

Graduation Guidance Document 2011-2012

Mathematics

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"Making Education Work for All Georgians"

Guidance for Georgia High School Mathematics Graduation Requirements

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Georgia High School Mathematics Graduation Requirements

Executive Summary

Successful preparation for both postsecondary education and employment requires learning the same rigorous mathematics content and skills. No longer do students planning to enter the workplace after high school need a different and less rigorous mathematics curriculum than those planning to go to college. (Achieve, Inc., 2004)

On September 13, 2007, the State Board of Education adopted rigorous new graduation requirements effective with the incoming ninth grade class in 2008. A hallmark of the rule is the elimination of tiered diploma options where students followed either College Preparatory or Technology/Career coursework. Under the rule, all students are expected to complete a common set of mathematics requirements to earn a regular diploma. The rule specifies certain mathematics courses that all students must take – making rigorous content an expectation for all, not just some.

Under the rule, all students will have an opportunity to choose mathematics courses that may include Advanced Placement, International Baccalaureate, and dual enrollment courses. Students should be able to enroll in mathematics courses based on their areas of interest. Students who are actively involved in selecting courses they want are more likely to engage in courses that lead to graduation.

Requirements in the graduation rule are aligned with the Georgia Performance Standards (GPS) for mathematics. A selection of courses provide multiple opportunities for students to continue taking advanced coursework, academic support classes, or special interest courses, depending on the individual's needs and goals. More students with disabilities will have the opportunity to earn a regular education diploma, thus enabling them to become employed or to go on to postsecondary education.

Mathematics graduation requirements, along with state curriculum standards and assessments, will ensure that more students finish school ready to thrive in our knowledge-based, high-skills economy.

Key Feature of the State Board of Education Rule 160-4-2-.48 Requirements: 4 units of Mathematics to include Mathematics I, GPS Algebra, or the equivalent and Mathematics II, GPS Geometry, or the equivalent

The research on the requirement of challenging mathematics in high school is consistent. Yet, it may come as a surprise to many adults who did not take higher-level mathematics courses when they went to school. For most students, taking challenging mathematics in high school is the gatekeeper that either opens or shuts the doors to great opportunities.

In a pair of landmark federal studies that followed high school students through their postsecondary years, Clifford Adelman found that the highest level of mathematics taken in high school has the most powerful relationship to earning a bachelor's degree. This is true regardless of student ethnicity, family income, or parents' education levels. Students who complete Algebra II content in high school *more than double* their chances of earning a four-year college degree. Those who do not take challenging math courses are much more likely to end up in remedial courses and are more likely to drop out.

It is not only the college bound who need more mathematics. Increasingly, well-paying jobs that pay a living wage and allow for career advancement require strong mathematics, problem-solving, and reasoning skills.

Due to advancements in technology, manufacturing companies need employees with strong mathematics skills to operate the machinery on the factory floor. Eastman Chemical in Texas has an established company-run Operator Apprenticeship Program to train new machine operators. Apprentices are evaluated on their ability to perform tasks that require solving multiple-step mathematics problems and presenting solutions in the appropriate unit of measure or dimension. In 2000, there were 1.6 million jobs for machine operators, paying median hourly wages from \$10.40 to \$16.07. Those in the construction trade also need higher level mathematics skills. According to the Associated General Contractors of America, electricians, pipe fitters, sheet metal workers, draftsmen, and surveyors all need algebra, geometry, trigonometry and physics to be successful on the job.

If you think this sounds a lot like the mathematics courses students need for college, you're right. A study by ACT looked carefully at the skills needed for success in freshmen courses in college and compared them to skills needed for training programs in occupations that offer a salary sufficient to support a family of four. ACT concluded that those jobs require a comparable level of mathematics skill in algebra, geometry, data analysis, and statistics to that required for success in college.

In a national poll of recent high school graduates, more than two-thirds who took Algebra II in high school reported that they were well prepared for the demands they faced in college and the workplace. In contrast, of graduates who took less than Algebra II, only four out of 10 say they were well prepared. The statistics were similar whether graduates went to college or directly to the workplace. Eighty percent of graduates said they would work harder and apply themselves more if they could go back and do high school all over again — that answer was the same for those who went straight to the workforce and for those who went on to college.

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More than two-thirds of graduates would like to have taken more rigorous courses in high school, knowing what they know now about the demands of the workplace and college. When it comes to mathematics, one-third of college students and half of those who went straight to the workplace would have taken more rigorous high school courses.

The Bottom Line: No matter which path students choose after high school, those who have taken more demanding mathematics courses are better prepared.

National Trends

Achieve, Inc., The Expectations Gap: A 50-State Review of High School Graduation Requirements, 2004

Mathematics

- College professors and employers agree that to be successful beyond high school, graduates should have mastered the content typically taught in a rigorous four-year course sequence of Algebra I, Geometry and Algebra II, as well as data analysis and statistics.
- There is growing consensus that students should take math during their senior year in high school – preferably a course beyond Algebra II – to ensure that they continue to strengthen their knowledge and skills.
- 29 states and the District of Columbia require students to complete three or more years of math.
- 13 states require only two years of math.
- 20 states and the District of Columbia specify not only the number of courses but also which ones students must take – in these states Algebra I is the most common requirement, although a growing number of states also are requiring Geometry.
- For a general diploma, 13 states require two, 24 states and the District of Columbia require three, and five states – Alabama, Arkansas, Mississippi, South Carolina and West Virginia (and now Georgia beginning in 2008) – require students to complete four math courses to graduate..

Georgia High School Mathematics Graduation Requirements

Section 1: Requirements

Four units of credit in mathematics shall be required of all students, including

- Mathematics I, GPS Algebra, or its equivalent,
- Mathematics II, GPS Geometry, or its equivalent, and
- Mathematics III, GPS Advanced Algebra or its equivalent. *

*NOTE: Students entering ninth grade in 2008-2009, 2009-2010, and 2010-2011 only, who earn credit in Mathematics I and Mathematics II or GPS Algebra and GPS Geometry, along with 2 additional core mathematics courses, will have satisfied the **minimum** mathematics requirements for high school graduation. For these three cohorts of students, which includes Students with Disabilities, Mathematics Support courses may be treated as elective or core courses. Mathematics III or GPS Advanced Algebra will remain core (c) courses but will not be required (r) courses for graduation.

Additional units needed to complete four credits in mathematics must be chosen from the list of GPS/AP/IB/dual enrollment designated courses.

