers.

Vocabulary instruction in math classes must be explicit. This means students must have opportunities to interact with the words linguistically and non-linguistically. For example, teachers could utilize vocabulary notebooks, review games, or incorporate art or music in their vocabulary instruction. Visuals are a perfect way to introduce new words. The goal should always be for students to own the words, using them daily as they talk and write about mathematics.

Math is more than performing calculations in order to get the right answer. A solid math curriculum is grounded in conceptual understanding, problem solving opportunities, and explicit vocabulary instruction. In order for students to face a rapidly changing, math-oriented world, these components must be a part of their daily instructional routine..