

# I N S I D E ALGEBRA

Multisensory plus differentiation equals success.

FLORIDA 2018-2019

**MATH  
ADOPTION**



VOYAGER SOPRIS  
LEARNING®



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## The Differentiated Approach: What is *Inside Algebra*?

Many students struggle with math. They begin the school year without the necessary prerequisite skills to succeed, and, year after year, the achievement gap grows.

**Your struggling algebra students deserve more.**

*Inside Algebra* is **more than the average core**. *Inside Algebra* is an intensive core program specifically designed for struggling students and their teachers. With its multisensory, differentiated approach, *Inside Algebra* delivers **rigorous, standards-based instruction** while simultaneously **reinforcing conceptual development** students need to build strong algebraic skills.

No matter how your math students have performed in the past, *Inside Algebra* will **engage and motivate your students to master algebra instruction and pass the Algebra EOC**.

## Standards-Based Instruction

To meet the needs of struggling students, *Inside Algebra* scaffolds standards instruction to teach **both the prerequisite skills and the grade-level standards** that fully align to the critical areas of Algebra 1A and 1B instruction:

- ✓ Relationships Between Quantities and Reasoning with Equations
- ✓ Linear and Exponential Equations
- ✓ Expressions and Equations
- ✓ Quadratic Functions and Modeling
- ✓ Descriptive Statistics

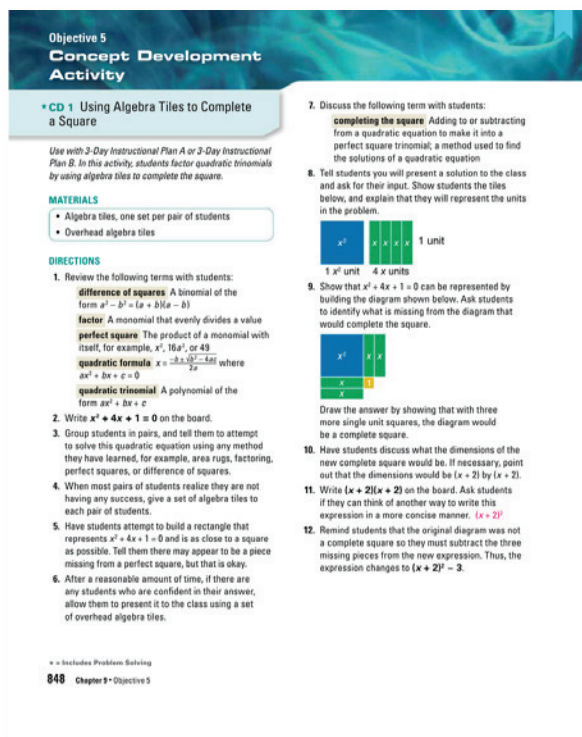
## Everything Teachers and Students Need to Succeed

### STUDENT MATERIALS:

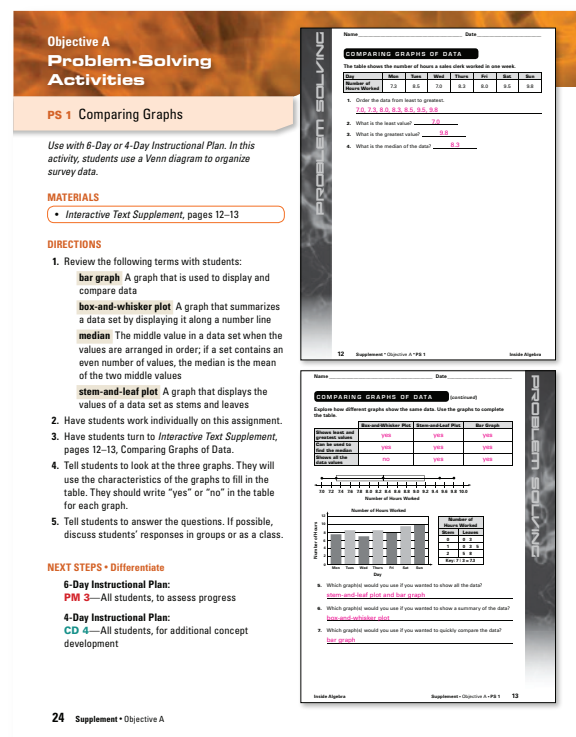
- ▶ Student Interactive Text
- ▶ Assessment Book
- ▶ Student Placement Test
- ▶ Access to Selected ExploreLearning®Gizmos

### TEACHER MATERIALS:

- ▶ Teacher Guides (Two-volume set)
- ▶ Teacher Placement Guide
- ▶ VPORT® Online Data Management System
- ▶ Online Resources
- ▶ Algebra Skill Builders Blackline Masters
- ▶ Hands-on Manipulatives Class Set



Quadratic Functions and Modeling



Descriptive Statistics

## A Balanced, Objectives-Based Instructional Design

*Inside Algebra* includes 60 objectives and 500 activities organized in a logical scope and sequence to mastery. The objectives-based approach is a critical component of *Inside Algebra's* effectiveness.

FOR STRUGGLING STUDENTS, it **deconstructs complex algebra skills and standards** into smaller, more accessible activities.

For teachers, it provides the **explicit, scaffolded instruction** struggling students need with the flexibility to differentiate instruction when they need it.

To promote engagement, *Inside Algebra* provides a variety of instructional models from whole group to small group to individual activities.

Each objective's activities are built around a four-step lesson design.

**CONCEPT DEVELOPMENT ACTIVITIES** use pictorial representations, hands-on manipulatives, and digital simulations to connect abstract algebra concepts with real-world models.