Accelerated Mathematics I and Accelerated Mathematics II or Accelerated GPS Algebra/Geometry and Accelerated Geometry/Advanced Algebra include the standards of Mathematics I, Mathematics II, and Mathematics III or GPS Algebra, GPS Geometry, and GPS Advanced Algebra. At the present time, these are the only equivalent courses for Mathematics I, II and III or GPS Algebra, GPS Geometry, and GPS Advanced Algebra.

Students with disabilities who earn credit in Mathematics I or GPS Algebra and the associated mathematics support course, and earn credit in Mathematics II or GPS Geometry and the associated mathematics support course, upon determination through the Individualized Education Plan process may meet diploma requirements by completing Mathematics III, GPS Advanced Algebra, or the equivalent for a total of 3 mathematics core credits. Completion of 3 units of mathematics may not meet mathematics admission requirements for entrance into a University System of Georgia institution or other post-secondary institution without additional course work.

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All students, including Students with Disabilities, entering ninth grade in 2008-2009, 2009-2010, and 2010-2011 ONLY, who earn core credit in Mathematics I and Mathematics II or GPS Algebra and GPS Geometry, along with 2 other core mathematics courses, will have satisfied the **minimum** mathematics requirements for high school graduation. Mathematics Support I, GPS Algebra Support I, Mathematics Support II, GPS Geometry Support, Mathematics Support III, and GPS Advanced Algebra Support III may be designated as elective or core courses for students who entered ninth grade in 2008-2009, 2009-2010, or 2010-2011 ONLY. Please find a sample advisement template on pages 8 and 9 for your use in guiding students who will satisfy only **minimum** mathematics requirements for graduation.

NOTE: The successful completion of Mathematics I and II or GPS Algebra and GPS Geometry along with 2 core credits in mathematics support courses, for students who entered ninth grade in 2008-2009, 2009-2010, 2010-2011 may not meet the mathematics admission requirements for entrance into a University System of Georgia institution or other post-secondary institution without additional coursework.

All students who entered high school in 2008-2009 or 2009-2010 ONLY and earn credit in Mathematics I-III or GPS Algebra, GPS Geometry, and GPS Advanced Algebra, along with credit in Mathematics Support III or GPS Advanced Algebra Support will have met the minimum mathematics requirements for entrance into some of the University System of Georgia institutions.

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ADVISEMENT TEMPLATE: MINIMUM MATHEMATICS REQUIREMENTS FOR A GEORGIA HIGH SCHOOL DIPLOMA

Student Name: _____ Student # _____

Parent Name: _____ Date: _____

The Georgia Board of Education has approved the following mathematics graduation requirements for students entering ninth grade in 2008-09, 2009-10, and 2010-11:

- o All students must earn a total of four core units of mathematics;
o The recommended standard mathematics sequence includes Mathematics I or GPS Algebra, Mathematics II or GPS Geometry, Mathematics III or GPS Advanced Algebra, and a fourth mathematics option;
o The minimum state requirements include the following: one credit in Mathematics I or GPS Algebra, one credit in Mathematics II or GPS Geometry and two additional core credits;
o Districts are permitted flexibility in awarding core or elective credit for mathematics support courses.

Summary of Data Reviewed in Consideration of Altering Recommended Standard Course Sequence for Student (past performance in mathematics courses, anecdotal record from student's mathematics teacher(s), SST/IEP committee information, present level of performance in mathematics, parent concerns). Please attach additional pages if needed:

Four horizontal lines for additional information.

Mathematics courses and units student has earned for graduation:

Four horizontal lines for listing mathematics courses and units.

Student Initials

Parent Initials

Table with 2 columns (Student Initials, Parent Initials) and 4 rows of acknowledgment text regarding mathematics requirements.

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I have read and understand the items listed above. I understand that the completion of the minimum mathematics requirements listed above could significantly limit post secondary opportunities for the student.

Student Signature

Parent Signature

FACULTY PRESENT FOR MEETING:

Print Name

Signature

School Counselor (MUST BE SIGNED)

Mathematics Administrator (MUST BE SIGNED)

Mathematics Teacher or Department Chair

SST/IEP Designee

Principal (MUST BE SIGNED)

Section 2: High School Credit for Mathematics Courses Taken in Middle School

Unit credit may be awarded for courses offered in the middle grades that meet 9-12 GPS requirements. Credit courses must follow GPS requirements as well as associated End Of Course Test requirements. In August 2008, Quality Core Curriculum (QCC) mathematics courses (Algebra I, Geometry, etc.) were replaced by GPS courses (Mathematics I and Accelerated Mathematics I, etc.) and were made available to middle schools that offered high school courses for advanced students.

The 2011 Graduation Rule Amendment expanded the available GPS courses to include GPS discrete mathematics courses (GPS Algebra and Accelerated GPS Algebra/Geometry, etc.) which will be available to middle schools that offer high school courses for advanced middle school students.

High school credit for mathematics courses taken in middle school credit should be awarded only for courses that include concepts and skills based on the Georgia Performance Standards (GPS) for grades 9-12 or those approved by the State Board of Education. The Individualized Education Program (IEP) shall specify whether core courses taken as part of an IEP shall receive core unit credit. High School unit credit is not awarded for courses that include concepts and skills for grades K-8.

Students who completed QCC mathematics courses in middle school in 2007 were able to continue the QCC sequence of courses when they entered high school in 2008. Students who completed Algebra I and Geometry, for example, were able to enroll in Algebra II since QCC courses were available for upperclassmen until the QCC courses were phased out. Decisions concerning placement into QCC courses were made at the local level.

Section 3: Course Sequence Information

Flowchart for Students Entering Ninth Grade in School Years 2008 – 2011				
	Option 1	Option 2	Option 3	Option 4
Grade			Advanced	Accelerated
6th	6 th Grade GPS	6 th Grade GPS	6 th Grade Advanced GPS	6 th , 7 th , and 8 th grade GPS
7th	7 th Grade GPS	7 th Grade GPS	7 th Grade Advanced GPS	
8th	8 th Grade GPS	8 th Grade GPS	8 th Grade Advanced GPS	Accelerated Mathematics I or Accelerated GPS Algebra/Geometry
9th	Mathematics I or GPS Algebra	Accelerated Mathematics I or Accelerated GPS Algebra/Geometry	Accelerated Mathematics I or Accelerated GPS Algebra/Geometry	Accelerated Mathematics II or Accelerated GPS Geometry/Advanced Algebra
10th	Mathematics II or GPS Geometry	Accelerated Mathematics II or Accelerated GPS Geometry/Advanced Algebra	Accelerated Mathematics II or Accelerated GPS Geometry/Advanced Algebra	Accelerated Mathematics III or Accelerated GPS Pre-Calculus
11th	Mathematics III or GPS Advanced Algebra	Accelerated Mathematics III or Accelerated GPS Geometry/Advanced Algebra	Accelerated Mathematics III or Accelerated GPS Geometry/Advanced Algebra	Fourth Mathematics Course Options*; IB Courses**; Dual*** & Joint Enrollment Courses
12th	Fourth Mathematics Course Options*; IB Courses**; Dual/ Joint Enrollment Courses	Fourth Mathematics Course Options*; IB Courses**; Dual*** & Joint Enrollment Courses	Fourth Mathematics Course Options*; IB Courses**; Dual*** & Joint Enrollment Courses	Fourth Mathematics Course Options*; IB Courses**; Dual*** & Joint Enrollment Courses

* Fourth Mathematics Course Options are listed in Chart A on page 12.

