

**BALTIMORE COUNTY PUBLIC SCHOOLS**

**DATE:** December 21, 2010

**TO:** **BOARD OF EDUCATION**

**FROM:** Joe A. Hairston, Superintendent

**SUBJECT:** **REPORT ON MATHEMATICS PREK-12 CURRICULUM AND INITIATIVES UPDATE**

**ORIGINATOR:** John Quinn, Acting Associate Superintendent, Curriculum and Instruction

**RESOURCE PERSON(S):** Patricia Baltzley, Acting Executive Director, Department of STEM  
John Staley, Secondary Coordinator, Office of Mathematics PreK-12

**RECOMMENDATION**

That the Board of Education receives an update on the Mathematics PreK-12 Curriculum and Initiatives.

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Attachment I: Mathematics PreK-12 Curriculum and Initiatives Update

# **BALTIMORE COUNTY PUBLIC SCHOOLS**

## **Division of Curriculum and Instruction**

### **Executive Summary**

#### **Report on Mathematics PreK-12 Curriculum and Initiatives Update**

The PreK-12 mathematics program in Baltimore County Public Schools continues to grow as data trends exhibit needs and student expectations progress. Performance Goal 1 in the *Blueprint for Progress* clearly outlines the expectations for all students: “By 2012, all students will reach high standards, as established by the Baltimore County Public Schools and State performance level standards, in reading/language arts, mathematics, science, and social studies.” The Office of Mathematics PreK-12 is committed to this goal and an accessible, rigorous course of study for all students.

The revised elementary mathematics curriculum (PreK-5) which blends a core basal and a hands-on program, *Investigations* has provided a boost to the elementary mathematics program and enables a seamless transition to the middle school mathematics program. A differentiated approach to mathematics in middle school provides opportunities for all students, at all ability levels to have access to a rich, engaging, rigorous curriculum and to be ready for Algebra I and the Algebra/Data Analysis High School Assessment (HSA) by ninth grade. The Algebraic Thinking sequence of courses provides this foundation for Algebra I.

With a strong program of professional development and a differentiated curriculum, the Algebra I curriculum has been implemented in all Algebra I classrooms and provides students with the skills-set necessary to be successful on the HSA and to be ready for the college preparatory courses of Algebra II and Geometry. Two courses for students with special needs, *Algebra and Data Analysis Adapted* and *Algebraic Functions*, provide the opportunity for students with a severe mathematics disability recommended through the IEP team process to have access to the Algebra I curriculum and appropriate preparation for the High School Assessment in Algebra/Data Analysis. Under Dr. Hairston’s leadership, an expectation of rigorous coursework has been embraced. Baltimore County Public Schools continuously pushes students towards AP courses and college preparatory courses. All diploma bound students receive credits in Algebra I, Geometry, and Algebra 2, minimally-all courses needed to be successful on the SAT and needed for success in college and the workforce.

Baltimore County Public Schools recognizes that a highly-qualified mathematics teacher is a critical element in mathematics achievement for students and is committed to provide the necessary support so that all students will have opportunities for success in mathematics. To this end, a program of sustained, high-quality, professional development has been developed at all levels. Additionally, initiatives for new curriculum programs and software interventions have been considered and are in implementation or pilot status. These initiatives are being evaluated for their effectiveness by the Office of Mathematics PreK-12 in collaboration with the Department of Research, Accountability and Assessment. The Office of Mathematics PreK-12 will continue to review current programs and initiatives to support all students as they access a

high-quality, rigorous mathematics program that will help forge the path to success in education and future career goals.



