

# The GRE<sup>®</sup> Mathematics Test

***We invite you to  
take a closer look...***

Does your graduate department require or recommend that graduate applicants take the GRE<sup>®</sup> Mathematics Test?

This test can be very useful in distinguishing among candidates whose credentials are otherwise similar. The test measures undergraduate achievement and provides a common yardstick for comparing the qualifications of students from a variety of colleges and universities with different standards. Consider these factors:

## **Predictive Validity**

Subject Test scores are a valid predictor of graduate school performance, as confirmed by a meta-analysis performed by independent researchers who analyzed over 1,700 studies containing validity data for GRE tests.<sup>1</sup> This study showed that GRE<sup>®</sup> Subject Tests are reliable predictors of a range of outcome measures, including first-year graduate grade-point average, cumulative graduate grade-point average, comprehensive examination scores, publication citation counts, and faculty ratings. For more information about the predictive validity of the GRE tests, visit [www.ets.org/gre/validity](http://www.ets.org/gre/validity).

## **Content That Reflects Today's Curricula**

The test consists of approximately 66 multiple-choice questions, drawn from courses commonly offered at the undergraduate level. A brief summary of test topics can be found on the back of this sheet. Additional information about the test and a full-length practice test are provided FREE and can be downloaded at [www.ets.org/gre/subject/prepare](http://www.ets.org/gre/subject/prepare).

<sup>1</sup> Source: "A comprehensive meta-analysis of the predictive validity of the Graduate Record Examinations<sup>®</sup>: Implications for graduate student selection and performance." Kuncel, Nathan R.; Hezlett, Sarah A.; Ones, Deniz S., *Psychological Bulletin*, January 2001, Vol. 127(1), 162-181.

## **Developed by Leading Educators in the Field**

The content and scope of each edition of the test are specified and reviewed by a distinguished team of undergraduate and graduate faculty representing colleges and universities across the country. Individuals who serve or have recently served on the Committee of Examiners are faculty members from the following institutions:

- Chapman University
- DePaul University
- Iowa State University
- Morgan State University
- University of Northern Colorado
- University of Washington
- Wake Forest University

Committee members are selected with the advice of the Mathematical Association of America and the American Mathematical Society.

Test questions are written by committee members and by other subject-matter specialists from colleges and universities across the country.

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For more information about the GRE<sup>®</sup> Mathematics Test,  
visit [www.ets.org/gre/subjecttests](http://www.ets.org/gre/subjecttests).

## Test Content

The test consists of approximately 66 multiple-choice questions, drawn from courses commonly offered at the undergraduate level. Approximately 50 percent of the questions involve calculus and its applications—subject matter that can be assumed to be common to the backgrounds of almost all mathematics majors. About 25 percent of the questions in the test are in elementary algebra, linear algebra, abstract algebra, and number theory. The remaining questions deal with other areas of mathematics currently studied by undergraduates in many institutions.

The following content descriptions may assist students in preparing for the test. The percentages given are estimates; actual percentages will vary somewhat from one edition of the test to another.

### **Calculus** **50%**

- Material learned in the usual sequence of elementary calculus courses—differential and integral calculus of one and of several variables—including calculus-based applications and connections with coordinate geometry, trigonometry, differential equations, and other branches of mathematics

### **Algebra** **25%**

- Elementary algebra: basic algebraic techniques and manipulations acquired in high school and used throughout mathematics
- Linear algebra: matrix algebra, systems of linear equations, vector spaces, linear transformations, characteristic polynomials, eigenvalues and eigenvectors
- Abstract algebra and number theory: elementary topics from group theory, the theory of rings and modules, field theory, and number theory

### **Additional Topics** **25%**

- Introductory real analysis: sequences and series of numbers and functions, continuity, differentiability and integrability, and elementary topology of  $\mathbb{R}$  and  $\mathbb{R}^n$
- Discrete mathematics: logic, set theory, combinatorics, graph theory, and algorithms
- Other topics: general topology, geometry, complex variables, probability and statistics, and numerical analysis

The above descriptions of topics covered in the test should not be considered exhaustive; it is necessary to understand many other related concepts. Prospective test takers should be aware that questions requiring no more than a good precalculus background may be quite challenging; such questions can be among the most difficult questions on the test. In general, the questions are intended not only to test recall of information, but also to assess the test taker's understanding of fundamental concepts and the ability to apply those concepts in various situations.