**International Baccalaureate Course Sequences are provided in Chart B on pages 13 and 14.

***Additions to the High School Roster of ACCEL-Aligned Courses are provided on page 15.

CHART A: Fourth Mathematics Course Options

	Fourth Mathematics	Suggested Prerequisite Courses
27.08300/27.06230	Mathematics III or GPS Advanced Algebra	Mathematics Support III or GPS Advanced Algebra Support for core credit
27.08400/27.06240	Mathematics IV or GPS Pre-Calculus	Mathematics I, II, III or GPS Algebra, GPS Geometry, GPS Advanced Algebra; Accelerated Mathematics I,II or Accelerated GPS Algebra/Geometry, Accelerated GPS Geometry/Advanced Algebra
27.08500	Advanced Mathematical Decision Making (AMDM)	Mathematics I, II, III or GPS Algebra, GPS Geometry, GPS Advanced Algebra; Accelerated Mathematics I,II or Accelerated GPS Algebra/Geometry, Accelerated GPS Geometry/Advanced Algebra
27.08600	Mathematics of Industry and Government (MIG)	Mathematics I, II, III or GPS Algebra, GPS Geometry, GPS Advanced Algebra; Accelerated Mathematics I,II or Accelerated GPS Algebra/Geometry, Accelerated GPS Geometry/Advanced Algebra
27.08700	Mathematics of Finance (MOF)	LEA Flexibility
27.07400	AP Statistics	Mathematics I, II, III or GPS Algebra, GPS Geometry, GPS Advanced Algebra; Accelerated Mathematics I,II or Accelerated GPS Algebra/Geometry, Accelerated GPS Geometry/Advanced Algebra
27.07800	Calculus	Mathematics I, II, III, IV or GPS Algebra, GPS Geometry, GPS Advanced Algebra, GPS Pre-Calculus, Accelerated Mathematics I,II,III or Accelerated GPS Algebra/Geometry, Accelerated GPS Geometry/Advanced Algebra, Accelerated GPS Pre-Calculus
27.07200	AP Calculus AB	Mathematics I, II, III, IV or GPS Algebra, GPS Geometry, GPS Advanced Algebra, GPS Pre-Calculus, Accelerated Mathematics I,II,III or Accelerated GPS Algebra/Geometry, Accelerated GPS Geometry/Advanced Algebra, Accelerated GPS Pre-Calculus
27.07300	AP Calculus BC	Accelerated Mathematics I, II, III, IV or Accelerated GPS Algebra/Geometry, Accelerated GPS Geometry/Advanced Algebra, Accelerated GPS Pre-Calculus
27.05200	History of Mathematics	AP Calculus AB or BC (may be taken concurrently w/AP Calculus); elective credit only
27.07700	Multivariable Calculus	AP Calculus BC

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CHART B: International Baccalaureate Mathematics-GPS Mathematics Course Sequences

Grade	Option 1	Option 2		Option 3	Option 4	Option 5	Option 6
						Accelerated	Accelerated
6th	6th Grade GPS	6th Grade GPS		6th Grade GPS	6th Grade GPS	6th, 7th, and 8th grade GPS	6th, 7th, and 8th grade GPS
7th	7th Grade GPS	7th Grade GPS		7th Grade GPS	7th Grade GPS		
8th	8th Grade GPS	8th Grade GPS		8th Grade GPS	8th Grade GPS	Mathematics I or GPS Algebra	Accelerated Mathematics I or Accelerated GPS Algebra/Geometry
9th	Mathematics I or GPS Algebra	Mathematics I or GPS Algebra		Accelerated Mathematics I or Accelerated GPS Algebra/Geometry	Accelerated Mathematics I or Accelerated GPS Algebra/Geometry	Mathematics II or GPS Geometry	Accelerated Mathematics II or Accelerated GPS Geometry/Advanced Algebra
10th	Mathematics II or GPS Geometry	Mathematics II or GPS Geometry		Accelerated Mathematics II or Accelerated GPS Geometry/Advanced Algebra	Accelerated Mathematics II or Accelerated GPS Geometry/Advanced Algebra	Mathematics III or GPS Advanced Algebra	Accelerated Mathematics III or Accelerated GPS Pre-Calculus or IB Mathematics Studies*
11th	Mathematics III or GPS Advanced Algebra	Mathematics III or GPS Advanced Algebra : Block	Math IV or GPS Pre-Calculus or IB Math Studies*:Block	Accelerated Mathematics III or Accelerated GPS Pre-Calculus or IB Mathematics Studies*	Accelerated Mathematics III or Accelerated GPS Pre-Calculus and/or IB Mathematics SL*	IB Mathematics Studies*	IB Mathematics SL*
12th	IB Mathematics Studies	IB Mathematics SL		IB Mathematics SL	IB Mathematics HL or AP Calculus AB/BC, AP Statistics	IB Mathematics SL	IB Mathematics HL or AP Calculus AB/BC, AP Statistics

**After students meet the diploma requirements for IB Standard Level, additional choices for the fourth year could include: Advanced Mathematical Decision Making, Mathematics of Industry and Government, Mathematics of Finance, AP Statistics, AP Calculus AB/BC.*

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Option 1: This option includes grade-level standards in middle school. After Mathematics III or GPS Advanced Algebra, students may take IB Mathematics Studies to meet the diploma requirements associated with IB Standard Level Mathematics.

Option 2: This option includes grade-level standards in middle school. After completing the Mathematics I – III or GPS Algebra, GPS Geometry, GPS Advanced Algebra sequence, students may take Mathematics IV, GPS Pre-Calculus or IB Math Studies, followed by IB Mathematics SL, to meet the diploma requirements associated with IB Standard Level.