# **Mathematics PreK-12 Curriculum and Initiatives Update**

Board of Education  
Meeting

December 21, 2010

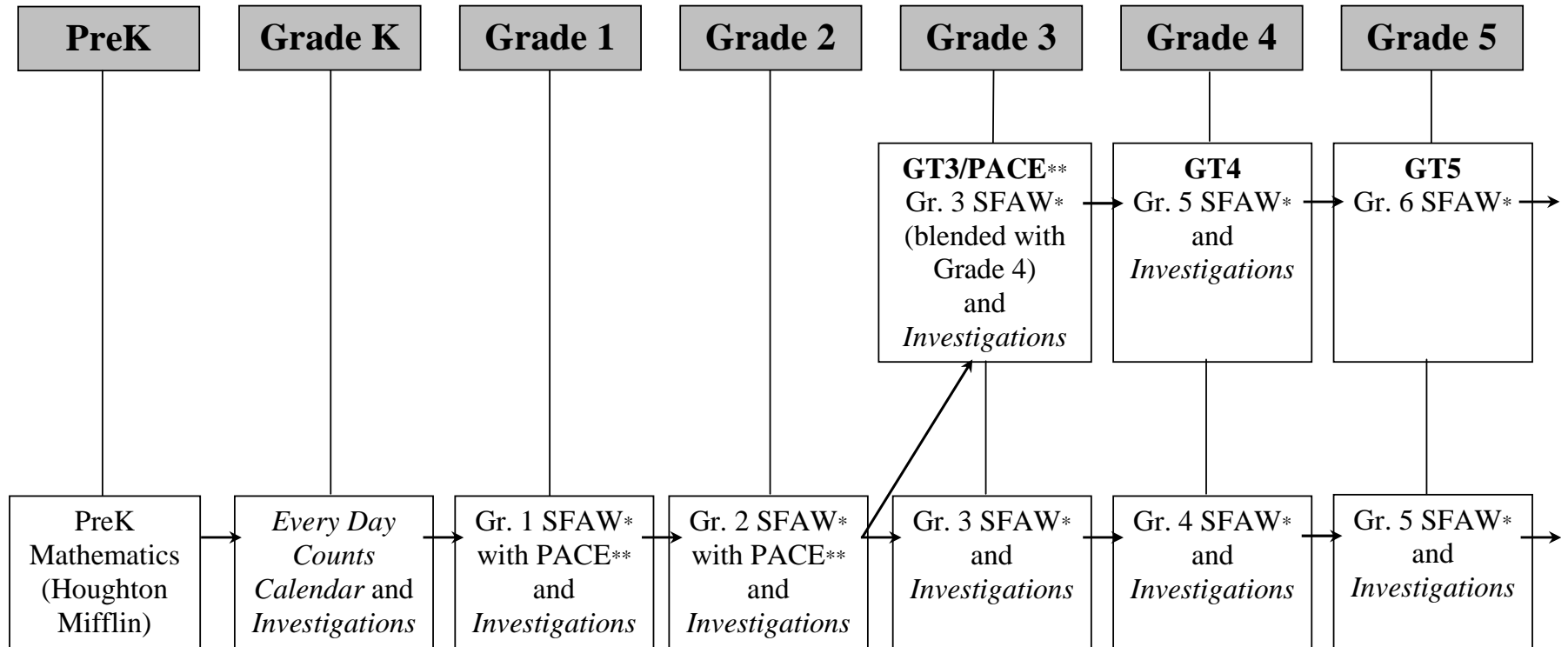
# Mathematics Curriculum and Initiatives

- Overview of Mathematics PreK-12 Curriculum Program
- Highlight of Gateway to Algebra I: Algebraic Thinking
- Current Mathematics PreK-12 Initiatives
- Future Initiatives

# PreK-12

- Sequence of Courses
- Instructional Pacing Guides
- Alignment to SC and grade level Resource Guides
- Short Cycle Assessments and Benchmarks and curriculum-embedded unit assessments through Algebra I

