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Office for Standards, Assessment and Reporting

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TO: District Superintendents
School Superintendents
Principals of Public and Nonpublic High Schools
Principals of Charter Schools
Mathematics Department Chairs and Coordinators
High School Mathematics Teachers

FROM: David Abrams

SUBJECT: June 2010 Regents Examination in Algebra 2/Trigonometry

The first administration of the new Regents Examination in Algebra 2/Trigonometry will take place in June 2010. For this administration, schools will have the option of requesting and administering both Algebra 2/Trigonometry and Mathematics B. This is the final step in the transition from Mathematics A and Mathematics B to Integrated Algebra, Geometry, and Algebra 2/Trigonometry. A chart detailing this transition is attached to this memorandum. Each student may take only the examination for which he or she has been prepared by coursework.

In late October 2009, the Office of State Assessment will provide schools with the Regents Examination in Algebra 2/Trigonometry Test Sampler. This Test Sampler will consist of examples of the types of questions, the formatting, and the scoring guides that are being developed for the examination. It may be duplicated for classroom instruction and will be available at:

<http://www.emsc.nysed.gov/osa/new-math.htm>

The test specifications that the Regents Examination and the Test Sampler will follow are attached to this memorandum and are available on the Department's web site at the above address.

As is the case with all Regents Examinations, New York State teachers have been making essential contributions to all aspects of the test development process for Algebra 2/Trigonometry. The Department's contractor for this examination, Riverside Publishing Company, works closely with Department staff and with committees of teachers from across New York State to develop examination questions that evaluate student attainment of Standard 3 of the Learning Standards for Mathematics, Science and Technology and that are aligned with the core curriculum in Algebra 2/Trigonometry. The Mathematics Core Curriculum for Algebra 2/Trigonometry is also available at the web site listed above.

Please note that graphing calculators **are required** for student use for this examination. Additional information concerning calculators is available at:

<http://www.emsc.nysed.gov/osa/mathre/calculators07.pdf>

We encourage teachers to become involved in test development and standard-setting activities. Please download and complete the application available at:

<http://www.emsc.nysed.gov/osa/itemwriterapp.htm>

The score collection phase is a vital step in the test development and validation process. **All** schools that administer the examination in June 2010 will be participating in the post-operational score collection for standard setting. Prior to the Regents Examination period, the Department will provide answer sheets to all schools that request the Regents Examination in Algebra 2/Trigonometry. These answer sheets will be produced by Pearson, the Department's contractor for score collection and standard setting. These are the **only** answer sheets that can be used for this examination. The box from Pearson containing the answer sheets will arrive in mid- to late-May. Detailed directions for the use and submission of these Algebra 2/Trigonometry answer sheets will be shipped from the Department along with the other nonsecure testing materials. These directions will also be available on the Department's web site.

As part of the score collection phase, schools will be required to ship the original scored answer sheets to Pearson via UPS shortly after administration of the test. The box in which the answer sheets were shipped to the schools **must** be reused for their return to Pearson. A pre-paid shipping label will be provided.

The conversion chart for determining each student's final examination scale score from the total raw score will be posted on the Department's web site no later than the Rating Day, Thursday, June 24.

In conducting standard setting for the new Regents Examination in Algebra 2/Trigonometry, the Department will use the same processes that were used for the Regents Examinations in Integrated Algebra and Geometry as well as for the Grades 3–8 English Language Arts and Mathematics Tests. These processes include:

- Conducting the standard setting immediately after the examination has been administered using operational testing data;
- Convening and consulting with the measurement policy review forum;
- Participation in standard setting in an advisory capacity of New York State general education, special education, and English as a second language teachers;
- Validating the process and reviewing final results of standard setting and measurement policy review forum with the Department's external Technical Advisory Group prior to submission of results to the Commissioner of Education for approval;
- Approval and final determination of the passing and mastery scores made by the Commissioner of Education.

These processes reflect best practices and adhere to the *Standards for Educational and Psychological Testing* (generally referred to as the "Joint Standards").¹

Suggestions and feedback from teachers provide an important contribution to the test development process. The Department provides an online evaluation form for State assessments that permits teachers to respond to several specific questions and to make suggestions. This form is available at:

<http://www.emsc.nysed.gov/osa/exameval>

The Regents Examination in Algebra 2/Trigonometry will be added to this online form in June 2010 and teachers who administer this examination are encouraged to submit an evaluation following the administration of the examination.

¹ American Educational Research Association, American Psychological Association, and National Council on Measurement in Education. *Standards for Educational and Psychological Testing*. Washington, DC: American Educational Research Association, 1999.