Option 3: This option includes grade-level standards in middle school. Students who successfully complete middle grades standards can take Accelerated Mathematics I and II or Accelerated GPS Algebra/Geometry and Accelerated GPS Geometry/Advanced Algebra, then Accelerated Mathematics III, Accelerated Pre-Calculus, or IB Math Studies, followed by IB Mathematics SL to meet IB Standard Level Mathematics diploma requirements.

Option 4: This option includes grade-level standards in middle school. Students who successfully complete middle grades standards can take either of the accelerated mathematics pathways. After Accelerated Mathematics III, Accelerated Pre-Calculus, and/or IB Mathematics SL, students may choose IB Mathematics HL to meet the IB diploma requirements for Higher Level.

Option 5: This option requires the compacting of three years of middle grades standards into two years and the completion of Mathematics I or GPS Algebra in the 8th grade. After completing the Mathematics I – III or the GPS Algebra, GPS Geometry, GPS Advanced Algebra sequence, students may take IB Mathematics Studies and IB Mathematics SL to meet the IB diploma requirements for Standard Level Mathematics.

Option 6: This option is for students who are highly talented in mathematics. It requires the compacting of three years of middle grades standards into two years and Accelerated Mathematics I or Accelerated GPS Algebra/Geometry in 8th grade. After completing Accelerated Mathematics II or Accelerated GPS Geometry/Advanced Algebra, students may take Accelerated Mathematics III, Accelerated Pre-Calculus, or IB Mathematics SL followed by Mathematics HL to meet the IB diploma requirements for Higher Level Mathematics.

Key to IB Course Names, based on International Baccalaureate Organization's Hierarchical Listing:

www.ibo.org/diploma/curriculum/group5

- *Mathematical Studies Standard Level* IB Mathematics Studies
- *Mathematical Methods Standard Level* IB Mathematics SL
- *Mathematics Higher Level* IB Mathematics HL
- *Further Mathematics Standard Level*

Note: At this time, no requests to offer this course have been submitted.

ACCEL Program: High School Course Roster Additions

- The courses and course codes below are *inactive* and will not appear on the IDA-3 roster of state-funded courses
- The courses and course codes are to be reported only upon receipt of dual enrollment college level credit for a course which ACCEL has aligned to the *inactive* course.

27.07910	College Statistics A
27.07920	College Statistics B
27.08010	College Calculus A
27.08020	College Calculus B

Section 4: Course Descriptions

Mathematics

The Georgia Mathematics Curriculum focuses on actively engaging students in the development of mathematical understanding by using manipulatives and a variety of representations (e.g., concrete, symbolic, verbal, graphical), working independently and cooperatively to solve problems, estimating and computing efficiently, and conducting investigations and recording findings. There is a shift towards applying mathematical concepts and skills in the context of authentic problems and understanding concepts rather than merely following a sequence of procedures. In mathematics classrooms, students will learn to think critically in a mathematical way with an understanding that there are many different ways to a solution and sometimes more than one right answer in applied mathematics. Mathematics is the economy of information. It is the reasoned, logical connections that make mathematics manageable. As a result, implementation of the Georgia Performance Standards places a greater emphasis on the process standards from the National Council of Teachers of Mathematics: problem solving, reasoning, representation, connections, and communication.

GPS Mathematics: Integrated Delivery System

Mathematics I: Algebra/Geometry/Statistics

This is the first in a sequence of mathematics courses designed to ensure that students are college and work ready. It requires students to:

- explore the characteristics of basic functions utilizing tables, graphs, and simple algebraic techniques;
- operate with radical, polynomial, and rational expressions;
- solve a variety of equations, including quadratic equations with leading coefficient of one, radical equations, and rational equations;
- investigate properties of geometric figures in the coordinate plane;
- use the language of mathematical argument and justification;
- discover, prove, and apply properties of polygons;
- utilize counting techniques and determine probability;
- use summary statistics to compare samples to populations; and
- explore the variability of data.

Mathematics II: Geometry/Algebra II/Statistics

This is the second in a sequence of mathematics courses designed to ensure that students are college and work ready. It requires students to:

- represent and operate with complex numbers;
- use numerical, graphical, and algebraic techniques to explore quadratic, exponential, and piecewise functions and to solve quadratic, exponential and absolute value equations and inequalities;
- use algebraic models to represent and explore real phenomena;
- explore inverses of functions;

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- use right triangle trigonometry to formulate and solve problems;
- discover, justify, and use properties of circles and spheres;
- use sample data to make informal inferences about population means and standard deviations; and
- fit curves to data and examine the issues related to curve fitting.

Mathematics III: Advanced Algebra/Statistics

This is the third in a sequence of mathematics courses designed to ensure that students are college and work ready. It requires students to:

- analyze polynomial functions of higher degree;
- explore logarithmic functions as inverses of exponential functions;
- solve a variety of equations and inequalities numerically, algebraically, and graphically;
- use matrices and linear programming to represent and solve problems;
- use matrices to represent and solve problems involving vertex-edge graphs
- investigate the relationships between lines and circles;
- recognize, analyze, and graph the equations of conic sections;
- investigate planes and spheres;
- solve problems by interpreting a normal distribution as a probability distribution; and
- design and conduct experimental and observational studies.

Mathematics IV: Pre-Calculus-Trigonometry/Statistics

This is a fourth year mathematics course designed to prepare students for calculus and other college level mathematics courses. It requires students to:

- investigate and use rational functions;
- analyze and use trigonometric functions, their graphs, and their inverses;
- use trigonometric identities to solve problems and verify equivalence statements;
- solve trigonometric equations analytically and with technology;
- find areas of triangles using trigonometric relationships;
- use sequences and series;
- understand and use vectors;
- investigate the Central Limit theorem; and
- use margins of error and confidence intervals to make inferences.

Accelerated Mathematics I: Geometry/Algebra II/Statistics

This is the first in a sequence of mathematics courses designed to ensure that students are prepared to take higher-level mathematics courses during their high school career, including Advanced Placement Calculus AB, Advanced Placement Calculus BC, and Advanced Placement Statistics. It requires students to:

- represent and operate with complex numbers;
- explore the characteristics of basic functions utilizing tables, graphs, and simple algebraic techniques;
- operate with radical, polynomial, and rational expressions;
- solve equations, including quadratic, radical, and rational equations;

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- investigate properties of geometric figures in the coordinate plane;
- use the language of mathematical argument and justification;
- discover, prove, and apply properties of polygons, circles and spheres;
- utilize counting techniques and determine probability;
- use summary statistics to compare sample data distributions and to relate sample statistics to corresponding population parameters;
- explore variability of data; and
- fit curves to data and examine the issues related to curve fitting.

