

MATH PLACEMENT



WHY DO I HAVE TO TAKE MATH?

When you think of God as the Creator of all things, maybe you picture things like trees and rocks and birds. If you really stretch your imagination, maybe you can picture God as the Creator of things that are invisible, like gravity. But our God is also the Creator of concepts, and mathematics is part of His incredible creation. He did not design His universe to be chaotic; rather, He designed it with order, structure, and care. When we study mathematics, we are studying the Creator of mathematics, and we are learning how to think in the way that He thinks.

Mathematics is the study of good thinking. Of course it's applicable in any career, since every task we accept will require logical thinking and problem-solving. But more importantly, when we study mathematics, we are learning how to think in the way that God thinks. We are learning how to model Him well as His image-bearers, and we are learning how to best care for the earth over which He has given us dominion. Developing your mathematical skills is one of the best ways to follow His commandment to "love your God with all your mind." (Matthew 22:37)

WHY MATH PLACEMENT?

To equip our students to think well and model the mind of our Creator, each program at Cornerstone includes the requirement of at least one college-level course in mathematics. Many science-based majors will require a higher level of mathematics (such as precalculus, calculus, multivariable calculus, etc.), while other majors will require only a basic course in college mathematics.

We all have different backgrounds and have been prepared for collegiate mathematics in different ways, so we want to make sure that a student registered for a course in mathematics has the background skills that would set them up for success in that course. To prevent students from taking a class for which they are not yet ready, we assess their current level of mathematics and place them in the appropriate class. This placement may require some students to take multiple math courses in order to reach the course required for their major, but it's designed to affirm our students in competency. Failing a course for which you're not prepared is discouraging and wastes your time here; we want to avoid that.

HOW MATH PLACEMENT WORKS

WHICH MATH COURSE DO I NEED FOR MY MAJOR?

Great question. I'm glad you asked that question. I've prepared a small chart in anticipation of that question.

YOUR MAJOR	THE MATH COURSE YOU NEED TO REACH	SOME OTHER THOUGHTS TO CONSIDER
Math (<i>major or minor</i>)	Calculus I: MAT-131	
Math Education (<i>elementary or secondary; major or minor</i>)	Calculus I: MAT-131	
Engineering (<i>with any focus</i>)	Calculus I: MAT-131	
Exercise Science (<i>Pre-Physical Therapy concentration only</i>)	College Algebra: MAT-121	
Pre-Dental	College Algebra: MAT-121	Some dental schools require Calculus (MAT-131)
Pre-Medical	College Algebra: MAT-121	
Pre-Pharmacy	Calculus I: MAT-131	
Pre-Veterinary	College Algebra: MAT-121	Some veterinary schools require Pre-Calculus (MAT-122)
Pre-PA	College Algebra: MAT-121	
Biology	College Algebra: MAT-121	
Biology Education	College Algebra: MAT-121	
Integrated Science Education (<i>elementary or secondary, major or minor</i>)	College Algebra: MAT-121	
Environmental Biology (<i>with any focus</i>)	College Algebra: MAT-121	
Associate of Science in Health Services (<i>or entry into Nursing</i>)	Intermediate Algebra: MAT-108	
Literally any other major	College Math: MAT-110	

HOW DO I GET PLACED?

Now we're asking the big questions. The good news is that, for the most part, there's nothing you need to do. The math course that you're placed is determined by your highest score in the mathematics section of either the SAT, ACT, or CLT.

COURSE	MINIMUM SCORE REQUIRED		
	SAT	ACT	CLT
Calculus: MAT-131	610	26	24
Pre-Calculus: MAT-122	560	23	20
College Algebra: MAT-121	540	22	19
College Mathematics: MAT-110	530	21	19
Intermediate Algebra: MAT-108	530	21	19
Algebra: MAT-107	510	19	18
Pre-Algebra: MAT-096	<510	<19	<18

You are not required to take the highest-level class for which you qualify; if your major required a lower-level course, you may register for that course. For example, suppose a student who wishes to major in communications achieved a score of 27 in the math section of the ACT. The placement system qualifies that student to register for Calculus I, but that student would only need College Math for their major. In that situation, the student would likely register for College Math (unless they wanted to explore more of mathematics, which is never frowned upon).

WHAT IF I DON'T PLACE INTO THE CLASS I NEED?

There are two options:

01

Follow the Path.

If you didn't get placed into the math course you need for your major, that's okay. You can take lower-level courses that will prepare you for the course you need. Each course that you pass qualifies you for the next one in the sequence. For example, if you need Calculus I but are placed in College Algebra, you can take College Algebra, then Pre-Calculus, and then Calculus I.