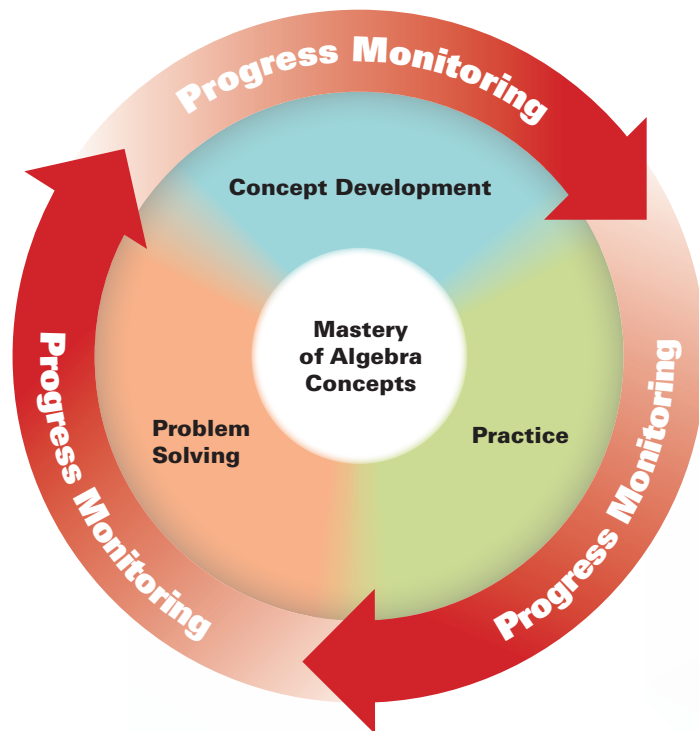
**PRACTICE ACTIVITIES** provide more time on task and increased opportunities to master objectives through games, challenges, and small-group collaboration.

**PROBLEM-SOLVING ACTIVITIES** provide explicit, step-by-step guidance about how to solve multistep problems, justify reasoning skills, and communicate understanding in a teacher-led setting.

**PROGRESS-MONITORING ACTIVITIES** increase computational fluency, provide informal assessment opportunities, and support data-driven differentiation.

### CHAPTER 4 — Graphing Relations and Functions

- Objective 1:** Graph ordered pairs and relations.
- Objective 2:** Identify the domain, range, and the inverse of a relation.
- Objective 3:** Determine the range for a given domain of a relation.
- Objective 4:** Graph linear equations.
- Objective 5:** Determine whether a relation is a function, and find a value for a given function.



## Differentiation, Differentiation, Differentiation

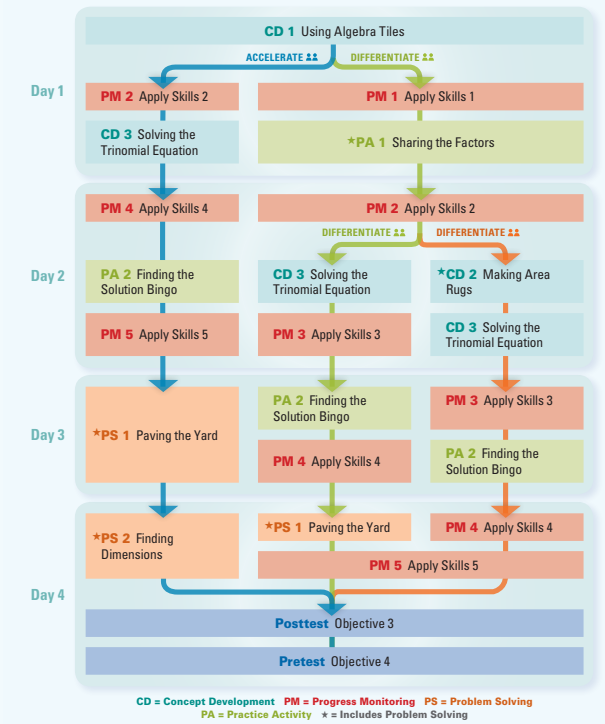
Every student has unique instructional needs on the path to proficiency. For that reason, *Inside Algebra* is designed around the most critical instructional component for struggling students—**differentiation**.

From the objective pretests, **teachers can choose between two distinct instructional plans to complete the objective**—a streamlined path to move through activities at a faster pace and an intensive path to provide more instruction for students in need. Additional differentiation is embedded in each instructional plan to meet students' ongoing needs.

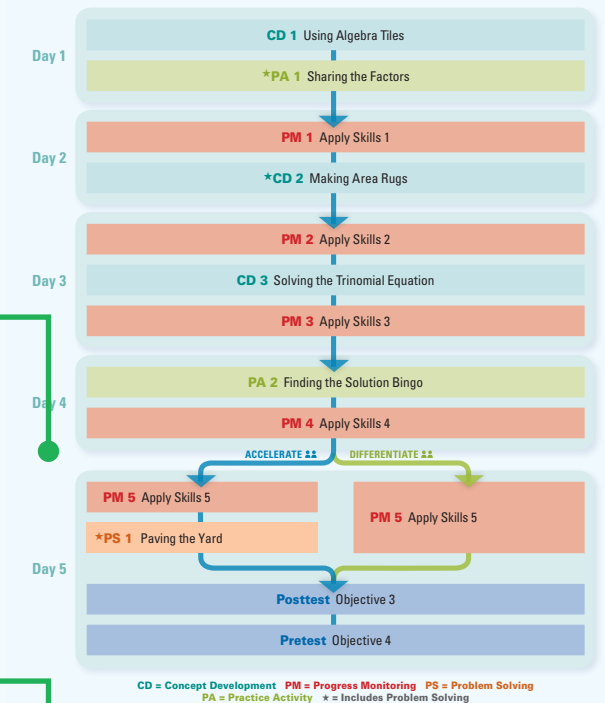
**1** After each Objective Pretest teachers use data to **SELECT AN APPROPRIATE INSTRUCTIONAL PLAN** for the class.

