

Expert Content Review

Dixie Ross

I have carefully examined the new Texas Mathematics Standards and also solicited input from others in my district who have more experience at the elementary and middle school levels. Overall, the response to the new standards is positive with appreciation for the level of specificity as well as the earlier introduction of some concepts and the increased rigor of the content. There seems to be agreement that these standards are well-aligned with the NCTM standards.

There are a few specific standards for which I have questions or concerns as explained below.

2M02 Determine lengths to the “nearest marked unit” needs to be more specific. One teacher might use a ruler marked to the nearest $\frac{1}{4}$ -inch and another teacher might use rulers that are marked to the nearest $\frac{1}{16}$ -inch. This standard also concerns me in that fractions on a number line do not appear until the subsequent grade level.

3N15 It seems that the standard unnecessarily avoids naming the specific properties of operations (commutative, associative, distributive) that students will be expected to master.

3M04 Expected tools (graduated cylinder, balance scales??) should be specifically identified and these should be aligned with the science standards.

4N23 Again, properties should be named as well as the scope of the use of order of operations. On page 39, “using the order of operations is listed as a supporting topic for grade 6 and yet it is also expected in grade 4, according to this standard.

5N11, 12 Are the factors decimal x whole, or can it be decimal x decimal. Can the product only be to hundredths place, or can both factors be to hundredths place?

5N14 Division of decimals. Is it decimal divided by whole, whole divided by decimal, and decimal divided by decimal as long as the quotient is only expressed to the hundredths?

6A08 Again, specify properties.

Grade 7 or 8 Determining effects on perimeter, surface area and volume when dimensions of a shape are changed proportionally does not appear anywhere in the standards, but is an important concept in geometric reasoning.

A1Q04 Parentheses are missing from the listed function transformations.

A1A18 This should specify that literal equations should include geometric and scientific formulas as well as other formulas.

GG04 The phrase “choosing from” should be replaced with “including.” Some teachers will choose to only use software thus depriving the kinesthetic learners from an opportunity to master this material. Other teachers will choose the traditional tools and fail to make use of appropriate software.

Geometry I like the inclusion of the probability standards in geometry—something new that will better prepare more students for AP Statistics. Teachers will not be prepared for this standard and professional development will need to be developed and delivered.

Algebra II I was disappointed that linearization of data using inverse functions is not included in the new standards. This seems an opportunity missed to reinforce the importance of linear relationships and inverse functions, to help students understand how regression equations are determined using technology and to better prepare more students for AP Statistics.

A2F05 Would like to see the signum function specifically included.

A2L04 Matrix methods should be more clearly identified. Many teachers teach the inverse matrix method as a calculator “trick” without developing student understanding. Are students expected to know Gaussian elimination? Many college courses expect students to understand this method and it forms a nice bridge between the algebraic methods and matrix methods.

I do NOT believe that other courses should be added at the high school level to provide more options for students. There is a core body of knowledge and skills that students need to have developed in order to be career and college-ready. As courses proliferate, there are options developed that do not include the mathematical rigor and expectations that are necessary to function in today’s society. The courses that are listed (as well as Advanced Placement courses in Computer Science, Statistics and Calculus) provide students with plenty of appropriate options.

Respectfully submitted
Dixie Ross
AP Calculus Teacher
Pflugerville High School