

Concrete

Representative

Abstract

ASK as a Resource

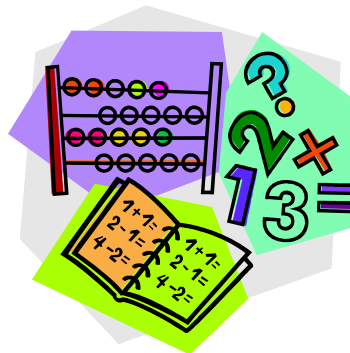
The Algebra Success Keys (ASK) is a resource available to teachers to improve student learning of algebra in grades K-12. ASK should be used to help teachers teach algebraic thinking using three levels of learning (Concrete, Representational, Abstract) as well as to meet the needs of individual students.

Visit our web site at

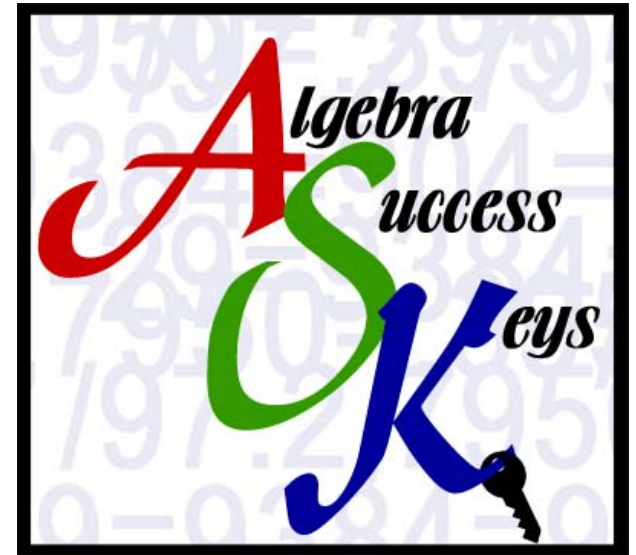
<http://reach.ucf.edu/~CENTRAL>

Purpose

The purpose of the Algebra Success Keys (ASK) is to provide algebra teachers of grades K-12 with research-based strategies in instruction, assessments, accommodations, and technology to help students learn algebraic thinking. Math teachers and special education teachers should use this guide to enhance their teaching of algebraic thinking skills to students with diverse learning needs.



PROJECT **CENTRAL**
Coordinating Existing Networks to Reach All Learners



The Algebra Success Keys (ASK) guide is a compilation of research-based practices developed to help teach algebra to students with diverse learning needs.

This document was developed for the Effective Instructional Practices Project (Project CENTRAL), a special project funded by the State of Florida, Department of Education, Bureau of Exceptional Education and Student Services (BEESS), through federal assistance under the Individuals with Disabilities Education Act (IDEA), Part B

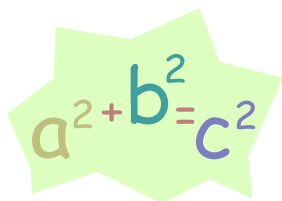
Professional Development

Topics:

Levels Of Learning CRA

The ASK professional development provides strategies when teaching the use of the CRA levels of learning

- **Concrete:** Instructional strategies that use actual objects in teaching algebraic thinking concepts
- **Representational:** Instructional strategies that use pictures, tally marks, diagrams, and drawings in teaching algebraic thinking
- **Abstract:** Instructional strategies that use written words (including Braille), symbols (such as variables or numerals), or verbal expressions (including sign language) in teaching algebraic thinking concepts.


$$a^2 + b^2 = c^2$$

Instructional Strategies

ASK provides professional development in metacognitive strategies such as mnemonic devices, problem-solving routines, self-monitoring skills, and the use of graphic organizers designed to assist students in representing patterns, interpreting data, and analyzing information relevant to problem-solving.

Assessment

ASK addresses the use of rubrics and a task analysis by grade level to use for pre-assessments, on-going assessments and post-assessments.



Accommodations and Technology

ASK suggests accommodations and technology within each of the five general areas.

- instructional methods and materials
- assignment and classroom assessments
- time demands and scheduling
- learning environment and
- use of special communication systems.

Strategies for ESL Learners

ASK provides a list of instructional strategies specific for second language learners.

NCTM Standards:

The **Algebra Success Keys (ASK)** provides strategies for the teaching of algebra within the four standards:

- **understanding patterns, relations, and functions**
- **representing and analyzing mathematical situations and structures using algebraic symbols**
- **using mathematical models to represent and understand quantitative relationships**
- **analyzing change in various contexts .**

(NCTM, 2001).

PROJECT CENTRAL

University of Central Florida
1673 Mason Avenue, Suite 207
Daytona Beach, FL 32117

Phone: 1-866-367-4150

Fax: 386-274-0179

Email: projcentral@mail.ucf.edu

<http://reach.ucf.edu/~CENTRAL>