**2** Throughout each instructional plan teachers use informal assessment data to **IDENTIFY GROUPS FOR ACCELERATION OR DIFFERENTIATION**, providing a second layer of differentiation to support a range of learners.

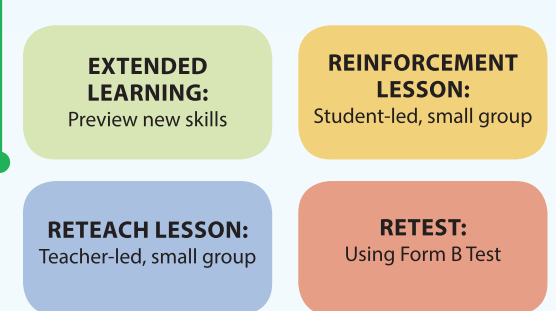
**3** Based on the results of the Objective Posttest, teachers **GROUP STUDENTS BASED ON THEIR DIFFERENTIATED NEEDS**.



INSTRUCTIONAL PLAN 1



INSTRUCTIONAL PLAN 2



FURTHER INSTRUCTION

# Instructional Walkthrough: Chapter 9 Using Factoring, Objective 3

Logical, consistent lesson design keeps students moving toward conceptual understanding and mastery.

**CONCEPT DEVELOPMENT ACTIVITIES** use manipulatives to develop algebraic thinking and provide concrete representations of abstract concepts.

**CONSISTENT LESSON FORMAT** provides explicit direction for teachers to present instruction to support student mastery.

**PRACTICE ACTIVITIES** use games and small group interaction to strengthen conceptual understanding.

Important **VOCABULARY** is highlighted and reviewed at point of use to promote math language development.

**DIRECTIONS**

- Review the following terms with students:
  - factor** A monomial that evenly divides a value
  - quadratic trinomial** A polynomial of the form  $ax^2 + bx + c$

### Objective 3 Concept Development Activities

#### CD 1 Using Algebra Tiles

Use with 5-Day or 4-Day Instructional Plan. In this activity, students factor quadratic trinomials using algebra tiles.

**MATERIALS**

- Algebra tiles, one set for every two students
- Variation: Gizmos** Modeling the Factorization of  $x^2 + bx + c$

**DIRECTIONS**

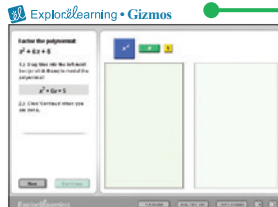
- Review the following term with students:
  - factor** A monomial that evenly divides a value
- Review how to find the product of two binomials using algebra tiles; for example, write  $(x + 1)(x + 2)$  on the board and use the following rectangle to discuss:
 

$$\begin{array}{c} x+2 \\ + \\ x+1 \\ \hline \end{array}$$

Be sure students see that  $(x + 1)(x + 2) = x^2 + 3x + 2$ .
- Discuss the following term with students:
  - quadratic trinomial** A polynomial of the form  $ax^2 + bx + c$
- Next, show students that to find factors of a trinomial, they should make a rectangle out of the given trinomial. In other words, work backward from what is shown in Step 2. Write  $x^2 + 4x + 3$  on the board, and use algebra tiles to factor the trinomial. Show students how to determine the dimensions of the overall rectangle.  $(x + 1)(x + 3)$ 

$$\begin{array}{c} x+3 \\ + \\ x+1 \\ \hline \end{array}$$

**Variation: Gizmos** For this activity, use the tiles in the Gizmo Modeling the Factorization of  $x^2 + bx + c$  to model the factoring of these quadratic expressions.



Modeling the Factorization of  $x^2 + bx + c$

5. Write several polynomials on the board, and have students use algebra tiles to find the factors. Call on students to give you the factors they found and write them under the appropriate polynomials.

**Sample problems:**

- $x^2 + 5x + 6$   $(x + 2)(x + 3)$
- $x^2 + 4x + 4$   $(x + 2)^2$
- $x^2 + x - 6$   $(x - 2)(x + 3)$
- $x^2 + 6x + 5$   $(x + 1)(x + 5)$

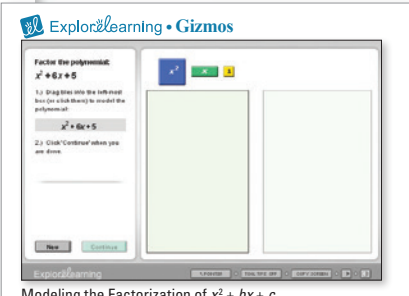
6. Demonstrate how to factor  $x^2 + 5x + 6$ .  $(x + 2)(x + 3)$

Discuss the relationship between the numbers (5 and 6) and the factors (2 and 3). Make sure students recognize that  $2 + 3 = 5$  and  $2 \cdot 3 = 6$ . Use the model to show why the relationship exists. Repeat this process for all polynomials on the board.

7. Ask students to find the factors of  $x^2 + 7x + 10$  and  $x^2 + x - 12$ . Allow students to use the algebra tiles if they need the model to find the factors.  $x^2 + 7x + 10 = (x + 2)(x + 5)$ ,  $x^2 + x - 12 = (x - 3)(x + 4)$

**Note:** If students need more practice multiplying binomials, refer to Chapter 8, Objective 5.

**EXPLORE LEARNING GIZMOS** provide alternate presentations of concepts using interactive simulations and virtual manipulatives.



Modeling the Factorization of  $x^2 + bx + c$

**NEXT STEPS • Differentiate**

**5-Day Instructional Plan:** **PM 4**, page 817—All students, to assess progress

**4-Day Instructional Plan:** **PM 5**, page 818—Students who are on the accelerated path, to assess progress

**PM 4**, page 817—Students who are on the differentiated path, to assess progress

**NEXT STEPS** provide guidance based on student performance along the instructional path.

### Objective 3 Practice Activities

#### PA 2 Finding the Solution Bingo

Use with 5-Day or 4-Day Instructional Plan. In this activity, students factor quadratic trinomials.

