

The School District Of Palm Beach County, Florida



Mission Statement

The School Board of Palm Beach County is committed to excellence in education and preparation of all our students with the knowledge, skills and ethics required for responsible citizenship and productive employment.

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INTRODUCTION

In many nations of the world, there are no courses in the schools called Algebra I or Algebra II. Instead, students take different levels of mathematics which include Algebra as they progress through their schools' curricula. Now educators across the United States at the federal, state, and district levels are also recognizing more clearly than ever that the development of algebraic thinking does not occur in a single mathematics course. In fact, algebraic thinking begins at a very early age. We see evidence of that in early childhood classrooms where youngsters are asked to recognize, describe, and extend patterns of shapes, colors and sounds. The development of algebraic thinking continues through high school, college, and beyond. Therefore, we must see this development in our students as a journey rather than a destination.

As our world grows increasingly more technological and our economy grows ever more global, educational leaders at all levels are seeking to identify the skills that students must have to make them productive citizens of a world that is becoming increasingly more complex. It is appropriate and necessary that school districts across the nation question what those skills are and respond by encouraging the development of these skills in their students. Therefore, in 1997, the Florida legislature mandated a credit in Algebra I as a requirement for high school graduation. In response to that legislation, the Palm Beach County School Board approved the K-9 Algebra Initiative.

This report describes our progress in developing algebraic thinking for ALL of our students. The journey begins in early childhood. Hopefully, it never ends!



THE ALGEBRA INITIATIVE

ALGEBRA INITIATIVE IN PALM BEACH COUNTY SCHOOLS

In 1997 the Florida State Legislature mandated that, effective for students entering ninth grade in the 1997-1998 school year and thereafter, one of three mathematics credits required for high school graduation must be Algebra I. Raising the bar, Palm Beach County School Board members went a step further by approving the K-9 Algebra Initiative and, embracing Key Result #2, by committing to successful completion of Algebra I by students in all racial/ethnic groups prior to tenth grade. Monitoring implementation of this initiative is included in the Academic Business Plan.

TIMELINE

1999-2000 The School Board approved the K-9 Algebra Initiative.

2000-2001 The design and implementation of the Algebra Initiative:

- Established a K-9 Algebra Team
- Created a 20:1 student/teacher ratio
- Provided school-based resource teachers
- Developed Family Involvement programs
- Purchased needed technology
- Implemented aggressive guidelines for placement in Algebra I
- Provided staff development for elementary, middle, and high school mathematics teachers

2001-2002 All ninth grade students were required to take Algebra I. The following programs were developed to support this requirement:

- Algebra I Support class
- Algebra-Prep Summer Program for selected incoming ninth grade students

2002-2003 The continued development of the Algebra Initiative was supported by:

- Increased district support to the school sites
- Increased staff development for Algebra I teachers
- Expansion of the Algebra-Prep Summer Program

2003-2004 Preparation for Algebra I for all eighth grade students included:

- Pilot programs for 8th grade Algebra I at Jefferson Davis (Palm Springs) and Jupiter Middle Schools
- Intensive staff development for middle school teachers
- Partnership with Palm Beach Community College
- Expansion of the Algebra Prep Summer Program

2004-2005 All eighth grade students were enrolled in a high school credit course, Algebra I or Pre-Algebra, supported by:

- Revising the middle school mathematics curriculum
- Adopting textbooks that support the curriculum alignment
- Aligning all instructional materials
- Providing orientation to the newly adopted textbook and software for teachers
- Increasing staff development

To better prepare students for success in Algebra I in the eighth grade, intense support was evident during the 2004-2005 school year. The additional support included:

- Instructional Materials
- District Support
- Staff Development
- Community Connections

On the following pages are the details of each area of support provided.

INSTRUCTIONAL MATERIALS

To provide teachers with appropriate instructional materials, the Secondary Mathematics Team:

- Revised curriculum guidelines and academic calendars in middle school mathematics to articulate the specific goals for success in Algebra I
- Adopted new textbooks that included the latest in technology, real world applications, standardized test preparation, FCAT test practice, and teacher support materials
- Developed semester exam review materials to support teacher efforts for meaningful review of the major concepts of the first semester
- Revised and implemented district-wide first semester exams for Algebra I and Algebra I Honors for both middle and high school levels
- Developed a correlation of Algebra curriculum to the Educational Testing Service (ETS) End-of-Year Algebra assessment to support teacher efforts for meaningful review of the major concepts of Algebra I
- Administered the (ETS) End-of-Year Algebra Assessment to all Algebra students
- Provided extensive technology staff development for the graphing calculator, Riverdeep and Geometer's Sketchpad

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| DISTRICT SUPPORT |
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To support teachers district-wide, the Secondary Mathematics Team:

- Offered teacher staff development through workshops, school and classroom visits
- Enhanced the mathematics curricula in collaboration with department instructional leaders and teachers
- Provided support for analysis of data and methods for the use of data to improve classroom instruction and student preparation for Algebra I
- Modeled and provided co-teaching of best practices in classrooms
- Developed and disseminated FCAT support materials for integration into the Pre-Algebra and Algebra I courses
- Provided monthly staff development for mathematics coaches
- Served as liaison among school administrators, teachers, and district personnel
- Provided content-intensive staff development and strategies to Alternative Education administrators and teachers
- Visited all secondary school sites

The Secondary Mathematics Team met with the mathematics coaches at the Accelerated Academic Achievement (AAA) High-Needs Schools each month for staff development, curriculum coordination and networking best practices. Secondary schools with AAA Mathematics Coaches included:

Middle Schools

Bear Lakes Middle
Conniston Middle
Jeaga Middle
Jefferson Davis Middle
John F. Kennedy Middle
Lake Shore Middle
Lake Worth Middle
Village Academy

