

ALGEBRA AND ALGEBRAIC THINKING

ALGEBRA AND ALGEBRAIC THINKING ENCOMPASS FUNDAMENTAL MATHEMATICAL CONCEPTS THAT ARE CRUCIAL FOR DEVELOPING PROBLEM-SOLVING SKILLS AND LOGICAL REASONING. THESE AREAS OF STUDY SERVE AS THE BACKBONE FOR ADVANCED MATHEMATICS AND VARIOUS REAL-WORLD APPLICATIONS. THIS ARTICLE WILL DELVE INTO THE DEFINITIONS AND IMPORTANCE OF ALGEBRA, THE PRINCIPLES OF ALGEBRAIC THINKING, AND THE METHODS FOR TEACHING AND LEARNING THESE CONCEPTS EFFECTIVELY. WE WILL EXPLORE THE ROLE OF ALGEBRA IN EDUCATION, ITS APPLICATIONS IN EVERYDAY LIFE, AND BEST PRACTICES FOR INTEGRATING ALGEBRAIC THINKING INTO VARIOUS LEARNING ENVIRONMENTS. BY UNDERSTANDING THESE FACETS, READERS WILL APPRECIATE THE SIGNIFICANCE OF ALGEBRA AND ALGEBRAIC THINKING IN BOTH ACADEMIC AND PRACTICAL CONTEXTS.

- UNDERSTANDING ALGEBRA AND ALGEBRAIC THINKING
- THE IMPORTANCE OF ALGEBRA IN EDUCATION
- CORE PRINCIPLES OF ALGEBRAIC THINKING
- EFFECTIVE STRATEGIES FOR TEACHING ALGEBRA
- APPLICATIONS OF ALGEBRA IN EVERYDAY LIFE
- CONCLUSION

UNDERSTANDING ALGEBRA AND ALGEBRAIC THINKING

ALGEBRA IS A BRANCH OF MATHEMATICS THAT DEALS WITH SYMBOLS AND THE RULES FOR MANIPULATING THOSE SYMBOLS TO SOLVE PROBLEMS. IT PROVIDES A WAY TO EXPRESS MATHEMATICAL RELATIONSHIPS AND TO FORMULATE EQUATIONS THAT CAN BE SOLVED. ALGEBRAIC THINKING, ON THE OTHER HAND, REFERS TO THE ABILITY TO THINK IN ABSTRACT TERMS, RECOGNIZE PATTERNS, AND UNDERSTAND THE RELATIONSHIPS BETWEEN QUANTITIES. THIS FORM OF THINKING IS ESSENTIAL FOR SOLVING PROBLEMS THAT REQUIRE LOGICAL REASONING AND CRITICAL ANALYSIS.

DEFINITION OF ALGEBRA

ALGEBRA INVOLVES THE USE OF LETTERS AND SYMBOLS TO REPRESENT NUMBERS AND QUANTITIES IN FORMULAS AND EQUATIONS. IT ALLOWS FOR THE GENERALIZATION OF MATHEMATICAL CONCEPTS, ENABLING THE SOLUTION OF A WIDE RANGE OF PROBLEMS. KEY COMPONENTS OF ALGEBRA INCLUDE:

- **VARIABLES:** SYMBOLS THAT REPRESENT UNKNOWN VALUES.
- **CONSTANTS:** FIXED VALUES THAT DO NOT CHANGE.
- **EXPRESSIONS:** COMBINATIONS OF VARIABLES AND CONSTANTS USING MATHEMATICAL OPERATIONS.
- **EQUATIONS:** STATEMENTS THAT TWO EXPRESSIONS ARE EQUAL.

THE CONCEPT OF ALGEBRAIC THINKING

ALGEBRAIC THINKING INVOLVES RECOGNIZING PATTERNS, MAKING GENERALIZATIONS, AND APPLYING REASONING TO SOLVE MATHEMATICAL PROBLEMS. IT ENCOMPASSES VARIOUS SKILLS, INCLUDING:

- **PATTERN RECOGNITION:** IDENTIFYING REGULARITIES AND TRENDS IN NUMBERS OR SHAPES.
- **GENERALIZATION:** EXTENDING OBSERVATIONS TO BROADER PRINCIPLES.
- **PROBLEM SOLVING:** USING LOGICAL REASONING TO FIND SOLUTIONS TO COMPLEX PROBLEMS.

