

FARMINGDALE UFSD						
Grade 11 Trigonometry Curriculum - Scope and Sequence September 2009						
Director: Gerardine M. Johnson-Carpenter, Ed.D.						
Textbook: AMSCO: Integrated Mathematics Course 3 2nd Edition, 1991						
DATE	LESSON	PI	Amsco - Course 3	Algebra 2/Trig.	Prentice Hall	Glencoe
Unit I: Equations (8 days)						
	1. Review factoring completely.	A2.A.7 A2.N.3	56-61	22-27	259 - 263	268-275
	2. Review solving quadratic equations with rational roots by factoring.			27-30	267 - 268	
	3. How do we solve a linear/quadratic system of equations algebraically? (With rational answers only. Include rational equations that result in linear equations with extraneous roots.)	A2.A.3	673-675	229-233	589 - 590	662-667
	4. How do we solve quadratic inequalities in one variable and graph their solution set?	A2.A.4	677-682	30-35	296 - 297	312-318
	5. How do we solve absolute value equations?	A2.A.1	149-154	13-17	33 -34	27-32
	6. How do we solve absolute value inequalities in one variable and graph their solution set?	A2.A.1	154-157	13-17; 80-83	35 -36	41-48
	7. Review			35-38		
	8. Test					

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	Unit II: Rational Expressions (9 days)					
	1. Review reducing rational expressions.		63-68	39-48	509	553-561
	2. How do we multiply and divide rational expressions?	A2.A.16	68-73	48-53	510- 511	553-561
	3. How do we add and subtract rational expressions?	A2.A.16	73-77	53-57	514	562-568
	4. More with adding and subtracting rational expressions with the focus on polynomial denominators.	A2.A.16	77-83	53-57	514 - 516	562-568
	5. How do we simplify complex rational expressions? (Include some transforming a mixed expression into a rational expression.)	A2.A.17	83-87	61-64	516 - 517	562-568
	6. How do we solve fractional equations?	A2.A.23	87-93	64-70	522 - 524	594-602
	7. More on solving fractional equations? (Include solving fractional inequalities.)	A2.A.23	87-93	64-70		594-602
	8. Review		93-94	74-77		
	9. Test					
	Unit III: Irrationals (9 days)					
	1. How do we simplify and combine radicals? (Include finding the principal root.)	A2.A.13 A2.A.14 A2.N.2 A2.N.4	157-163; 170-179	84-98	266; 370 - 371; 380 - 381	431-436; 439-445
	2. How do we multiply and divide radicals?	A2.A.14 A2.N.2 A2.N.4	179-187	98-104	374 - 377	439-445

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	3. How do we divide radicals by rationalizing the denominator? (Include monomial and binomial denominators, and finding the multiplicative inverse.)	A2.A.15 A2.N.5	187-193	102-108	382	439-445
	4. How do we solve radical equations?	A2.A.22	197-201	108-113	391 - 393	453-459
	5. How do we solve quadratic equations by completing the square?	A2.A.24		187-191	282 - 285	284-290
	6. What is the quadratic formula and how do we use it to solve quadratic equations?	A2.A.25	193-197	193-195	289 - 293	292-300
	7. How do we solve a linear quadratic system of equations using the quadratic formula?		673-675	229-233	289-291; 293; 301	
	8. Review		201-203	113-118		
	9. Test					
	Unit IV: Polynomials and equations of higher degree (6 days)					
	1. How do we factor polynomials of higher degrees using factoring?			22-25	315 - 316; 320 - 323; 328 - 330	368-375
	2. How do we solve equations of higher degrees using factoring and/or the quadratic formula?	A2.A.26		224-229	320 - 323; 328 - 330	368-375
	3. More solving equations of higher degrees.	A2.A.26		224-229		368-375
	4. How do we approximate the solution to a polynomial equation of a higher degree by inspecting the graph?	A2.A.50			327 - 328	357-364
	5. Review			239-244		

