



Anne Patterson

# Empower Your Students to Cross the Bridge from Arithmetic to Algebra

*Discover exciting and proven hands-on strategies that will motivate your students to think mathematically . . . and have fun as they learn!*

*A 2-day workshop for mathematics teachers of grades 4 through 8 and mathematics specialists who want to provide a solid foundation and a smooth transition from arithmetic to algebraic thinking*

**It is possible to teach the required curriculum with an activity-based approach!**

Often, students superficially learn mathematics through the rote memorization of processes, gaining little insight into the underlying concepts. As students then progress from arithmetic computation into the abstractions of algebra and geometry, they often “hit the wall” of understanding and experience unnecessary difficulty in their later study of mathematics.

You can add spice to your teaching and end the day feeling invigorated and fulfilled, rather than defeated and discouraged. Engage your students in meaningful activities by incorporating common household objects, inexpensive manipulatives, and accessible technology. Learn organizational techniques and strategies for effectively using manipulatives with older students.

You will leave this workshop with well-planned, ready-to-use lessons covering a variety of topics that include number sense and real number operations while enhancing algebraic and geometric thinking. Each activity can be integrated into your prescribed curriculum and will address the needs of students from a wide range of ability and experience levels.

Learn strategies to empower your students to construct conceptual meaning, make powerful connections, and transfer learning to new and abstract concepts...and have fun doing it!

## In This Workshop You Will Discover:

### How to promote algebraic and geometric reasoning using physical models to:

- Estimate, measure, substitute, and evaluate expressions.
- Graph equations and inequalities.
- Verify properties of positive and negative exponents.
- Explore the Pythagorean Theorem.
- Connect mathematics and science through a graphics calculator demonstration.
- Justify properties of circles.

### How to plan fun, challenging, and manageable problem-solving activities by:

- Forming a construction company and competing for bids while applying area, perimeter, volume, and percent concepts
- Opening mystery envelopes to explore patterns and number theory
- Competing in games which reinforce real number operations and elements of geometry

### How to enliven the required curriculum using manipulative-based instruction to:

- Explore real-life ratios.
- Derive formulae for area, perimeter, volume, and surface area.
- Make fractions real.
- Integrate fractions, decimals, percents, and probability.
- Define and reinforce integer operations.
- Practice correct order of operations and absolute value.
- Combine like terms.
- Explore polynomial operations.
- Simplify algebraic expressions.
- Solve systems of equations.
- Discover triangle relationships.

### Inexpensive, effective hands-on materials:

- beans
- coins
- color chips and tiles
- thermometers
- cubes
- string
- potato chip cans
- toothpicks
- algebra tiles
- number tiles

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**Mathematics  
Grades 4-8  
2 Days**