**MATERIALS**

- Blackline Master 38
- Game markers to cover squares

**DIRECTIONS**

- Review the following terms with students:
  - factor** A monomial that evenly divides a value
  - quadratic trinomial** A polynomial of the form  $ax^2 + bx + c$
- Distribute one copy of Blackline Master 38, 4 x 4 Bingo Card, to each student. Have each student put the numbers -3, -2, -1, 0, 1, 2, 3 at random in the squares of the bingo card. Point out that they will have to repeat some numbers to fill the 16 squares.
- Write an equation on the board, selected at random from the list below. Tell students to solve the equation and cover the squares that have the solution(s) with their markers. Have students write the equations and solutions on a piece of paper to hand in at the end of the activity.
- Continue with other equations. The first student to get four markers in a row should call out, "Bingo!" If the student's answers are correct, that student is the winner.
- Alternatively, continue play until a student covers all the squares on his or her card.

**NEXT STEPS • Differentiate**

**5-Day Instructional Plan:** **PM 4**, page 817—All students, to assess progress

**4-Day Instructional Plan:** **PM 5**, page 818—Students who are on the accelerated path, to assess progress

**PM 4**, page 817—Students who are on the differentiated path, to assess progress

Equations to Use	Solutions	Equations to Use	Solutions
1. $x^2 + 3x + 2 = 0$	-2, -1	14. $x^2 - 2x - 3 = 0$	-1, 3
2. $x^2 - 4x + 3 = 0$	3, 1	15. $x^2 - x - 2 = 0$	2, -1
3. $x^2 - 4x + 4 = 0$	2	16. $x^2 - 5x + 6 = 0$	3, 2
4. $x^2 + x - 6 = 0$	-3, 2	17. $x^2 + 2x - 3 = 0$	-3, 1
5. $x^2 + x - 2 = 0$	-2, 1	18. $x^2 + 4x + 3 = 0$	-3, -1
6. $x^2 + 2x + 1 = 0$	-1	19. $x^2 + 5x + 6 = 0$	-3, -2
7. $x^2 + 8x + 9 = 0$	-3	20. $x^2 + 2x = 0$	-2, 0
8. $x^2 - x - 6 = 0$	-3, -2	21. $x^2 - 4 = 0$	-2, 2
9. $x^2 - 2x = 0$	0, 2	22. $x^2 + 3x = 0$	0, -3
10. $x^2 + 4x + 4 = 0$	-2	23. $x^2 - 2x + 1 = 0$	1
11. $x^2 + x = 0$	0, -1	24. $x^2 - 3x + 2 = 0$	1, 2

**PROGRESS-MONITORING ACTIVITIES** determine differentiation through alternate activities as they build fluency with basic algebra skills.

Informal assessment strategies such as **ASK FOR**, **WATCH FOR**, and **LISTEN FOR** provide further insight into student progress.

**Watch for:**

- Do students factor the trinomials using algebra tiles to complete the rectangle?
- Do any students try an algebraic method?

### Objective 3 Progress-Monitoring Activities

#### PM 1 Apply Skills 1

Use with 5-Day or 4-Day Instructional Plan.

**MATERIALS**

- Interactive Text, page 346

**DIRECTIONS**

- Have students turn to *Interactive Text*, page 346, Apply Skills 1.
- Remind students of the key terms: *quadratic trinomial* and *factor*.
- Monitor student work, and provide feedback as necessary.

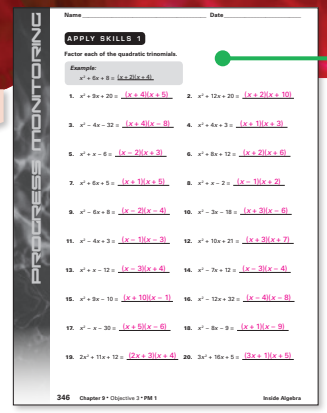
**Watch for:**

- Do students factor the trinomials using algebra tiles to complete the rectangle?
- Do any students try an algebraic method?

**NEXT STEPS • Differentiate**

**5-Day Instructional Plan:** **CD 2**, page 810—All students, for additional concept development and problem solving

**4-Day Instructional Plan:** **PA 1**, page 812—All students, for additional practice and problem solving



### Modified wraparound Teachers Guide includes ANSWER KEYS.

**APPLY SKILLS 1**

Factor each of the quadratic trinomials.

**Example:**  $x^2 + 6x + 8 = (x + 2)(x + 4)$

- $x^2 + 9x + 20 = (x + 4)(x + 5)$
- $x^2 + 12x + 20 = (x + 2)(x + 10)$
- $x^2 - 4x - 32 = (x + 4)(x - 8)$
- $x^2 + 4x + 3 = (x + 1)(x + 3)$
- $x^2 + x - 6 = (x - 2)(x + 3)$
- $x^2 + 8x + 12 = (x + 2)(x + 6)$
- $x^2 + 6x + 5 = (x + 1)(x + 5)$
- $x^2 + x - 2 = (x - 1)(x + 2)$
- $x^2 - 6x + 8 = (x - 2)(x - 4)$
- $x^2 - 3x - 18 = (x + 3)(x - 6)$
- $x^2 - 4x + 3 = (x - 1)(x - 3)$
- $x^2 + 10x + 21 = (x + 3)(x + 7)$
- $x^2 + x - 12 = (x - 3)(x + 4)$
- $x^2 - 7x + 12 = (x - 3)(x - 4)$
- $x^2 + 9x - 10 = (x + 10)(x - 1)$
- $x^2 - 12x + 32 = (x - 4)(x - 8)$
- $x^2 - x - 30 = (x + 5)(x - 6)$
- $x^2 - 8x - 9 = (x + 1)(x - 9)$
- $2x^2 + 11x + 12 = (2x + 3)(x + 4)$
- $3x^2 + 16x + 5 = (3x + 1)(x + 5)$

**PROBLEM-SOLVING ACTIVITIES** reinforce problem-solving strategies and reflective thinking as students synthesize cumulative skills.