ALGEBRAIC THINKING IS NOT CONFINED TO TRADITIONAL ALGEBRA; IT ALSO INCLUDES THE ABILITY TO THINK CRITICALLY ABOUT RELATIONSHIPS AMONG QUANTITIES, WHICH IS APPLICABLE IN VARIOUS DOMAINS SUCH AS SCIENCE, ECONOMICS, AND ENGINEERING.

THE IMPORTANCE OF ALGEBRA IN EDUCATION

ALGEBRA IS A CRUCIAL COMPONENT OF THE MATHEMATICS CURRICULUM IN SCHOOLS, SERVING AS A FOUNDATION FOR HIGHER-LEVEL MATH COURSES. ITS SIGNIFICANCE CAN BE OBSERVED IN MULTIPLE DIMENSIONS.

BUILDING CRITICAL THINKING SKILLS

STUDYING ALGEBRA PROMOTES CRITICAL THINKING AND PROBLEM-SOLVING SKILLS. AS STUDENTS LEARN TO MANIPULATE SYMBOLS AND SOLVE EQUATIONS, THEY DEVELOP THE ABILITY TO ANALYZE PROBLEMS SYSTEMATICALLY. THIS SKILL IS TRANSFERRABLE ACROSS DISCIPLINES, ENHANCING STUDENTS' ACADEMIC PERFORMANCE IN SCIENCE AND TECHNOLOGY FIELDS.

PREPARATION FOR ADVANCED STUDIES

ALGEBRA SERVES AS A PREREQUISITE FOR ADVANCED STUDIES IN MATHEMATICS, PHYSICS, ENGINEERING, AND ECONOMICS. A SOLID UNDERSTANDING OF ALGEBRAIC PRINCIPLES EQUIPS STUDENTS WITH THE NECESSARY TOOLS TO TACKLE CALCULUS, STATISTICS, AND OTHER COMPLEX MATHEMATICAL CONCEPTS.

CAREER OPPORTUNITIES

MANY PROFESSIONS REQUIRE A STRONG FOUNDATION IN ALGEBRA, INCLUDING:

- ENGINEERING
- DATA SCIENCE
- FINANCE
- HEALTHCARE

- INFORMATION TECHNOLOGY

THUS, PROFICIENCY IN ALGEBRA CAN SIGNIFICANTLY ENHANCE A STUDENT'S CAREER PROSPECTS IN VARIOUS HIGH-DEMAND FIELDS.

CORE PRINCIPLES OF ALGEBRAIC THINKING

ALGEBRAIC THINKING IS GROUNDED IN SEVERAL KEY PRINCIPLES THAT GUIDE MATHEMATICAL REASONING AND PROBLEM-SOLVING. UNDERSTANDING THESE PRINCIPLES CAN HELP EDUCATORS FOSTER A DEEPER COMPREHENSION OF ALGEBRA AMONG STUDENTS.

UNDERSTANDING RELATIONSHIPS

ONE OF THE FUNDAMENTAL PRINCIPLES OF ALGEBRAIC THINKING IS UNDERSTANDING RELATIONSHIPS BETWEEN QUANTITIES. THIS INVOLVES RECOGNIZING HOW CHANGES IN ONE QUANTITY CAN AFFECT ANOTHER, WHICH IS ESSENTIAL FOR SOLVING EQUATIONS AND INEQUALITIES.

SYMBOLIC REPRESENTATION

STUDENTS MUST LEARN TO USE SYMBOLS EFFECTIVELY TO REPRESENT MATHEMATICAL IDEAS. THIS SYMBOLIC REPRESENTATION IS CRUCIAL FOR FORMULATING AND MANIPULATING EQUATIONS, ALLOWING FOR THE ABSTRACTION OF NUMERICAL RELATIONSHIPS.

LOGICAL REASONING

ALGEBRAIC THINKING REQUIRES LOGICAL REASONING TO DERIVE CONCLUSIONS FROM PREMISES. STUDENTS LEARN TO CONSTRUCT LOGICAL ARGUMENTS AND PROOFS, ENHANCING THEIR ANALYTICAL ABILITIES.