Accelerated Mathematics II: Advanced Algebra/Geometry/Statistics

This is the second in a sequence of mathematics courses designed to ensure that students are prepared to take higher-level mathematics courses during their high school career, including Advanced Placement Calculus AB, Advanced Placement Calculus BC, and Advanced Placement Statistics. It requires students to:

- explore the characteristics of exponential, logarithmic, and higher degree polynomial functions using tables, graphs, and algebraic techniques;
- explore inverses of functions;
- use algebraic models to represent and explore real phenomena;
- solve a variety of equations and inequalities using numerical, graphical, and algebraic techniques with appropriate technology;
- use matrices to formulate and solve problems;
- use linear programming to solve problems;
- use matrices to represent and solve problems involving vertex-edge;
- use right triangle trigonometry to formulate and solve problems;
- investigate the relationships between lines and circles;
- recognize, analyze, and graph the equations of conic sections;
- investigate planes and spheres;
- use sample data to make informal inferences about population means and standard deviations;
- solve problems by interpreting a normal distribution as a probability distribution; and
- design and conduct experimental and observational studies.

Accelerated Mathematics III: Pre-Calculus-Trigonometry/Statistics

This is the third in a sequence of mathematics courses designed to ensure that students are prepared to take higher-level mathematics courses during their high school career, including Advanced Placement Calculus AB, Advanced Placement Calculus BC, and Advanced Placement Statistics. It requires students to:

- investigate and use rational functions;
- analyze and use trigonometric functions, their graphs, and their inverses;
- find areas of triangles using trigonometric relationships;
- use trigonometric identities to solve problems and verify equivalence statements;
- solve trigonometric equations analytically and with technology;
- use complex numbers in trigonometric form;

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- understand and use vectors;
- use sequences and series;
- explore parametric representations of plane curves;
- explore polar equations;
- investigate the Central Limit theorem; and
- use margins of error and confidence intervals to make inferences.

GPS Mathematics: Discrete Delivery System

GPS Algebra

This is the first in a sequence of mathematics courses designed to ensure that students are college and work ready. It requires students to:

- explore the characteristics of basic functions utilizing tables, graphs, and simple algebraic techniques;
- operate with radical, polynomial, and rational expressions;
- solve a variety of equations, including quadratic equations with leading coefficient of one, radical equations, and rational equations;
- represent and operate with complex numbers;
- use numerical, graphical, and algebraic techniques to explore quadratic, exponential, and piecewise functions and to solve quadratic, exponential and absolute value equations and inequalities;
- use algebraic models to represent and explore real phenomena;
- utilize counting techniques and determine probability;
- use summary statistics to compare samples to populations;
- explore the variability of data; and
- fit curves to data and examine the issues related to curve fitting.

GPS Geometry

This is the second in a sequence of mathematics courses designed to ensure that students are college and work ready. It requires students to:

- investigate properties of geometric figures in the coordinate plane;
- use the language of mathematical argument and justification;
- discover, prove, and apply properties of polygons;
- explore inverses of functions;
- use right triangle trigonometry to formulate and solve problems;
- discover, justify, and use properties of circles and spheres; and
- use sample data to make informal inferences about population means and standard deviations.

GPS Advanced Algebra

This is the third in a sequence of mathematics courses designed to ensure that students are college and work ready. It requires students to:

- analyze polynomial functions of higher degree;

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- explore logarithmic functions as inverses of exponential functions;
- solve a variety of equations and inequalities numerically, algebraically, and graphically;
- use matrices and linear programming to represent and solve problems;
- use matrices to represent and solve problems involving vertex-edge graphs
- investigate the relationships between lines and circles;
- recognize, analyze, and graph the equations of conic sections;
- investigate planes and spheres;
- solve problems by interpreting a normal distribution as a probability distribution; and
- design and conduct experimental and observational studies.

GPS Pre-Calculus

This is a fourth year mathematics course designed to prepare students for calculus and other college level mathematics courses. It requires students to:

- investigate and use rational functions;
- analyze and use trigonometric functions, their graphs, and their inverses;
- use trigonometric identities to solve problems and verify equivalence statements;
- solve trigonometric equations analytically and with technology;
- find areas of triangles using trigonometric relationships;
- use sequences and series;
- understand and use vectors;
- investigate the Central Limit theorem; and
- use margins of error and confidence intervals to make inferences.

Accelerated GPS Algebra/Geometry

This is the first in a sequence of mathematics courses designed to ensure that students are prepared to take higher-level mathematics courses during their high school career, including Advanced Placement Calculus AB, Advanced Placement Calculus BC, and Advanced Placement Statistics. It requires students to:

- represent and operate with complex numbers;
- explore the characteristics of basic functions utilizing tables, graphs, and simple algebraic techniques;
- operate with radical, polynomial, and rational expressions;
- solve equations, including quadratic, radical, and rational equations;
- investigate properties of geometric figures in the coordinate plane;
- use the language of mathematical argument and justification;
- discover, prove, and apply properties of polygons, circles and spheres;
- utilize counting techniques and determine probability;
- use summary statistics to compare sample data distributions and to relate sample statistics to corresponding population parameters;
- explore variability of data; and
- fit curves to data and examine the issues related to curve fitting.

Accelerated GPS Geometry/Advanced Algebra

This is the second in a sequence of mathematics courses designed to ensure that students are prepared to take higher-level mathematics courses during their high school career, including Advanced Placement Calculus AB, Advanced Placement Calculus BC, and Advanced Placement Statistics. It requires students to:

- explore the characteristics of exponential, logarithmic, and higher degree polynomial functions using tables, graphs, and algebraic techniques;
- explore inverses of functions;
- use algebraic models to represent and explore real phenomena;
- solve a variety of equations and inequalities using numerical, graphical, and algebraic techniques with appropriate technology;
- use matrices to formulate and solve problems;
- use linear programming to solve problems;
- use matrices to represent and solve problems involving vertex-edge;
- use right triangle trigonometry to formulate and solve problems;
- investigate the relationships between lines and circles;
- recognize, analyze, and graph the equations of conic sections;
- investigate planes and spheres;
- use sample data to make informal inferences about population means and standard deviations;
- solve problems by interpreting a normal distribution as a probability distribution; and
- design and conduct experimental and observational studies.