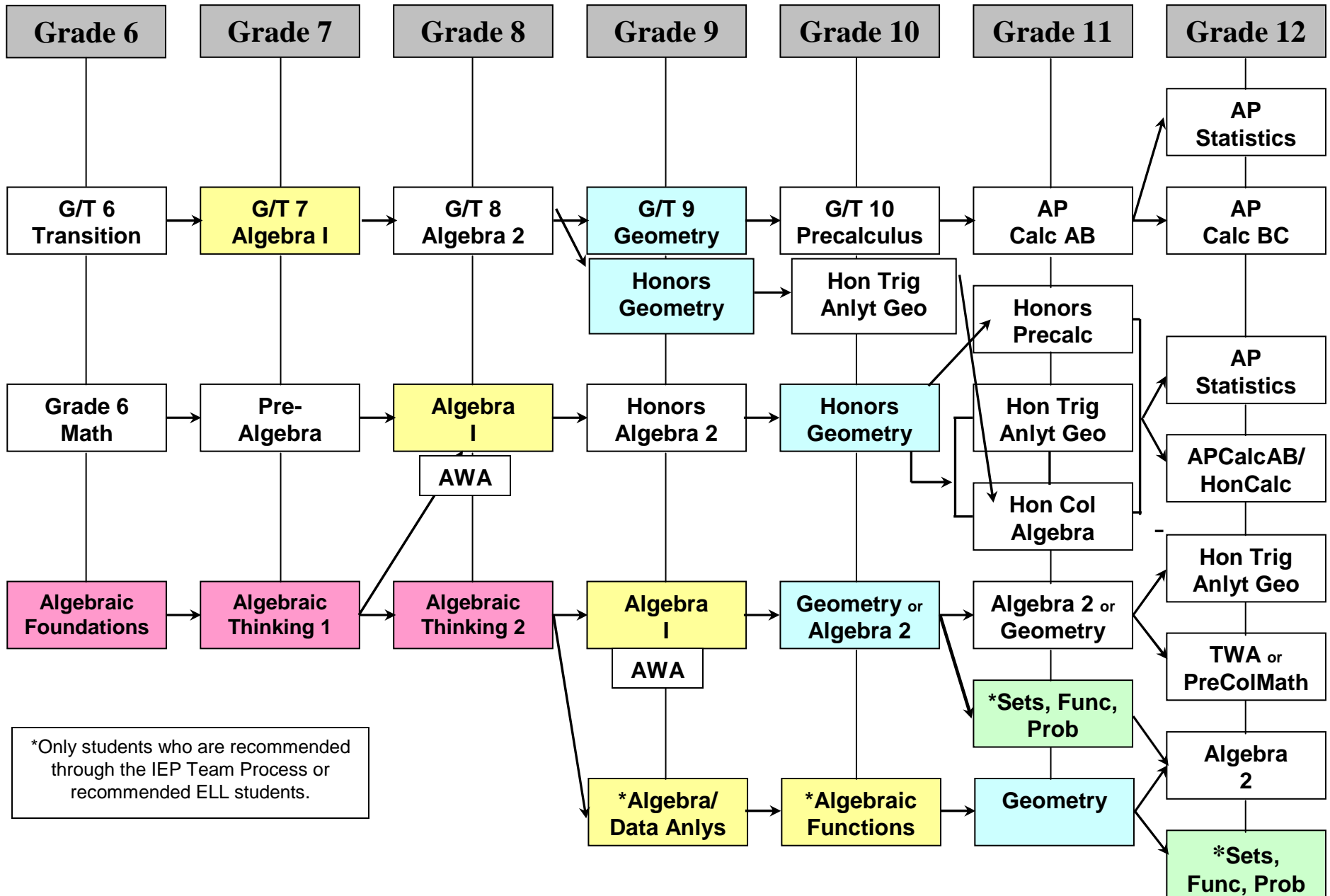
## BCPS MATHEMATICS PROGRAM Grades PreK-5



\*SFAW Scott Foresman-Addison Wesley

\*\*PACE Primary Achievement Curriculum Enrichment

# MATHEMATICS SEQUENCE Grades 6-12





## The Journey begins: 2006-2007

*at*

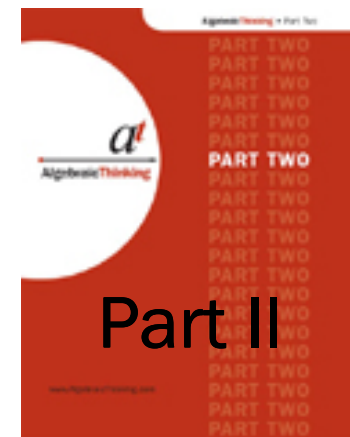
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**AlgebraicThinking**



Foundations



Part I



Part II



AlgebraicThinking

- Algebraic Thinking (AT) is a three year middle grades mathematics program designed to prepare students to be successful in Algebra 1 by grade 9.
- Each course is a complete on-grade level mathematics program that is parallel to the BCPS mathematics courses.
- 90 minute class periods.