EFFECTIVE STRATEGIES FOR TEACHING ALGEBRA

TO EFFECTIVELY TEACH ALGEBRA AND FOSTER ALGEBRAIC THINKING, EDUCATORS CAN EMPLOY VARIOUS STRATEGIES THAT ENGAGE STUDENTS AND PROMOTE UNDERSTANDING.

USE OF VISUAL AIDS

VISUAL AIDS, SUCH AS GRAPHS AND CHARTS, CAN HELP STUDENTS GRASP ABSTRACT ALGEBRAIC CONCEPTS. BY VISUALIZING EQUATIONS AND INEQUALITIES, STUDENTS CAN BETTER UNDERSTAND THE RELATIONSHIPS THEY REPRESENT.

HANDS-ON ACTIVITIES

INCORPORATING HANDS-ON ACTIVITIES, SUCH AS USING MANIPULATIVES OR INTERACTIVE SOFTWARE, CAN MAKE LEARNING

ALGEBRA MORE ENGAGING. THESE ACTIVITIES ENCOURAGE EXPLORATION AND EXPERIMENTATION, ALLOWING STUDENTS TO DISCOVER ALGEBRAIC PRINCIPLES ACTIVELY.

REAL-WORLD APPLICATIONS

CONNECTING ALGEBRA TO REAL-WORLD SCENARIOS HELPS STUDENTS APPRECIATE ITS RELEVANCE. PROVIDING PRACTICAL EXAMPLES, SUCH AS BUDGETING OR MEASURING AREAS, CAN MOTIVATE STUDENTS TO LEARN AND APPLY ALGEBRAIC CONCEPTS.

APPLICATIONS OF ALGEBRA IN EVERYDAY LIFE

ALGEBRA IS NOT MERELY AN ACADEMIC SUBJECT; IT HAS NUMEROUS APPLICATIONS IN EVERYDAY LIFE. UNDERSTANDING THESE APPLICATIONS CAN ENHANCE APPRECIATION FOR ALGEBRA AND ITS IMPORTANCE.

FINANCIAL MANAGEMENT

ALGEBRAIC THINKING IS ESSENTIAL FOR MANAGING FINANCES, SUCH AS BUDGETING, CALCULATING INTEREST RATES, AND MAKING INVESTMENT DECISIONS. UNDERSTANDING HOW TO SET UP EQUATIONS CAN HELP INDIVIDUALS MAKE INFORMED FINANCIAL CHOICES.

PROBLEM SOLVING IN SCIENCE AND ENGINEERING

IN SCIENTIFIC RESEARCH AND ENGINEERING, ALGEBRA IS USED TO FORMULATE AND SOLVE EQUATIONS THAT DESCRIBE PHYSICAL PHENOMENA. FOR INSTANCE, ENGINEERS USE ALGEBRA TO DESIGN STRUCTURES AND SYSTEMS, ENSURING SAFETY AND EFFICIENCY.

DATA ANALYSIS

DATA ANALYSIS RELIES HEAVILY ON ALGEBRAIC CONCEPTS, PARTICULARLY WHEN INTERPRETING STATISTICAL DATA. UNDERSTANDING HOW TO MANIPULATE VARIABLES ALLOWS PROFESSIONALS TO DRAW MEANINGFUL CONCLUSIONS FROM DATA SETS.

CONCLUSION

ALGEBRA AND ALGEBRAIC THINKING ARE FOUNDATIONAL ELEMENTS OF MATHEMATICS THAT EXTEND BEYOND THE CLASSROOM. THEIR IMPORTANCE IN EDUCATION, CRITICAL THINKING DEVELOPMENT, AND REAL-WORLD APPLICATIONS CANNOT BE OVERSTATED. BY FOSTERING A SOLID UNDERSTANDING OF ALGEBRA, EDUCATORS CAN PREPARE STUDENTS FOR ACADEMIC SUCCESS AND EQUIP THEM WITH ESSENTIAL SKILLS FOR FUTURE ENDEAVORS. THE INTEGRATION OF EFFECTIVE TEACHING STRATEGIES AND THE APPLICATION OF ALGEBRA IN EVERYDAY CONTEXTS WILL ENSURE THAT STUDENTS NOT ONLY LEARN BUT ALSO APPRECIATE THE VALUE OF ALGEBRA IN THEIR LIVES.

Q: WHAT IS THE DIFFERENCE BETWEEN ALGEBRA AND ALGEBRAIC THINKING?

