MATHEMATICS
HINSDALE SCHOOL DISTRICT

Course: Algebra II, Text,Holt, Algebra II, 2007. NOTE: Since there are no GLEs for Algebra II, this curriculum follows the Algebra I curriculum but includes additional/expanded topics covered in Alg II
Standard: M:Functions and Algebra (F&A):10-1-Assessed—note: 10th graders in Alg II are tested in gr 11.

Knowledge & Skills	Content	Activities Resources & Materials	Assessments
Identifies, extends, and generalizes a variety of patterns (linear and nonlinear) represented by models, tables, sequences, or graphs in problem solving situations.		Note, numbers refer to page numbers in the text 662-multiple representations of functions NOTE: Videos available online through keywords in text as lesson supplements	Starters, homework (for completion), graded homework, quizzes/tests, graded classwork (as required), technology worksheets (as required), weekly process quizzes
	models	142-145, 374-377, "Know it notebook"	
	tables	182-185, 656, "Know it notebook"	
	sequences		
	arithmetic	879-883	
	geometric	890-894	
	graphs	158-160, 569, 52, 571, 105-109,723-724	
	correlation	P 142-145, TI-83 activity/technology sheet	
	piecewise functions	P 663-664, 670-671, handouts, TI-83 activity Go.hrw.com videos	

Course: Algebra II

Standard:M:F&A-10-2-Assessed in Algebra I, covered in Algebra II curriculum

Knowledge & Skills	Content	Activities Resources & Materials	Assessments
Demonstrates conceptual understanding of linear and nonlinear functions and relations (including characteristics of classes of functions) through an analysis of constant, variable, or average rates of change, intercepts, domain, range, maximum and minimum values, increasing and decreasing intervals and rates of change (e.g., the height is increasing at a decreasing rate); describes how change in the value of one variable relates to change in the value of a second variable; or works between and among different representations of functions and relations (e.g., graphs, tables, equations, function notation).	- An analysis of constant, variable, or average rates of change - Intercepts - Domain and range -Maximum and minimum values, Local min/max End behavior -Increasing and decreasing intervals -Rates of change (e.g., the height is increasing at a decreasing rate)	105, 106, 471, problems 20-23 106,136,184,324, 332-334,455,673 example 2 44,53,55,56,67,150,158,428,492,501,507,531,532,593 326 includes ti-83 activity of finding max/min of parabolas and applying the results 455 452-453 Covered in interval notation 6,7 105	Starters, homework (for completion), graded homework, quizzes/tests, graded classwork (as required), technology worksheets (as required), weekly process quizzes

Course: Algebra II

Standard: MF&A:-10-3-Assessed in Algebra I curriculum, covered in Algebra II curriculum

Knowledge & Skills	Content	Activities Resources & Materials	Assessments
Demonstrates conceptual understanding of algebraic expressions by solving problems involving algebraic expressions, by simplifying expressions (e.g., simplifying polynomial or rational expressions, or expressions involving integer exponents, square roots, or absolute values), by evaluating expressions, or by translating problem situations into algebraic expressions.	Polynomials Definition classifying degrees dividing end behavior factoring leading coefficients multiplying -Simplifying and evaluating expressions involving real exponents -Simplifying and evaluating expressions involving square roots -Translates problem situations into algebraic expressions using	406-408 407 406 422-425 453 430-432 406 414-417 34-38,610-614,414, Know it notebook, plus additional worksheets to reinforce techniques Go.hrw.com videos Google videos 21-23 Know it notebook, additional worksheets needed P 793	Starters, homework (for completion), graded homework, quizzes/tests, graded classwork (as required), technology worksheets (as required), weekly process quizzes

	polynomial expressions -Translates problem situations into algebraic expressions using rational expressions -Translates problem situations into algebraic expressions using integer exponents -Translates problem situations into algebraic expressions using square roots	p. 406-410 p. 587 p. 27 p. 619-620, Know it notebook	

Course: Algebra II

Standard:MF&A-10-4-Assessed in Algebra I curriculum, covered in Algebra II curriculum

