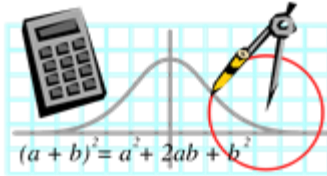


HomeSchoolMathOnline.com Algebra 2 Course Checklist

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Introduction

Special Message from the Teacher:

Welcome to the HSMO/TabletClass Math Basic Algebra 2 course. First I want to say that I'm very excited to have you as a student. My goal is to give you an enjoyable and high quality learning experience. Moreover I want you to know that you can master this material if you work hard and never give up. The secret to being successful in mathematics is your approach to studying the topic- i.e. your study habits. From years of teaching math I can say that those students with the best study habits almost always earn the top grades. As such, parents and teachers must focus on holding students accountable for the quality of their work.

Below are critical guidelines for students as they take the course:

1. Never give up- especially when a topic is not understood easily or immediately.
2. Strive to be as neat and organized as possible.
3. Excellent note taking is a must to succeed in math.
4. Show all steps when working problems.
5. Double check your work as you write your solution steps.
6. Always go back and review incorrect problems and discover where the error was made.
7. Master the fundamentals and don't move forward unless you understand previous material.

Remember the course material builds on itself so you want to ensure that you don't skip chapters and sections. Furthermore you want to correct your weak areas before moving onto the next topic. Lastly, I want to stress that you can be great in math if you work hard. Even if you have struggled in math before I want you to look at this course as a fresh start in your mathematics journey- I know in my heart you can ace this course!

Best of luck!

John Zimmerman

TabletClass Math Teacher

Algebra 2 Course

Chapter 1

▶ Chapter 1: Introduction to Algebra Terms and Concepts

(Date started _____ | Date completed _____)

This chapter introduces students to basic terms and concepts used in algebra. Time is taken to ensure the student understands basic number operations, variables and their applications. Additionally, the student gains a fundamental sense of equations, inequalities and their solutions.

Section Summary (circle / complete after chapter is finished):

1. Number Operations

totally understand | kind of understand | not understanding

2. Variables

totally understand | kind of understand | not understanding

3. Order of Operations

totally understand | kind of understand | not understanding

4. Translating Verbal and Algebraic Phrases

totally understand | kind of understand | not understanding

5. Equations/Inequalities/Solutions

totally understand | kind of understand | not understanding

Algebra 2 Course

Chapter 2

Chapter 2: Real Numbers and Simplifying Variable Expressions

(Date started _____ | Date completed _____)

This chapter focuses on getting the student to master working with the Real Numbers. Students learn the rules of integers and practice through many examples. Also, students will learn to apply the Distributive property and simplify variable expressions by combining like terms.

Section Summary (circle / complete after chapter is finished):

1. Real Number System

totally understand | kind of understand | not understanding

2. Adding Real Numbers

totally understand | kind of understand | not understanding

3. Subtracting Real Numbers

totally understand | kind of understand | not understanding

4. Multiplying and Dividing Real Numbers

totally understand | kind of understand | not understanding

5. Distributive Property

totally understand | kind of understand | not understanding

6. Simplifying by Combining Like Terms

totally understand | kind of understand | not understanding

Algebra 2 Course

Chapter 3

Chapter 3: Solving Equations

(Date started _____ | Date completed _____)

The chapter breaks down the steps to solve multi-step linear equations. Students will build up their skills as they progress from one and two-step equations to more advance equations. Core concepts involved will be reviewed to include the distributive property and combining like terms.

Section Summary (circle / complete after chapter is finished):

1. One Step Equations

totally understand | kind of understand | not understanding

2. Solving Two Step Equations

totally understand | kind of understand | not understanding

3. Solving Multi-Step Equations

totally understand | kind of understand | not understanding

4. Formulas and Literal Equations

totally understand | kind of understand | not understanding

Algebra 2 Course Chapter 4

Chapter 4: Graphing Linear Equations

(Date started _____ | Date completed _____)

This very important chapter walks the student step-by-step to master how to graph linear equations. Concepts involving the coordinate plane, slope and methods to graph lines are thoroughly reviewed and introduced. Upon completion of the chapter students will gain the necessary knowledge and skills needed to learn more advance topics involving linear equations.

