

# Foundations of Math and Pre-Calculus 10

**Type:** Online

## Course Description:

Foundations of Math and Pre-Calculus 10 is intended to help students continue on the path to potential STEM-based post secondary studies. Students in this course will experience an emphasis on increased algebraic foundations, problem solving and critical thinking skills. Specifically, students will cover topics such as Polynomials, Functions, Relations, Systems of Equations, Trigonometry and Financial Literacy.

StudyForge Foundations of Math and Pre-Calculus 10 is intentionally designed for student success, featuring elements such as:

- Video, Audio and Hands-on instruction through videos and interactives
- Practice questions with detailed solutions for self-assessment
- A student notebook that accompanies the instruction, to enhance engagement with course material
- Summative assessments for each module - randomized to allow retests for mastery
- A customized dashboard to let you know which students are most needing your help
- A variety of Inquiry-based projects
- Solution Files & Answer Keys
- And more.

*Foundations of Math and Pre-Calculus 10 requires that students have completed the prerequisite course: Math 9.*

## Major Units and Topics:

- Exponents
- Polynomials
- Functions and Relations
- Linear Relations
- Systems of Equations
- Trigonometry
- Financial Literacy



### Assessments:

- Video Note Package
- Projects
- Practice Questions
- Assignments
- Chapter Tests

### Student Requirements:

- Students will need access to a computer (with internet, speakers, mic and camera), printer, pencil, papers and a scientific calculator.
- A graphing calculator is also permitted and recommended.
  - (Note that there is a built-in graphing calculator in all practice questions.)

### Learning Standards Overview:

Content <i>Students are expected to know the following:</i>	Ch 1	Ch 2	Ch 3	Ch 4	Ch 5	Ch 6	Ch 7
<b>Powers</b>							
Positive and negative exponents	✓					✓	
Exponent Laws	✓						
Evaluation using order of operations	✓					✓	
Numerical and Variable Bases	✓						
<b>Prime Factorization</b>							



Expressing prime factorization of a number using powers		✓					
Identifying the factors of a number		✓					
Includes greatest common factor (GCF) and least common multiple (LCM)		✓					
Strategies include using factor trees and factor pairs		✓					
<b>Functions and Relations</b>							
Communicating domain and range in both situational and non-situational contexts			✓	✓			
Connecting graphs and context			✓	✓	✓		
Understanding the meaning of a function			✓				
Identifying whether a relation is a function			✓				
Using Function Notation			✓	✓			
<b>Linear Functions</b>							
Slope: positive, negative, zero and undefined				✓			
Types of equations of lines (point-slope, slope intercept, and general)				✓	✓		
Equations of parallel and perpendicular lines				✓			
Equations of horizontal and vertical lines				✓			



Connections between representations: graphs, tables, equations				✓	✓		
<b>Arithmetic Sequences</b>							
Applying formal language (common difference, first term, general term) to increasing and decreasing linear patterns				✓			
Connecting to linear relations				✓			
Extension: exploring arithmetic series				✓			
<b>Systems</b>							
Solving graphically					✓		
Solving algebraically by inspection, substitution, elimination					✓		
Connecting ordered pair with meaning of an algebraic solution					✓		
Solving problems in situational contexts					✓		
<b>Multiplication</b>							
Applying the distributive property between two polynomials, including trinomials		✓					
Connecting the product of binomials with an area model		✓					
<b>Factoring</b>							



Greatest common factor of a polynomial		✓					
Simpler cases involving trinomials and difference of squares		✓					
<b>Trigonometric</b>							
Since, cosine, and tangent ratios						✓	
Right-triangle problems: determining missing sides and/or angles using trigonometric ratios and the Pythagorean theorem						✓	
Contexts involving direct and indirect measurement						✓	
<b>Financial Literacy</b>							
Types of income							✓
Income tax and other deductions							✓

