

Curriculum Map for: Math 12

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Textbook(s): PreCalculus - Graphing and Data Analysis

Prerequisites: Successful completion of Math 3R or Math 3-H

Scope: Math 12 is designed for students as a fourth year preparatory math course for calculus. It is a rigorous and progressive class to help enhance algebraic, geometric, and trigonometric skills. These topics are delivered in a problem solving setting with emphasis on application.

TIME	CONTENT	TEXTBOOK PAGES / ASSIGNMENTS
September		
	Coordinate Geometry	
2 Days	Formula Review (Slope, Distance, Midpoint)	Example Problems as notes
	3 Forms of a Line (Point-Slope, Slope-Intercept, Standard)	
	Parallel, Perpendicular Lines	
5 Days	Formula Review and 3 Forms of a Line	Worksheet #1-10 Formula Review and 3 Forms of a Line
	Altitude, Median, Perpendicular Bisector Notes	Worksheet #1 Students must find lengths, equations of altitudes, points of intersections, and the area of a triangle
		Worksheet #2 Practice with Coordinate Geometry Formulas, 3 Forms of a Line, and Altitude, Median, Perpendicular Bisector
		1 Question Given a triangle, students must find the equation of an altitude, perpendicular bisector, and median
5 Days	Point to Line Formula (Students will find the distance between a point and a line)	Worksheet #1 Students will apply the Point to Line formula in finding the distance from a point to a line, the distance from a line to a line and find the equations of the angle bisectors of two lines
		Worksheet #2 (evens) Students will apply the Point to Line formula in finding the distance from a line to a line and find the equations of angle bisectors of two lines
		Worksheet #2 (odds) Students will apply the Point to Line formula in finding the distance from a point to a line and find lines parallel to a given line from a specific point given the distance.

TIME	CONTENT	TEXTBOOK PAGES / ASSIGNMENTS
		<p>3 Tough Questions Applications of Coordinate Geometry questions for homework or extra credit.</p>
5 Days	<p>Circles (Students will learn the general form of a circle and the (h, k) form of a circle - Students will find equations of circles using these two forms)</p>	<p>Worksheet #1 (1 - 6 ONLY) Students will find the center and radius of circle equations by completing the square and will find equations of circles given the center and radius</p>
		<p>Worksheet #1 (7 - 10 ONLY) Students will find the equations of tangent lines, equations of circles that pass through specific points and equations of circles that pass through points and are tangent to a line</p>
		<p>Worksheet #2 Students will find equations of circles that pass through points and are tangent to a line, points of intersections between circles / circles and lines, y-intercepts of circles, and value of k</p>
		<p>Worksheet #3 Students will find the center and radius of circle equations, equations of circles that pass through specific points and intersections of circles / circles and lines</p>
October		
5 Days	Circles	<p>Worksheet #4 Students will practice finding equations of circles, equations of tangent lines, and points of intersections between circles / circles and lines</p>
		<p>Worksheet #5 Students will practice finding equations of circles, equations of tangent lines, and points of intersections between</p>

TIME	CONTENT	TEXTBOOK PAGES / ASSIGNMENTS
		circles / circles and lines
		Worksheet #6 Students will practice finding equations of circles, equations of tangent lines, and points of intersections between circles / circles and lines
		Worksheet #7 Students will practice finding equations of circles, equations of tangent lines, and points of intersections between circles / circles and lines
4 Days	5 Week Cumulative Test	Review Worksheets Review will encompass material from past 4 weeks
4 Days	Conic Sections (Students will solve systems algebraically to find intersections of conic sections)	Worksheet #1 Students will find intersection points of conic sections using algebraic methods of solving systems
		Worksheet #2 Students will find intersection points of conic sections using algebraic methods of solving systems
		Worksheet #3 Students will find intersection points of conic sections using algebraic methods of solving systems
	Polynomials	
5 Days	Students will work with the Rational Roots Theorem, Descartes' Rule of Signs, the Remainder Theorem, and Synthetic Division	Worksheet #1 Students will use synthetic division to divide and find factors of polynomials as well as the Remainder Theorem to find factors of polynomials.
		Worksheet #2

TIME	CONTENT	TEXTBOOK PAGES / ASSIGNMENTS
		Students will use the Rational Root Theorem and the Rule of Signs to determine roots of polynomials
		Worksheet #3 Students will use the Rational Root Theorem and the Rule of Signs to determine roots of polynomials as well as provide sketches of certain polynomials
		Worksheet #4 Students will use the Rational Root Theorem and the Rule of Signs to determine roots of polynomials
5 Days	Students will work with polynomial functions to solve max / min problems	Worksheet #1 Students will work with polynomial functions to solve max / min problems
		Worksheet #2 Students will work with polynomial functions to solve max / min problems
November		
		Worksheet #3 (84 - 86) Students will work with polynomial functions to solve max / min problems
		Worksheet #3 (87 - 89)
5 Days	Students will work with polynomial functions and applications with the graphing calculator	Worksheet #1 <i>Section 3.1 Page 185</i>
		Worksheet #2 <i>Section 3.1 Page 185</i>
		Worksheet #3 <i>Section 3.2 Page 196</i>
		Worksheet #4 <i>Section 3.3 Page 206</i>
5 Days	Students will work with rational functions and finding vertical, horizontal, and slant asymptotes	Worksheet #1 <i>Section 3.4 Page 209</i>

