Algebra Resource Kit

Mid-Valley
STEM-CTE HUB

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Algebra Resource Kit

The Algebra Resource Kit is designed to help students develop a deep understanding of algebraic concepts using engaging, hands-on tools. The kit includes manipulatives, visual aids, and problem-solving tools that cover essential algebra topics such as solving equations, working with expressions, simplifying terms, and understanding functions. Ideal for students in grades 6–9, this kit fosters interactive learning, critical thinking, and problem-solving in algebra.

Grade Level

5th - 8th

Group Size

1 - 4

Time Duration

20 - 40 minutes

Content of Kits

Components

- Algebra Lab Gear student set (2 sets of 2)
- Algebra Lab Gear Resource Book: Basic Algebra
- Foam Algebra Tiles, 12 sets
- Working with Algebra Tiles, 2nd edition
- Magnetic Algebra Tiles
- Algebraic Expressions & Equations Dominoes
- Linear Graphs Algebra Card Game

Consumables

- Graph paper

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Usage

Getting Started

1. **Unbox and Inspect Components -** Begin by unpacking the Didax Algebra Resource Kit and verifying that all components are present and undamaged. This includes the algebra tiles, equation balancer, fraction tiles, and instructional guide.

2. **Organize the Algebra Tiles -** Sort the algebra tiles by type and color to make them easily accessible to students. These tiles will help students visualize algebraic expressions, equations, and operations.

3. **Set Up the Equation Balancer -** Set up the equation balancer to help students practice solving linear equations. Explain how the balancer uses physical movement to represent equation-solving in a visual, interactive way.

4. **Introduce the Fraction Tiles -** Hand out the fraction tiles and explain how they represent fractional values, helping students visualize fraction addition, subtraction, and equivalence. Use the instructional guide for step-by-step instructions and examples.

Storage

- Return items to their provided pouches and store pouches in provided storage container when the kit is not in use.

Troubleshooting

- **Algebra Tiles Not Connecting Properly -** Ensure that the algebra tiles are aligned correctly when building expressions. If pieces do not click together, check for any debris or damaged tiles.
- **Equation Balancer Not Functioning Correctly - I**f the equation balancer is not properly showing the balance between both sides, make sure that all pieces are correctly placed. Students may need a refresher on how to use the balance correctly.
- **Fraction Tiles Not Stacking Correctly -** Ensure that students are using the tiles in the correct order, with larger fractions placed beneath smaller ones. This will help with visualizing equivalent fractions and operations.

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Activity Guide

Beginner

Visualizing Expressions
Students will use the algebra tiles to represent simple algebraic expressions like X + 3 or 2X – 4. They will arrange the tiles to match the given expression, helping them understand the structure of algebraic terms. This will introduce them to how variables and constants are represented and manipulated in algebra.

Intermediate

Solving Simple Equations
Using the equation balancer, students will practice solving simple linear equations such as X + 5 = 10 or 3X – 2 = 7. They will move the pieces of the balancer to represent the equation's sides and work through the steps to isolate the variable. This hands-on method helps students see the logic behind solving equations in an intuitive way.

Advanced

Fraction Operations
Students will use the fraction tiles to explore operations with fractions. They will practice adding, subtracting, and simplifying fractions by physically combining or separating the tiles. This activity helps students visualize how fractions relate to one another, reinforcing their understanding of fraction operations and equivalence.

Extension Activities:

Creating and Solving Word Problems
Students will create word problems that involve algebraic equations and fractions. For example, they might write a problem about finding the total cost of several items with a discount. Then, they will represent the problem using the algebra tiles or fraction tiles and solve it. This activity encourages real-world application of algebraic concepts and problem-solving skills.

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Learning Extensions

STEAM Connections: Math

Learning Objectives:

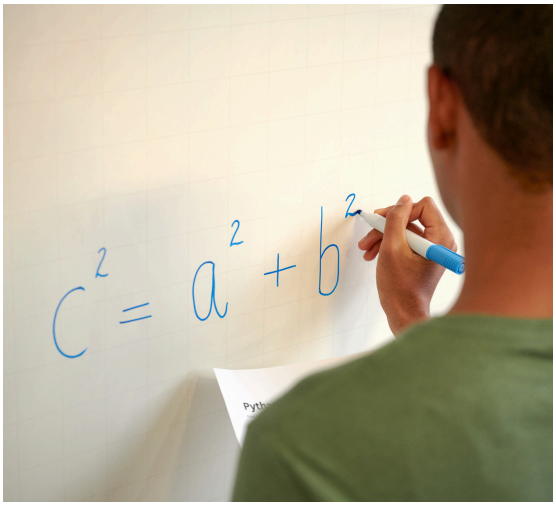
- Understand how to use algebra tiles and equation balancers to represent and solve algebraic expressions and equations.
- Develop fluency in solving equations involving variables.
- Gain a concrete understanding of fractions and their operations using fraction tiles.
- Reinforce problem-solving skills through visual aids and interactive activities.
- Build confidence in working with algebraic concepts in a hands-on way.

Career Connections:

- **Mathematician -** Uses algebraic concepts to solve complex problems in various scientific fields.
- **Engineer -** Applies algebra to design systems, models, and solutions in engineering projects.
- **Economist -** Uses algebra to model economic relationships and predict trends.
- **Data Analyst -** Analyzes data and uses algebraic equations to interpret and draw conclusions.

Essential Employability Skills:

- Critical Thinking
- Collaboration
- Communication
- Attention to Detail
- Adaptability



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Resources and Accessibility

Safety Guidelines

- Store all materials properly after use to keep them in good condition for future activities.

Accessibility

- Use tactile labels for the algebra tiles and fraction tiles to help students identify the components.
- Provide extended time for students with motor challenges to handle the small pieces and set up equations.
- Offer step-by-step guidance and visual aids to support understanding of algebraic concepts.

Library Catalog

Library Resources

Feedback

QR to feedback survey