Accelerated GPS Pre-Calculus

This is the third in a sequence of mathematics courses designed to ensure that students are prepared to take higher-level mathematics courses during their high school career, including Advanced Placement Calculus AB, Advanced Placement Calculus BC, and Advanced Placement Statistics. It requires students to:

- investigate and use rational functions;
- analyze and use trigonometric functions, their graphs, and their inverses;
- find areas of triangles using trigonometric relationships;
- use trigonometric identities to solve problems and verify equivalence statements;
- solve trigonometric equations analytically and with technology;
- use complex numbers in trigonometric form;
- understand and use vectors;
- use sequences and series;
- explore parametric representations of plane curves;
- explore polar equations;
- investigate the Central Limit theorem; and
- use margins of error and confidence intervals to make inferences.

Section 5: Placement Information

Placement of students from 8th Grade Mathematics to Mathematics I, GPS Algebra, Accelerated Mathematics I, or Accelerated GPS Algebra/Geometry:

Students at risk for failing Mathematics I or GPS Algebra should be placed in Mathematics I or GPS Algebra and an associated mathematics support course. Local guidelines for identification of at risk students should consider such factors as success in the 8th grade mathematics course, score on the Criterion-Referenced Competency Test, teacher recommendation, and scores on other standardized tests (ITBS, CogAT, etc.).

Students who successfully complete the Georgia Performance Standards in Mathematics for grades 6-8 have mastered the content necessary to be successful in Mathematics I, GPS Algebra, Accelerated Mathematics I, or Accelerated GPS Algebra/Geometry. Determination of course placement should depend on the student's interest in mathematics and/or related fields of study and on the student's achievement in mathematics. As the pace, and rigor of accelerated mathematics courses is significantly more challenging than that of the regular mathematics sequence, students placed in an accelerated mathematics course should have strong mathematical skills and an interest in pursuing Advanced Placement or other higher-level mathematics courses while still in high school.

Schools should consider equity and access for all when assigning students to accelerated mathematics courses. The GPS curriculum provides an opportunity for students with an interest and desire to study mathematics to challenge themselves by taking more rigorous courses. Given the alignment of the standards, students who have difficulty in the accelerated mathematics sequences will be able to transition easily to the regular mathematics sequence.

The local school or system should determine the criteria, and measurement of the criteria, in placing students in the appropriate mathematics course.

Placement of students transferring into Georgia from out-of-state schools:

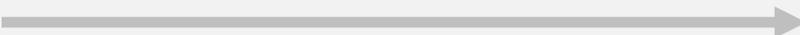
Existing mathematics credits granted by out-of-state schools must be transferred as mathematics credit. Because the content of courses with similar names can vary significantly, it is crucial that the transcripts of students entering Georgia high schools with existing credit in high school mathematics courses be examined and that the students' mathematics proficiency be assessed.

Appropriate placement of students entering Georgia schools from other states or countries should be determined by careful examination of the students' transcripts and by individual student assessments. Students needing extensive remediation on middle grades topics should be placed in Mathematics I or GPS Algebra, along with the associated mathematics support course.

Chart C on page 24 provides guidance for placing students entering with traditional course credit. In every case, students' transcripts should be carefully evaluated and assessments should be given. Students' interest and levels of achievement (grades) should also be considered in making a final decision.

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CHART C: Secondary Guidance for Placement of Transfer Students into Georgia Schools-pg1

Transfer In at Grade:	With Credit for:	Course Sequence 			
		After Initial placement, each row shows the course pathway to follow.			
		9 th Grade Placement	10 th Grade Placement	11th Grade Placement	12th Grade Placement
9	Algebra I	Mathematics I or GPS Algebra*	Mathematics II or GPS Geometry	Mathematics III or GPS Advanced Algebra	4 th year option
		Accelerated Mathematics I or Accelerated GPS Algebra/Geometry*	Accelerated Mathematics II or Accelerated GPS Geometry/Advanced Algebra	Accelerated Mathematics III or Accelerated GPS Pre-Calculus	
9	Algebra I and Geometry	Mathematics II or GPS Geometry*	Mathematics III or GPS Advanced Algebra	Accelerated Mathematics II or Accelerated GPS Geometry/Advanced Algebra	4 th year option
		Accelerated Mathematics I or Accelerated GPS Algebra/Geometry*	Accelerated Mathematics II or Accelerated GPS Geometry/Advanced Algebra	4 th year option	
9	Algebra I and Algebra II	Mathematics II or GPS Geometry*	Mathematics III or GPS Advanced Algebra	4 th year option	4 th year option
		Accelerated Mathematics I or Accelerated GPS Algebra/Geometry*	Accelerated Mathematics II or Accelerated GPS Geometry/Advanced Algebra	Accelerated Mathematics III or Accelerated GPS Pre-Calculus	
9	Algebra I, Geometry, and Algebra II	Mathematics III or GPS Advanced Algebra*	4 th year option	4 th year option	4 th year option
		Accelerated Mathematics II or Accelerated GPS Geom/Adv Algebra*	Accelerated Mathematics III or Accelerated GPS Pre-Calculus		

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CHART C: Secondary Guidance for Placement of Transfer Students into Georgia Schools-pg2					
10	Algebra I		Mathematics I or GPS Algebra*	Mathematics II or GPS Geometry	Mathematics III or GPS Advanced Algebra **
			Mathematics II or GPS Geometry*	Mathematics III or GPS Advanced Algebra	4 th year option
10	Algebra I and Geometry		Mathematics II or GPS Geometry*	Mathematics III or GPS Advanced Algebra	4 th year option
			Accelerated Mathematics I or Accelerated GPS Algebra/Geometry*	Accelerated Mathematics II or Accelerated GPS Geometry/Advanced Algebra	Accelerated Mathematics III or Accelerated GPS Pre-Calculus
10	Algebra I and Algebra II		Mathematics II or GPS Geometry*	Mathematics III or GPS Advanced Algebra	4 th year option
			Accelerated Mathematics I or Accelerated GPS Algebra/Geometry*	Accelerated Mathematics II or Accelerated GPS Geometry/Advanced	Accelerated Mathematics III or Accelerated GPS Pre-Calculus
10	Algebra I, Geometry, and Algebra II		Mathematics III or GPS Advanced Algebra*	4 th year option	4 th year option
			Accelerated Mathematics II or Accelerated GPS Geometry/Advanced Algebra*	Accelerated Mathematics III or Accelerated GPS Pre-Calculus	

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CHART C: Secondary Guidance for Placement of Transfer Students into Georgia Schools-pg3