A: ALGEBRA REFERS TO THE BRANCH OF MATHEMATICS THAT USES SYMBOLS TO REPRESENT NUMBERS AND RELATIONSHIPS IN

EQUATIONS AND EXPRESSIONS. ALGEBRAIC THINKING, HOWEVER, IS A BROADER COGNITIVE PROCESS THAT INVOLVES RECOGNIZING PATTERNS, MAKING GENERALIZATIONS, AND UNDERSTANDING THE RELATIONSHIPS BETWEEN QUANTITIES. WHILE ALGEBRA PROVIDES THE TOOLS, ALGEBRAIC THINKING ENABLES PROBLEM-SOLVING AND CRITICAL ANALYSIS.

Q: WHY IS ALGEBRA IMPORTANT FOR STUDENTS?

A: ALGEBRA IS IMPORTANT FOR STUDENTS BECAUSE IT DEVELOPS CRITICAL THINKING AND PROBLEM-SOLVING SKILLS. IT SERVES AS A FOUNDATION FOR HIGHER-LEVEL MATH COURSES, PREPARES STUDENTS FOR VARIOUS CAREER PATHS, AND IS APPLICABLE IN EVERYDAY DECISION-MAKING, SUCH AS FINANCIAL MANAGEMENT AND DATA ANALYSIS.

Q: HOW CAN TEACHERS EFFECTIVELY TEACH ALGEBRA?

A: TEACHERS CAN EFFECTIVELY TEACH ALGEBRA BY USING VISUAL AIDS, INCORPORATING HANDS-ON ACTIVITIES, AND RELATING ALGEBRAIC CONCEPTS TO REAL-WORLD SITUATIONS. ENGAGING STUDENTS THROUGH INTERACTIVE METHODS AND PRACTICAL APPLICATIONS ENHANCES UNDERSTANDING AND RETENTION OF ALGEBRAIC PRINCIPLES.

Q: AT WHAT AGE SHOULD STUDENTS START LEARNING ALGEBRA?

A: STUDENTS TYPICALLY START LEARNING BASIC ALGEBRA CONCEPTS AROUND MIDDLE SCHOOL, BETWEEN AGES 11-14. HOWEVER, FOUNDATIONAL SKILLS CAN BE INTRODUCED EARLIER THROUGH ACTIVITIES THAT PROMOTE ALGEBRAIC THINKING, SUCH AS PATTERN RECOGNITION AND PROBLEM-SOLVING TASKS IN ELEMENTARY SCHOOL.

Q: HOW DOES ALGEBRA APPLY TO REAL LIFE?

A: ALGEBRA APPLIES TO REAL LIFE IN VARIOUS WAYS, INCLUDING FINANCIAL MANAGEMENT (BUDGETING AND INVESTMENTS), SCIENTIFIC RESEARCH (FORMULATING EQUATIONS TO DESCRIBE PHENOMENA), AND DATA ANALYSIS (INTERPRETING STATISTICAL INFORMATION). UNDERSTANDING ALGEBRA HELPS INDIVIDUALS MAKE INFORMED DECISIONS IN THEIR PERSONAL AND PROFESSIONAL LIVES.

Q: WHAT ARE SOME COMMON MISCONCEPTIONS ABOUT ALGEBRA?

A: COMMON MISCONCEPTIONS ABOUT ALGEBRA INCLUDE THE BELIEF THAT IT IS ONLY ABOUT SOLVING EQUATIONS OR THAT IT IS IRRELEVANT TO EVERYDAY LIFE. MANY STUDENTS MAY ALSO THINK THEY ARE INHERENTLY "BAD" AT MATH, WHICH CAN HINDER THEIR WILLINGNESS TO ENGAGE WITH ALGEBRA. ADDRESSING THESE MISCONCEPTIONS THROUGH RELATABLE EXAMPLES CAN ENHANCE UNDERSTANDING.

Q: CAN ALGEBRA BE SELF-TAUGHT?

A: YES, ALGEBRA CAN BE SELF-TAUGHT THROUGH VARIOUS RESOURCES, INCLUDING TEXTBOOKS, ONLINE COURSES, AND INTERACTIVE SOFTWARE. WITH DEDICATION AND PRACTICE, INDIVIDUALS CAN LEARN ALGEBRAIC CONCEPTS INDEPENDENTLY, ALTHOUGH GUIDANCE FROM TEACHERS OR TUTORS CAN ENHANCE THE LEARNING EXPERIENCE.

