RECOMMENDATIONS FOR HIGH SCHOOL MATH

- **Calculators**: Inappropriate use of calculators may also interfere with students' understanding of the meaning of fractions and their ability to compute with fractions. Along the same lines, graphing calculators can enhance students' understanding of functions, but students must develop a sound idea of what graphs are and how to use them independently of the use of a graphing calculator.

- **Learning algorithms**: Students should be able to use the basic algorithms of whole number arithmetic fluently, and they should understand how and why the algorithms work. Fluent use and understanding ought to be developed concurrently. These basic algorithms were a major intellectual accomplishment. Because they embody the structure of the base-ten number system, studying them can reinforce students' understanding of the place value system.

  More generally, an *algorithm* is a systematic procedure involving mathematical operations that uses a finite number of steps to produce a definite answer. An algorithm can be implemented in different ways; different recording methods for the same algorithm do not constitute different algorithms. The idea of an algorithm is fundamental in mathematics. Studying algorithms beyond those of whole number arithmetic provides opportunities for students to appreciate the diversity and importance of algorithms. Examples include constructing the bisector of an angle; solving two linear equations in two unknowns; calculating the square root of a number by a succession of dividing and averaging.

- **Teaching mathematics in "real world" contexts**: It can be helpful to motivate and introduce mathematical ideas through applied problems. However, this approach should not be elevated to a general principle. If all school mathematics is taught using real world problems, then some important topics may not receive adequate attention. Teachers must choose contexts with care. They need to manage the use of real-world problems or mathematical applications in ways that focus students' attention on the mathematical ideas that the problems are intended to develop.

- **Instructional methods**: Some have suggested the exclusive use of small groups or discovery learning at the expense of direct instruction in teaching mathematics. Students can learn effectively via a mixture of direct instruction, structured investigation, and open exploration. Decisions about what is better taught through direct instruction and what might be better taught by structuring explorations for students should be made on the basis of the particular mathematics, the goals for learning, and the students' present skills and knowledge. For example, mathematical conventions and definitions should not be taught by pure discovery. Correct mathematical understanding and conclusions are the responsibility of the teacher.
Recommended Curricula for Math:


**What Works Clearinghouse (WWC) recommend curriculum:

The What Works Clearinghouse (WWC) reviewed interventions to promote middle school students' math knowledge and skills. Because there is some variation in how school districts organize middle school, we considered curricula aimed at students in grades 6 through 9, covering one or more of the following content areas: numbers and operations, algebra, geometry, measurement, and data analysis and probability. Only core, comprehensive math curricula were eligible for inclusion in this review. These curricula extend over the course of one semester or more, are central to students' regular school instruction, and are based on any combination of text materials, manipulatives, computer software, videotapes, and other materials.

I Can Learn® Pre-Algebra and Algebra had positive effects. 

Saxon Middle School Math had positive effects. 

Algebra Readiness
Ensure students are brought to mastery of pre-algebra skills and concepts
Grades 4–6

Essentials for Algebra
Provide the essential knowledge and focused math lesson plans that under-performing students need to prepare for algebra 1 or algebra 2 with this targeted middle and high school math program
Grades 3–Adult

Corrective Math 2005
Boost computation and problem-solving skills
Grades K–8

All three curricula from McGraw-Hill SRA: 
https://www.sraonline.com/products.html?PHPSESSID=0e87b7e8dae23711a709c6046b900800&tid=10