High Schools

Boynton Beach High
Forest Hill High
Glades Central High
Pahokee Middle/Senior High
Palm Beach Gardens High
Palm Beach Lakes High

STAFF DEVELOPMENT

| WORKSHOP | DESCRIPTION |
|---|---|
| Mathematics Coaches at AAA Schools | Mathematics Coaches met monthly to receive staff development, to plan curriculum coordination and to network best practices. |
| Algebra I Institute | Algebra I teachers attended five days of staff development provided by the Secondary Mathematics Team in partnership with Palm Beach Community College (PBCC). Participants received content specific information and instructional materials to use in their classrooms. |
| Algebra I Textbook | Algebra I teachers were provided an orientation to the new Glencoe Algebra I textbook and software by the publishing company's consultant. |
| Conquering the FCAT | Teachers were provided with a variety of proven FCAT strategies to use in their classrooms. These strategies included gridded practice, data interpretation, rubric training, specific benchmarks, and content. |
| Fall Pre-School Conference | The conference provided opportunities for all mathematics teachers to receive staff development in specific courses, technology, curriculum and allowed time for sharing best practices. |
| Geometer's Sketchpad | Selected Middle School teachers were trained in Geometer's Sketchpad, a dynamic construction and exploration tool that enables students to explore and understand mathematics in ways that are simply not possible with traditional tools. |
| Making Connections in Algebra I | The workshop focused on connections among the Algebra I functions that included linear, quadratic and absolute value functions. |
| Making Math Connections in Elementary/Middle School | The workshop provided participants with valuable teaching strategies and materials to bridge the gap in mathematics instruction for students in grades six and seven. |
| Math Academy | Fifth, sixth, and seventh grade teachers were offered a three-day staff development workshop designed to bridge the gap between elementary and middle school mathematics content. |

| WORKSHOP | DESCRIPTION |
|--|--|
| Picower/College Board | <p>Teachers received staff development in the following:</p> <ol style="list-style-type: none"> 1. Pre-AP Strategies in Mathematics and Science – Analyzing and Describing Data 2. Pre-AP Strategies in Mathematics – Chance, Variation and Probability |
| PowerPoint in the Mathematics Classroom | <p>Teachers received instruction on creating PowerPoint lessons and were given a step-by-step handbook to assist them with utilizing alternative teaching methods in the mathematics classroom.</p> |
| PROMISE Network | <p>The Algebra I Consortium was designed for teachers to learn new strategies and exchange ideas. Teachers were supplied with activities and hands-on materials for immediate use in the classroom.</p> |
| Reading in the Mathematics Content Area | <p>Teachers were provided with a content area guide designed to assist students in becoming better readers. The guide suggested many ways to help students become better readers especially in the mathematics classroom including tips for reading in the textbook, reading word problems, and reading a test. It also addressed alternative strategies by recommending graphic organizers to increase reading comprehension.</p> |
| Riverdeep | <p>These workshops helped teachers to increase content knowledge while understanding how to build technology-rich math lessons for their students as a whole group, as a small group, or within individualized instruction. The software supports algebraic thinking and the Algebra I curriculum.</p> |
| Teacher Leadership Cadre (TLC) | <p>In partnership with Texas Instruments a teacher leadership cadre was established to develop highly qualified presenters for technology utilizing the Texas Instruments hardware and software.</p> |
| TI-73 Graphing Calculator TI-84 Graphing Calculator | <p>Teachers were provided with a series of classroom-ready student-centered activities that enhanced teaching and learning through the use of handheld technology and related software.</p> |
| Using Manipulatives in the Mathematics Classroom | <p>Teachers discovered new strategies for successful mathematics instruction with manipulatives. The resource binder featured detailed, ready-to-use lesson plans that introduced and explored specific mathematics concepts using manipulatives.</p> |

COMMUNITY CONNECTIONS

In cooperation with local agencies, the Secondary Mathematics Team:

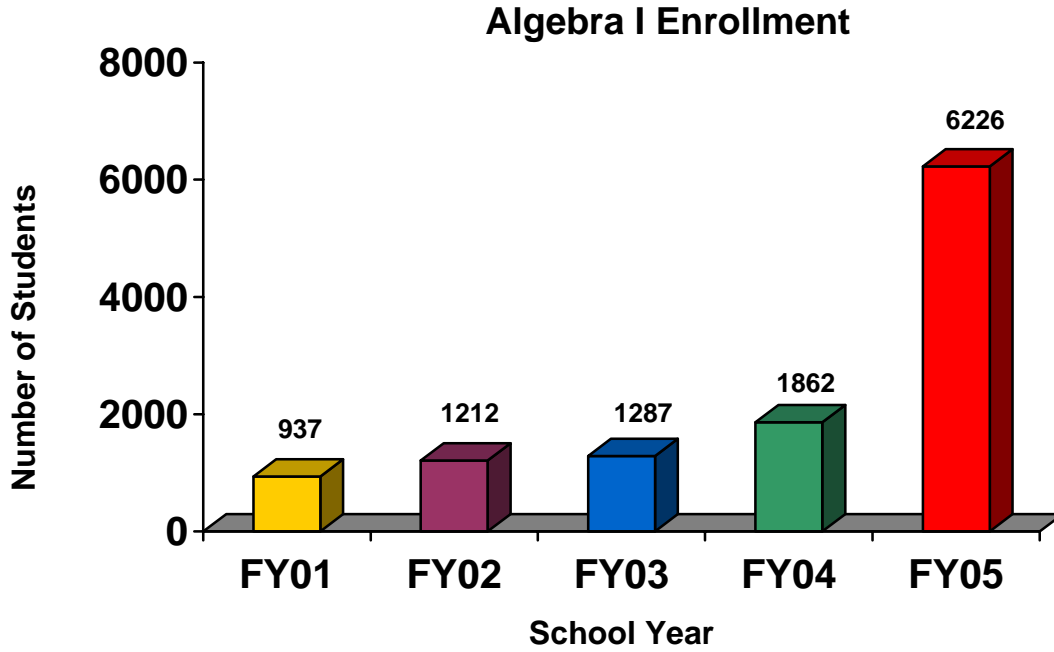
- Established a partnership with Palm Beach Community College to enhance Algebra content knowledge. In addition, teachers were provided with hands-on manipulatives to support instruction for all students. During the past two summers over 100 Algebra teachers took advantage of this opportunity to learn new ideas and best practices for use in the classroom.
- Established a partnership with Florida Atlantic University (FAU) to set the foundation for revision of curriculum for FY05. FAU personnel assisted in analyzing and remapping curriculum for the implementation of Algebra I in the eighth grade.
- Partnered with local businesses (PROMISE Network) to support Algebra teachers by sponsoring staff development opportunities and providing teachers with materials, such as classroom sets of manipulatives.
- Piloted the Math and Parent Partnerships in Schools (MAPPS) Program at Jeaga Middle School that brought parents, students, and school personnel together in the evenings to experience and explore mathematics together.
- Established technology partnership with Texas Instruments (TI) to create a Teacher Leader Cadre. Teachers learned to integrate TI Technology into the classroom as well as become teacher leaders for the school district.
- Established technology partnership with Riverdeep, an interactive mathematics software program that allows students to work at their own pace. This software assists teachers in instruction, remediation, and assessment.
- Encouraged and participated in Math Family Nights at local schools.