### Objective 3 Problem-Solving Activities

#### \*PS 2 Finding Dimensions

Use with 4-Day Instructional Plan. In this activity, students apply what they know about quadratic equations to solve word problems.

**DIRECTIONS**

- Discuss the following term with students:
  - quadratic formula**  $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$  where  $ax^2 + bx + c = 0$
- Read the following scenario to students:
 

A small calf needs to be kept away from the herd of cattle because of an infection. The rancher has fences made of tubing that can be put up quickly. The calf will need 280 square feet of grazing land. The tube frame will be six feet longer than it is wide. Find the dimensions of the fence.

280 square feet
- Guide students as they write an equation based on the information they know. Remind students to solve the equation to find the actual dimensions of the area.
 
$$x(x + 6) = 280 \text{ sq. ft.}$$

$$x^2 + 6x - 280 = 0$$

$$(x - 14)(x + 20) = 0$$

$$x = 14, -20; \text{ dimensions cannot be negative so the fence is 14 ft. by 20 ft.}$$
- Tell students to find the dimensions if the calf only needs 160 square feet of grazing land.
 
$$x(x + 6) = 160 \text{ sq. ft.}$$

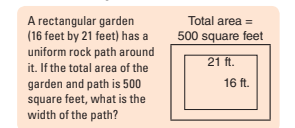
$$x^2 + 6x - 160 = 0$$

$$(x - 10)(x + 16) = 0$$

$$x = 10, -16; \text{ dimensions cannot be negative so the fence is 10 ft. by 16 ft.}$$

**NEXT STEPS • Differentiate**

**4-Day Instructional Plan:** **Objective 3 Posttest**, page 821—All students



**EXAMPLES** of student solutions showcase one possible strategy that students may use to solve the problem.

6. Guide students as they write an equation based on the information they know. Remind students to solve the equation to find the actual dimensions of the area.

$l \cdot w = 500 \text{ sq. ft.}$

$(21 + x + x)(16 + x + x) = 500$

$(21 + 2x)(16 + 2x) = 500$

$4x^2 + 74x + 336 = 500$

$4x^2 + 74x - 164 = 0$

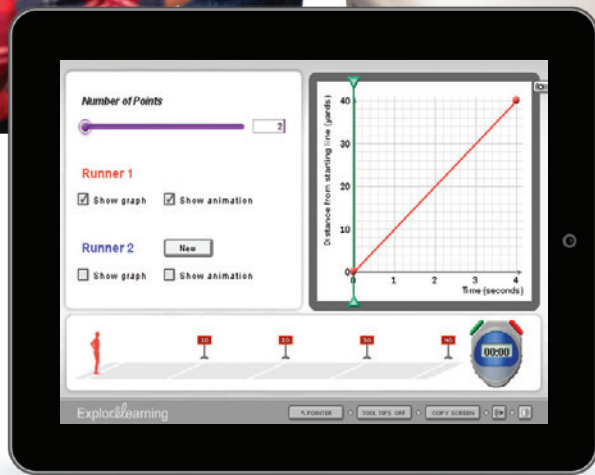
$2x^2 + 37x - 82 = 0$

$(2x + 41)(x - 2) = 0$

$x = -\frac{41}{2}$  or 2; measurement must be positive so the width of the path is 2 ft.

## Enhance and Enrich Conceptual Development

Gizmos® are interactive simulations students can manipulate to visualize and learn important concepts. As a web-based technology, students have access to ExploreLearning® Gizmos wherever and whenever they have Internet access.

