

8th Grade Honors Algebra 1 Syllabus

Textbook: Holt Algebra 1

(This is the exact textbook and curriculum used for Honors Algebra at MVRHS)

Quarter 1

Chapter 1

Expressions, Equations, and Functions

- 1.1 Evaluate Expressions
- 1.2 Apply Order of Operations
- 1.3 Write Expressions
- 1.4 Write Equations and Inequalities
- 1.5 Use a Problem Solving Plan
- 1.6 Use Precision and Measurement
- 1.7 Represent Functions as Rules and Tables
- 1.8 Represent Functions as Graphs

- Function notation is introduced
- Introduction to the TI84 Graphing Calculator
- How to add, subtract, multiply, and divide fractions
 - Reducing fractions
 - Converting a decimal to a fraction
 - Graphing functions

Chapter 2

Solving Linear Equations

- 2.1 Find Square Roots and Compare Real Numbers
- 2.2 Solve One-Step Equations
- 2.3 Solve Two-Step Equations
- 2.4 Solve Multi-Step Equations
- 2.5 Solve Equations with Variables on Both Sides
- 2.6 Write Ratios and Proportions
- 2.7 Solve Proportions Using Cross Products
- 2.8 Rewrite Equations and Formulas
- Review and Projects

- Very rigorous equations

Chapter 3

Graphing Linear Equations and Functions

- 3.1 Plot Points in a Coordinate Plane
- 3.2 Graph Linear Equations
- 3.3 Graph Using Intercepts
- 3.4 Find Slope and Rate of Change
- 3.5 Graph Using Slope-Intercept Form
- 3.6 Model Direct Variation
- 3.7 Graph Linear Functions

- Level C and Challenge slope problems
 - Using the TI84 to graph lines
 - Table function
 - Adjusting the window
 - resetting the calculator

Quarter 2

Chapter 4 Writing Linear Equations

- 4.1 Write Linear Equations in Slope-Intercept Form
- 4.2 Use Linear Equations in Slope-Intercept Form
- 4.3 Write Linear Equations in Point-Slope Form
- 4.4 Write Linear Equations in Standard Form
- 4.5 Write Equations of Parallel and Perpendicular Lines
- 4.6 Fit a Line to Data
- 4.7 Predict with Linear Models

- Switching from slope intercept to standard form
 - Using the TI84 for linear regression
- Students should be able to find the regression line, correlation coefficient, and be able to make predictions with the equation that they find from their data using the TI84.

Chapter 5 Solving and Graphing Linear Inequalities

- 5.1 Solve Inequalities Using Addition and Subtraction
- 5.2 Solve Inequalities Using Multiplication and Division
- 5.3 Solve Multi-Step Inequalities
- 5.4 Solve Compound Inequalities
- 5.5 Solve Absolute Value Equations
- 5.6 Solve Absolute Value Inequalities
- 5.7 Graph Linear Inequalities in Two Variables

Chapter 6

Systems of Equations and Inequalities

6.1 Solve Linear Systems by Graphing

6.2 Solve Linear Systems by Substitution

6.3 Solve Linear Systems by Adding or Subtracting

6.4 Solve Linear Systems by Multiplying First

6.5 Solve Special Types of Linear Systems

6.6 Solve Systems of Linear Inequalities

- Word problems including all types of “classic mixture problems” would be covered before completing this chapter.
 - Mixture problems
 - Upstream/downstream problems
 - Age problems
 - Investment problems
 - Two digit number problems
 - Work problems

MIDTERM EXAM CHAPTERS 1-6

Quarter 3

Chapter 7

Exponents and Exponential Functions

- 7.1 Apply Exponent Properties Involving Products
- 7.2 Apply Exponent Properties Involving Quotients
- 7.3 Define and Use Zero and Negative Exponents
- 7.4 Write and Graph Exponential Growth Functions
- 7.5 Write and Graph Exponential Decay Functions

- Introduction to the laws of exponents
- Monomials are introduced at a very rigorous level

Chapter 8

Polynomials and Factoring

- 8.1 Add and Subtract Polynomials
- 8.2 Multiply Polynomials
- 8.3 Find Special Products of Polynomials
- 8.4 Solve Polynomial Equations in Factored Form
- 8.5 Factor $ax^2 + bx + c$
- 8.6 Factor $ax^2 + bx + c$ where $a \neq 1$
- 8.7 Factor Special Products
- 8.8 Factor Polynomials Completely

- $(a+b)^n$ expansion using Pascal's triangle
- Extensive time spent on factoring trinomials where a is not 1
 - Factoring by grouping
- Factoring polynomials that involve several steps

Extra Chapter Radicals

Simplifying radicals is introduced before students begin
“Completing the Square” and “The Quadratic Formula”
Simplifying Radicals
Adding and Subtracting Radicals
Multiplying Radicals
Dividing Radicals rationalizing the denominator
Rationalizing the denominator with a binomial (conjugates)

Quarter 4

Chapter 9

Quadratic Equations And Functions

9.1 Graph $y = ax^2 + c$

9.2 Graph $y = ax^2 + bx + c$

9.3 Solve Quadratic Equations by Graphing

9.4 Use Square Roots to Solve Quadratic Equations

9.5 Solve Quadratic Equations by Completing the Square

9.6 Solve Quadratic Equations by the Quadratic Formula

9.7 Solve Systems with Quadratic Equations

9.8 Compare Linear, Exponential, and Quadratic Models

9.9 Model Relationships

- Completing the square is introduced first.
 - The quadratic formula is derived from this method and students must be able to show this derivation on their own.
 - Quadratic regression using the TI84
- *Projectile problems student must know the general equations and be able to find maximum height, how long it took, when the object hits the ground, and how long it took.

Chapter 10

Data Analysis

10.1 Analyze Surveys and Samples

10.2 Use Measures of Central Tendency and Dispersion

10.3 Analyze Data

10.4 Interpret Stem-and-Leaf Plots and Histograms

10.5 Interpret Box-and-Whisker Plots

The TI84 is used throughout chapter 10 and students must be very comfortable with using the STAT functions throughout this chapter.

Chapter 11

Probability and Statistics

- 11.1 Find Probabilities and Odds
- 11.2 Find Probabilities Using Permutations
- 11.3 Find Probabilities Using Combinations
- 11.4 Find Probabilities of Disjoint and Overlapping Events
- 11.5 Find Probabilities of Independent and Dependent Events

Cumulative review of entire book

Honors Algebra 1

Final Exam