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	6. Test					
	Unit V: Complex numbers (10 days)					
	1. What is an imaginary number? How do we simplify, combine, and multiply imaginary numbers? (Include powers of i.)	A2.N.6 A2.N.7	632-637	203-209	274 - 277	276-282
	2. What is a complex number? How do we perform arithmetic operations on complex numbers?	A2.N.9	637-639; 653-656	209-217	274 - 277	276-282
	3. How do we represent addition and subtraction of complex numbers graphically? How do we find a vectors magnitude and its absolute value?		639-647	209-217	275	
	4. How do we divide by a complex number and how do we find its multiplicative inverse?	A2.N.8	647-653	209-217	276	276-282
	5. How do we solve quadratic equations in a + bi form?	A2.A.25	656-659	217-219	291 - 293	292-300
	6. What is the relationship between the discriminant and the nature of the roots of a quadratic equation?	A2.A.2	659-673	198-203	291 - 293	292-300
	7. More on the nature of the roots. (Include problems where you are given a quadratic equation where either a, b, or c is unknown and you are asked to find the value given the nature of the roots.)	A2.A.2	659-666	221-223	291 - 293	292-300
	8. What is the relationship between the coefficients of a quadratic equation and the sum and product of its roots? How do we write a quadratic equation when given its roots?	A2.A.20 A2.A.21	666-673	219-224		301-302
	9. Review		682-683	239-244		
	10. Test					

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	Unit VI: Functions (9 days)					
	1. What is a relation, domain, and range? (Include mappings and relating graphs to restrictions on the domain and range?)	A2.A.37 A2.A.51	232-238	298-304; 119-120	55 - 56	P4-P5; 61- 67
	2. What is a function? How do we use the vertical line test? How do we evaluate a function for a given value algebraically and graphically? (Include the various forms of function notation.)	A2.A.37 A2.A.38 A2.A.40 A2.A.41 A2.A.52	238-247	120-129	57 -58	P4-P5; 61- 67
	3. How do we determine the domain and range of a function given its equation?	A2.A.39	232-261	120-123	55 - 58	P4-P5
	4. More on determining domain and range given its equation.	A2.A.39	232-261	120-123	398	P4-P5
	5. What are the special functions? (Include recognizing functions/relations by their equations.)	A2.A.38	261-279	130-155	547 - 550	P4-P5
	6. What is and how do we perform compositions of functions?	A2.A.42	282-288	155-160	398 - 400	409-416
	7. How do we find the inverse of a function and how do we use composition to justify the result?	A2.A.43 A2.A.44 A2.A.45	288-294	160-167	406 - 409	61-67; 417- 422
	8. Review		294-296	178-185		
	9. Test					
	Unit VII: Functions Part 2 (11 days)					
	1. How do we transform functions from a graph using function notation of transformations? $[f(x + a), f(x) + a, f(-x), -f(x), af(x)]$	A2.A.46		158-159	253; 415	109-115

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	2. How do we apply transformations to quadratics in standard form and vertex form?	A2.A.46			252 - 255	305-309
	3. How do we apply transformations to absolute value equations?	A2.A.46		152-153	94 - 97	101-107
	4. How do we graph and apply transformations to radical equations?	A2.A.46		153	391 - 393; 425	424-430
	5. Review equations of circles. How do we apply transformations to circles?(Include determining center and radius from equation, write the equation given its center and radius, and write equation from a graph.)	A2.A.46 A2.A.47 A2.A.49		167-174	561 - 563; 583, 592	631-637
	6. How do we write the equation of a circle given its center and a point on the circle? (Include writing the equation given endpoints of the diameter. Note: the need for the distance formula.)	A2.A.48		167-174	561 - 563; 583; 592	631-637
	7. How do we use direct and inverse variations to solve for unknown values?	A2.A.5	279-282	133; 174-176; 57-61	72-74; 110; 488- 489; 495; 539 - 540	586-593
	8. How do we graph exponential functions in the form $y = b^x$ for positive values of	A2.A.53	474-480	298-302	430 - 434; 439 - 440	475-482
	9. How do we graph log functions as the inverse of a related exponential function? (Include $\ln x$)	A2.A.54	487-492	321-322	446 - 449	492-499
	10. Review					
	11. Test					