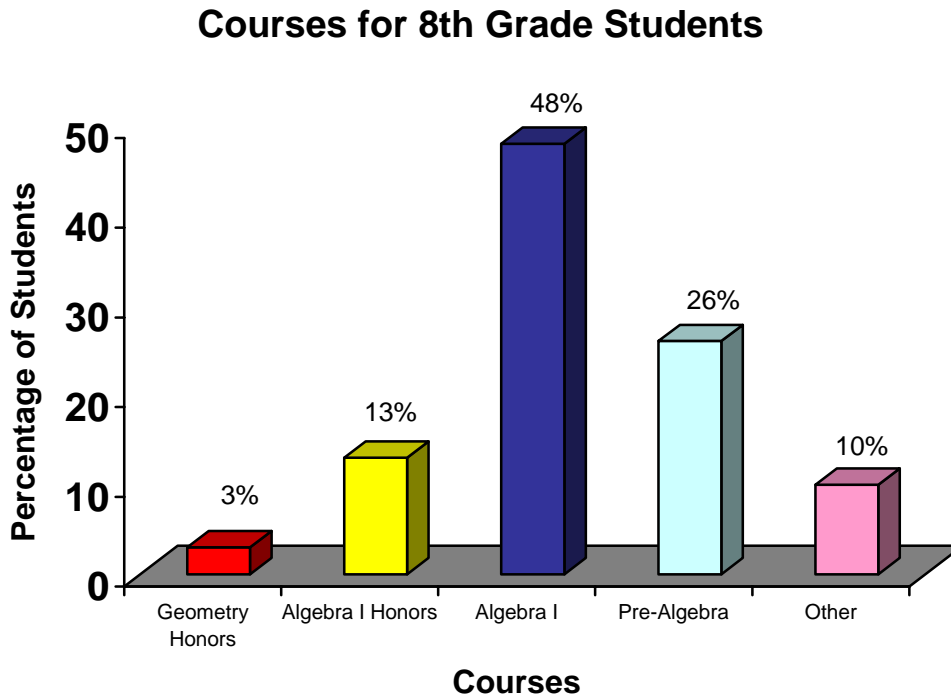
ALGEBRA TRENDS



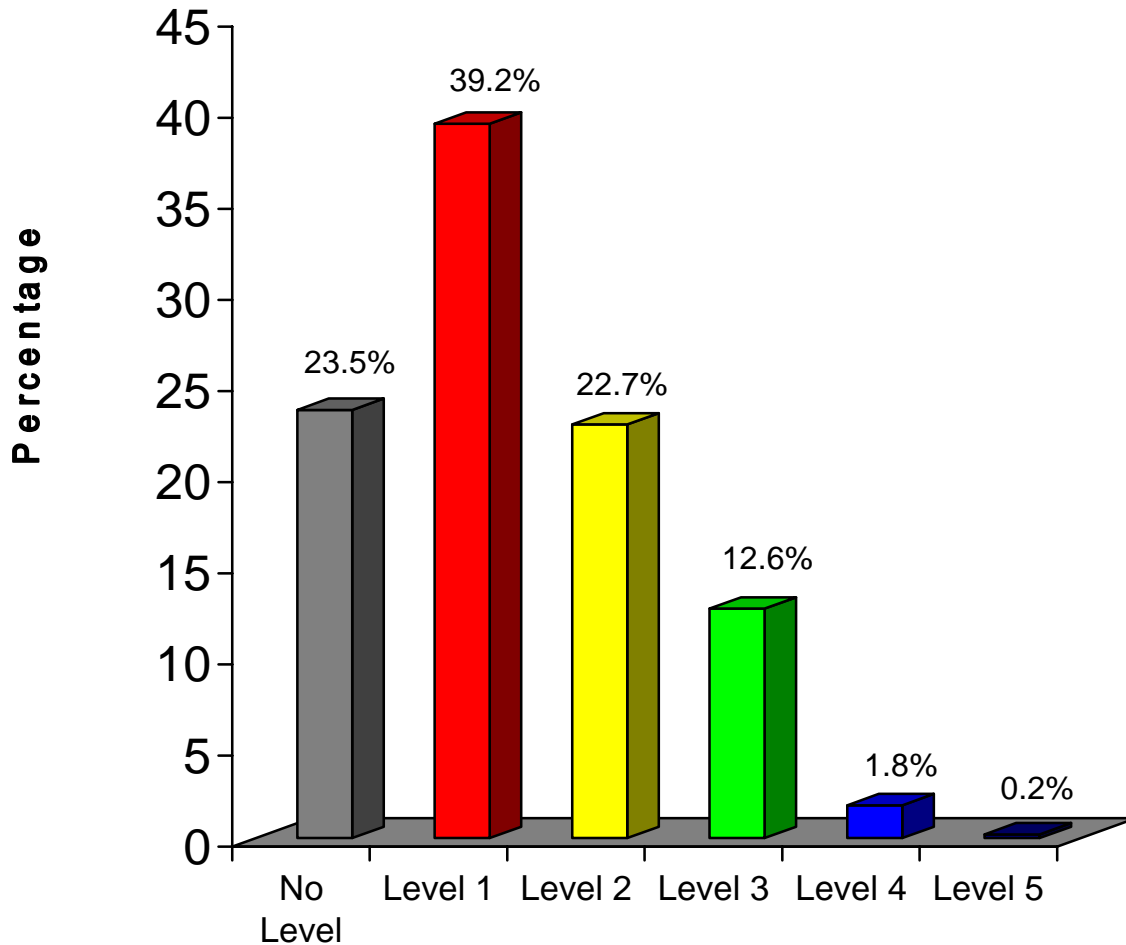
The Algebra I enrollment in the 8th grade over a five year period .