If you need Calculus I, Pre-Calculus, College Algebra, or Intermediate Algebra, follow this sequence until you reach the desired course:

- + MAT-096
- + MAT-107
- + MAT-108
- + MAT-121
- + MAT-122
- + MAT-131

Note that students pursuing one of these courses will never take MAT-110.

If you need College Math, follow this sequence:

- + MAT-096
- + MAT-107
- + MAT-110

02

CHALLENGE YOUR SCORE.

If you feel that your SAT, ACT, or CLT score doesn't accurately represent your mathematical ability, you are welcome to contest this placement by taking the Math Placement Test. You are allowed to take this test a maximum of two times. For more information on how to challenge your score, see the section below on the Math Placement Test.

WHAT IF I HAVEN'T TAKEN THE SAT, ACT OR CLT?

No problem! We'll have you take the Math Placement Test. See the information for the Math Placement Test below.

THE MATH PLACEMENT TEST

HOW DOES THE MATH PLACEMENT TEST WORK?

Most people are placed into a math course by their score on the SAT, ACT, or CLT standardized tests (see above). However, the Math Placement Test exists for students who 1.) Haven't taken one of the standardized tests used to place someone, or 2.) Wish to challenge their placement and potentially place into a higher-level course.

The test is a written, multiple-choice exam that must be taken in person. No calculators are allowed during the test. There are four parts to the exam:

- + **Section A:** Arithmetic.
- + **Section B:** Algebra.
- + **Section C:** College Algebra.
- + **Section D:** Trigonometry.

However, you won't necessarily have to take all four parts.

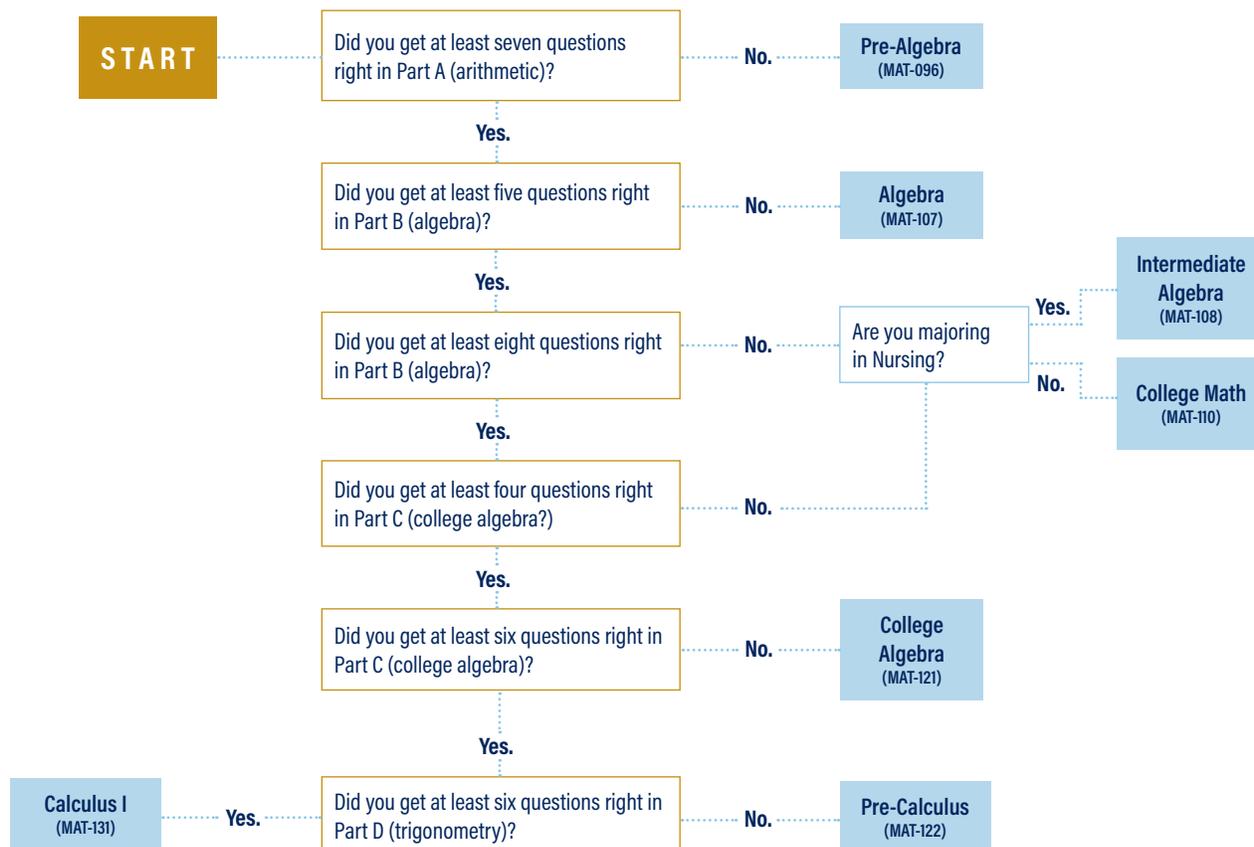
- + *If you're intending to take Calculus I, you'll need to take Sections A,B,C, and D. You will have one hour to complete the exam.*
- + *If you're intending to take Pre-Calculus, you'll need to take Sections A,B, and C. You will have forty-five minutes to complete the exam.*
- + *If you're intending to take College Math, you'll need to take Sections A and B. You will have thirty minutes to complete the exam.*
- + *If you're intending to take Intermediate Algebra, you'll need to take Sections A and B. You will have thirty minutes to complete the exam.*