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	Unit VIII: Exponents and Logs (13 days)					
	1. What are the basic laws of exponents and how do we rewrite expressions that contain negative exponents?	A2.A.9 A2.N.1	455-463	287-293	368, 387	333-339
	2. How do we rewrite expressions with fractional exponents in radical form and radical form to expressions with fractional exponents?	A2.A.10 A2.A.11	468-474	293-298	385 - 386	446-452
	3. How do we apply the rules of exponents to simplify expressions involving negative and/or fractional exponents?	A2.A.8 A2.N.1	468-474	289-298	387 - 388	446-452
	4. How do we solve equations with fractional and/or negative exponents?		481-485	304-308	391 - 394	453-457
	5. What is a log? How do we change between exponential form and logarithmic form, evaluate logarithmic expressions in any base, and solve simple log equations? (Include $\ln x$)	A2.A.12 A2.A.18 A2.A.19	487-495	320-327	446 -448; 480	492-499; 526-531
	6. What are the laws of logarithms and how do we simplify and expand log equations using these laws? (Include $\ln x$)	A2.A.12 A2.A.19	495-502; 510-520	327-336	454 - 456	509-515; 526-531
	7. How do we solve log equations of the same base? (Include equations that have log on both sides and equations that need to be transformed into exponential form.)	A2.A.28	508-510; 487-495; 529-531	344-347	463 - 464	502-507; 509-515
	8. How do we solve exponential equations using a common base?	A2.A.27	508-510; 487-495; 529-531	340-344	439 - 440	485-491
	9. How do we solve exponential equations using logs?	A2.A.27	508-510; 487-495; 529-531	340-344	461 - 462	516-522

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	10. How do we solve algebraically applications which result in exponential equations?	A2.A.6	508-510; 487-495; 529-531	340-344	470 - 471	485-491; 533-539
	11. How do we solve graphically applications which result in exponential equations?	A2.A.6	508-510; 487-495; 529-531	340-344	470 - 471	485-491; 533-539
	12. Review		485-486; 531-533	314-316; 347-351		
	13. Test					
	Unit IX: Trigonometric Functions (9 days)					
	1. Introduction to angles as rotations in standard position. (Include: Coterminal angles, converting between degrees and radians, and finding the length of an arc, central angle, or radius given the others.)	A2.M.1 A2.M.2 A2.A.61	333-341; 350-354; 376-384	400; 354-362	718-719; 726 - 729	817-823
	2. What is the unit circle and how do we define Sine, Cosine, and Tangent using the unit circle? (Include the quadrantal angles and the signs of the functions in the different quadrants.)	A2.A.56 A2.A.60 A2.A.62	341-354	362-374	720 - 721	825-831; 848-854
	3. How do we find the exact values of the special angles and how do we express and apply the basic trigonometric functions as ratios of the sides of a right triangle? (Include the special right triangles.)	A2.A.55 A2.A.56	354-358	378-386; 354-357	721 - 722	808-816; 825-831
	4. What is a reference angle and how do we represent an angle as a function of a positive acute angle?	A2.A.57	367-375	386-392		825-831
	5. How do we find the exact value of a trigonometric function?	A2.A.56	375; 385	406-411	721 - 722	825-831; 848-854