The Department has established an e-mail address dedicated solely to handling questions regarding the content of the new mathematics assessments and the transition from Mathematics A and Mathematics B to Integrated Algebra, Geometry, and Algebra 2/Trigonometry. Please use emscreminfo@mail.nysed.gov for the quickest response to your questions on these topics. As it becomes available, information regarding this new assessment will also be provided on the Department's web site at: <http://www.emsc.nysed.gov/osa/new-math.htm>. Please check this address frequently in order to have the latest information.

Thank you for your help and for all the work you do on behalf of the students in New York State.

Attachments



Mathematics Regents Examinations Implementation / Transition Timeline

On December 8, 2005, the Board of Regents unanimously approved the Department's recommended implementation timeline for the Regents Examinations in Integrated Algebra, Geometry, and Algebra 2/Trigonometry.

	Mathematics A	Mathematics B	Algebra	Geometry	Algebra 2/ Trigonometry
2006-07	X	X			
2007-08	X	X	X First admin. in June 2008		
2008-09	X Last admin. in January 2009	X	X	X First admin. in June 2009	
2009-10		X Last admin. in June 2010	X	X	X First admin. in June 2010
2010-11			X	X	X
2011-12			X	X	X

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Specifications for the Regents Examination in Algebra 2/Trigonometry
(First Administration—June 2010)

The questions on the Regents Examination in Algebra 2/Trigonometry will assess both the content and the process strands of New York State Mathematics Standard 3. Each question will be aligned to one content performance indicator but will also be aligned to one or more process performance indicators, as appropriate for the concepts embodied in the task. As a result of the alignment to both content and process strands, the examination will assess students' conceptual understanding, procedural fluency, and problem-solving abilities rather than assessing knowledge of isolated skills and facts.

There will be 39 questions on the Regents Examination in Algebra 2/Trigonometry. The table below shows the percentage of total credits that will be aligned with each content strand.

Content Strand	% of Total Credits
1) Number Sense and Operations	6–10%
2) Algebra	70–75%
4) Measurement	2–5%
5) Probability and Statistics	13–17%

Question Types

The Regents Examination in Algebra 2/Trigonometry will include the following types and numbers of questions:

Question Type	Number of Questions
Multiple choice (2 credits each)	27
2-credit open ended	8
4-credit open ended	3
6-credit open ended	1
Total credits	88

Calculators

Schools must make a graphing calculator available for the exclusive use of each student while that student takes the Regents Examination in Algebra 2/Trigonometry.

Algebra 2/Trigonometry Reference Sheet

Area of a Triangle

$$K = \frac{1}{2} ab \sin C$$

Functions of the Sum of Two Angles

$$\sin (A + B) = \sin A \cos B + \cos A \sin B$$

$$\cos (A + B) = \cos A \cos B - \sin A \sin B$$

$$\tan (A + B) = \frac{\tan A + \tan B}{1 - \tan A \tan B}$$

Functions of the Difference of Two Angles

$$\sin (A - B) = \sin A \cos B - \cos A \sin B$$

$$\cos (A - B) = \cos A \cos B + \sin A \sin B$$

$$\tan (A - B) = \frac{\tan A - \tan B}{1 + \tan A \tan B}$$

Law of Sines

$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

Sum of a Finite Arithmetic Series

$$S_n = \frac{n(a_1 + a_n)}{2}$$

Binomial Theorem

$$(a + b)^n = {}_n C_0 a^n b^0 + {}_n C_1 a^{n-1} b^1 + {}_n C_2 a^{n-2} b^2 + \dots + {}_n C_n a^0 b^n$$

$$(a + b)^n = \sum_{r=0}^n {}_n C_r a^{n-r} b^r$$

Law of Cosines

$$a^2 = b^2 + c^2 - 2bc \cos A$$

Functions of the Double Angle

$$\sin 2A = 2 \sin A \cos A$$

$$\cos 2A = \cos^2 A - \sin^2 A$$

$$\cos 2A = 2 \cos^2 A - 1$$

$$\cos 2A = 1 - 2 \sin^2 A$$

$$\tan 2A = \frac{2 \tan A}{1 - \tan^2 A}$$

Functions of the Half Angle

$$\sin \frac{1}{2} A = \pm \sqrt{\frac{1 - \cos A}{2}}$$

$$\cos \frac{1}{2} A = \pm \sqrt{\frac{1 + \cos A}{2}}$$

$$\tan \frac{1}{2} A = \pm \sqrt{\frac{1 - \cos A}{1 + \cos A}}$$

Sum of a Finite Geometric Series

$$S_n = \frac{a_1(1 - r^n)}{1 - r}$$

Normal Curve Standard Deviation