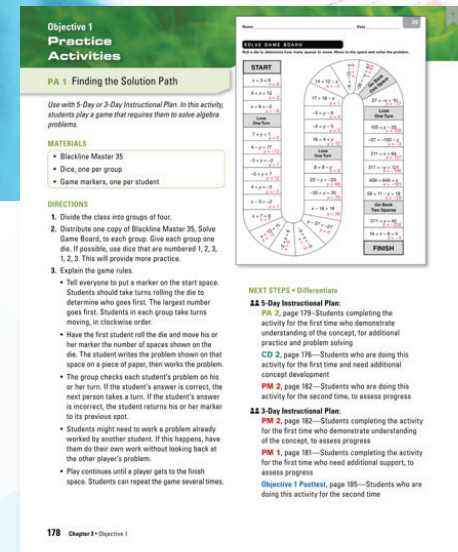
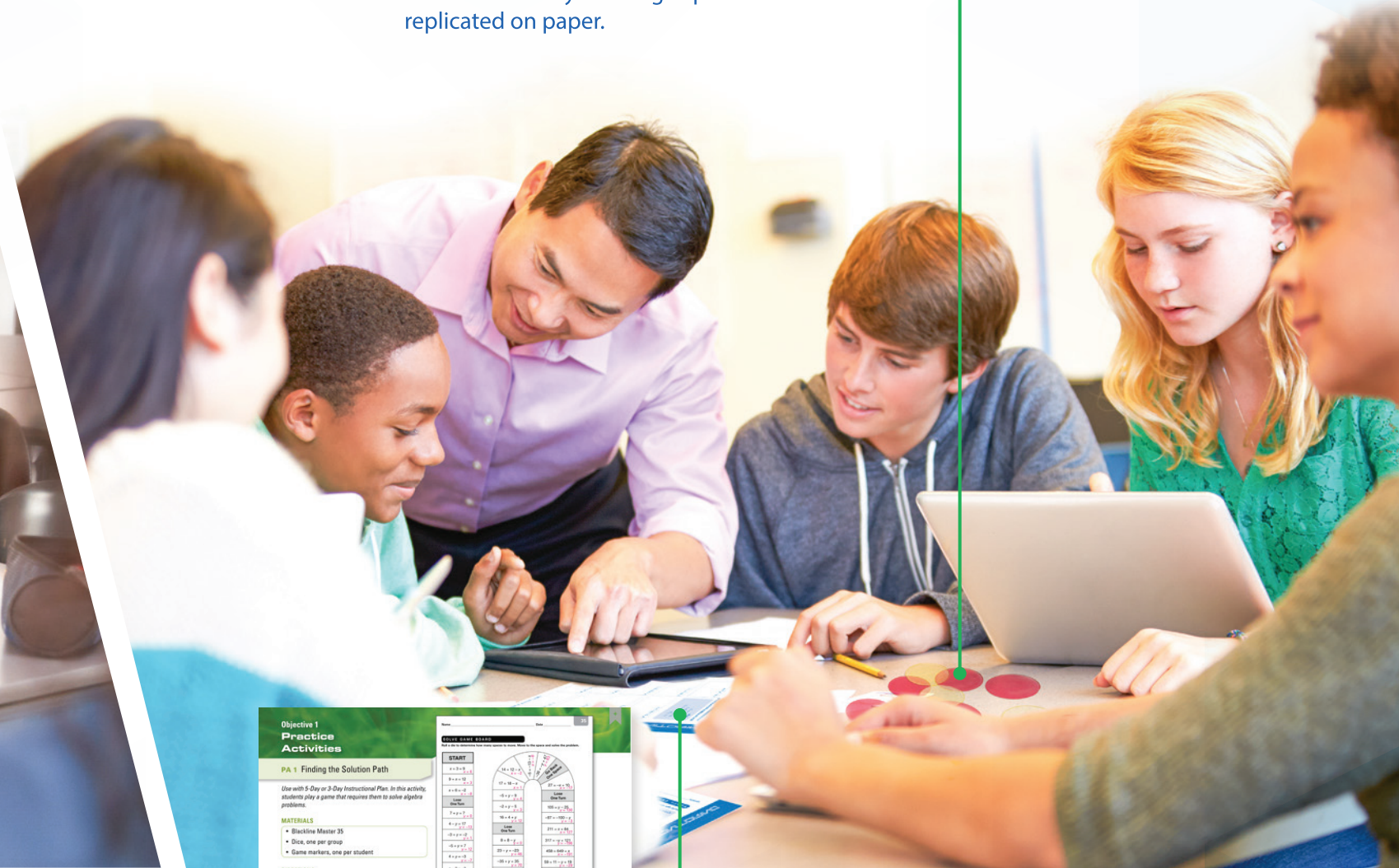


### Gizmos

Gizmos engage and empower students to test and extend their conceptual understanding of complex algebra skills. As students work independently on fun activities, they self-discover connections between algebra and the real world.

## Kinesthetic and Multisensory Learning

Students respond well to kinesthetic and multisensory learning. Each *Inside Algebra* kit comes with a class set of hands-on manipulatives that are used in whole-group, small-group, and independent activities. The manipulatives-based lessons engage students in a multisensory learning experience that can't be replicated on paper.



### Interactive Games and Competition

Many *Inside Algebra* activities employ small-group games to practice and reinforce instruction. These gaming activities fuel students' competitive spirits and encourage them to engage, participate, and collaborate with others in a fun learning environment.

## Purposeful Assessments Drive Instruction

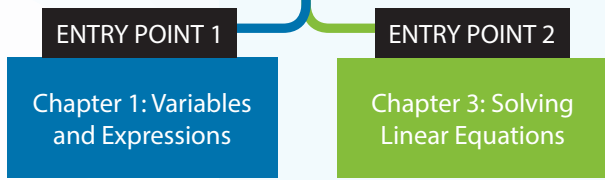
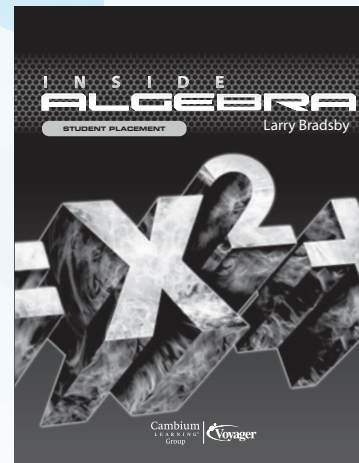
*Inside Algebra's* comprehensive assessment system allows teachers to accurately measure student progress and proficiency at every stage of instruction.

### Placement Test

Before instruction begins, the Placement Test provides a recommendation for student placement into one of two entry points:

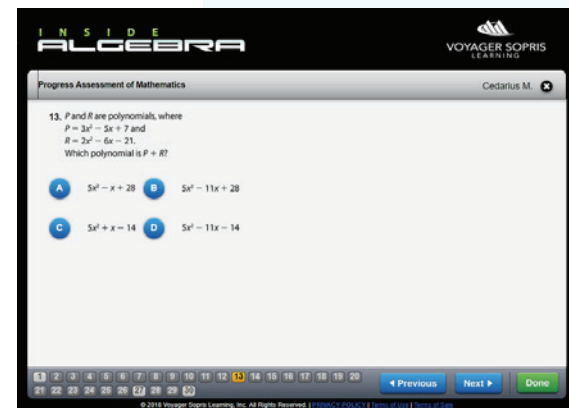
**CHAPTER 1:** students with significant gaps in prealgebraic skills and standards.