Percentage of students enrolled in mathematics courses in the eighth grade in FY05.



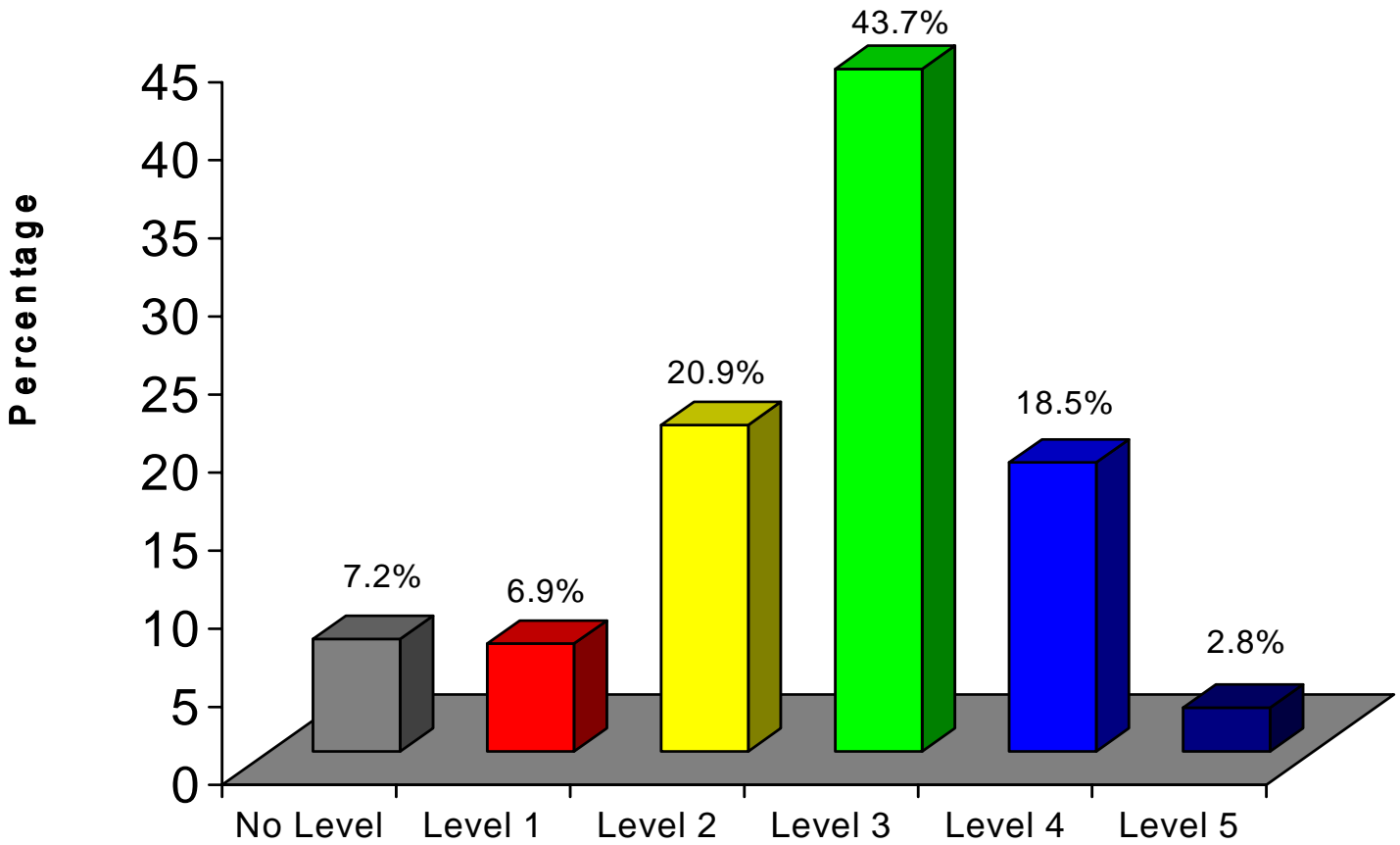
8TH GRADE PRE-ALGEBRA STUDENTS BY FCAT LEVELS* - FY05



