All middle and high school students can become proficient in mathematics if:

1. Teachers help students to solve mathematics problems by using manipulatives and tools to bridge concrete to abstract and symbolic understandings of mathematics.

2. Students are asked to make their mathematics thinking transparent by talking about their solution process, drawing a picture, or making a graph and using mathematically correct language (for example, using the terms “numerator” and “denominator” rather than “top number” and “bottom number” for fractions, telling how many groups of a divisor are in the dividend for division rather than saying 5 “goes into” 20 four times, or using the term “zero pairs” rather than “canceling out”).

3. Students are asked to read and critique one another’s written responses to problems.

4. Teachers present “real-life” word problems for students to solve daily.

5. Students are expected to solve multiplication and division facts regularly as a basis for working on rational numbers and algebraic problems.

6. Students are expected to master the properties of operations (order of operations; commutative, associative, and distributive properties; multiplicative identity property; multiplicative inverse property).

7. Students are given solved problems (correctly solved and incorrectly solved using common misconceptions) to analyze and discuss how the problems were solved and where the solution strategy broke down for incorrectly solved problems.

8. Teachers differentiate mathematics instruction for diverse learners (for example, struggling learners, English language learners, gifted students, and average achievers).

9. Teachers verbalize (think aloud, describe steps for a strategy) explanations of concepts and steps for solving problems.

10. Teachers collect data regularly to determine whether their students are benefiting from instruction and use the data to make informed instructional decisions for subsequent lessons.