**CHAPTER 3:** students with basic knowledge needed to begin mastering algebra skills and standards. algebra instruction.



### Progress Assessment of Mathematics (PAM)

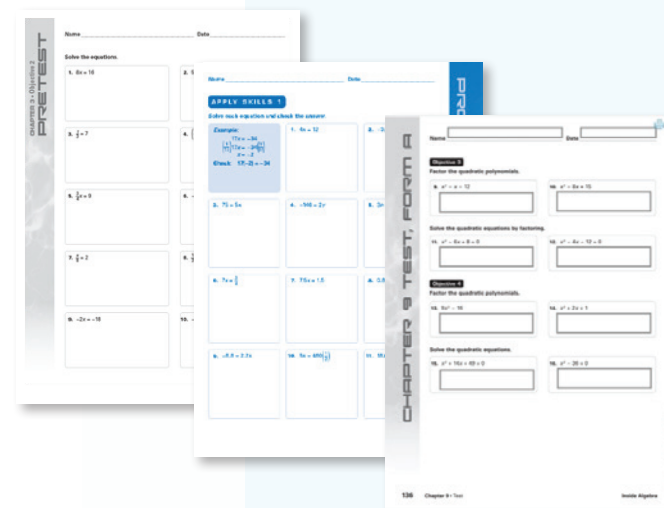
The PAM powered by The *Quantile Framework*® assigns students a Quantile score that represents their range of skills and readiness for learning new skills. As a benchmark assessment, PAM tracks student proficiency during the course of the year.



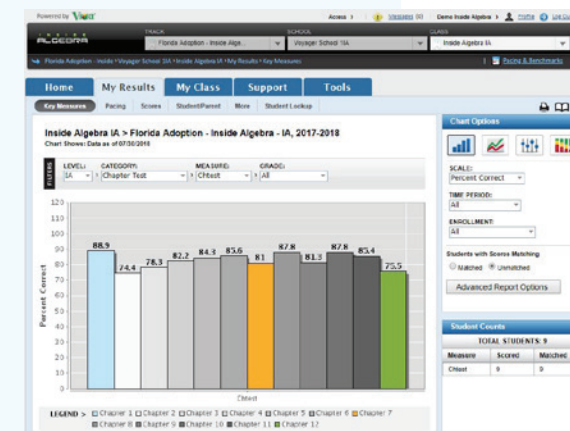
### Ongoing Assessments

A variety of formal and informal assessments are embedded in daily instruction and used to drive instructional decisions and differentiate with effectiveness. These ongoing assessments include:

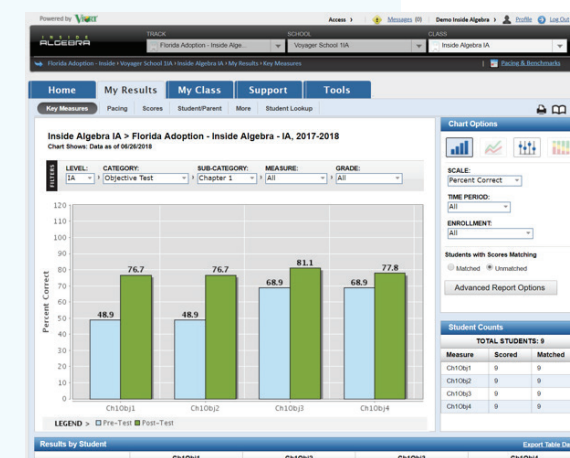
- ▶ Pretest/Posttests
- ▶ Progress-Monitoring Activities
- ▶ End-of-Chapter Tests
- ▶ Informal Assessments



PAM Report



Chapter Test Report



Objectives Report

## Real-time Reporting

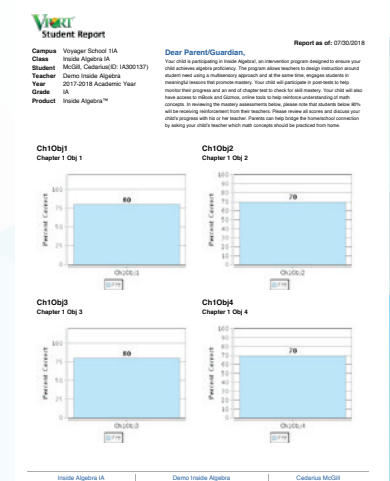
With a variety of reports available online, teachers and administrators have actionable data that can be used to drive instructional decisions, communicate progress to parents, and ensure students meet their goals.

The **PAM** is used to determine student mastery and demonstrate a student's trajectory toward grade-level standards proficiency.

The **CHAPTER TEST REPORT** demonstrates mastery of all objectives in a chapter and provides data to drive differentiation decisions and reteaching needs.

The **OBJECTIVES REPORT** demonstrates student growth from the pretest to posttest of each objective and provides data to choose the best instructional plan for each objective.

The **STUDENT/PARENT REPORT** is a custom report generator designed for parent communication about student progress. The report summarizes score data for key measures in an easy-to-read format.



## Unparalleled Professional Development and Support: Make a Difference in Florida

Adopting a new math program is a huge commitment for every district and a substantial change for teachers and students. Voyager Sopris Learning® understands the importance of effectively planning, launching, and nurturing an implementation to achieve success.

Therefore, we customize implementation plans to meet specific needs and goals of every district adopting our solutions. We are the experts of our programs like district leaders are the experts of their schools and we work with districts to customize an implementation plan that includes the training and support teachers deserve.

With a variety of services and activities, our top priority is building an effective and sustainable implementation in year one with supports to further success each year of the adoption.

