

# Honors Pre-Calculus



1<sup>st</sup> nine weeks

	Content	Days	ACT Standard	Assessment
	<b>Unit 1:</b>	<b>26</b>		
	<b>Real Numbers</b>	3		
	A. Properties			
	B. Interval			
	C. Set Theory			
	D. Properties of Absolute Value			
	<b>Exponents and Radicals</b>	5	28 - 32	
	A. Properties of Exponents & Nth Roots			
	B. Rational Exponents			
	C. Rationalizing the Denominator			
	<b>Polynomials</b>	5	24 - 27	
	A. Operations			
	B. Factoring			
	1. Trinomials			
	2. Difference of Squares			
	3. Sum and Difference of Cubes			
	4. Grouping			
	<b>Rational Expressions</b>	5		
	A. Simplify & Operations			
	B. Complex Fractions			
	C. Rationalizing the Numerator And Denominator			
	<b>Equations</b>	6	28 - 32	
	A. Linear, Quadratic, Rational, Radical and Literal			
	<b>Unit 2:</b>	<b>18</b>		
	<b>Modeling with Equations</b>	4	33 - 36	
	A. Interest			
	B. Solution			
	C. Work			
	D. Distance			
	E. Geometric			
	<b>Inequalities</b>	4	28 - 32	
	A. Linear, Non-linear, and Absolute Value			
	<b>Coordinate Geometry</b>	3	28 - 32	
	A. Midpoint & Distance Formula			
	B. Definition of Intercepts & Symmetry			
	<b>Solving Equations and Inequalities Graphically</b>	2		
	A. Determine appropriate viewing window			
	B. Solve Equations and Inequalities using The Graphing Calculator			
	<b>Lines</b>	3	28 - 32	
	A. Definition of Slope			
	B. Equations of Lines			
	1. Point-slope			

	2. Slope-intercept			
	3. General Form			
	4. Parallel and Perpendicular			
	<b>Unit 3:</b>	<b>23</b>		
	<b>Functions</b>	4		
	A. Definitions			
	B. Piecewise Functions			
	C. Evaluating			
	D. Domain			
	E. Verbal Interpretation of Graphs			
	<b>Graphs of Functions</b>	3		
	A. Graphs (including Piecewise)			
	B. Finding Domain & Range from graph			
	<b>Variation</b>	2		
	A. Direct, Inverse, Joint, & Applications			
	<b>Average Rate of Change</b>	2		
	A. Difference Quotient			
	B. Increasing & Decreasing Functions			
	<b>Transformations of Functions</b>	3	33 - 36	
	A. Graphing using Transformations			
	B. Even, odd, or neither			
	<b>Extreme Values of Functions</b>	2	28 - 32	
	A. Quadratic			
	B. Minimum and Maximum Values			
	<b>Modeling with Functions (optional)</b>	1	28 - 32	
	<b>Combining Functions</b>	2	28 - 32	
	A. Algebra & Composition of Functions			
	B. Finding Domain			
	<b>Functions</b>	2		
	A. One-to-one and Inverses			
	<b>Unit 4:</b>	<b>19</b>		
	<b>Polynomials</b>	3		
	A. End Behavior of Graphs			
	B. Zeros			
	C. Graphing			
	D. Finding Local Extrema with Calculator			
	<b>Dividing Polynomials</b>	2		
	A. Long & Synthetic Division			
	B. Remainder and Factor Theorem			
	<b>Real Zeros of Polynomials</b>	4		
	A. Rational Zero Theorem			
	B. Descarte's Rule of Signs			
	C. Applications using the graphing Calculators			
	<b>Complex Numbers</b>	2	28 - 32	
	A. Operations			
	B. Solving Equations			
	<b>Complex Zeros</b>	3		
	A. Fundamental Theorem of Algebra			
	B. Complete Factorization			
	C. Conjugate Zero Theorem			
	<b>Rational Functions</b>	3		

3<sup>rd</sup> nine weeks

	A. Finding Asymptotes			
	B. Finding x and y intercepts			
	C. Graphing			
	<b>Unit 5:</b>	<b>19</b>		
	<b>Exponential Functions</b>	3	33 - 36	
	A. Graphing			
	B. Natural Exponential Function			
	C. Compound & Continuous Interest			
	<b>Logarithmic Functions</b>	5	33 - 36	
	A. Definitions			
	B. Graphing			
	C. Properties of Logarithms			
	D. Common and Natural			
	E. Evaluating			
	<b>Laws of Logarithms</b>	3	33 - 36	
	A. Expanding Expressions			
	B. Condensing Expressions			
	C. Change of Base Formula			
	D. Evaluating			
	<b>Equations</b>	4	28 - 32	
	A. Solving Exponential			
	B. Solving Logarithmic			
	C. Applications			
	<b>Modeling with Exponential &amp; Logarithmic Functions</b>	2	28 - 32	
	A. Exponential Growth and Decay			
	<b>Unit 6:</b>	<b>16</b>		
	<b>Conic Sections</b>	4	28 - 32	
	A. Circles (Section 1.8)			
	B. Parabolas			
	1. Vertex			
	2. Focus and Directrix			
	3. Graphs			
	4. Find Equations			
	<b>Ellipses</b>	3		
	A. Center			
	B. Vertices			
	C. Foci			
	D. Major and Minor Axis			
	E. Graphs			
	F. Find Equations			
	<b>Hyperbolas</b>	3		
	A. Center			
	B. Vertices			
	C. Foci			
	D. Graph using Asymptotes			
	E. Find Equations			
	<b>Shifted Conics</b>	2		
	A. Include shifts while teaching other sections			
	<b>Parametric Equations</b>	2		

4 <sup>th</sup> nine weeks	<b>Unit 7:</b>	<b>17</b>		
	<b>Systems of Equations with Linear &amp; Quadratics</b>	3	28 - 32	
	A. Substitution			
	B. Elimination			
	C. Applications			
	<b>Systems of Linear Equations with Three Variables</b>	2		
	A. Solve			
	<b>Matrices</b>	2		
	A. Solve Using Guassian Method			
	B. Classify			
	<b>Matrices</b>	3		
	A. Basic Operations			
	B. Determinants			
	<b>Matrices</b>	2		
	A. Inverse using Graphing Calculators			
	B. Solving a Matrix Equations			
	<b>Partial Fractions</b>	3		
	<b>Unit 8:</b>	<b>10</b>		
	<b>Sequences</b>	2		
	A. Definition			
	B. Summation Notation			
	<b>Arithmetic Sequences and Series</b>	2		
	<b>Geometric Sequences and Series</b>	2	33 - 36	
<b>The Binomial Theorem</b>	2			
A. Factorials & Binomial Expansion				
<b>Unit 9:</b>	<b>6</b>			
<b>Finding Limits Numerically &amp; Graphically</b>	3			
<b>Finding Limits Algebraically</b>	2			

\* Curriculum Adjustment and Assessment:  
10 days as needed throughout the course