Math for Parents

April, 2017

Leaders in Learning, Caring and Growing

In December, 2016, the State Board of Education adopted the Arizona Mathematics Standards (Revised 2016). During the 2017-2018 school year, districts throughout the state will begin transitioning to these new standards which will be fully implemented the following year. The AzMERIT assessment will be aligned to these changes in the Spring of 2019.

MODELING IN MATHEMATICS

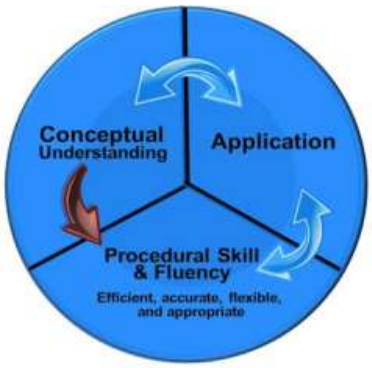
In the course of a student's mathematics education, the word "model" is used in many ways. Several of these, such as manipulatives, demonstration, role modeling, and conceptual models of mathematics, are valuable tools for teaching and learning. However, these examples are different from the practice of mathematical modeling. Mathematical modeling, both in the workplace and in school, uses mathematics to answer questions utilizing real-world context.

WHAT'S THE DIFFERENCE?

Standards – What a student needs to know, understand, and be able to do by the end of each grade/course. Standards build across grade levels in a progression of increasing understanding and through a range of cognitive-demand levels.

Curriculum – The resources used for teaching and learning the standards. Curricula are adopted at the local level by districts and schools. Curriculum refers to the **how** in teaching and learning the standards.

Instruction – The methods used by teachers to teach their students. Instructional techniques are employed by individual teachers in response to the needs of all students in their classes to help them progress through the curriculum in order to master the standards. Instruction refers to the **how** in teaching and learning the standards.



What is Fluency?

Whenever the word *fluently* appears in a content standard, the word includes *efficiently, accurately, flexibly, and appropriately.* Being fluent means that students are able to choose flexibly among methods and strategies to solve contextual and mathematical problems, they understand and are able to explain their approaches, and they are able to produce accurate answers efficiently.

- **Efficiency** – carries out easily, keeps track of sub-problems, and makes use of intermediate results to solve the problem.
- **Accuracy** – reliably produces the correct answer.
- **Flexibility** – knows more than one approach, chooses a viable strategy, and uses one method to solve and another method to double-check.

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The Arizona Mathematics Standards (AMS) are well articulated across grades K-8 and high school. The AMS are the result of a process designed to identify, review, revise or refine, and create high-quality, rigorous math standards. They are coherent, focus on deep math content knowledge, and address a balance of rigor, which includes conceptual understanding, application, and procedural skills and fluency.

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