All professional development plans are built as flexible, living documents to adjust to the ongoing needs of the district with services such as, but not limited to:

### District Launch Trainings for Teachers

- initial fall launch training
- new-hire launch training (mid year)
- delayed late-hire launch training

### Priority Support for District-Identified Schools

- custom work sessions
- custom data reports
- intensive support services
- individualized action plans

### Leadership Touchpoints for Administrators

- implementation status
- data reports and analysis
- planning, goal setting
- challenges/next steps
- classroom observation PD
- MAFS instruction

### Webinars for Monthly Online Touchpoints

- customized topics
- sharing best practices
- Q&A forums
- FSA prep and enrichment

### Implementation Support for All Schools

- lesson modeling
- curriculum review
- data analysis
- MAFS alignment
- differentiation coaching
- side-by-side coaching
- principal/coach meetings
- progress monitoring
- goal setting/action plans
- lesson planning/delivery
- student grouping
- classroom visits

### District Meetings & Customizations

- strategic planning
- data analysis
- MAFS & FSA alignment
- ongoing PD planning
- custom pacing guide
- SSO integration
- customized reporting
- goal setting/action plans

Multisensory plus differentiation equals success.  
*Read what our customers have to say...*

“I like the program and the activities it includes. I was able to pull out different activities and augment those activities as needed. The students seemed to like the program as well.”

—**Ashley C. Mattin**  
Teacher, TN

“I think it helps them see that Algebra isn't some unattainable skill; that they can learn it step-by-step without too much difficulty. The pre and post-tests give them verifiable proof that they are, in fact, learning. It has provided them with a level of instruction they wouldn't otherwise have received through a resource setting.”

—**Pam O'Day**  
Teacher, TN

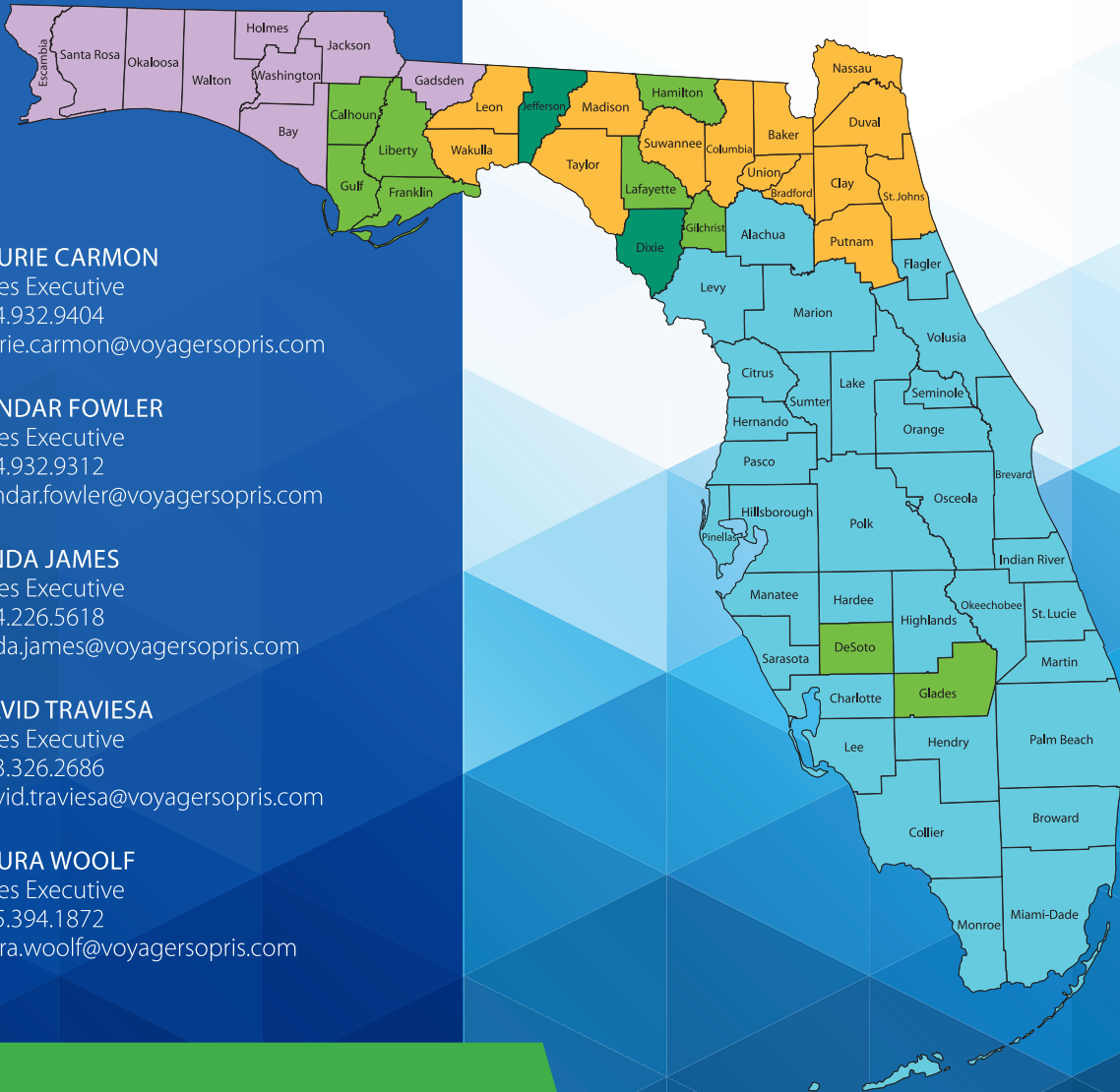
“This program seems to get rid of [math anxiety]...and gets them completely engaged.”

—**Danielle Neri**  
Teacher, NM

Contact your sales executive to explore successful solutions for your students today.

# I N S I D E ALGEBRA

Multisensory plus differentiation equals success.



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