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High School Mathematics State Policy Research

September 14, 2018

Overview

This policy outline provides a synopsis of recent state policies related high school mathematics pathways, graduation requirements and science, technology, engineering and mathematics (STEM) education. The outline is not an exhaustive list, but includes policies relevant to the mathematics workgroups or are slightly differentiated from Florida's policies related to each of the listed areas. Examples of policy and advocacy recommendations of mathematics associations are included to provide insight on statewide and national policy agendas of a few mathematics organizations. This list of mathematics organizations is not exhaustive, but relevant to the mathematics workgroups.

Table 1. Recent Legislation Related to High School Mathematics Pathways and Graduation Requirements

State	Strategies
California <u>51224.5</u> (2015)	Accepting high school mathematics completed prior to Grade 9. Prior to this recent legislative change, California would require high school mathematics courses only be taken in Grades 9-12. California requires two credits in mathematics, Algebra I is required and the second course must meet or exceed the rigor of Algebra I.
Georgia <u>160-4-2-.48</u> (2011)	Requires four credits in mathematics of designated college preparatory mathematics. Georgia requires four units of core credit in mathematics to be completed in Grades 9-12. The mathematics requirements must include Mathematics I or Georgia Performance Standards (GPS) Algebra, or its equivalent and Mathematics II or GPS Geometry, or its equivalent and Mathematics III or GPS Advanced Algebra or its equivalent. Additional core courses needed to complete four credits in mathematics can also be chosen from approved state lists or AP, IB or dual enrollment designated courses.
Idaho <u>IDAPA 08.02.03.105</u> (2007)	Requires enrollment in a mathematics course during 12th grade. Idaho requires students to complete six credits (3 courses) in mathematics in high school with Algebra I and Geometry as mandatory courses. Students can choose the third mathematics course and must take at least one mathematics course during the 12 th grade year. Students must also complete a senior project and take the ACT or SAT exam by the end of the 11 th grade.
Oklahoma <u>S1370</u> (2017)	Requires students to enroll in the state's "College Preparatory/Work Ready Curriculum" aligned with college admission requirements. Students entering 9 th grade are required to enroll in the College Preparatory/Work Ready Curriculum. Parents or legal guardians may request an opt-out and the student can enroll in the Oklahoma's Core Curriculum. The College Preparatory/Work Ready Curriculum is aligned admission requirements for Oklahoma's colleges and universities and Oklahoma Promise-a college tuition waiver. The College Preparatory/Work Ready curriculum requires students to complete three credits of mathematics and mandates Algebras one of the three mathematics courses. The remaining credits can be satisfied with Algebra II,

State	Strategies
	Geometry, Trigonometry, Math Analysis, Calculus, Advanced Placement Statistics, or any mathematics course with content and/or rigor above Algebra I and approved for college admission requirements. These three courses must be completed in Grades 9-12 and the student must complete an additional mathematics course if one of the three required mathematics courses was completed prior to the 9 th grade.
Virginia 8VAC20-131-50 (2018)	Awards diplomas based on intended pathways and allows computer science and data analysis to satisfy mathematics and advanced diploma options. Virginia requires three standard credits of mathematics and one verified credit (credit by exam). Requires two mathematics credits to include Algebra I, Geometry, Algebra functions, data analysis, Algebra II, or other mathematics courses approved by the state board. Computer science course credit may be considered a mathematics course credit. In addition, Virginia has multiple diploma pathways depending on students' long-term academic goals. An Advanced Studies Diploma is awarded to students who complete four standard and two verified credit in mathematics, have a high school grade point average of "B" or better and successfully completed at least nine transferable college credits. The mathematics course options for the advanced studies diploma are Algebra I, Geometry, Algebra II, or other mathematics courses above the level of Algebra II.

Table 2. STEM Education

Algebra based mathematics is at the core foundation of STEM education and students successful in mathematics are able to pursue degree programs in STEM pathways at the postsecondary level. There are achievement gaps between students of different race/ethnicities in mathematics achievement and STEM degree attainment. Understanding strategies and pathways to improve mathematics success may contribute to increasing the number of underrepresented populations in STEM.

State	Strategies
Idaho SB 1267 (2018)	Awarding STEM diploma with additional mathematics and science requirements. The standard Idaho diploma requires six credits (3 courses) in mathematics and requires students to complete a mathematics course during 12 th grade. Students can earn a STEM diploma by completing additional requirements in STEM to include eight credits (4 courses) in mathematics and natural sciences, and five additional credits in the student's choice of any or all subjects of science, technology, engineering or mathematics.
Oklahoma S1370 (2017)	Awarding STEM Diplomas Students and parents have an option to request an alternative high school core curriculum that allows for students to opt into a more STEM based curriculum. This request must be initiated by the student and parent (if a student is under the age of

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State	Strategies
	<p>18) and documented with the school district. Unlike, Idaho there was no indication that this diploma receives a special “STEM” designation.</p> <p>This alternate curriculum still requires three credits of mathematics, but the options to satisfy the mathematics requirements are different than the standard college preparatory/workforce diploma.</p> <p>Oklahoma defines "Contextual methodology" as academic content and skills taught by utilizing real-world problems and projects in a way that helps students understand the application of that knowledge.</p>
Virginia 8VAC20-131-50 (2018)	<p>Multiple diploma pathways for Advanced Studies and Mathematics and Technology.</p> <p>Virginia awards an Advanced Mathematics and Technology diploma designation to whomever earned either a Standard Diploma or an Advanced Studies Diploma and satisfied four credits of mathematics that include Algebra II and two verified credits with a "B" average or better, passed an examination in a career and technical education field that confers certification from a recognized industry, trade, or professional association, acquire a professional license in a career and technical education field from the Commonwealth of Virginia or pass an examination approved by the board that confers college-level credit in a technology or computer science area.</p>
Washington S 6133, S6136 (2017)	<p>Uses computer science equivalent to high school mathematics or science</p> <p>Allows the use of computer science and AP computer science courses as equivalent to high school mathematics or science and AP computer science qualifies as a math-based quantitative course for students who take the course in the 12th grade.</p>

Table 3. Policies Promoted by Associations and Researchers

Association	Strategies
Florida Association of Mathematics Supervisors (FAMS) & Florida Council of Teachers of Mathematics (FCTM)	<p>Promoting equity in mathematics.</p> <p>FAMS and FCTM advocate and support equitable access to higher levels of mathematics for all students and ensuring the best path to Algebra I success with policy recommendations detailed in the Advocating for Each and Every Student's Success in Algebra1 Outline and the FCTM Access and Equity Position Statement.</p>
National Council of Teachers of Mathematics (NCTM)	<p>Promoting equity in mathematics.</p> <p>NCTM's legislative platform focuses on influencing policies that improve mathematics education for each and every student and policies that invest in teachers of mathematics. The full detail of policy recommendations are outlined in the 2018 NCTM Legislative Platform.</p>

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