11	Algebra I			Mathematics I or GPS Algebra*	Mathematics II or GPS Geometry**
				Mathematics II or GPS Geometry*	Mathematics III or GPS Advanced Algebra**
11	Algebra I and Geometry			Mathematics II or GPS Geometry	Mathematics III or GPS Advanced Algebra**
11	Algebra I, Geometry, and Algebra II			Mathematics III or GPS Advanced Algebra*	4 th year option
				Accelerated Mathematics II or Accelerated GPS Geometry/Advanced Algebra*	Accelerated Mathematics III or Accelerated GPS Pre-Calculus
12	Algebra I and Geometry				Mathematics II or GPS Geometry* **
					Mathematics III or GPS Advanced Algebra* **
12	Algebra I and Algebra II				Mathematics II or GPS Geometry* **
					Mathematics III or GPS Advanced Algebra* **
12	Algebra I, Geometry, and Algebra II				Mathematics III or GPS Advanced Algebra* **
					4 th year option*
12	Algebra I, Geometry, Algebra II and Pre-Calculus				4 th year option

CHART C: Secondary Guidance for Placement of Transfer Students into Georgia Schools-pg4

PLACEMENT

*Placement in these courses is dependent upon assessment of student knowledge from the transfer school. Students should be evaluated by a mathematics instructor with a thorough understanding of the content of the Georgia Performance Standards for Mathematics. Because students who transfer from a traditional program may lack content knowledge from some strands (Algebra, Geometry, and Data Analysis) it is important to identify both strengths and weaknesses for each strand. After using the identified strengths to place the student in the appropriate course, identified weaknesses should be used to prescribe supplementary lessons that address pre-requisite content knowledge. These lessons can be delivered through the Mathematics Support class or through independent work. To assist schools with these lessons, free resources have been developed and are available through the GaDOE Virtual School.

**Students who complete the mathematics sequences only through Mathematics III may have limited post-secondary options. Parents should be thoroughly advised of the consequences of their student graduating with only Mathematics I through III credit. During the advisement, fourth year mathematics options should be discussed and clarified; they are as follows: summer courses, virtual courses, other available resources.

Transfer Credit:

Pursuant to State Board of Education Rule 160-5-1-.15 section (2)(a),” Local boards of education shall accept student course credit earned in an accredited school.” In paragraph (2)(a)1, “A local board of education shall not substitute courses and exempt students from the required secondary minimum core curriculum...unless the student transferred from an accredited secondary school...”.

Military Transfer Law:

In 2009, O.C.G.A. § 20-2-2130 through 20-2-2170 which pertain to the transfer and placement of children of military families in Georgia public schools were added to Georgia State Law. Among other provisions, the law requires that the local school system shall initially honor placement of the student in educational courses based on the student's enrollment in the sending state school or educational assessments conducted at the school in the sending state, if the courses are offered. Course placement includes but is not limited to honors, international baccalaureate, advanced placement, vocational, technical, and career pathways courses. Continuing the student's academic program from the previous school and promoting placement in academically and career challenging courses should be paramount when considering placement. Additionally, local school systems shall have flexibility in waiving course or program prerequisites or other preconditions for placement in courses and programs offered by the local school system.

Course Numbers:

Students who move into Georgia with Algebra I, Geometry, or Algebra II credit shall receive transfer credit. We will not add the following numbers to State Board of Education Rule 160-4-2-.20 [IDA(3)] since they cannot be used as active classes in the school day, but only for the recording of transfer credit. Please use the following course numbers to award transfer credit:

27.03400 Transfer Algebra I (1st year if taught over 2 years)

27.03500 Transfer Algebra I (2nd year if taught over 2 years or if taught in 1 year)

27.03600 Transfer Geometry

27.03700 Transfer Algebra II

Placement of students transferring out of Georgia schools:

Content descriptions for all completed GPS mathematics courses need to accompany students transferring out of Georgia schools.

Chart D indicates **possible** placement from GPS Mathematics courses into traditional courses similar to those that existed under the Quality Core Curriculum.

CHART D: Secondary Guidance for Placement of Transfer Students out of Georgia Schools

Completed GPS Courses	Possible Traditional Placement
GPS 8 th Grade Math	Algebra I
Mathematics I or GPS Algebra	Geometry or Algebra II
Accelerated Mathematics I or Accelerated GPS Algebra/Geometry	Honors Algebra II or Pre-Calculus
Mathematics II or GPS Geometry	Algebra II or Advanced Algebra and Trigonometry
Accelerated Mathematics II or Accelerated GPS Geometry/Advanced Algebra	Pre-Calculus, Advanced Algebra and Trigonometry, AP Statistics
Mathematics III or GPS Advanced Algebra	Advanced Algebra and Trigonometry, Pre-Calculus, AP Statistics, Discrete Mathematics
Accelerated Mathematics III or Accelerated GPS Pre-Calculus	AP Calculus AB, AP Calculus BC, AP Statistics, Discrete Mathematics

Placement of students transferring within Georgia Schools:

Students who are transferring from an integrated delivery system to a discrete delivery system or from a discrete delivery system to an integrated delivery system after successfully completing the first course in the delivery system sequence will benefit from study of the units within the GPS Transition Frameworks which are posted on the GaDOE Mathematics Program Webpage at:
http://public.doe.k12.ga.us/ci_services.aspx?PageReq=CIServMath.

Mathematics I to GPS Geometry

Students who are transitioning from GPS Mathematics I to GPS Geometry will be missing critical content from GPS Algebra. The Transition Packet: Mathematics I to GPS Geometry document provides the content in both web-based and print formats. The standards are the same in either format.

GPS Algebra to Mathematics II

Students who are transitioning from GPS Algebra to GPS Mathematics II will be missing content from GPS Mathematics I, mainly content dealing with geometry. The Transition Packet: GPS Algebra to Mathematics II provides the content in both web-based and print formats. The standards are the same in either format.

It is important to note that the standards addressed in the following course matches are identical. However, the standards are not necessarily addressed within the courses in the same order as indicated below.

GPS Advanced Algebra	and	Mathematics III
GPS Pre-Calculus	and	Mathematics IV
Accelerated GPS Algebra/Geometry (Units sorted differently within the courses)	and	Accelerated Mathematics I
Accelerated GPS Geometry/Advanced Algebra (Units sorted differently within the courses)	and	Accelerated Mathematics II
Accelerated GPS Pre-Calculus	and	Accelerated Mathematics III

Section 6: Mathematics Support Course Guidance

Purpose: The purpose of the mathematics support courses is to address the needs of students who have traditionally struggled in mathematics by providing the additional time and attention they need in order to successfully complete their core academic mathematics course without failing.

Mathematics support courses should be taught concurrently with a student's core academic mathematics course. Additional elective credit can be given for mathematics support courses if students retake core academic mathematics courses in which they were not initially successful and choose to retake the associated support course.