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	6. What are the reciprocal functions and when given a trigonometric function how do we determine the values of the remaining five functions?	A2.A.55 A2.A.58 A2.A.59 A2.A.66	386-390	374-378	778-779	808-816; 825-831; 891-897
	7. What are co-functions?	A2.A.58	406-410	425-428	815; 829	
	8. Review		410-411	394-396		
	9. Test					
	Unit X: Trigonometric Graphs (8 days)					
	1. How do we determine amplitude, period, and frequency of Sine and Cosine functions given the equation? (Include domain, range, and the appearance of the function.)	A2.A.69	420-428	447-460	710 - 713; 735; 738; 744; 771	855-861
	2. How do we graph $y = a \sin bx$ and $y = a \cos bx$?	A2.A.70	415-420	435-447	734-738; 743- 744	855-861
	3. How do we graph Sine and Cosine curves on the same graph?	A2.A.70	428-432	435-447; 472-475		855-861
	4. How do we determine the equation of a Sine or Cosine function from its graph and determine the equations of Sine and Cosine functions with a vertical shift? ($y = a \sin bx + D$ and $y = a \cos bx + D$)	A2.A.72	415-432	455-460	756-760	863-870
	5. How do we sketch and recognize the graphs of Csc and Sec? (Investigate domain and range and the need to restrict the domain.)	A2.A.71	435-438	463-468		855-861
	6. How do we sketch and recognize Tangent and Cotangent functions? (Investigate the domain and range.)	A2.A.71	432-438	460-463	749 - 751	855-861

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	7. Review		452-454	475-479		
	8. Test					
	Unit XI: Trigonometric Inverses and Identities (8 days)					
	1. How do we apply the angle sum formulas for the three trigonometric functions?	A2.A.76	593-604	493-504	816-817	904-909
	2. How do we apply the angle difference formulas for the three trigonometric functions?	A2.A.76	588-604	488-493; 496-504	816-817	904-909
	3. Mixed practice the sum and difference formulas.	A2.A.76	588-604	493-504		904-909
	4. How do we apply the double angle formulas for the three trigonometric functions?	A2.A.77	604-608	504-508	821-822	911-917
	5. How do we apply the half angle formulas for the three trigonometric functions?	A2.A.77	608-614	508-513	822-823	911-917
	6. What are the Pythagorean Identities? How do we use the trigonometric identities to write equivalent expressions?	A2.A.67	393-406	411-414; 483-485	778-780	898-903
	7. Review		629-631; 614-616	428-431; 513-515		
	8. Test					
	Unit XII: Trigonometric Equations (7 days)					
	1. How do we restrict the domain of the Sine, Cosine, and tangent functions to insure the existence of an inverse function? (Include Arc notation and recognizing the graphs of the inverses.)	A2.A.63 A2.A.64 A2.A.65	443-452	415-425; 468-472	763-766; 783- 786; 827-828	871-876

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	2. How do we solve first degree trigonometric equations?	A2.A.68	616-619	519-526	744-745; 784-787	919-925
	3. How do we solve second degree trigonometric equations?	A2.A.68	619-624	526-554	786	919-925
	4. How do we solve first and second degree trigonometric equations using identity substitution?	A2.A.68	624-629	534-542	786	919-925
	5. Practice		624-629	534-542		
	6. Review		629-631	542-545		
	7. Test					
	Unit XIII: Trigonometric Applications (10 days)					
	1. How do we find the area of a triangle and a parallelogram given the measure of two sides and the included angle?	A2.A.74	546-551	559-564	801-802; 828	832-829
	2. How do we apply the Law of Cosines to find a missing side of a triangle?	A2.A.73	537-541	552-557	808-810; 829	841-846
	3. How do we apply the Law of Cosines to find a missing angle of a triangle?	A2.A.73	542-546	557-559	808-810; 829	841-846
	4. How do we apply the Law of Sines to find a missing side or angle of a triangle?	A2.A.73	551-557	564-569	801-803; 807; 828	832-839
	5. How do we use the Law of Sines in the Ambiguous case?	A2.A.75	557-563	569-575	807	832-839
	6. Mixed practice using Laws of Sines, Cosines, and area formulas.	A2.A.73 A2.A.74	537-563	575-581		832-839

