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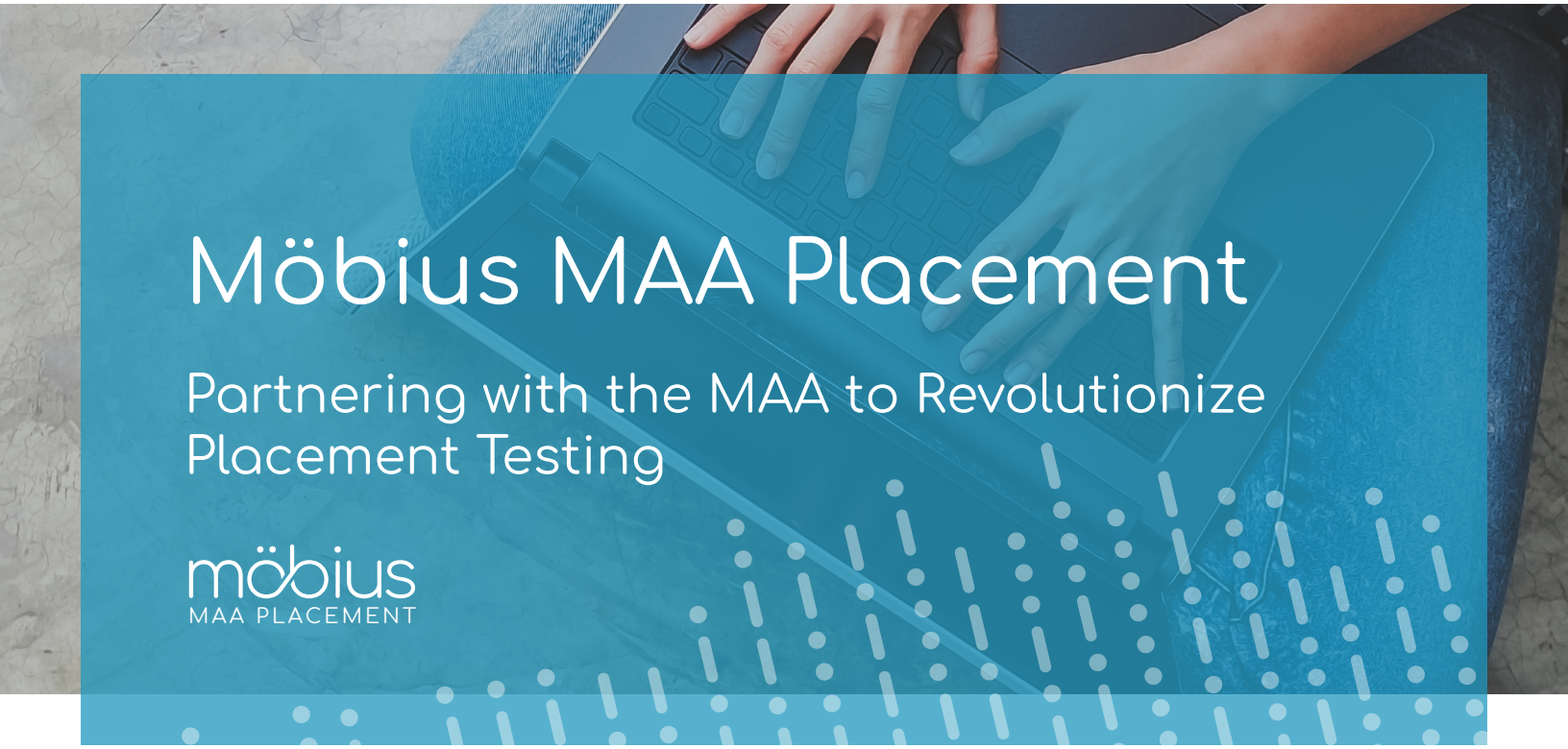


Möbius MAA Placement

Partnering with the MAA to Revolutionize Placement Testing

möbius
MAA PLACEMENT

Easy to administer.
Deliver tests online, without the logistical headaches of room scheduling, paper copy delivery, marker hiring, marathon marking sessions, and manual mark entry.

Flexible delivery.
Tests can be offered multiple times, or over a period of time, to accommodate everyone's busy schedule. Tests can even be administered more than once to the same students throughout the license period, to validate improvements during and after the course and to determine placement for additional subjects.

Instant results.
Results are available as soon as the student has completed the test.

Placement before scheduling.
Because tests are taken online, placement testing can be done before students arrive on campus, over the summer or even at the end of the previous school year when the concepts are fresh in students' minds. Class scheduling can then be done using the placement information.

Place your incoming students in the right mathematics courses quickly and painlessly using the renowned **Mathematical Association of America (MAA) placement tests** offered online exclusively through the Möbius Assessment testing environment.

MAA
MATHEMATICAL ASSOCIATION OF AMERICA

Features

- Includes tests for calculus, algebra, advanced algebra, and more
- Standard, calculator-based, and algorithmic tests available
- For standard and calculator-based tests
  - Each test is carefully balanced and real-life tested by the MAA to provide consistent and reliable results
  - Parallel forms of these tests are available for many topics
- Algorithmic tests
  - Each question contains one or more variables whose values are randomly chosen according to the constraints specified in the question template
  - Every student is presented with a randomized version of the same problem, so answers cannot be shared
  - Based on the original algorithms used to create the parallel forms of the standard placement tests
  - Reviewed and approved by the MAA
- Each test available as a built-in assignment
- Instant grading of results
- Results can be analyzed with automated tools
- Standard math notation used in questions, so they appear just as they would on paper
- User's Guide provides guidelines on selecting the appropriate test, and analyzing the results to set cutoff scores
- Can be incorporated into virtually any course management system, including Blackboard®, Canvas, Moodle™, Brightspace™, and more!

MAA Placement Test?

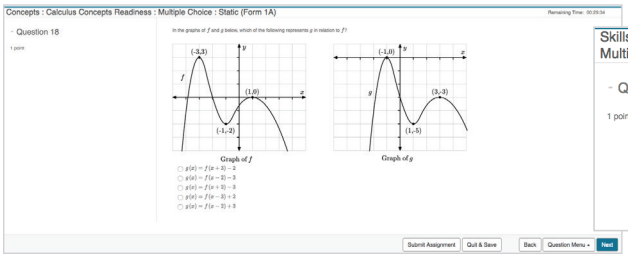
Student success. Today's students arrive with a wide range of backgrounds in mathematics. Correct placement ensures higher success rates for students. Students are more satisfied with the education they are receiving, and instructors can focus on teaching the content of the course instead of dealing with under-prepared or over-prepared students. Institutions can plan appropriate levels of courses and be confident that they are meeting students' needs.

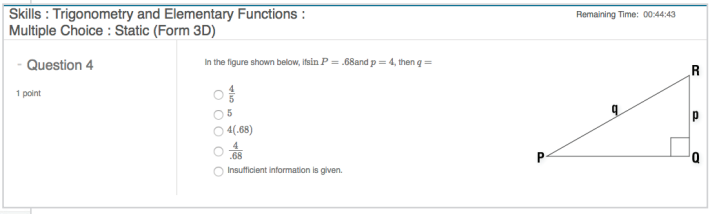
Created by experts. MAA placement test items are written and constructed by panels of college mathematics teachers who are directly involved with teaching students the courses served by the placement tests. Final approval for each test comes from the MAA.

Statistically rigorous and validated. Before a test can become an MAA standard or calculator-based placement test, it is first administered at select institutions. The results undergo detailed analysis, with modifications and further trials as required. While it is not possible for the millions of variations of algorithmic tests to undergo the same testing procedure, the algorithmic tests are based on the original algorithms used to create the parallel forms of the standard placement tests. All of the algorithmic questions have been reviewed and approved by the MAA.

High content validity. MAA placement tests have high content validity as judged by college faculty members who either helped construct the tests or piloted the tests at their institutions. For three decades, many mathematics departments have found the tests reliable and valid for appropriately placing students in entry level mathematics courses. The tests assess simple computational and manipulative skills in unrehearsed contexts as well as understanding of fundamental concepts needed for success in introductory mathematics courses.

Trusted for decades. Started in 1977, MAA placement tests are used by hundreds of institutions throughout the U.S.





Detailed Topic List

The tables below outline the topics covered in each test in Möbius MAA Placement, along with the number of test questions in that particular topic. Note that some questions are counted more than once so the total number of questions may be more than the number of questions on the test. The time limits are those recommended by the Mathematical Association of America (MAA).

Standard, Algorithmic, and Calculator-based Tests

There are 4 parallel versions of each of the standard and calculator-based tests. There are millions of variations of each algorithmic test, since each question contains one or more variables whose values are randomly chosen according to the constraints specified in the question template. Tests are multiple choice.

Placement Test	Topic	Standard and Algorithmic Tests # Questions	Calculator-based Tests # Questions
Arithmetic and Skills 32 questions 40 minutes	Integers and Fractions	5	6
	Decimals	4	3
	Order of Operations	2	2
	Linear Equations	1	2
	Formula Evaluation	3	2
	Exponents and Radicals	3	8
	Geometry	5	3
	Order Relations	2	2
	Word Problems	12	8
	Proportion	1	1
	Probability	1	
	Percent	3	2
	Averaging	1	
	Graph and Table Interpretation	4	4
	Approximation and Estimation	6	10
	Scientific Notation		1
	Calculator Active		18
Basic Algebra 25 questions 30 minutes (35 minutes for calculator test)	Arithmetic of Rational Numbers	2	1
	Order of Operations	2	
	Operations with Algebraic Expressions	8	3
	Algebraic Fractions	3	5
	Exponents and Radicals	4	5
	Linear Equations and Inequalities	7	8
	Systems of Linear Equations	1	2
	Fractional and Quadratic Equations	2	2
	Word Problems	4	4
	Graphing	3	3
	Geometry		3
	Absolute Value		2
	Estimation and Approximation		7
	Calculator Active		8
Algebra 32 questions 45 minutes	Arithmetic of Rational Numbers	3	2
	Operations with Algebraic Expressions	8	10
	Linear Equations and Inequalities	8	8
	Factoring and Algebraic Fractions	7	7
	Exponents and Radicals	6	8
	Graphing	3	5
	Fractional and Quadratic Equations and Quadratic Inequalities	4	2
	Logarithms	2	2
	Functions	2	3
	Complex Numbers	1	
	Absolute Value	2	2
	Systems of Equations	2	2
	Problem Solving		4
	Estimation and Approximation		5
	Calculator Active		8

Placement Test	Topic	Standard and Algorithmic Tests # Questions	Calculator-based Tests # Questions
Advanced Algebra 25 questions 30 minutes	Arithmetic of Rational Numbers	1	
	Operations with Algebraic Expressions	4	
	Linear Equations and Inequalities	5	
	Factoring and Algebraic Fractions	4	
	Exponents and Radicals	5	
	Graphing	4	
	Fractional and Quadratic Equations and Quadratic Inequalities	4	
	Logarithms	3	
	Functions	2	
	Complex Numbers	1	
	Absolute Value	1	
	Systems of Equations	1	
Trigonometry and Elementary Functions 30 questions 45 minutes	Definition of Trigonometric Functions	2	
	Right Triangles	2	
	Cofunctions	1	
	Evaluation of Special Angles	6	
	Related Angles	1	
	Radian Measure	6	
	Graphing	1	
	Identities	3	
	Laws of Sines and Cosines	1	
	Trigonometric Equations	2	
	Inverse Trigonometric Functions	1	
	Distance	1	
	Straight Line	3	
	Conics	2	
	Functions: Notation, Composition	5	
	Graphs and Their Properties	6	
	Logarithmic and Exponential Functions	4	
	Higher Degree Polynomials	1	
	Absolute Value	1	
	Inequalities	1	
Calculus Readiness 25 questions 30 minutes (40 minutes for calculator test)	Geometry and Measurement	5	7
	Graphs of Functions	8	8
	Word Problems, Modeling	5	5
	Concept Formulation	3	3
	Numerical Awareness	2	3
	Exponential Functions	2	2
	Exponents and Logarithms	2	3
	Equations and Factoring	2	3
	Functional Notation	2	2
	Inequalities, Absolute Value	2	2
	Trigonometry	5	5
	Calculator Active		9

Concept Readiness Tests

The Concepts Readiness Tests were developed by an MAA task force with close attention to what research indicates to be critical conceptual understandings and skills needed for success in the target course. Concept readiness tests are available for *Calculus* and *Algebra and Precalculus*.

Tests are multiple choice. There are 4 parallel versions of each test.

Reasoning Strands for Concept Readiness Tests

Quantitative Reasoning involves identifying and relating measureable attributes of an object or situation in a problem context.

Proportional Reasoning involves thinking about how two quantities change such that their ratio remains constant; attending to how one variable changes so that it is always a constant multiple of another variable.

Covariational Reasoning involves thinking about how two quantities in a functional relationship are changing together; attending to how one variable changes while imagining successive amounts of equal changes in another variable. It involves coordinating two varying quantities that change in tandem while attending to how the quantities change in relation to each other.

Variable Reasoning involves associating a letter with a numeric value, and flexibly viewing that letter as representing varying values or an unknown value as determined by the context in which the letter is defined or used.

Functional Reasoning involves either thinking of a function as a process that accepts input and produces output or making sense of symbols used in mathematical expressions and giving meaning to the mathematical ideas communicated by conventional notation.

Graphical Reasoning involves making sense of graphs that represent functions, and interpreting the meaning of attributes of a graph that convey aspects of a function's behavior.

Reasoning with Representations involves representing and interpreting a relationship between numeric values or quantities using graphs, algebraic equations, numeric values, or verbal expressions and using that relationship to change mathematical representations into equivalent representations that reveal desired information.

Computational Abilities refers to facility with manipulations and procedures needed to evaluate functions, solve equations, compose functions, and invert linear and exponential functions, within the context of algebraic representations.

Calculus Readiness

20 questions + 5 trigonometry questions
25 minutes (30 with trigonometry)

Proportions: Ratios of quantities in constant proportion
Algebra: Algebraic expressions, equations, inequalities
Functions: Concept, properties, operations
Representations of Functions: Symbolic, graphical, tabular, contextual (verbal)
Analytic Geometry: Circle, parabola, line
Trigonometry: Functions and applications
Models: Functions as models

Algebra and Precalculus Readiness

25 questions
30 minutes

Notations, Conventions, and Definitions
Modeling: Constructing and interpreting mathematical representations of relationships
Measurement: Angle measure, area, perimeter, circumference, volume
Rate of Change: Constant and average
Function Concepts: Composition, inverse, transformation
Solving equations: Manipulating equation to equivalent form
Inequalities: Representing or solving inequalities
Properties of Reals: Addition, multiplication, order

High School Prognostic Tests

The high school prognostic tests provide projected placements in college mathematics courses long before students arrive on campus. By using these tests as part of an outreach program, colleges can increase interest and ensure that more incoming students are prepared for college-level mathematics courses.