Q: WHAT ROLE DOES TECHNOLOGY PLAY IN LEARNING ALGEBRA?

A: TECHNOLOGY PLAYS A SIGNIFICANT ROLE IN LEARNING ALGEBRA BY PROVIDING INTERACTIVE TOOLS, SUCH AS GRAPHING CALCULATORS AND EDUCATIONAL SOFTWARE, THAT ENGAGE STUDENTS AND FACILITATE UNDERSTANDING. ONLINE RESOURCES AND PLATFORMS OFFER TUTORIALS, PRACTICE PROBLEMS, AND ASSESSMENTS THAT SUPPORT LEARNERS AT DIFFERENT LEVELS.

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algebra and algebraic thinking: Teaching and Learning Algebraic Thinking with 5- to 12-Year-Olds Carolyn Kieran, 2017-12-04 This book highlights new developments in the teaching and learning of algebraic thinking with 5- to 12-year-olds. Based on empirical findings gathered in several countries on five continents, it provides a wealth of best practices for teaching early algebra. Building on the work of the ICME-13 (International Congress on Mathematical Education) Topic Study Group 10 on Early Algebra, well-known authors such as Luis Radford, John Mason, Maria Blanton, Deborah Schifter, and Max Stephens, as well as younger scholars from Asia, Europe, South Africa, the Americas, Australia and New Zealand, present novel theoretical perspectives and their latest findings. The book is divided into three parts that focus on (i) epistemological/mathematical aspects of algebraic thinking, (ii) learning, and (iii) teaching and teacher development. Some of the main threads running through the book are the various ways in which structures can express themselves in children's developing algebraic thinking, the roles of generalization and natural language, and the emergence of symbolism. Presenting vital new data from international contexts, the book provides additional support for the position that essential ways of thinking algebraically need to be intentionally fostered in instruction from the earliest grades.

algebra and algebraic thinking: Applying Algebraic Thinking to Data Phil DeMarois, Mercedes A. McGowen, Darlene Whitkanack, 2005-12-30

algebra and algebraic thinking: Lessons for Algebraic Thinking Ann Lawrence, Charlie Hennessy, 2002 These lessons show how to maximize instruction that prepares students for formal algebra. Through a series of investigations, students build their proficiency with key algebraic concepts. Connections between arithmetic and algebra are made through the use of drawings, tables, graphs, words, and symbols. Lessons include a technology component with suggestions for teaching with graphing calculators.

algebra and algebraic thinking: Leveled Texts for Mathematics Lori Barker, 2011-06-01 Support math comprehension with leveled texts sure to improve students' reading and mathematical success. This product offers 15 sets of informational text written at four different reading levels with matching visuals and text structures.

algebra and algebraic thinking: Developing Thinking in Algebra John Mason, 2005-04-23 By integrating pedagogy and subject knowledge through experiencing a variety of tasks for learners, this book makes it possible for all learners to succeed in thinking algebraically.

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algebra and algebraic thinking: *Fostering Algebraic Thinking* Mark J. Driscoll, 1999
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algebra and algebraic thinking: *Lessons for Algebraic Thinking* Leyani Von Rotz, Marilyn Burns, 2002 The lessons in this book introduce basic algebraic concepts to students in the primary grades. Manipulative materials, problem-solving investigations, games, and real-world and imaginary contexts support arithmetic learning while introducing ideas basic to algebra, including patterns, equivalence, and graphing.