Total Number of Students = 3448

***FY04 FCAT Data**

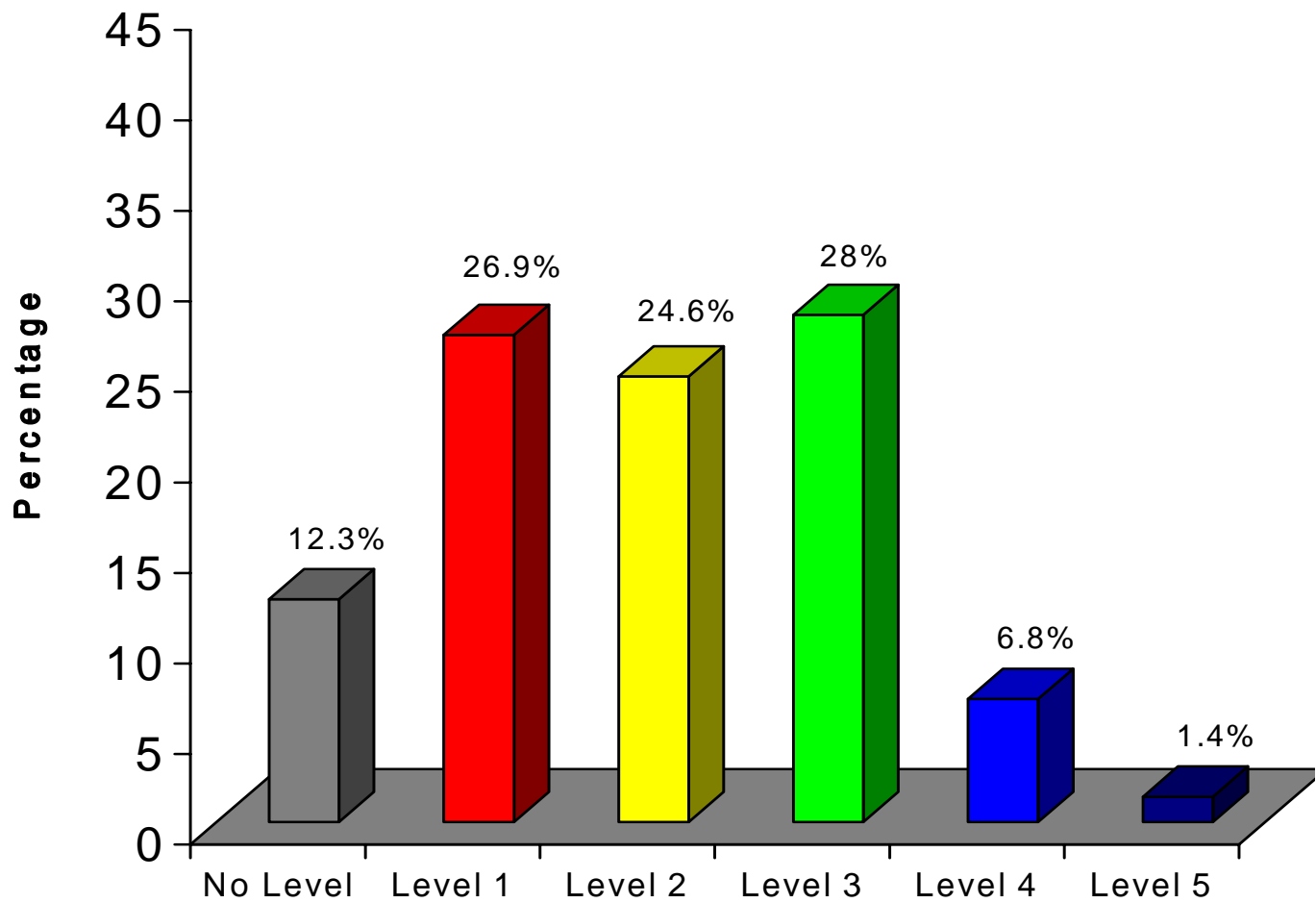
8TH GRADE ALGEBRA I STUDENTS BY FCAT LEVELS* - FY05