Section Summary (circle / complete after chapter is finished):

1. Graphing Lines with One Variable

totally understand | kind of understand | not understanding

2. Graphing Lines with Two Variables

totally understand | kind of understand | not understanding

3. The Slope of a Line

totally understand | kind of understand | not understanding

4. Slope Intercept Method

totally understand | kind of understand | not understanding

5. XY Intercept Method

totally understand | kind of understand | not understanding

Algebra 2 Course

Chapter 5

Chapter 5: Writing the Equations of Lines

(Date started _____ | Date completed _____)

The chapter builds on the student's prior knowledge and skill of linear equations. Various methods to find and write the equation of a line are introduced and practiced. The chapter focuses on the proper way to set-up and use formulas to write linear equations. Additional related topics are explored to include linear models, linear regression and word problems.

Section Summary (circle / complete after chapter is finished):

1. Using Slope-Intercept Form

totally understand | kind of understand | not understanding

2. Using Point-Slope intercept

totally understand | kind of understand | not understanding

3. Given the Slope and a Point

totally understand | kind of understand | not understanding

4. Given Two Points

totally understand | kind of understand | not understanding

5. Standard Form of Linear Equations

totally understand | kind of understand | not understanding

6. Best Fitting Line

totally understand | kind of understand | not understanding

7. Linear Models/Word Problems

totally understand | kind of understand | not understanding

Algebra 2 Course

Chapter 6

Chapter 6: Inequalities

(Date started _____ | Date completed _____)

In this chapter students will apply their equation solving skills to solve linear inequalities. Basic concepts and terms are introduced first, along with how to graph inequalities.

Section Summary (circle / complete after chapter is finished):

1. Linear Inequalities

totally understand | kind of understand | not understanding

2. Compound Inequalities

totally understand | kind of understand | not understanding

3. Graphing Linear Inequalities in Two Variables

totally understand | kind of understand | not understanding

Algebra 2 Course

Chapter 7

Chapter 7: Introduction to Systems

(Date started _____ | Date completed _____)

Understanding systems and the methods to solve them are vital in algebra. This chapter introduces/reviews techniques to solve linear systems. Students will also explore special systems, word problems and systems of linear inequalities. Lastly, the topic of Linear Programming will be introduced. This powerful way to use systems in business and industry will connect the chapter's concepts to "real world" applications.

Section Summary (circle / complete after chapter is finished):

1. Solving Systems by Graphing

totally understand | kind of understand | not understanding

2. Solving Systems Substitution Method

totally understand | kind of understand | not understanding

3. Solving Systems by Elimination/Linear Combination

totally understand | kind of understand | not understanding

4. Solving Linear System Word Problems

totally understand | kind of understand | not understanding

5. Special Linear Systems

totally understand | kind of understand | not understanding

6. Solving Systems of Linear Inequalities

totally understand | kind of understand | not understanding

7. Linear Programming

totally understand | kind of understand | not understanding

Algebra 2 Course Chapter 8

Chapter 8: Absolute Value

(Date started _____ | Date completed _____)

Absolute value problems can be challenging for some students to grasp. Time is taken to teach students core concepts and build understanding. Students will learn how to graph absolute value functions and apply the steps to solve absolute value equations/inequalities.