NOTE: Mathematics Support III and GPS Advanced Algebra Support can be taught as stand-alone core courses only for students who entered ninth grade in the school years 2008-2009, 2009-2010, and 2010-2011; Mathematics Support I, Mathematics Support II, Mathematics Support III, GPS Algebra Support, GPS Geometry Support, and GPS Advanced Algebra Support can be awarded core credit for students who entered ninth grade only in the school years 2008-2009, 2009-2010, and 2010-2011.

How should students be selected to be enrolled in a mathematics support course?

Students should be enrolled in mathematics support courses based on local system criteria for identifying students who are at risk for failing mathematics. Students who are *placed* in high school and have not passed the 8th grade math CRCT should certainly be afforded the benefit of a support course. Other criteria might include teacher recommendation based on student performance in the previous or current mathematics course, prior retention, a failing grade in a mathematics course, and/or low scores on the mathematics component of the CRCT, mathematics EOCT, or other instruments used by the system to predict success.

Who should teach this course?

The course should be taught by a certified mathematics teacher, preferably one with experience in differentiating instruction to meet the needs of struggling students. If English Learners are being served in a mathematics support course, it is recommended that the teacher also hold the ESOL endorsement. The mathematics support teacher should work closely with the teacher(s) teaching the associated core mathematics course to align content, instruction, and assessments.

How important is collaboration among teachers to the success of students enrolled in mathematics support courses?

Teachers of the mathematics support courses and the academic core mathematics courses, including collaborative English Learner (EL) and special education teachers, share the responsibility for students' mathematical achievement. In fact, all teachers who instruct students who are enrolled in mathematics support courses should consistently and frequently engage in communication which focuses on:

- individual student progress, including grades, strengths and weaknesses based on standards, mathematical disposition, and work habits;
- curriculum expectations, including specific standards to be addressed based on a timeline, prerequisite skills, vocabulary, and potential misconceptions;
- instructional strategies, including specific strategies for teaching math concepts that are being used in both classrooms to provide consistency and understanding for teachers and students; and
- differentiation of instruction, including tasks based on the *ACCESS* for *ELs* Composite Proficiency Levels of ELs and the WIDA standards for English Learners; and
- assessments, including content and formats that are being used to evaluate students for specific standards.

What are the critical components of a mathematics support course?

- All students in a particular mathematics support course should be enrolled in the same academic core mathematics course. (i.e. students enrolled in Mathematics Support I will all be enrolled in Mathematics I as well).
- The mathematics support course should focus on mastery of the standards being taught in the associated core academic mathematics course, and not on general content from elementary or middle school.
- Grading practices should emphasize mastery of standards through the frequent use of aligned quizzes and tests, both formative and summative.
- Continual progress monitoring should be used to assess and diagnose each student's strengths and weaknesses, based on the standards of the associated core academic mathematics course, and to provide appropriate interventions.
- Opportunities should be provided for students to review content with a focus on standards not previously mastered.
- Opportunities should be provided for students to preview mathematical concepts to be addressed in the associated core academic mathematics course, including prerequisite skills necessary for those concepts, vocabulary, and definitions.
- The academic language of mathematics should be explicitly taught as concepts are introduced and reinforced.

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- Proven strategies for success in mathematics should be utilized on a daily basis. Students should be engaged in *doing* mathematics, explaining their thinking, and justifying their work. Multiple representations of concepts (tables, charts, graphs, verbal descriptions) should be used as often as possible.
- There should be strong emphasis on building a positive disposition toward learning mathematics.
- Although there is no class size requirement for the mathematics support courses, a reduced class size is recommended.

How will students be evaluated in mathematics support courses?

The goal of a mathematics support course is to assist students in the successful completion of the associated core academic mathematics course. Assignments, quizzes and tests should be aligned to the standards being taught. Individuals should be given multiple opportunities to show mastery of the content, including opportunities to demonstrate mastery of material first addressed in the associated core academic mathematics course. Mathematics support provides the time some students need for additional practice or re-testing. The value of formative assessment and feedback cannot be overstated. Continuous progress monitoring with both feedback and commentary is essential in this course. Students should not feel pressure to “make grades” in this class as much as they should be motivated and encouraged to master standards. Documented continuous communication with students on an individual basis is the most appropriate way to maintain records of progress. Remedial Education Program (REP) assessment processes may be appropriate models.

How much credit is awarded for one mathematics support course?

One unit of elective credit is earned for the successful completion of this course.

NOTE: Mathematics Support III and GPS Advanced Algebra Support can be taught as stand-alone core courses only for students who entered ninth grade in the school years 2008-2009 and 2009-2010;

Districts will designate whether students who entered ninth grade in the school years 2008-2009, 2009-2010, and 2010-2011 will receive one unit of core or elective credit for successful completion of each of the following mathematics support courses: Mathematics Support I, Mathematics Support II, Mathematics Support III, GPS Algebra Support, GPS Geometry Support, and GPS Advanced Algebra Support.

How is this course different from the Remedial Education Program (REP)?

The focus of the mathematics support course is to provide very specific support for the high school core academic mathematics course in which they are currently enrolled. The Remedial Education Program is an instructional program designed for students in grades 6-12 who have identified deficiencies in reading, writing, and math. REP funding can be used for the mathematics support class, if REP guidelines for eligibility, scheduling, and class size are followed.

If a school is on a 4x4 block schedule, does this mean that students must have mathematics for two blocks during the school day?

It is important that the mathematics support course be taught concurrently with the associated core academic mathematics course. However, scheduling options that keep struggling students engaged in mathematics throughout the school year are generally preferable to two blocks each day for a semester. A hybrid scheduling model might address these issues, allowing for continuous yearlong support without requiring that two of the student's four semester blocks be devoted to mathematics.

Section 7: Resources Available to Middle School and High School Counselors

- PowerPoint Presentation at Summer 2011 Counselor Workshop: *Mathematics Update for School Counselors*: [http://www.gadoe.org/ci_cta.aspx?folderID=66650&m=links&ft=Counselor Information](http://www.gadoe.org/ci_cta.aspx?folderID=66650&m=links&ft=Counselor%20Information)
- Recorded Webinar: *Mathematics Conversation with Georgia's High School Counselors*
http://illuminate.gavirtualschool.org:80/doe/join_meeting.html?meetingId=1258875992220
- GaDOE Mathematics Program Webpage at:
http://public.doe.k12.ga.us/ci_services.aspx?PageReq=CIServMath
- Sandi Woodall, Mathematics Program Coordinator:
swoodall@doe.k12.ga.us; 404.463.1736