Total Number of Students = 6155

***FY04 FCAT Data**

9TH GRADE ALGEBRA I STUDENTS BY FCAT LEVELS* - FY05



Total Number of Students = 8864

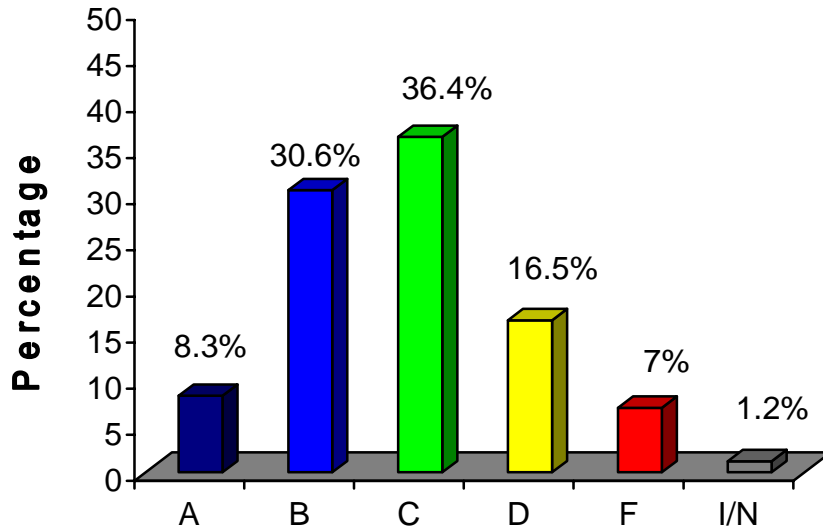
***FY04 FCAT Data**



GRADE DISTRIBUTION FY05

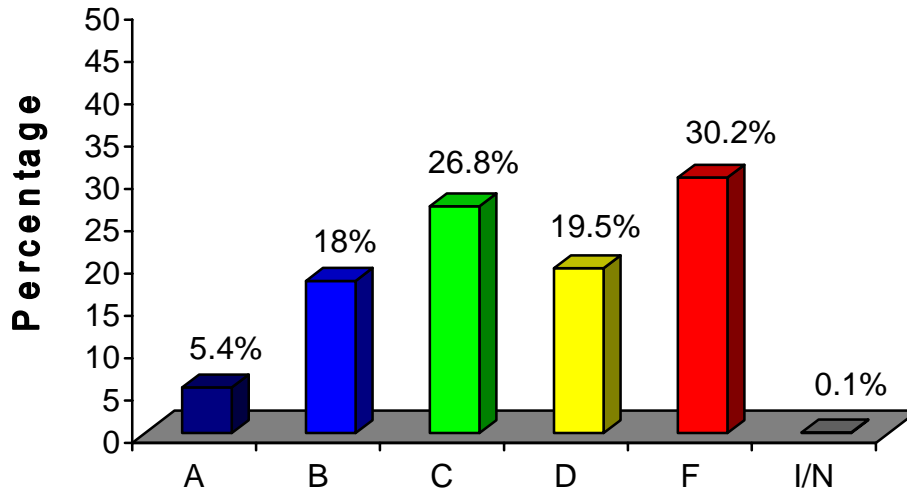
FIRST SEMESTER ALGEBRA I GRADE DISTRIBUTION FY05

8TH GRADE STUDENTS



Total Number of Students = 6266

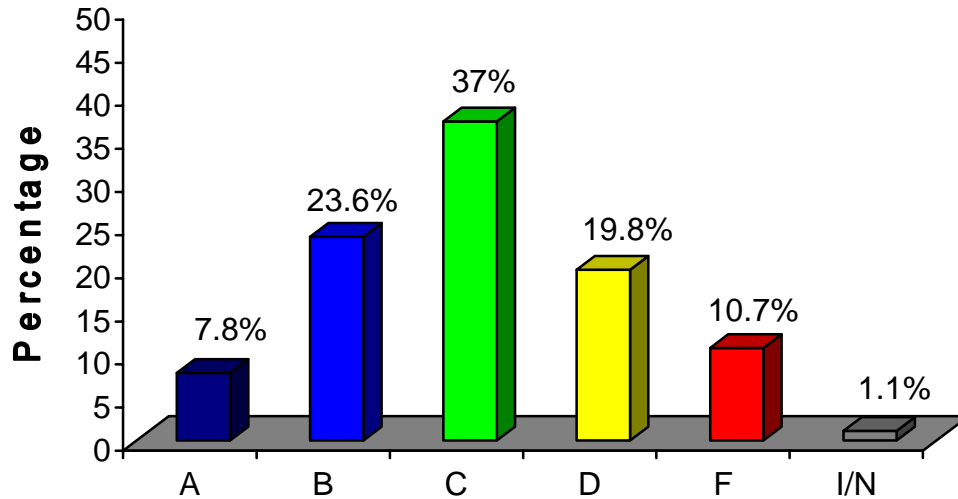
9TH GRADE STUDENTS



Total Number of Students = 8864

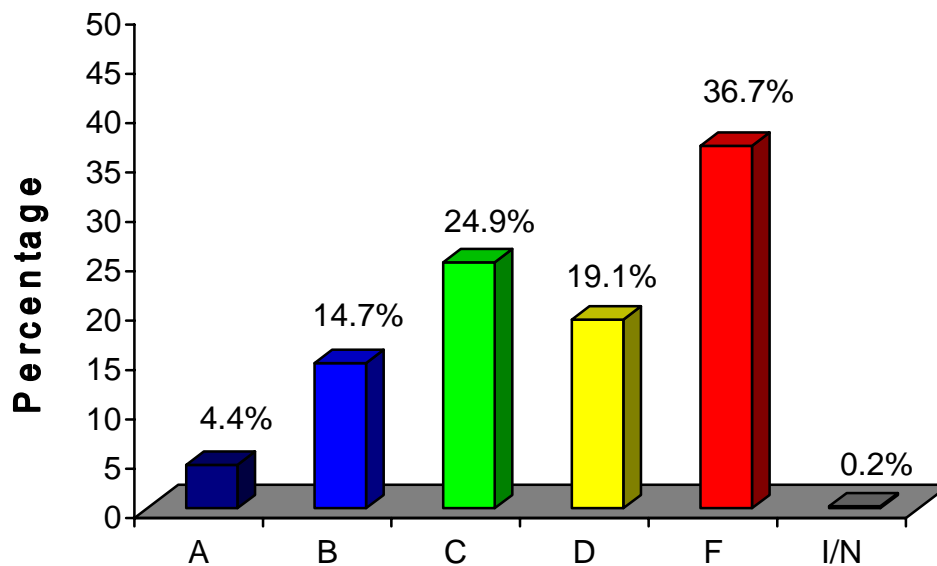
SECOND SEMESTER ALGEBRA I GRADE DISTRIBUTION FY 2005