Section Summary (circle / complete after chapter is finished):

1. Introduction to Absolute Value

totally understand | kind of understand | not understanding

2. Graphing Absolute Value Equations

totally understand | kind of understand | not understanding

3. Solving Absolute Value Equations

totally understand | kind of understand | not understanding

4. Absolute Value Inequalities

totally understand | kind of understand | not understanding

Algebra 2 Course

Chapter 9

Chapter 9: Powers and Exponents

(Date started _____ | Date completed _____)

This chapter covers the rules of powers and exponents a student needs to learn in algebra. Also, important applications of these rules are covered to include scientific notation, compound interest and exponential growth and decay.

Section Summary (circle / complete after chapter is finished):

1. Product and Power Rules of Exponents

totally understand | kind of understand | not understanding

2. Negative and Zero Exponents Rules

totally understand | kind of understand | not understanding

3. Division Rules of Exponents

totally understand | kind of understand | not understanding

4. Scientific Notation

totally understand | kind of understand | not understanding

5. Compound Interest

totally understand | kind of understand | not understanding

6. Exponential Growth and Decay

totally understand | kind of understand | not understanding

Algebra 2 Course

Chapter 10

Chapter 10: Polynomials and Factoring

(Date started _____ | Date completed _____)

The first part of the chapter covers the parts of a polynomial, related terminology and how to perform polynomial operations. A special focus is placed on avoiding common mistakes. The second part of the chapter focuses on the extremely important skill of factoring polynomials. Students will first understand how to factor out a polynomial GCF and build on this to learn many techniques to factor polynomials.

Section Summary (circle / complete after chapter is finished)

1. Introduction to Polynomials

totally understand | kind of understand | not understanding

2. Adding and Subtracting Polynomials

totally understand | kind of understand | not understanding

3. Multiplying Polynomials

totally understand | kind of understand | not understanding

4. Multiplying Polynomials Special Cases

totally understand | kind of understand | not understanding

5. Sum and Difference of Two Cubes

totally understand | kind of understand | not understanding

6. Factoring Greatest Common Factor

totally understand | kind of understand | not understanding

7. Factoring Quadratic Trinomials

totally understand | kind of understand | not understanding

8. Special Factoring Rules

totally understand | kind of understand | not understanding

Algebra 2 Course

Chapter 11

Chapter 11: Introduction to Quadratic Equations

(Date started _____ | Date completed _____)

Understanding the properties and methods to solve quadratic equations is essential for the student to advance in algebra. This chapter explains each concept in a very specific and focused manner. After students have been introduced to quadratic equations they build up their knowledge by learning various techniques to solve them. Additionally, they will learn the connection between solutions and graphs of quadratic functions. The chapter ends by covering quadratic inequalities and word problems.

Section Summary (circle / complete after chapter is finished):

1. Introduction to Quadratic Equations

totally understand | kind of understand | not understanding

2. Solving Quadratic Equations by Square Roots

totally understand | kind of understand | not understanding

3. Graphing Quadratic Equations

totally understand | kind of understand | not understanding

4. The Quadratic Formula

totally understand | kind of understand | not understanding

5. Solving Quadratic Equations by Factoring

totally understand | kind of understand | not understanding

6. The Discriminant - Types of Roots

totally understand | kind of understand | not understanding

7. Completing the Square

totally understand | kind of understand | not understanding

8. Quadratic Equation Word Problems

totally understand | kind of understand | not understanding

9. Graphing Quadratic Inequalities

totally understand | kind of understand | not understanding

Algebra 2 Course

Chapter 12

Chapter 12: Functions and Relations

(Date started _____ | Date completed _____)

Functions and relations transcend all through mathematics. This chapter explains core concepts at the algebra level and prepares the student for more advance study of the topic. Time is taken to explain the difference between a function and relation; and introduce the student to the language of functions to include the domain, range and linear/nonlinear functions. Students will also learn function operations, composite functions and graphing.