algebra and algebraic thinking: *How Students Think When Doing Algebra* Steve Rhine, Rachel Harrington, Colin Starr, 2018-11-01 Algebra is the gateway to college and careers, yet it functions as the eye of the needle because of low pass rates for the middle school/high school course and students' struggles to understand. We have forty years of research that discusses the ways students think and their cognitive challenges as they engage with algebra. This book is a response to the National Council of Teachers of Mathematics' (NCTM) call to better link research and practice by capturing what we have learned about students' algebraic thinking in a way that is usable by teachers as they prepare lessons or reflect on their experiences in the classroom. Through a Fund for the Improvement of Post-Secondary Education (FIPSE) grant, 17 teachers and mathematics educators read through the past 40 years of research on students' algebraic thinking to capture what might be useful information for teachers to know—over 1000 articles altogether. The resulting five domains addressed in the book (Variables & Expressions, Algebraic Relations, Analysis of Change, Patterns & Functions, and Modeling & Word Problems) are closely tied to CCSS topics. Over time, veteran math teachers develop extensive knowledge of how students engage with algebraic concepts—their misconceptions, ways of thinking, and when and how they are challenged to understand—and use that knowledge to anticipate students' struggles with particular lessons and plan accordingly. Veteran teachers learn to evaluate whether an incorrect response is a simple error or the symptom of a faulty or naïve understanding of a concept. Novice teachers, on the other hand, lack the experience to anticipate important moments in the learning of their students. They often struggle to make sense of what students say in the classroom and determine whether the response is useful or can further discussion (Leatham, Stockero, Peterson, & Van Zoest 2011; Peterson & Leatham, 2009). The purpose of this book is to accelerate early career teachers' "experience" with how students think when doing algebra in middle or high school as well as to supplement veteran teachers' knowledge of content and students. The research that this book is based upon can provide teachers with insight into the nature of a student's struggles with particular algebraic ideas—to help teachers identify patterns that imply underlying thinking. Our book, *How Students Think When Doing Algebra*, is not intended to be a "how to" book for teachers. Instead, it is intended to orient new teachers to the ways students think and be a book that teachers at all points in their career continually pull of the shelf when they wonder, "how might my students struggle with this algebraic concept I am about to teach?" The primary audience for this book is early career mathematics teachers who don't have extensive experience working with students engaged in mathematics. However, the book can also be useful to veteran teachers to supplement their knowledge and is an ideal resource for mathematics educators who are preparing preservice teachers.

algebra and algebraic thinking: *Algebra in the Early Grades* James J. Kaput, David W. Carraher, Maria L. Blanton, 2017-09-25 This volume is the first to offer a comprehensive, research-based, multi-faceted look at issues in early algebra. In recent years, the National Council for Teachers of Mathematics has recommended that algebra become a strand flowing throughout the K-12 curriculum, and the 2003 RAND Mathematics Study Panel has recommended that algebra be “the initial topical choice for focused and coordinated research and development [in K-12 mathematics].” This book provides a rationale for a stronger and more sustained approach to algebra in school, as well as concrete examples of how algebraic reasoning may be developed in the early grades. It is organized around three themes: The Nature of Early Algebra Students’ Capacity for Algebraic Thinking Issues of Implementation: Taking Early Algebra to the Classrooms. The contributors to this landmark volume have been at the forefront of an effort to integrate algebra into the existing early grades mathematics curriculum. They include scholars who have been developing the conceptual foundations for such changes as well as researchers and developers who have led empirical investigations in school settings. *Algebra in the Early Grades* aims to bridge the worlds of research, practice, design, and theory for educators, researchers, students, policy makers, and curriculum developers in mathematics education.

algebra and algebraic thinking: *Lessons for Algebraic Thinking* Maryann Wickett, Katharine Kharas, Marilyn Burns, 2002 Lessons for K-8 teachers on making algebra an integral part of their mathematics instruction.

algebra and algebraic thinking: EMPower Math, Seeking Patterns, Building Rules: Algebraic Thinking, Student Edition Contemporary, 2011-06-06 Students use a variety of representational tools— diagrams, words, tables, graphs, and equations— to understand linear patterns and functions. They connect the rate of change with the slope of a line and compare linear with non-linear relationships. They gain facility with and comprehension of basic algebraic notations.

algebra and algebraic thinking: *Algebraic Thinking, Grades K-12* Barbara Moses, 1999

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algebra and algebraic thinking: Pak De Marios, Phil DeMarois, Mercedes A. McGowen, Darlene Whitkanack, 2010-01-05

algebra and algebraic thinking: Seeking Patterns, Building Rules , 2011

algebra and algebraic thinking: Applying Algebraic Thinking to Data Addison-Wesley Educational Publishers, Incorporated, Phil DeMarois, Mercedes A. McGowen, Darlene Whitkanack, 1997-01-01

algebra and algebraic thinking: Mathematical Investigations Phil DeMarois, 1996

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