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	7. How do we solve force problems using the Laws of Sines and Cosines?	A2.A.73	563-567			832-839
	8. How do we solve multi-step trigonometric application problems? (Include angle of elevation and depression.)	A2.A.73	567-574	575-580		832-839
	9. Review		574-576	581-585		
	10. Test					
	Unit XIV: Probability (9 days)					
	1. Review probability, permutations, and factorials.	A2.S.10	721-726	675-695	39 - 42; 648 - 650; 685 - 686	P12-P14
	2. How do we calculate the number of possible combinations of "n" objects taken "r" at a time?	A2.S.11	730-735	683-685	687 - 688	P12-P14
	3. Mixed practice	A2.S.9 A2.S.12	721-735	686		P12-P14
	4. How do we calculate theoretical probability including geometric applications?	A2.S.13	726-730	687-694	41 - 42; 49	764-771
	5. How do we calculate empirical probability?	A2.S.14	726-730	687-688		764-771
	6. How do we apply the Binomial probability formulas to find exactly "r" successes out of "n" trials?	A2.S.15	730-735	701-711		786-793
	7. How do we apply the Binomial probability formulas to find at least and at most "r" successes out of "n" trials?	A2.S.15	735-739	701-711		786-793

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	8. Review		743-745	711-715		
	9. Test					
	Unit XV: Series and Sequences (8 days)					
	1. What is the binomial expansion and how do we apply it?	A2.A.36	739-743	708-711	353-354	721-723
	2. How do we find the "rth" term in a binomial expansion?	A2.A.36	739-743	708-711	353 - 354	721-723
	3. How do we identify an arithmetic sequence and use the formula to find the "nth" term and determine the common difference? (Include given the common difference and determine the formula.)	A2.A.29 A2.A.30 A2.A.32		247-257	619-625	681-687; 688-695
	4. How do we find the sum of the first "n" terms of an arithmetic series using sigma notation? (Include representing the sum of an arithmetic series using sigma notation.)	A2.N.10 A2.A.34 A2.A.35		257-265	619 - 625	688-695
	5. How do we identify a geometric sequence and use the formula to find the "nth" term and determine the common ratio? (Include given the common ratio and determine the formula.)	A2.A.29 A2.A.31 A2.A.32		266-270	626 - 630	696-702
	6 How do we find the sum of the first "n" terms of a geometric series using sigmanotation? (Include representing the sum of a geometric series using sigma notation.)	A2.N.10 A2.A.34 A2.A.35		270-276	626 - 630	696-702
	7. How do we specify terms of a sequence given its recursive definition?	A2.A.33		247-277	602; 60,, 613; 641	714-719
	8. Quiz					

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	Unit XVI: Statistics and Data analysis (10 days)					
	1. What are the various forms of data collection and which factors affect the outcome?	A2.S.1 A2.S.2		588-590	60; 436; 652; 674; 681; 689	745-750
	2. How do we calculate the measures of central tendencies with group frequency distributions?	A2.S.3	688-694; 711-718	588-614	660 - 662; 702; 886	752-758
	3. How do we calculate measures of dispersion for both samples and populations? (Range, interquartile range, variance, and standard deviation)	A2.S.4	694-704	614-628	669; 703	752-758
	4. What is the normal distribution and how do we apply its characteristics?	A2.S.5	704-711	628-634	692 - 694	773-778
	5. Practice with normal distribution and standard deviation.	A2.S.5	704-711	628-634	668 - 670	773-778
	6. How do we use the normal distribution to approximate binomial probabilities?	A2.S.16		701-708	685 - 687; 703	786-793
	7. What is regression and how do we determine from a scatter plot which regression is most appropriate? (Linear, logarithmic, exponential, and power)	A2.S.6		634-655	80; 86 -87	94-97
	8. How do we determine the function for the regression model and use the regression function to interpolate or extrapolate from the data? (Include using correlation coefficient to determine the strength of the model.)	A2.S.7 A2.S.8		655-662	438; 469; 476	500-501
	9. Review		719-720	662-669		
	10. Test					

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	Approximately 144 teaching days including unit reviews and tests.					
	Key:					
	Amsco-Course 3: Integrated Mathematics Course III					
	Amsco-Algebra2/Trig.: Amsco's Algebra 2 and Trigonometry					
	Prentice Hall: New York - Algebra 2 and Trigonometry					
	Glencoe: New York - Algebra 2 and Trigonometry					