Section Summary (circle / complete after chapter is finished):

1. Introduction to Functions and Relations

totally understand | kind of understand | not understanding

2. Function Operations

totally understand | kind of understand | not understanding

3. Inverse Functions

totally understand | kind of understand | not understanding

4. Graphing Functions

totally understand | kind of understand | not understanding

5. Linear and Nonlinear Functions

totally understand | kind of understand | not understanding

6. Special Functions

totally understand | kind of understand | not understanding

7. Composite Functions

totally understand | kind of understand | not understanding

Algebra 2 Course Chapter 13

Chapter 13: Rational Expressions/Equations

(Date started _____ | Date completed _____)

This chapter takes the student through fundamental rational expressions to include ratios, proportions, percent and variation. Special emphasis is placed on learning different methods to solve rational expression problems. The section on simplifying rational algebraic expressions starts by reviewing basic examples using numbers before introducing variable examples. The second part of the chapter builds from the student's knowledge of polynomials and covers operations with rational expressions. Instruction will focus on learning to multiply, divide, find the LCD and solve rational equations.

Section Summary (circle / complete after chapter is finished):

1. Ratios and Proportions

totally understand | kind of understand | not understanding

2. Percent

totally understand | kind of understand | not understanding

3. Direct and Inverse Variation

totally understand | kind of understand | not understanding

4. Simplifying Rational Expressions

totally understand | kind of understand | not understanding

5. Multiplying and Dividing Rational Expressions

totally understand | kind of understand | not understanding

6. Finding the LCD of Rational Expressions

totally understand | kind of understand | not understanding

7. Solving Rational Equations

totally understand | kind of understand | not understanding

8. Adding and Subtracting Rational Expressions

totally understand | kind of understand | not understanding

Algebra 2 Course

Chapter 14

Chapter 14: Radical Expressions/Equations

(Date started _____ | Date completed _____)

This chapter introduces the concept of radical expressions/equations at the Algebra 1 level. Students will first learn the properties of square roots and associated operations to include solving basic radical equations. Next the chapter looks at the application of radicals and how they help solve many problems in algebra. The chapter will also focus on the Pythagorean Theorem and the Distance and Mid-Point formula as well.

Section Summary (circle / complete after chapter is finished):

1. Simplifying Radicals

totally understand | kind of understand | not understanding

2. Operations with Radicals

totally understand | kind of understand | not understanding

3. Solving Radical Equations

totally understand | kind of understand | not understanding

4. The Distance and Mid-Point Formula

totally understand | kind of understand | not understanding

5. The Pythagorean Theorem

totally understand | kind of understand | not understanding

Algebra 2 Course

Chapter 15

Chapter 15: Matrices and Determinants

(Date started _____ | Date completed _____)

This chapter introduces the core concepts of matrices and determinants to students. Time is taken to teach terminology and common applications of matrices. Students will learn how to perform various matrix operations to include matrix addition, subtraction multiplication and scalar multiplication. Additionally students will learn the steps to find determinants and the inverse of a matrix. The chapter also focuses on how matrices can be used to solve linear systems by using an inverse matrix or Cramer's Rule.

Section Summary (circle / complete after chapter is finished):

1. Introduction to Matrices

totally understand | kind of understand | not understanding

2. Matrix Operations

totally understand | kind of understand | not understanding

3. Matrix Multiplication

totally understand | kind of understand | not understanding

4. Determinants

totally understand | kind of understand | not understanding

5. Identity and Inverse Matrices

totally understand | kind of understand | not understanding

6. Solving Systems using Inverse Matrices

totally understand | kind of understand | not understanding

7. Solving Systems using Cramer's Rule

totally understand | kind of understand | not understanding

Algebra 2 Course

Chapter 16

Chapter 16: Quadratic Equations and Complex Numbers

(Date started _____ | Date completed _____)

Understanding the properties and methods to solve quadratic equations is essential for a student to advance in algebra. This chapter explains each concept in a very specific and focused manner. After students have been introduced to quadratic equations they build up their knowledge by learning various techniques to solve them. Additionally, they will learn the connection between solutions and graphs of quadratic functions. Methods and procedures are applied to graph quadratic inequalities and solve word problems. Lastly the chapter covers complex and imaginary numbers. Students are introduced to complex number operations, graphs and the role complex and imaginary numbers have as solutions to equations.

Section Summary (circle / complete after chapter is finished):

1. Introduction to Quadratic Equations

totally understand | kind of understand | not understanding

2. Solving Quadratic Equations by Square Roots

totally understand | kind of understand | not understanding

3. Graphing Quadratic Equations

totally understand | kind of understand | not understanding

4. The Quadratic Formula

totally understand | kind of understand | not understanding

5. Solving Quadratic Equations by Factoring

totally understand | kind of understand | not understanding

6. The Discriminant - Types of Roots

totally understand | kind of understand | not understanding

7. Completing the Square

totally understand | kind of understand | not understanding

8. Quadratic Equation Word Problems

totally understand | kind of understand | not understanding

9. Graphing Quadratic Inequalities

totally understand | kind of understand | not understanding

10. Complex and Imaginary Numbers

totally understand | kind of understand | not understanding

Algebra 2 Course

Chapter 17

Chapter 17: Logarithmic and Exponential Functions

(Date started _____ | Date completed _____)

For most students this chapter will be their first introduction to logarithms. As such the chapter focuses on teaching the basic core concepts of a logarithm and its relationship to an exponential function. Students will learn how to convert between a logarithm and exponential equation.

Section Summary (circle / complete after chapter is finished):

1. Exponential Growth and Decay Functions

totally understand | kind of understand | not understanding

2. Introduction to Logarithms

totally understand | kind of understand | not understanding

3. Properties of Logarithms

totally understand | kind of understand | not understanding

4. The Natural Base e

totally understand | kind of understand | not understanding

5. Natural Logarithms

totally understand | kind of understand | not understanding

6. Solving Logarithmic Equations

totally understand | kind of understand | not understanding

7. Solving Exponential Equations

totally understand | kind of understand | not understanding

Algebra 2 Course

Chapter 18

Chapter 18: Polynomial Functions

(Date started _____ | Date completed _____)

The first part of the chapter covers the parts of a polynomial, related terminology and how to perform polynomial operations. A special focus is placed on avoiding common mistakes. The second part of the chapter focuses on the extremely important skill of factoring polynomials. Students will first understand how to factor out a polynomial GCF and build on this to learn many techniques to factor polynomials. Part 2 of this chapter goes into the various methods and techniques to solve a polynomial of any degree. Students will specifically learn how to apply key concepts, skills (polynomial long and synthetic division) and theorems (Rational Root and Fundamental Theorem of Algebra) to find the roots of polynomial functions.

Section Summary (circle / complete after chapter is finished)

1. Introduction to Polynomials

totally understand | kind of understand | not understanding

2. Adding and Subtracting Polynomials

totally understand | kind of understand | not understanding

3. Multiplying Polynomials

totally understand | kind of understand | not understanding

4. Multiplying Polynomials Special Cases

totally understand | kind of understand | not understanding

5. Sum and Difference of Two Cubes

totally understand | kind of understand | not understanding

6. Factoring Greatest Common Factor

totally understand | kind of understand | not understanding

7. Factoring Quadratic Trinomials

totally understand | kind of understand | not understanding

8. Special Factoring Rules

totally understand | kind of understand | not understanding

9. Graphing Polynomials

totally understand | kind of understand | not understanding

10. Solving Polynomial Equations by Factoring

totally understand | kind of understand | not understanding

11. Polynomial Division(long and synthetic division)

totally understand | kind of understand | not understanding

12. Remainder and Factor Theorem

totally understand | kind of understand | not understanding

13. Rational Root Theorem(Rational-Zero Test)

totally understand | kind of understand | not understanding

14. Solving n-degree Polynomials(Fundamental Theorem of Algebra)

totally understand | kind of understand | not understanding