



Parma High School

Math III

Scope and Sequence

Mathematical Practices <ol style="list-style-type: none"> 1. Make sense of problems and persevere in solving them. 2. Reason abstractly and quantitatively. 3. Construct viable arguments and critique the reasoning of others. 4. Model with mathematics. 5. Use appropriate tools strategically. 6. Attend to precision. 7. Look for and make use of structure. 8. Look for and express regularity in repeated reasoning. 		Math III Focus Areas The four critical areas of focus in Math III are: (1) using data collection methods and summary statistics (2) adding, subtracting, multiplying and dividing polynomials, finding roots of polynomials, using the Fundamental Theorem of Algebra, and working with rational expressions (3) using basic trigonometry to solve real-world problems and model periodic data, and solving triangles using the Law of Sines and Law of Cosines, and (4) extending work with exponential functions to solve equations with logarithms, creating compositions of functions, and transforming diverse types of functions.		Major Domains The major domains in High School Math are: <ol style="list-style-type: none"> 1. Number and Quantity 2. Algebra 3. Functions 4. Modeling 5. Geometry 6. Statistics and Probability 	
Weeks	Unit Title	Learning Targets	Vocabulary	Domain/Standards	Resources
Aug- Early Sept	Drawing Conclusions from Data	Students will review analyzing data using measures of central tendency and range and describe the spread of data using standard deviation. Students will understand how a sample relates to a population and be aware of measures to prevent bias in sampling or surveys. Students will recognize a normal distribution of data and be able to determine percentages of data at different standard deviations from the mean.	Mean, measure of central tendency, median, mode, normal distribution, population, sample, standard deviation.	S.ID.2, N.Q.2, S.IC.6, S.ID.6, S.IC.1, S.IC.3, S.MD.6, S.ID.4, S.MD.7, S.IC.4, S.IC.5	Pearson Math III Common Core

Early Sept- Late Sept	Linear Equations, Inequalities and Functions	Students will review finding the solution of an equation or inequality. Students will review finding the slope of a line from two points and writing an equation in slope-intercept form. Students will be able to transform parent functions using horizontal and vertical shifts, reflections and compressions or stretches. Students will be able to find the vertex and axis of symmetry of absolute value functions and transform them. Students will review graphing inequalities. Students will review solving systems of equations, and learn to solve systems with three variables. Students will be able to write a matrix for a system of equations and use row operations to find the solution.	Equivalent systems, linear equation, literal equation, matrix, matrix element, row operation, slope.	A.CED.1, F.IF.7a, b, A.CED.2, F.IF.4, F.IF.7, F.BF.3, A.CED.3,	Pearson Math III Common Core
Late Sept- Mid Oct	Quadratic Functions and Transformations	Students will review graphing a quadratic equation in vertex or standard form. Students will review finding the zeros of a quadratic function by factoring, completing the square, or using the Quadratic Formula. Students will be able to use the discriminant to determine how many solutions. Students will be able to solve linear-quadratic or quadratic-quadratic systems. Students will be able to write an equation of a parabola and graph it using the focus and directrix. Students will be able to write equations of circles.	Axis of symmetry, discriminant, greatest common factor, parabola, Quadratic Formula, quadratic function, standard form, vertex form, zero of a function.	F.BF.3, F.IF.4,5,6, F.IF.7a, A.CED.2, F.IF.8,9, A.SSE.1a, 2, A.APR.3, A.CED.1,3, A.REI.7,11, G.GPE.1,2,4	Pearson Math III Common Core
Mid- Oct- Early Nov	Polynomial Functions	Students will be able to classify polynomials and describe end behavior and turning points. Students will be able to add, subtract, multiply or divide polynomial expressions. Students will be able to determine if a function is even or odd. Students will be able to find the zeros of polynomial functions. Students will be able to use the Fundamental Theorem of Algebra to find complex solutions of polynomial equations.	End behavior, monomial, multiplicity, Pascal's Triangle, polynomial function, relative maximum, relative minimum, standard form of a polynomial function, synthetic division, turning point.	F.IF.7, F.BF.3 A.SSE.1, 2, F.IF.4,5,6,7,8,9, A.APR.1, 2,3,4,5,6, A.REI.11, N.Q.2, N.CN.8, 9,	Pearson Math III Common Core

Early Nov - Early Dec	Rational Expressions and Functions	Students will be able to simplify rational expressions. Students will be able to add, subtract, multiply and divide rational expressions. Students will recognize joint and inverse variation. Students will be able to graph rational functions. Students will be able to find points of discontinuity in rational functions. Students will be able to solve rational equations.	Asymptote, combined variation, complex fraction, continuous graph, discontinuous graph, excluded value, inverse variation, joint variation, point of discontinuity, rational equation, rational expression, rational function, reciprocal function.	A.APR.6,7, A.SSE.1,2, N.Q.2,, A.CED.4, F.IF.4,5,7,9, A.REI.2,11, A.CED.1,3	Pearson Math III Common Core
Early Dec- Late Jan	Roots and Radical Expressions	Students will review simplifying a radical expression, including rationalizing the denominator, using conjugates if required. Students will be able to combine like radicals. Students will be able to rewrite a radical expression using rational exponents. Students will be able to solve and graph radical equations and eliminate extraneous solutions. Students will be able to write compositions of functions and evaluate them. Students will be able to find inverses of functions.	Composite function, inverse function, nth root, principal root, radical equation, radicand, rational exponent, rationalize the denominator, square root equation, square root function.	A.SSE.2, A.REI.2, 11, A.CED.1,4, F.BF.1,4, N.Q.2, F.IF.4,7,9	Pearson Math III Common Core
Late Jan- Mid Feb	Exploring Exponential Models	Students will review exponential growth and decay models to solve real-life problems. Students will be able to solve continuously compounded interest problems and transform graphs of exponential functions. Students will understand that logarithmic functions are inverses of exponential functions, so are reflected across $y=x$. Students will be able to use properties of exponents to simplify logarithmic expressions. Students will be able to solve logarithmic or exponential equations. Students will be able to solve natural log equations.	Asymptote, Change of Base Formula, common logarithm, exponential equation, exponential function, exponential growth, logarithm, logarithmic equation, logarithmic function, natural logarithmic function.	F.IF.7, 8, A.SSE.1,2,3 A.CED.1,2, F.BF.4,5, F.LE.4, A.REI.11	Pearson Math III Common Core

Mid Feb- Mid March	Exploring Periodic Data	Students will be able to find the period, midline and amplitude of a periodic function. Students will be able to find sine and cosine of theta in the unit circle. Students will be able to convert radians to degrees and degrees to radians. Students will be able to graph sine, cosine and tangent functions, including phase shifts. Students will be able to find reciprocal trig functions. Students will be able to use Pythagorean Identities and reciprocal identities to simplify trigonometric expressions. Students will be able to use the Law of Sines and the Law of Cosines to solve missing measures of non-right triangles.	Amplitude, central angle, cosine, cycle, midline, period, periodic function, phase shift, radian, sine, tangent, trigonometric identity, unit circle.	F.IF.4, F.TF.1,2, 5,8, F.IF.7, F.BF.3, G.SRT.9,10,11	Pearson Math III Common Core
Mid March -Late March	Mathematical Patterns	Students will review writing explicit and recursive rules for arithmetic and geometric sequences. Students will be able to find an arithmetic or geometric mean. Students will be able to take the sum of an arithmetic or geometric series. Students will be able to recognize a convergent or divergent series, and find the limit of a convergent series.	Arithmetic sequence, arithmetic series, common difference, common ratio, converge, diverge, explicit formula, geometric sequence, geometric series, limits, recursive formula.	F.BF.1, A.SSE.4	Pearson Math III Common Core
Early April- Mid April	Applying Geometric Concepts	Students will review constructions and be able to circumscribe triangles in a circle. Students will be able to use volume to find density. Students will review perimeter, area, and volume of similar figures. Students will be able to use area to find geometric probabilities. Students will be able to use Euler's Formula to find missing faces, vertices, or edges of polyhedrons. Students will be able to sketch and describe a locus.	Cross section, edge, face, geometric probability, locus, polyhedron, similar solids, vertex.	G.CO.12, G.MG.1,2,3, G.GMD.4,	Pearson Math III Common Core
Mid April- Late April	Connecting Algebra and Geometry	Students will review finding area of parallelograms, triangles, trapezoids, rhombuses and kites. Students will review finding perimeter or area in the coordinate plane.	Area, base of a parallelogram, base of a triangle, height of a parallelogram, height of a trapezoid, height of a triangle, perimeter.	G.GPE.4,5,6,7, G.MG.1,	Pearson Math III Common Core

Early May- Mid May	Circles	Students will be able to define a circle and calculate arc length. Students will be able to find the area of a sector of a circle or a segment of a circle. Students will be able to find missing angle measures or chord lengths using theorems about tangents and secants of circles, central or inscribed angles, and intercepted arcs.	Central angle, chord, concentric circles, diameter, inscribed angle, intercepted arc, major arc, minor arc, secant, sector of a circle, segment of a circle, tangent to a circle.	G.C.1,2,3,4,5	Pearson Math III Common Core
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Parma High School Math III Curriculum Map.