AlgebraicThinking

### A Typical Algebraic Thinking Classroom:

- Non-Traditional Instruction – movement, volume, discussion, fun
- Answering the “WHY” of math concepts
- Active Engagement
- Hands-on Learning
- Scaffolding Curriculum
- Foldables/Graphic Organizers
- SOLVE – Do it, Say it, and Think it
- Word Wall – a work in progress
- Students in pairs/groups
  - Working Together
  - Discussing
  - Finding Solutions
  - Think – Pair – Share



AlgebraicThinking

*[ntnmath.algebraicthinking.com](http://ntnmath.algebraicthinking.com)*

## School/Teacher Resources:

- **Coach**
  - 2006-2009: Company coaches
  - 2009-now: School support teacher
- **E-Letters**
- **Website**
- **Video Clips (Online and DVD)**
- **On Going Training- Booster Sessions**
- **Math Madness Parent Newsletter**

# Bridge to Algebra Transition

- Keys to Essential Algebra Success (KEAS)
  - Supplemental lessons embedded in Algebra I
- Professional Development
  - All Algebra I teachers
  - Grade 9 Algebra I teachers
  - Special Education teachers
    - Inclusion
    - Algebra and Data Analysis Adapted
    - Algebraic Functions Adapted

# Current Curriculum Pilots

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- GT6 Mathematics (middle school)
- Geometry (high school)

# Mathematics Initiatives

- Carnegie Learning Cognitive Tutor (high)
- Project SEED (elementary)
- First in Math (elementary/middle)
- FASTT Math/GO Solve (elementary/Title I)
- Study Island (middle)

# Mathematics Initiatives - Pilots

- Elevate Math (elementary/high)
- Study Island (elementary/high)
- Fraction Nation (elementary/middle)
- Explore Learning Gizmos  
(elementary/middle/high)

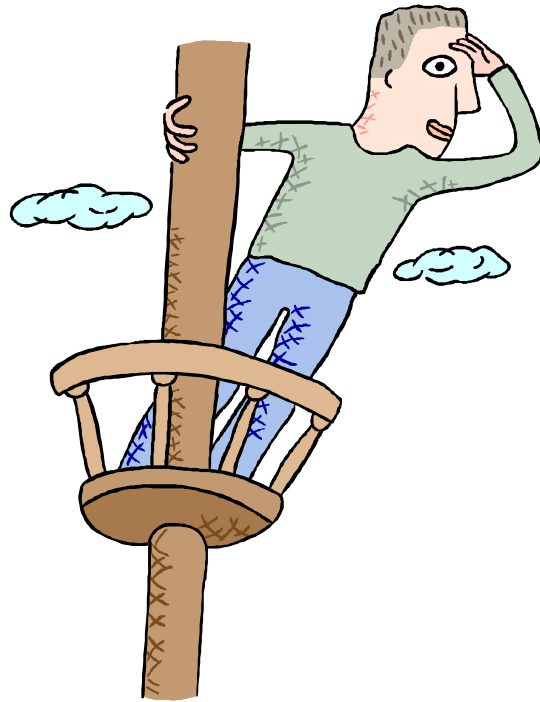


# Evaluation Process

In collaboration with DRAA:

- Research on product
- Usage Data (use and pre/post)
- Individual student data
- Surveys – teacher, principal, student, parent

# What's on the horizon?



# Maryland State University System

- Entering ninth grade class in 2011 (class of 2015)
  - Four years of high school mathematics
  - Algebra I, Geometry, Algebra 2, and a non-trivial algebra course
- Baltimore County is ready!

# Common Core State Standards

- Adopted by Maryland State Board of Education in June 2010 with State Common Core Curriculum to be adopted in June 2011.
- Review and Alignment of CCSS with State Curriculum standards throughout 2010-2011.
- Professional development begins starting 2011-2012.

# Focus Areas as Outlined in the Blueprint for Progress



- Mathematics achievement for ALL students
- Necessary support provided for ALL students
- Content knowledge and pedagogy for ALL teachers
- Rigorous coursework for ALL students
- Proficiency on MSA and Alt-MSA
- Passing HSA Algebra/Data Analysis as a graduation requirement for all diploma bound students
- Increased Performance on SAT and AP
- College, career, and/or military ready