Knowledge & Skills	Content	Activities Resources & Materials	Assessments
Demonstrates conceptual understanding of equality by solving problems involving algebraic reasoning about equality; by translating problem situations into equations; by solving linear equations (symbolically and graphically) and expressing the solution set symbolically or graphically, or provides the meaning of the graphical interpretations of solution(s) in problem-solving situations; or by solving problems involving systems of linear equations in a context (using equations or graphs) or using models or representations. -	-Translating problem situations into equations; by solving linear equations graphically/symbolically -Translating problem situations into equations by solving linear equations graphically -Express the solution set of a linear equation symbolically -Express the solution set of a linear equation graphically -Provide the meaning of the graphical interpretations of solution(s) in problem solving situations -Solving problems involving systems of linear equations in a context of using equations, graphs, or using models and representations	90-92 107,113, TI-83 applications 7-8,8-8,36 107,113 655-656 190-194, know it notebook plus ti-83 graphing practice Go.hrw.com videos/google math videos	Starters, homework (for completion), graded homework, quizzes/tests, graded classwork (as required), technology worksheets (as required), weekly process quizzes

Course: Algebra II

Standard: Data, Statistics, and Probability (DSP)-10-1-Assessed in Algebra I, covered in Alg II

Knowledge & Skills	Content	Activities Resources & Materials	Assessments
Interprets a given representation(s) (e.g., box-and-whisker plots, scatter plots, bar graphs, line graphs, circle graphs, histograms, frequency charts) to make observations, to answer questions, to analyze the data to formulate or justify conclusions, critique conclusions, make predictions, or to solve problems within mathematics or across disciplines or contexts (e.g., media, workplace, social and environmental situations).	box-and-whisker plots scatter plot bar graph line graphs circle graph histogram frequency charts	829,S68, S69 142,390,661,699 141, S68,S69 140, S68,S69 141, S68,S69 844,S68,S69 844,S68,S69 Go.hrw.com videos	Starters, homework (for completion), graded homework, quizzes/tests, graded classwork (as required), technology worksheets (as required), weekly process quizzes

Course: Algebra II

Standard:DSP-10-2-Assessed in Algebra I curriculum, covered in Algebra II curriculum

Knowledge & Skills	Content	Activities Resources & Materials	Assessments
Analyzes patterns, trends, or distributions in data in a variety of contexts by determining, using, or analyzing measures of central tendency (mean, median, or mode), dispersion (range or variation), outliers, quartile values, estimated line of best fit, regression line, or correlation (strong positive, strong negative, or no correlation) to solve problems; and solve problems involving conceptual understanding of the sample from which the statistics were developed.	Mean, median, mode Range Outliers Quartile values Estimated line of best fit Regression line or correlation and understanding positive, negative, or no correlation Solve problems involving conceptual understanding of the sample from which the statistics were developed.	S68,S69m 66m 828 S68 831 S68 142 844, 828-835 828-835 Go.hrw.com videos	Starters, homework (for completion), graded homework, quizzes/tests, graded classwork (as required), technology worksheets (as required), weekly process quizzes

Course: Algebra II

Standard:DSP-10-4-Assessed in Algebra I, covered in Algebra II

Knowledge & Skills	Content	Activities Resources & Materials	Assessments
Uses counting techniques to solve problems in context involving combinations or permutations using a variety of strategies (e.g., organized lists, tables, tree diagrams, models, Fundamental Counting Principle, or[sc] others).	combinations permutations Varied strategies including: organized lists tables tree diagrams, models Fundamental Counting Principle	794-797 794-797 797-797 794-797 794-797 794-797 794,795,797,809 Go.hrw.com videos	Starters, homework (for completion), graded homework, quizzes/tests, graded classwork (as required), technology worksheets (as required), weekly process quizzes

Course: Algebra II

Standard:DSP-10-5-Assessed in Algebra I, covered in Algebra II curriculum

Knowledge & Skills	Content	Activities Resources & Materials	Assessments
Solves problems involving experimental or theoretical probability.	**experimental probability** **theoretical probability**	805-806 802-806 Go.hrw.com videos	Starters, homework (for completion), graded homework, quizzes/tests, graded classwork (as required), technology worksheets (as required), weekly process quizzes