TIME	CONTENT	TEXTBOOK PAGES / ASSIGNMENTS
		Worksheet #2 <i>Section 3.5 Page 219</i>
		Worksheet #3 <i>Section 3.5 Page 219</i>
5 Days	Students will work with Piecewise Functions and be introduced to interval notation	Worksheet #1 <i>Section 2.3 Page 135</i>
		Worksheet #1 <i>Section 2.3 Page 136</i>
		Worksheet #2 <i>Section 14.4 Page 920</i>
		Worksheet #3 <i>Section 14.4 Page 921</i>
December		
	Exponential and Log Functions	
5 Days	Students will work with exponential functions including growth and decay, investment and base e	Worksheet #1 <i>Section 5.1 Page 280</i>
		Worksheet #2 <i>Section 5.2 Page 292</i>
		Worksheet #3 <i>Section 5.2 Page 292</i>
		Worksheet #4 <i>Section 5.5 Page 324</i>
5 Days	Students will work with exponential functions including growth and decay, investment and base e	Worksheet #1 <i>Section 5.7 Page 339</i>
		Worksheet #2 <i>Section 5.7 Page 339</i>
		Worksheet #3 <i>Section 5.6 Page 328</i>
		Worksheet #4 <i>Section 5.5 Page 324</i>
5 Days	Students will work with logarithm and natural	Worksheet #1

TIME	CONTENT	TEXTBOOK PAGES / ASSIGNMENTS
	logarithm functions	<i>Section 5.3 Page 305</i>
		Worksheet #2 <i>Section 5.3 Page 305</i>
		Worksheet #3 <i>Section 5.4 Page 316</i>
		Worksheet #4 <i>Section 5.5 Page 324</i>
January		
3 Days	Students will work with logarithm and natural logarithm functions	Worksheet #1 <i>Section 5.8 Page 348</i>
		Worksheet #2 <i>Section 5.8 Page 348</i>
	Trigonometry	
5 Days	Students will work with graphing trigonometric functions, solving trigonometric equations, trigonometric identities, sum and difference formulas as well as central angles and arcs	Worksheet #1 <i>Section 7.1 Page 446</i>
		Worksheet #2 <i>Section 7.1 Page 446</i>
		Worksheet #3 <i>Section 7.2 Page 452</i>
		Worksheet #4 <i>Section 7.2 Page 452</i>
5 Days	Students will work with graphing trigonometric functions, solving trigonometric equations, trigonometric identities, sum and difference formulas as well as central angles and arcs	Worksheet #1 <i>Section 7.3 Page 461</i>
		Worksheet #2 <i>Section 7.4 Page 470</i>
		Worksheet #3 <i>Section 7.5 Page 473</i>

TIME	CONTENT	TEXTBOOK PAGES / ASSIGNMENTS
		Worksheet #4 <i>Section 7.6 Page 485</i>
	REGENTS WEEK	
5 Days	Students will work with graphing trigonometric functions, solving trigonometric equations, trigonometric identities, sum and difference formulas as well as central angles and arcs	Worksheet #1 <i>Section 7.7 Page 485</i>
		Worksheet #2 <i>Section 7.7 Page 490</i>
		Worksheet #3 <i>Section 7.7 Page 490</i>
		Worksheet #4 <i>Section 7.7 Page 490</i>
February		
5 days	Students will work with graphing trigonometric functions, solving trigonometric equations, trigonometric identities, sum and difference formulas as well as central angles and arcs.	Worksheet #1 <i>Section 8.1 Page 507</i>
		Worksheet #2 <i>Section 8.2 Page 521</i>
		Worksheet #3 <i>Section 8.3 Page 532</i>
		Worksheet #4 <i>Section 8.4 Page 539</i>
	Parametric Equations	
5 Days	Students will work with parametric equations to solve motion problems	Worksheet #1 <i>Section 10.7 Page 690</i>
		Worksheet #2 <i>Section 10.7 Page 704</i>
		Worksheet #3 <i>Section 10.7 Page 704</i>