HOW IS THE MATH PLACEMENT TEST SCORED?

Your scores in each section are examined to determine the class into which you are placed.

COURSE	MINIMUM SCORE REQUIRED			
	ARITHMETIC	ALGEBRA	COLLEGE ALGEBRA	TRIGONOMETRY
Calculus: MAT-131	7	8	6	6
Pre-Calculus: MAT-122	7	8	6	
College Algebra: MAT-121	7	8	4	
College Mathematics: MAT-110	7	5		
Intermediate Algebra: MAT-108	7	5		
Algebra: MAT-107	7			
Pre-Algebra: MAT-096				

The minimum in each section must be reached for a student to place into that class. Another way to understand this placement system would be to following the subsequent flowchart:



WHAT TOPICS ARE ON THE MATH PLACEMENT EXAM?

Part A: Arithmetic

- + Be able to round numbers to various places, such as the hundreds, tens, ones, tenths, hundredths, thousandths, ten thousandths.
- + Be able to add and subtract fractions and write your answer in lowest terms.
- + Be able to multiply and divide fractions and write your answer in lowest terms.
- + Be able to work with percentages:
 - ◆ Finding a percent of a number (e.g., find 68% of 150).
 - ◆ Describe by what percent an amount increased or decreased.
 - ◆ Convert between fractions and percentages.
- + Know the order of operations and be able to compute an expression using them.
- + Be able to use inequalities with fractions (e.g., which is bigger, $\frac{7}{8}$ or $\frac{19}{20}$?)
- + Be able to convert between mixed numbers (e.g., $5\frac{1}{3}$) and improper fractions (e.g., $\frac{16}{3}$).
- + Understand the connection between ratios and fractions and be able to apply them to amounts (e.g., if the ratio of water to vinegar should be 3:2, and I have 14 ounces of water, how much vinegar should I add?)

Part B: Algebra

- + Be able to substitute variables into an expression (e.g., if $x = 4$ and $y = 9$, what is $8x^2 - 2xy$?)
- + Be able to simplify expressions by combining like terms.
- + Be able to expand binomials being multiplied together (i. e., FOIL).
- + Be able to find the slope of a line passing through two given points.
- + Be able to solve linear equations.
- + Be able to solve quadratic equations.
- + Be able to take a verbal expression and write it as a mathematical expression (e.g., "eight times three less than a number" as $8(x - 3)$).
- + Be able to write a linear expression for a situation (e.g., I make seven dollars an hour plus a one-time payment of nine dollars, so the amount of money I make is $7h + 9$, where h is in hours).
- + Be able to solve fractional equations by cross-multiplying.

Part C: College Algebra

- + Be able to solve quadratic equations...
 - ◆ ...by factoring.
 - ◆ ...by using the quadratic formula.
- + Be able to find the vertex of a parabola.
- + Be able to factor quadratic expressions.
- + Be familiar with function notion and be able to input expressions into functions (e.g., evaluate/simplify $f(a^2 + 3)$).
- + Be able to add, subtract, multiply and divide fractions with expressions in them.
- + Be familiar with how graphs of functions are affected by changing the expression in situations like $kf(x)$, $f(kx)$, $f(x+k)$, $f(x - k)$, $f(x) + k$ and $f(x) - k$.
- + Be able to simplify logarithmic expressions using log rules.
- + Be able to solve simple exponential equations using logarithms.

Part D: Trigonometry

- + Be familiar with basic trigonometric definitions and how they relate to the sides of a triangle.
- + Know the unit circle.
- + Be able to convert between radians and degrees.
- + Know basic trigonometric identities such as the sum/difference identities, double angle identities and the Pythagorean identity.
- + Be familiar with the reciprocal trig functions $\sec \theta$, $\csc \theta$, and $\cot \theta$.
- + Know the Law of Sines and the Law of Cosines.
- + Be able to solve trigonometric equations.