Course: Algebra II

Standard:Numbers and Operations (N&0)-10-2-Assessed in Algebra I, covered in Algebra II

Knowledge & Skills	Content	Activities Resources & Materials	Assessments
Demonstrates understanding of the relative magnitude of real numbers by solving problems involving ordering or comparing rational numbers, common irrational numbers (e.g., $\sqrt{2}$, π), rational bases with integer exponents, square roots, absolute values, integers, or numbers represented in scientific notation using number lines or equality and inequality symbols.	rational number	6	Starters, homework (for completion), graded homework, quizzes/tests, graded classwork (as required), technology worksheets (as required), weekly process quizzes
	common irrational numbers (e.g., $\sqrt{2}$, π)	6	
	rational bases with integer exponents	34-38	
	square roots	21-23	
	absolute values	151	
	integers	6	
	numbers represented in scientific notation	36	
	using number lines	92, reviewed when introducing inequalities	
	using equality and inequality symbols.	92	

Course: Algebra II

Standard:N&O-10-4-Assessed in Algebra I, covered in Algebra II

Knowledge & Skills	Content	Activities Resources & Materials	Assessments
Accurately solves problems involving rational numbers within mathematics, across content strands, disciplines or contexts (with emphasis on, but not limited to, proportions, percents, ratios, and rates).	Proportions Percents Ratios Rates	97-100 97 97,890 98	Starters, homework (for completion), graded homework, quizzes/tests, graded classwork (as required), technology worksheets (as required), weekly process quizzes

Course: Algebra II

Standard:F&A-HS-1-Not Assessed in Algebra I curriculum but covered in Algebra II curriculum

Knowledge & Skills	Content	Activities Resources & Materials	Assessments
Identifies arithmetic and geometric sequences **and finds the nth term; then** uses the generalization **to find a specific term.**	Arithmetic sequences Geometric sequences Finding nth term Finding specific term	897-883, Know it notebook 893,908 890-894,,900-903 890-894 Go.hrw.com videos	Starters, homework (for completion), graded homework, quizzes/tests, graded classwork (as required), technology worksheets (as required), weekly process quizzes

Course: Algebra II

Standard:F&A-HS-2-Not Assessed in Algebra I curriculum but covered in Algebra II curriculum

Knowledge & Skills	Content	Activities Resources & Materials	Assessments
Demonstrates conceptual understanding of linear and nonlinear functions and relations. Analyzes characteristics of classes of functions (polynomial, rational, and exponential) to include domain, range, intercepts, increasing and decreasing intervals and rates of change. Understands one-to-one (injective) functions and that a function that is one-to-one has a converse that is also a function; and finds inverses algebraically and graphically. Graphs polynomial, rational and exponential functions, including vertical and horizontal shifts, stretches, and compressions as well as reflections across vertical and horizontal axes. Applies knowledge of functions to	Characteristics of polynomials domain, range, intercepts, increasing and decreasing intervals and rates of change. Rationals domain, range, intercepts, increasing and decreasing intervals and rates of change. Exponential functions domain, range, intercepts, increasing and decreasing intervals and rates of change. Definition of one-to-one function Inverses	406-409, Know it notebook 402-485 Rationals: 592-596 Radicals: 67, 619-623, 537-531 490, 537-541 50,691 497-501,690-693, Know it notebook	Starters, homework (for completion), graded homework, quizzes/tests, graded classwork (as required), technology worksheets (as required), weekly process quizzes

interpret and understand situations, design mathematical models, and solve problems in mathematics as well as in the natural and social sciences.	Graphically Algebraically Polynomials Graphs of Rationals Exponentials Transformations Shifts and reflections Interpret and understand situations, model situations, and solve problems in mathematics and natural and social sciences	497-501 497-501 315-317,619-620,594-596,537,538,460,316,672 619-620,537-538,672	