TIME	CONTENT	TEXTBOOK PAGES / ASSIGNMENTS
		Worksheet #4 <i>Section 10.7 Page 704</i>
5 Days	Students will work with parametric equations to solve motion problems	Worksheet #1 <i>Section 10.7 Page 699</i>
		Worksheet #2 <i>Section 10.7 Page 694</i>
		Worksheet #3 <i>Section 10.7 Page 695</i>
		Worksheet #4 <i>Section 10.7 Page 697</i>
	Polar Coordinates	
5 Days	Students will work with polar coordinates by converting between polar and rectangular, they will work with complex numbers and graphing them in the complex plane	Worksheet #1
		Worksheet #2
		Worksheet #3
		Worksheet #4
March		
5 Days	Students will work with polar coordinates by converting between polar and rectangular, they will work with complex numbers and graphing them in the complex plane	Worksheet #1 <i>Section 9.1 Page 560</i>
		Worksheet #2 <i>Section 9.1 Page 560</i>
		Worksheet #3 <i>Section 9.2 Page 568</i>
		Worksheet #4 <i>Section 9.2 Page 568</i>
5 Days	Students will work with polar coordinates by converting between polar and rectangular, they will work with complex numbers and graphing them in the complex plane	Worksheet #1 <i>Section 9.3 Page 585</i>

TIME	CONTENT	TEXTBOOK PAGES / ASSIGNMENTS
		Worksheet #2 <i>Section 9.3 Page 585</i>
		Worksheet #3 <i>Section 9.4 Page 594</i>
		Worksheet #4 <i>Section 9.4 Page 594</i>
	Sequences	
4 Days	Students will work with arithmetic, geometric and recursive series as well as summation notation	Worksheet #1 <i>Section 12.1 Page 810</i>
		Worksheet #2 <i>Section 12.1 Page 810</i>
		Worksheet #3 <i>Section 12.2 Page 825</i>
4 Days	Students will work with arithmetic, geometric and recursive series as well as summation notation	Worksheet #1 <i>Section 12.2 Page 825</i>
		Worksheet #2 <i>Section 12.3 Page 831</i>
		Worksheet #3 <i>Section 12.3 Page 831</i>
5 Days	Students will work with arithmetic, geometric and recursive series as well as summation notation	Worksheet #1 <i>Section 12.3 Page 831</i>
		Worksheet #2 <i>Section 12.4 Page 840</i>
		Worksheet #3 <i>Section 12.4 Page 852</i>
		Worksheet #4 <i>Section 12.4 Page 852</i>
April		
	Preview of Calculus	
5 Days	Students will work with calculus topics such	Worksheet #1

TIME	CONTENT	TEXTBOOK PAGES / ASSIGNMENTS
	as limits, derivatives and integration	<i>Section 14.1 Page 902</i>
		Worksheet #2 <i>Section 14.1 Page 902</i>
		Worksheet #3 <i>Section 14.1 Page 902</i>
		Worksheet #4 <i>Section 14.2 Page 908</i>
4 Days	Students will work with calculus topics such as limits, derivatives and integration	Worksheet #1 <i>Section 14.2 Page 908</i>
		Worksheet #2 <i>Section 14.2 Page 908</i>
		Worksheet #3 <i>Section 14.3 Page 915</i>
5 Days	Students will work with calculus topics such as limits, derivatives and integration	Worksheet #1 <i>Section 14.3 Page 915</i>
		Worksheet #2 <i>Section 14.4 Page 921</i>
		Worksheet #3 <i>Section 14.4 Page 921</i>
		Worksheet #4 <i>Section 14.4 Page 921</i>
May		
5 Days	Students will work with calculus topics such as limits, derivatives and integration	Worksheet #1 <i>Section 14.4 Page 921</i>
		Worksheet #2 <i>Section 14.5 Page 929</i>
		Worksheet #3 <i>Section 14.5 Page 929</i>
		Worksheet #4 <i>Section 14.5 Page 929</i>
5 Days	Students will work with calculus topics such as limits, derivatives and integration	Worksheet #1 <i>Section 14.5 Page 937</i>
		Worksheet #2

TIME	CONTENT	TEXTBOOK PAGES / ASSIGNMENTS
		<i>Section 14.5 Page 937</i>
		Worksheet #3 <i>Section 14.5 Page 937</i>
		Worksheet #4 <i>Section 14.5 Page 937</i>
4 Days	Students will work with calculus topics such as limits, derivatives and integration	Worksheet #1 <i>Section 14.5 Page 937</i>
		Worksheet #2 <i>Section 14.5 Page 937</i>
		Worksheet #3 <i>Section 14.5 Page 937</i>
4 Days	Students will work with calculus topics such as limits, derivatives and integration	Worksheet #1 <i>Section 14.5 Page 937</i>
		Worksheet #2 <i>Section 14.5 Page 937</i>
		Worksheet #3 <i>Section 14.5 Page 937</i>
June		
10 Days	Final Review	Page 942 – 998