

Conceptual Algebra 2

Instructors:

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Prerequisite:

Satisfactory completion of Algebra I and Geometry. Students who have completed Algebra I but have not completed Geometry will need special permission from the Department Chair to take Algebra II and Geometry out of order.

Description:

This course will cover the fundamentals of Algebra II. Coursework includes an examination of probability, statistics, radical expressions and equations, quadratic equations, exponential and logarithmic equations, functions, polynomial expressions, and trigonometric equations. Projects emphasizing how material is applicable to everyday life will also be part of the course. The pace of this course is slower than that of the Algebra II course. This course may not meet the requirements for admission to a four year college/university.

Graduation Standards (the number of the standard is referenced in the performance indicators listed in each unit):

- 1- Reason and model quantitatively, using units and number systems to solve problems.
- 2- Interpret, represent, create and solve algebraic expressions.
- 3- Interpret, analyze, construct, and solve linear, quadratic, and trigonometric functions.

Unit 1 Review of Basic Concepts

Summary A brief review of basic operations in the real number system with hands on applications.

Performance Indicators 1B – Apply properties within the real number system.

2A – Interpret the structure of expressions.

Assessed in Unit 2B – Write expressions in equivalent forms to solve problems.

2G – Create equations that describe numbers or relationships.

2H – Understand solving equations as a process of reasoning and explain the reasoning.

Unit 2 Measurements and Percents

Summary Real world problem solving involving percents and measurement conversions. Topics include percent and measurement problems; simple geometry problems for area and volume, percent equivalencies; and estimating. Dimensional analysis of the various units of measure and how to quickly convert from one unit to another.

Performance Indicators 1C – Reason quantitatively and use units to solve problems.

2B – Write expressions in equivalent forms to solve problems

Assessed in Unit 2H – Understand solving equations as a process of reasoning and explain the reasoning.

4L – Explain volume formulas and use them to solve problems.

Unit 3 Probability & Statistics

Summary An overview of how to interpret basic data sets. Investigate various ways to display data.

Performance Indicators 5A – Summarize, represent, and interpret data on a single count or measurement variable

5B – Summarize, represent, and interpret data on 2 categorical and quantitative variables.

Assessed in Unit 5D – Understand and evaluate random processes underlying statistical experiments.

5E – Make inferences and justify conclusions from sample surveys, experiments, and observational studies.

5F – Understand independent and conditional probability and use them to interpret data.

Unit 4 Linear Algebra	
Summary	Covering the numerous real world uses of Algebraic techniques.
Performance Indicators Assessed in Unit	<p>2A – Interpret the structure of expressions.</p> <p>2G – Create equations that describe numbers or relationships.</p> <p>2I – Solve equations and inequalities in one variable.</p> <p>2J – Solve systems of equations.</p> <p>3A – Understand the concept of a function and use function notation.</p> <p>3B – Interpret functions that arise in applications in terms of context.</p> <p>3C – Analyze functions using different representations.</p> <p>3D – Build a function that models a relationship between two quantities.</p>
Unit 5 Exponential Functions	
Summary	Extend knowledge of functions to creating, graphing, and analyzing exponential functions in the real world.
Performance Indicators Assessed in Unit	<p>1A-Extend the properties of exponents to rational exponents.</p> <p>2A – Interpret the structure of expressions.</p> <p>3F – Construct and compare linear, quadratic, and exponential models and solve problems.</p> <p>3G – Interpret expressions for functions in terms of the situation they model.</p> <p>4B – Understand congruence in terms of rigid motions.</p>
Unit 6 Review of Quadratics	
Summary	An overview of Quadratic equations and functions.
Performance Indicators Assessed in Unit	<p>2D – Understand the relationship between zeros and factors of polynomials.</p> <p>2H – Understand solving equations as a process of reasoning and explain the reasoning.</p> <p>2K – Represent and solve equations and inequalities graphically.</p> <p>3C – Analyze functions using different representations.</p> <p>3F – Construct and compare linear, quadratic, and exponential models and solve problems.</p>
Unit 7 Radical Expressions and Equations	
Summary	Simplify radical expressions and solve radical equations.
Performance Indicators Assessed in Unit	<p>1A – Extend properties of exponents to rational exponents.</p> <p>1D – Perform arithmetic operations on complex numbers.</p> <p>2B – Write expressions in equivalent forms to solve problems</p> <p>2H – Understand solving equations as a process of reasoning and explain the reasoning.</p> <p>2I – Solve equations and inequalities in one variable</p>