

**American Diploma Project  
Algebra II End-of-Course Exam  
April 2007**

**Background**

In May 2005, leaders from the American Diploma Project (ADP) Network States began to explore the possibility of working together, with support from Achieve, to develop a common end-of-course exam in Algebra II. These states were planning to require or strongly encourage students to take Algebra II in order to better prepare them for college and career. Algebra II is a gateway course for higher education and teaches quantitative reasoning skills important for the workplace.

The chief state school officers in these nine states recognized the importance of using an end-of-course test to help ensure a consistent level of content and rigor in classes within and across their respective states. They also understood the value of working collaboratively on a common test: the potential to create a higher quality test faster and at lower cost to each state, and to compare their performance and progress with one another. They also believed that Algebra II content should not differ from state to state.

In the fall of 2005 nine states began to work on this initiative. They agreed on the test purposes, content, format and other characteristics. In summer 2006, under Ohio's auspices, the nine states issued a multi-state Request for Proposals for the development, scoring and reporting of the ADP Algebra II exam, and awarded a contract with Pearson Education Measurement (PEM) in late March 2007.

As test development proceeds, the states will now turn their attention to ways in which they can work together to provide their schools with the tools and strategies – such as curriculum, instructional strategies, formative assessments, professional development and supports for students – necessary to improve secondary math achievement.

**Consistent College- and Work- Ready Expectations in Participating States**

The states agreed to base the core content that should be taught and tested in Algebra II, on the ADP “college- and work- ready” mathematics benchmarks, which reflect the knowledge and skills students need in order to succeed in college-level classes and be prepared for 21<sup>st</sup> century jobs. Each of the states has already completed the process of aligning its high school standards with the demands of college and work, or is in the process of doing so. As a result, Algebra II will be a more rigorous course than would have been the case had the states simply identified the common content they previously included in Algebra II, and the test will be a more rigorous test.

Achieve is helping nearly all of the 29 ADP Network states benchmark their own state standards against the ADP college- and work- ready expectations, leading to more rigorous and more consistent standards among the states.

### **Test Purposes**

The ADP Algebra II test will serve three main purposes:

1. ***To improve curriculum and instruction.*** The test will help classroom teachers focus on the most important concepts and skills in Algebra II, and identify areas where the curriculum needs to be strengthened. They will get the test results back within three weeks of when it is administered, which will provide sufficient time to make the necessary adjustments for the next year's course. Achieve also is developing model high school course descriptions, as well as K-8 grade level benchmarks, to provide guidance to states about what is most important to be taught in a rigorous college and work ready mathematics sequence. The course descriptions will be accompanied by sample tasks that illustrate the depth and cognitive demand of the mathematics students should learn.
2. ***To help colleges determine if students are ready to do credit-bearing work.*** Because the test is aligned with the ADP benchmarks, it will measure skills students need to enter and succeed in credit-bearing rather than remedial math courses. Colleges will be able to use the results of the test to tell high school students whether they are ready for college level work, or if they have skill gaps that need to be filled before they enroll in college. This information should help high schools better prepare their students for college, and reduce the need for colleges to provide costly remedial courses. At present, more than 30% of first year college students are required to take remedial courses, because they lack the skills needed to do college level work. As the test is developed by PEM, Achieve and the participating states will review it to make sure it measures critical college-ready skills. PEM will conduct the necessary studies to identify the score students must achieve in order to have a very strong likelihood of succeeding in credit-bearing math courses, subject to review by Achieve.
3. ***To compare performance and progress among the participating states.*** Achieve will issue a report each year comparing performance and progress among the participating states. This report will help state education leaders, educators and the public assess performance, identify areas for improvement, and evaluate the impact of state strategies for improving secondary math achievement.

### **Test Content and Format**

The end-of-course Algebra II test will be taken in two 45-minute sessions over two class periods (one of which will allow the use of calculators). It will include a total of 60 items with a combination of multiple choice, short answer, and extended response. Fully 30 percent of a student's score will be based on the short answer and extended response

items. The test will be administered in the late spring and late fall/early winter of each school year, starting in May 2008. It will be available in pencil and paper as well as on-line (as of fall 2008). Results will be available within three weeks. Math high school teachers and college faculty from each state will be involved in reviewing test items.

The core test will cover a range of algebraic topics. Successful students will demonstrate an understanding of the properties and operations of real and complex numbers. They will be able to generalize through the use of variables, resulting in facility with algebraic expressions. They will be able to identify and represent situations that can be modeled by single or systems of linear or quadratic equations and inequalities, to analyze the models, and to determine and effectively represent their solution(s). Successful students also will be able to demonstrate facility with estimating and verifying solutions to other non-linear equations, making use of technology where appropriate to do so. Finally, students will be able to demonstrate knowledge of functions and their properties – distinguishing among quadratic, higher degree polynomial, exponential, periodic, and piecewise linear functions – and recognize and solve problems that can be modeled by these functions.

In addition to the core algebraic content described above, over time seven modules will be available to states to enrich the core with content that is important to colleges and employers alike, including data and statistics, probability and trigonometry.

### **ADP Algebra II Exam available to all states**

Additional states that want to use this test and participate in the broader initiative, including comparative reporting of performance and progress and working with other states to improve secondary mathematics, can do so at any time. They should contact Achieve for further information.