Course: Algebra II

Standard:F&A-HS-3-Not Assessed in Algebra I but covered in Alg II curriculum

Knowledge & Skills	Content	Activities Resources & Materials	Assessments
Demonstrates conceptual understanding of algebraic expressions. Manipulates, evaluates, and simplifies algebraic and numerical expressions. Adds, subtracts, multiplies and divides polynomials and rational expressions. Factors quadratic and higher degree polynomials. Understands properties of logarithms and converts between logarithmic and exponential forms. Manipulates, evaluates, and simplifies expressions involving rational exponents and radicals and converts between expressions with rational exponents and expressions with radicals. • Understands the effect of simplifying rational expressions on the domain of the related functions (e.g., $x^2/x = x$ for $x \neq 0$).	Simplifying algebraic expressions Add/subtract/multiply/divide polynomials and rationals Solves rational equations Properties of logarithms Conversions logs to exponents Rational exponents Radical to rationals Domains of rationals and radicals	Go.hrw.com videos 27-29 422-425 583-600, go.hrw.com videos 512-515 514 610-614 610-623 610-614	Starters, homework (for completion), graded homework, quizzes/tests, graded classwork (as required), technology worksheets (as required), weekly process quizzes

Course: Algebra II

Standard:F&A-HS-4, not assessed as Algebra I curriculum, covered in Alg II curriculum

Knowledge & Skills	Content	Activities Resources & Materials	Assessments
Demonstrates conceptual understanding of equality. Factors, completes the square, uses the quadratic formula, and graphs quadratic functions to solve quadratic equations. Solves equations involving polynomial, rational, and radical expressions. Graphs and interprets the solutions. Understands extraneous solutions. Finds approximate solutions to equations by graphing each side as a function using technology.	Solves quadratics by Factoring Graphing Complete the square Quadratic formula Domains Finding zeros of Stretches/translations Extraneous solutions Solves equations by graphing each side and finding intersection point	Use of videos available online through hrw.com highly encouraged 331 315-319 343 356-359 326 333-337 316-318 524 340-350, see p 347 # 65-70	Starters, homework (for completion), graded homework, quizzes/tests, graded classwork (as required), technology worksheets (as required), weekly process quizzes

Understands that any equation in x can be interpreted as the equation $f(x) = g(x)$ and interpret the solutions of the equation as the x-value(s) of the intersection point(s) of the graphs of $y = f(x)$ and $y = g(x)$.	If f(x)=g(x), graph f(x) and g(x) and recognize solution is their intersection point(s)	P 340-350	
Solves 2×2 and 3×3 systems of linear equations and graphically interprets the solutions. Solves systems of linear and quadratic inequalities.	Solve 2 by 2s, 3 by 3 system of of linear equations graphically and with technology	p. 178-241	
Solves systems of equations involving nonlinear expressions and graphically interprets the solutions.	Solve system of nonlinear equations, such as quadratics	768-771	
Translates problem situations into inequalities; and solves linear and non-linear inequalities (symbolically and graphically).	Go.hrw.com videos and google videos on this math topic		

Course: Algebra II

Standard: Functions and Algebra, Not assessed

Knowledge & Skills	Content	Activities Resources & Materials	Assessments
Solve Linear Programming problems	Linear programming Constraint Feasible region Objective function	205-209, solve real life business applications using linear programming strategies	Starters, homework (for completion), graded homework, quizzes/tests, graded classwork (as required), technology worksheets (as required), weekly process quizzes
The natural base e and its use in creating exponential functions	Origin of "e" "e" as the basis of exponential functions Graphing equations with base e	P 531, "Know it notebook" P 531-534 531-534 Go.hrw.com videos	

Course: Algebra II
Standard:DSP-HS-1-2-Not Assessed

Knowledge & Skills	Content	Activities Resources & Materials	Assessments
Variation functions, modeling using direct, inverse, joint variation	Constant of variation "k"	p. 568-576, Know it notebook, hrw.com videos	Starters, homework (for completion), graded homework, quizzes/tests, graded classwork (as required), technology worksheets (as required), weekly process quizzes
	Direct variation	go.hrw.com videos	
	Inverse variation	568-576	
	Joint variation	568-576	
Rational functions	Manipulating rationals	p. 577, Know it notebook, hrw.com video	
	Multiplying and dividing Adding and subtracting rationals	577-581	
	Identifying valid domain and ranges for rational functions	p. 583-587	
	Graphing rationals or functions with "holes" in them	p 591, TI-83 activity	

