Learn More About Cognitive Tutor
The Cognitive Tutor family of mathematics solutions includes:

- Algebra I
- Geometry
- Algebra II
- Integrated Math I, II & III
- Teacher Training
- Professional Development

Ask about our research reports and case studies

For more information and answers to your questions:
Telephone: 1.888.851.7094 (select option for Educational Sales)
E-Mail: edsales@carnegielearning.com
Web Site: www.carnegielearning.com
1200 Penn Avenue, Suite 150, Pittsburgh, PA 15222

© Copyright 2004, Carnegie Learning Inc. All rights reserved. Carnegie Learning, Cognitive Tutor, SchoolCare and Learning by Doing are registered trademarks of Carnegie Learning. The product and/or portions thereof are manufactured under license from Carnegie Mellon University. All other company and product names mentioned are used for identification purposes only and may be trademarks of their respective owners.
Classroom Lessons | Software | Skills Covered
--- | --- | ---
**Print** | **Units 1 – 9, 29, 32, and 33**
**Linear Functions**
- Graphing Using Slope and Y-intercept
- Linear Transformations
- General Linear Form
- Solving Systems Algebraically and Graphically
- Co-Varying Input, Fixed Output
- Graphing in the Half-Plane
- Solving Systems of Linear Inequalities
- Linear Programming

**Exponential Functions**
- Units 10 – 13, and 26
- Exponential Growth and Decay
- Equation Solving with Exponents and Logarithms
- Exponential and Linear Transformations
- Exponential Systems

**Quadratics**
- Units 14 – 20, and 25
- Linear and Quadratic Transformations
- Quadratic Models in Factored Form
- Quadratic Models in General Form
- Solving by Factoring
- Generalized Quadratic Solving
- Linear, Quadratic, and Exponential Transformations
- Quadratic Systems

Students will be able to prepare a mathematical analysis of a problem modeled by a linear function in any form. Solve any linear equation. Understand the concept of inequalities and be able to solve, graph, and interpret linear inequalities. Model and solve systems of two equations or inequalities. Understand what is meant by a solution to a system of equations or inequalities. Use systems of equations or inequalities to solve real-world problems. Connect graphical, tabular, and algebraic representations. Maximize and minimize functions. Understand and use arithmetic sequences and series and inverse functions. Use linear programming to solve real-world problems. Understand functional notation, f(x), and evaluate f(x) for given values of x. Determine the domain and range of a given function. Describe different kinds of sequences, list next terms or nth terms, and generate a recursive and explicit formula that defines the sequence. Create and use the formula for finding the sum of the first n terms of an arithmetic series. Use matrices to organize data. Perform matrix addition and subtraction. Perform matrix multiplication; and perform scalar multiplication. Use matrices to solve linear systems.

In addition to the skills attained in previous units, students will define and identify exponential functions. Model exponential functions algebraically and graphically, and evaluate and solve exponential equations. Define and identify logarithmic function. Understand the relationship between exponential and logarithmic functions. Define and apply the properties of logarithms in order to solve exponential functions. Compare basic properties of linear and exponential functions. Find the common ratio of a geometric sequence. Determine whether an infinite geometric series will converge or diverge. Find the sum of an infinite geometric series. Understand and derive the formula for the nth term of a geometric sequence and use it to write several terms of that sequence. Define a geometric series. Understand and use amplitude, period, phase shift, and horizontal shifts in graphing periodic functions. Use real-world problems to understand the relationship between the unit circle and the trigonometric functions. Compute the intercepts, local maxima, and local minima for periodic functions. Use reflections to create graphs for the inverse trigonometric functions. Use real-world problems to understand the sinusoidal graphs. Compute the sine, cosine, or tangent of an angle of any measure. Use the relationship between the values of the sine, cosine, and tangent.

In addition to the skills attained in previous units, students will define and identify a polynomial function and the family of polynomial functions. Model and graph situations and solve problems involving polynomial functions. Understand the relationship between the degree of the polynomial function and the number of zeros. Find the zeros of polynomial function. Define local maxima and minima, intervals of increase and decrease, and end behavior. Define a rational function, the domain and range, continuity and discontinuity. Identify asymptotes. Operate on rational expressions. Represent the parent function and perform the basic set of transformations. Define the inverse of a rational function and apply procedures for computing it. Define base, exponent, and power. Use the definition of an exponent to expand and simplify monomial expressions. Analyze properties of exponents. Define a zero power. Define a negative exponent. Simplify algebraic expressions using various laws of exponents/powers.

In addition to the skills attained in previous units, students will graph radical functions. Understand, interpret, and graph, discontinuous functions and relations including step functions and piece-wise defined functions. Create and use polar and parametric equations. Create models of the conic sections, including parabolas, circles, ellipses, and hyperbolas. Make connections to calculus concepts through the use of area models.