8TH GRADE STUDENTS



Total Number of Students = 6080

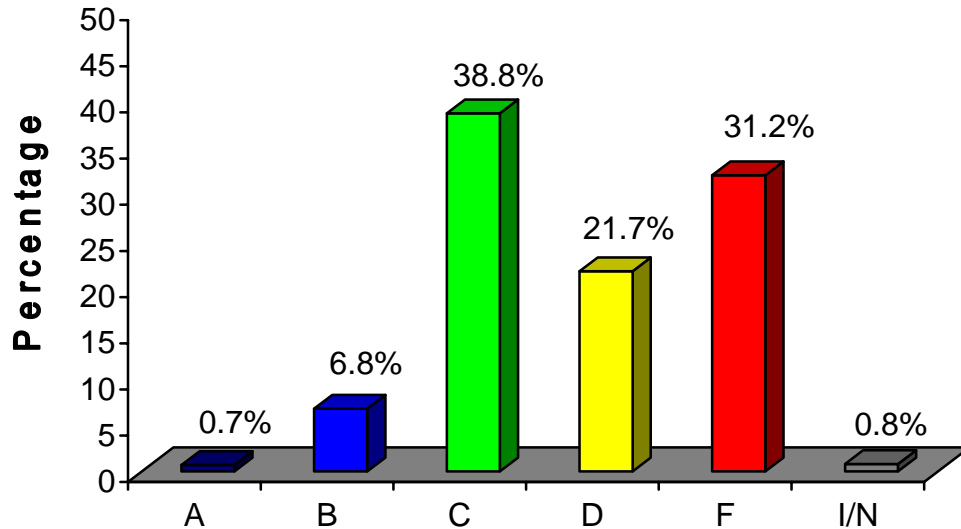
9TH GRADE STUDENTS



Total Number of Students = 9678

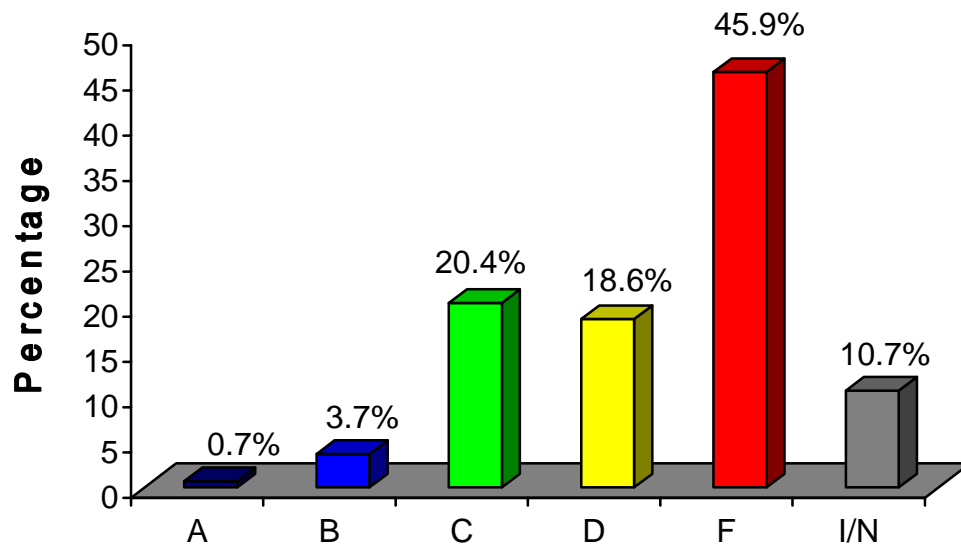
**SECOND SEMESTER ALGEBRA I EXAM (ETS)*
GRADE DISTRIBUTION FY 2005**

8TH GRADE STUDENTS



Total Number of Students = 5900

9TH GRADE STUDENTS



Total Number of Students = 9599

* Educational Testing Service



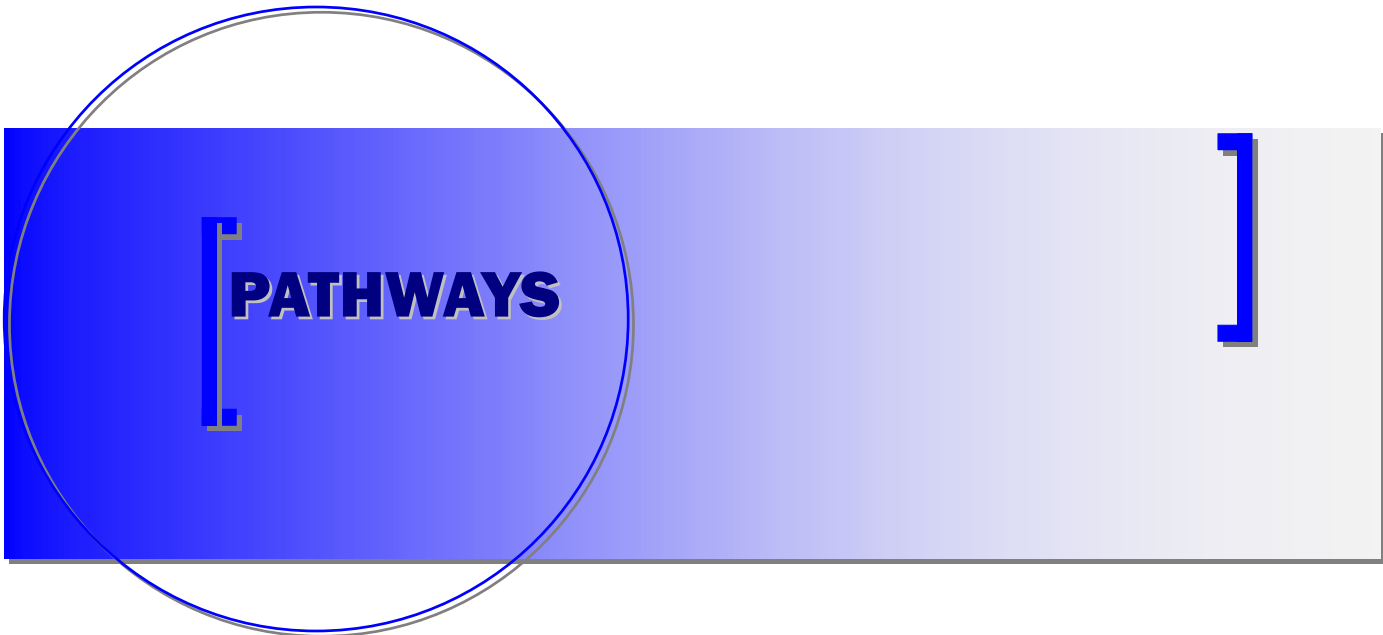
MAINTAINING THE MOMENTUM

The analysis of the algebra data from FY05 indicates:

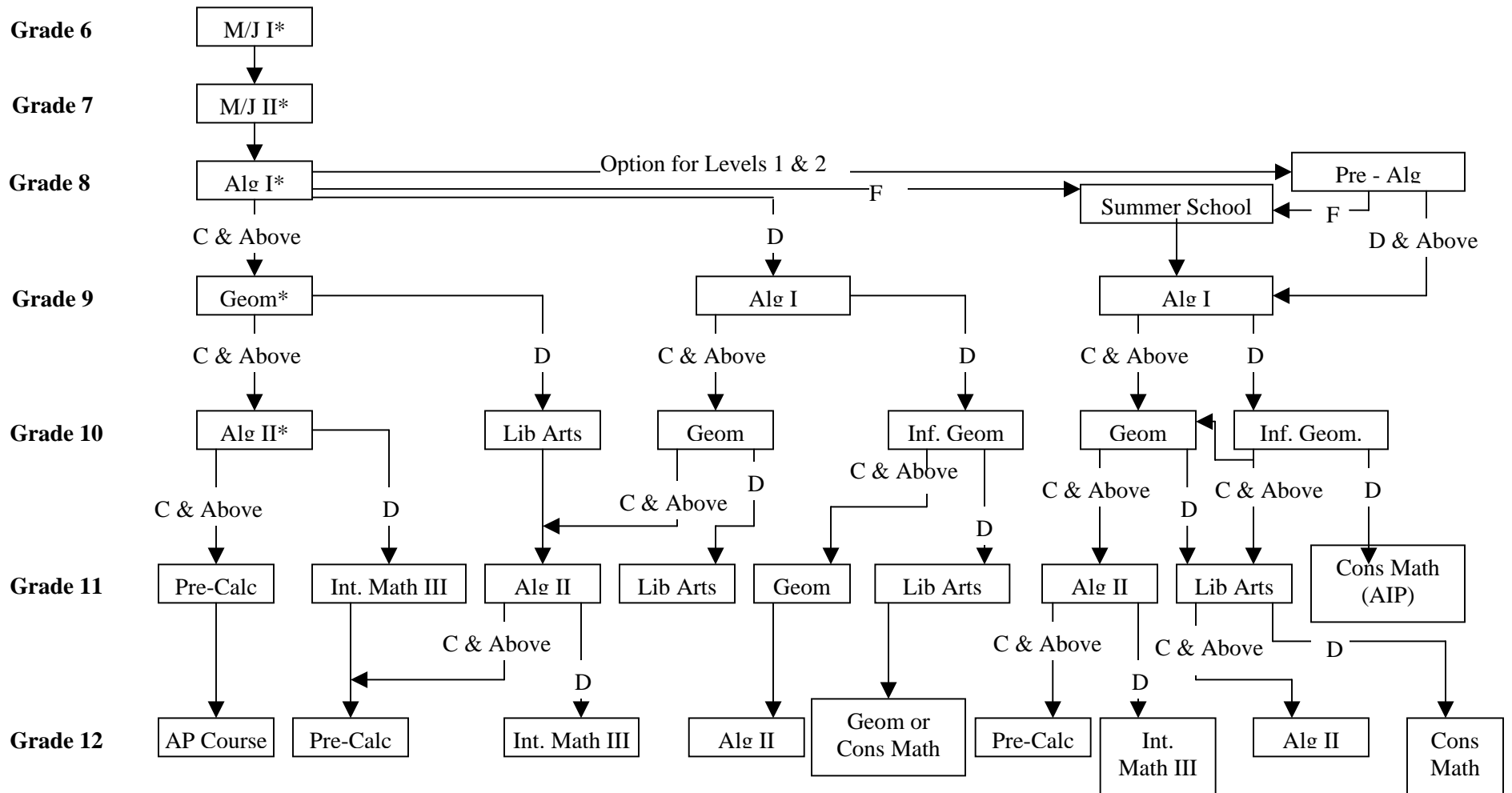
- The percentage of eighth grade students taking Algebra I increased from 15.0% in FY04 to 48% in FY05
- Approximately 70% of eighth grade students who took Algebra I passed the ETS End-of-Year Exam
- Approximately 92% of eighth grade students who took Algebra I passed first semester Algebra I
- Approximately 90% of eighth grade students who took Algebra I passed second semester Algebra I

For continued growth in the Algebra Initiative, increased success in Algebra I, and a reduction in the number of Pre-Algebra classes:

- Increase teacher capacity by providing staff development in
 - › the content area through summer workshops and inservice opportunities during the school year
 - › methods to increase student efficacy through the use of both assessments OF learning and assessments FOR learning
 - › the use of technology in the classroom
 - › the effective use of data for both teachers and students
- Continue District support by the Secondary Mathematics Team
- Provide opportunities for articulation between elementary and middle school teachers
- Expand partnerships with post-secondary schools, Safe Schools, the business community and parent groups



Suggested Mathematics Pathways



* M/J I Advanced, M/J II Advanced, Algebra I Honors, Geometry Honors, and Algebra II Honors are typically taken in succession in grades 6 – 10.