Course: Algebra II
Standard:Functions and Algebra

Knowledge & Skills	Content	Activities Resources & Materials	Assessments
Radical functions, their graphs, transformations, zeros, domains and ranges	Radical functions	619-625, Know it notebook, hrw.com video	Starters, homework (for completion), graded homework, quizzes/tests, graded classwork (as required), technology worksheets (as required), weekly process quizzes
	Graphs	Practice worksheets in graphing	
	Range	636	
	Domain	636, 661	
	Transformations	620-621	
		Go.hrw.com videos	
Solving radical functions	Solution strategies and applications	628-632	

Course: Algebra II
Standard:DSP-HS

Knowledge & Skills	Content	Activities Resources & Materials	Assessments
DSP-HS-4:Uses counting techniques to solve problems in context involving combination or permutations using nCr, nPr, or n!; and finds unions, intersections, and complements of sets.D **DSP-HS-5:For a probability event in which the sample space may or may not contain equally likely outcomes, predicts** the theoretical probability of an event and tests the prediction. compares and contrasts theoretical and experimental probabilities; finds the odds of an event and understands the relationship between probability and odds.	Combinations Permutations Unions Intersections Complements of sets Probability	796 794-797 812 811 811-812 41,413,529,S70, 811 Go.hrw.com videos and google math videos	Starters, homework (for completion), graded homework, quizzes/tests, graded classwork (as required), technology worksheets (as required), weekly process quizzes

Course: Algebra 1I
Standard: **N&O**

Knowledge & Skills	Content	Activities Resources & Materials	Assessments
Accurately solves problems. Interprets and computes with rational exponents and their relation to radicals, by hand in simple cases (e.g., $4^{3/2}$), and using a calculator when appropriate. Interprets and computes in scientific notation with and without a calculator. Solves compound interest problems using $A = P\left(1+\frac{r}{n}\right)^{nt}$, where *n* is finite. Continuous interest	Rational exponents Computes in scientific notation Solves compound interest problems Compound interest Continuous interest P=Pe^rt	611-614, Know it notebook, hrw.com video 36, 518 490-493 490-493 490-493 Go.hrw.com and google videos	Starters, homework (for completion), graded homework, quizzes/tests, graded classwork (as required), technology worksheets (as required), weekly process quizzes

Course: Algebra II
Standard:N&O

Knowledge & Skills	Content	Activities Resources & Materials	Assessments
Operations with functions, adding, subtracting, multiplying, and dividing functions	Adding functions Subtracting functions Multiplying functions Dividing functions	682-686, "Know it notebook", hrw.com video 682-686 682-686 682-686	Starters, homework (for completion), graded homework, quizzes/tests, graded classwork (as required), technology worksheets (as required), weekly process quizzes
Area and volume relationships	Geometric formulas	p. 689	
Functions and their inverses	Finding the inverse of a function algebraically and graphically	p. 690-695 go.hrw.com videos	

Course: Algebra II
Standard: N&O

Knowledge & Skills	Content	Activities Resources & Materials	Assessments
Trigonometry	Definition of the six basic trigonometric functions Graphs of the functions Basic trig identities	1006-1008, these pages give a brief overview of trig. Material is augmented with worksheets for more function practice. Outdoor activity of determining the height of objects using sun angle and length of shadow is possible, get sun elevation angles for Hinsdale from the US Naval Observatory web site. Extra worksheets needed for trig identities for adequate practice.	Starters, homework (for completion), graded homework, quizzes/tests, graded classwork (as required), technology worksheets (as required), weekly process quizzes

Course:Algebra II
Standard:N&O-HS-8-Not Assessed

Knowledge & Skills	Content	Activities Resources & Materials	Assessments

Course: