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TO: Members of the State Board of Education

FROM: Lillian M. Lowery, Ed.D.

DATE: April 22, 2014

SUBJECT: COMAR 13A.04.12 Program in Mathematics (AMEND)
PERMISSION TO PUBLISH

PURPOSE:

To seek approval of this regulation that addresses specific subject regulations for Mathematics.

BACKGROUND:

In October 2013, an emergency regulation was sought to modify the specific subject regulations in mathematics to align to the Maryland College- and Career-Ready Standards and to incorporate the requirements of the College and Career Readiness and College Completion Act of 2013 (Attachment A). Today, I am presenting the permanent specific subject regulations in mathematics for information (Attachment B).

EXECUTIVE SUMMARY:

Maryland adopted the Common Core State Standards for Mathematics in June 2010. Since adopted Maryland educators have analyzed the new standards to determine the shifts necessary to move from the standards in the State Curriculum. Maryland educators developed the Maryland Common Core Curriculum Frameworks that reflect the analysis of these standards and how they compare to the earlier standards. These frameworks were posted on www.mdk12.org, shared with educators and the Educator Effectiveness Academies, and with our State Board. Full implementation of these new standards began with the 2013-2014 school year.

The language in the regulations being submitted reflects the change in language and content required by the Maryland College and Career-Ready Standards. For example, in the new standards for mathematics, the domains are listed by grade bands, and for high school students, conceptual categories are identified. The Standards for Mathematical Practice describe the processes and proficiencies for mathematics.

ACTION:

I am requesting the State Board of Education approve the proposed amendments to COMAR 13A.04.12 Program in Mathematics for publication in the Maryland Register.

Attachments

Title 13A STATE BOARD OF EDUCATION

Subtitle 04 Specific Subjects

Chapter 12 Program in Mathematics

Authority: Education Article, §§2-205(h) and 7-205.1, Annotated Code of Maryland

.01 Mathematics Instructional Programs for Grades Prekindergarten—12.

A. Each local school system shall:

(1) Provide in public schools an instructional program in mathematics each year for all students in grades prekindergarten—8; [and]

(2) Offer in public schools a mathematics program in grades 9—12 [which enables students to meet graduation requirements and to select mathematics electives.] *or each year that a student is enrolled in high school, which enables students to meet graduation requirements and to select mathematics and mathematics-related courses that shall include:*

(a) Mathematics Transition Course;

(b) Algebra II;

(c) Pre-Calculus;

(d) Discrete Mathematics;

(e) Linear Algebra;

(f) Probability and Statistics;

(g) AP© Computer Science;

(h) AP© Calculus (A/B);

(i) AP© Calculus (B/C); or

(j) A Computer Science course that is not AP© Computer Science if the local school system determines the course meets the mathematics standards required by this regulation; and

(3) Beginning with students entering grade 9 in the 2014 school year, require each of those students to enroll in a mathematics course in each year of high school they attend.

B. Maryland Mathematics Program. The comprehensive instructional program shall provide for the diversity of student needs, abilities, and interests at the early, middle, and high school learning years. Each local school system shall include the content standards in §§C—[I]*F* of this regulation in its curriculum.

C. [Algebra, Patterns, and Functions. Students shall demonstrate knowledge of algebra, patterns, and functions by algebraically representing, modeling, or solving mathematical or real-world problems involving patterns or functional relationships, using technology when appropriate.] *For prekindergarten through grade 5, students shall demonstrate knowledge of the domains: Number, Counting and Cardinality, Number Operations and the Problems They Solve, Numbers in Base Ten, Number – Fractions, Measurement and Data Analysis, and Geometry.*

D. [Geometry. Students shall demonstrate knowledge of geometry by applying the properties of one-dimensional, two-dimensional and three-dimensional geometric figures to describe, reason, or solve problems about shape, size, position, or motion of objects, using technology when appropriate.] *For grades 6—8, students shall demonstrate knowledge of the domains: Ratios and Proportional Reasoning, The Number System, Expressions and Equations, Functions, Geometry, and Statistics and Probability.*

E. [Measurement. Students shall demonstrate knowledge of measurement by identifying attributes, units, or systems of measurement by applying a variety of techniques, formulas, tools, or technology.] *For high school students, students should demonstrate knowledge of the conceptual categories: Number and Quantity, Algebra, Functions, Geometry, and Statistics and Probability.*

[F. Statistics. Students shall demonstrate knowledge of statistics by collecting, organizing, displaying, analyzing, or interpreting data to make decisions or predictions, using technology when appropriate.

G. Probability. Students shall demonstrate knowledge of probability by using experimental methods or theoretical reasoning to determine probabilities to make predictions or solve problems about events whose outcomes involve random variation, using technology when appropriate.

H. Number Relationships and Computation. Students shall demonstrate knowledge of number relationships and arithmetic/computation by describing, representing, or applying numbers and shall estimate or compute using mental strategies, paper/pencil, or technology.

I. Processes of Mathematics. Students shall demonstrate knowledge of the processes of mathematics by making connections and applying reasoning to solve problems and communicate their findings.]

F. Standards for Mathematical Practice. Students in prekindergarten through high school shall demonstrate knowledge of the processes and proficiencies of mathematics: make sense of problems and persevere in solving them, reason abstractly and quantitatively, construct viable arguments and critique the reasoning of others, model with mathematics, use appropriate tools strategically, attend to precision, look for and make use of structure, and look for and express regularity in repeated reasoning.

[J.] *G.* Curriculum Documents. Consistent with Education Article, §4-110, Annotated Code of Maryland, each local school system shall provide mathematics curriculum documents for the elementary and secondary schools under its jurisdiction that:

(1) Include the content standards described in §§C—[I]*F* of this regulation; and

(2) Are aligned with the [Voluntary State Curriculum as developed by the Maryland State Department of Education in collaboration with local school systems] *Maryland College- and Career-Ready Standards as developed by the Maryland State Department of Education in collaboration with local school systems and aligned to the Common Core State Standards.*

[K.] *H.* Student Participation. Each student shall have the opportunity to participate in the comprehensive mathematics program required by this chapter.

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State Superintendent of Schools