

# K-12 MATHEMATICAL THINKING

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Developing Skills for the  
Future



PRESENTATION TO THE BOARD OF EDUCATION

March 9, 2026

The mission of the Syosset Central School District is to prepare students to thrive in both the future we imagine and one which may evolve in ways yet to be envisioned.

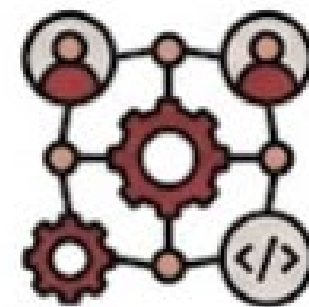
### Student-Centered Learning

- Create agile, creative, adaptable learners.
- Design personalized learning experiences.
- Foster instruction that increases thinking capacity.



### Innovation

- Establish programs that are innovative, engaging, and effective
- Create environments that foster a strong, flexible culture.



### Community & Collaboration

- Cultivate collaboration skills in all learning designs.
- Foster meaningful connections and strengthen relationships.



# Deepening Our Impact



As we move from implementation to coherence, we are deepening our impact by intentionally evaluating the effectiveness of our primary resources. This next phase reflects a shift from rollout to refinement —leveraging summer curriculum writing and strengthened coherence to deepen mathematical reasoning, critical thinking, and problem solving across classrooms.

## Reflecting & Refining

To deepen our impact, we began by building on feedback and refining our implementation with intention.

### **Feedback in action:**

- **Pacing:** Streamlined sequencing to ensure students are developmentally ready to build a strong foundation
- **Resources:** Expanded support materials for teachers and students
- **Intervention:** Strengthened Tier 2 & 3 instructional opportunities
- **Coaching:** Continued partnership with *Go Math!* for real-time support
- **Development:** Dedicated, ongoing professional learning opportunities

## Strengthening Coherence

Refining our work meant strengthening coherence — aligning practices and resources to ensure a unified numeracy experience across all buildings.

### **Building alignment and instructional consistency:**

- Established shared instructional priorities aligned to the NYS Numeracy Initiative
- Created districtwide structures for collaboration through cross-building professional learning
- Centralized common instructional materials to support a cohesive approach to math teaching and learning.



## Elevating Instructional Practice

With coherence in place, our focus turns to impact —intentionally helping every student grow as a confident, independent mathematician.

**Helping our students grow as mathematicians:**

- **Building Confidence:** We teach students how to discuss their ideas and keep trying when a problem gets tough.
- **Visual Learning:** We use drawings and models to move beyond just memorizing rules to truly understanding concepts.
- **Independent Thinking:** Our "Problem of the Day" challenges students to find their own ways to solve real -world math puzzles.
- **Optimize Support:** We tailor small -group lessons to ensure help is perfectly matched to each child's level.

# Building Mathematical

## Confidence

- Students grapple
  - productive struggle
  - math talk
  - personal connection
- Teachers implement guided and independent practice
  - class discourse
  - peer-to-peer explanations
  - ownership

### Sauce Recipe

- 2 tablespoons olive oil
- 1 medium onion
- 3-5 cloves of garlic
- 2 teaspoons dried basil
- Pinch of red pepper flakes
- $\frac{1}{2}$  teaspoon salt
- $3\frac{1}{2}$  cups crushed tomatoes
- $\frac{1}{4}$  cup water



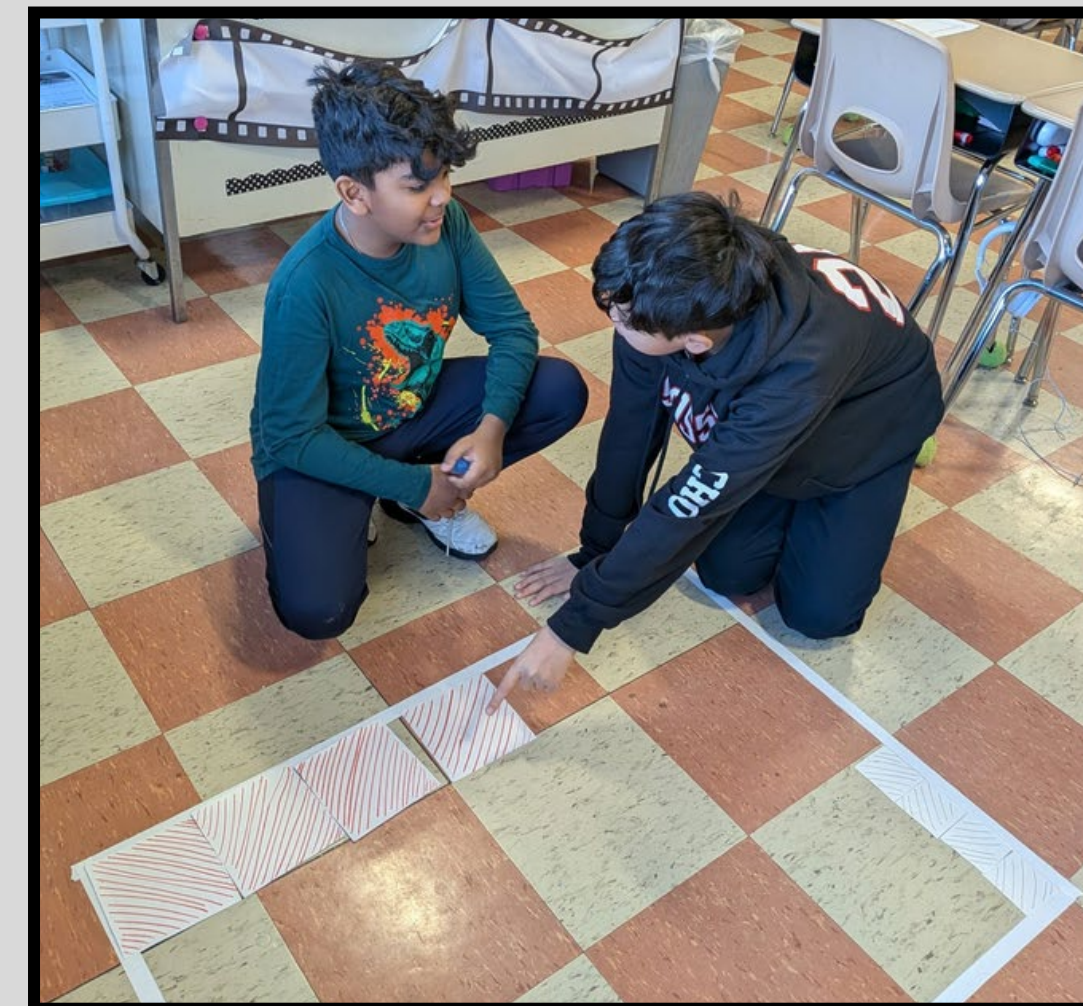
Mrs. Koster is making sauce for a party using the recipe above. She wants to scale the recipe by  $3\frac{1}{2}$ .



Avery says she needs  $12\frac{1}{4}$  cups of crushed tomatoes, while Alexandra says she needs  $9\frac{1}{4}$  cups.



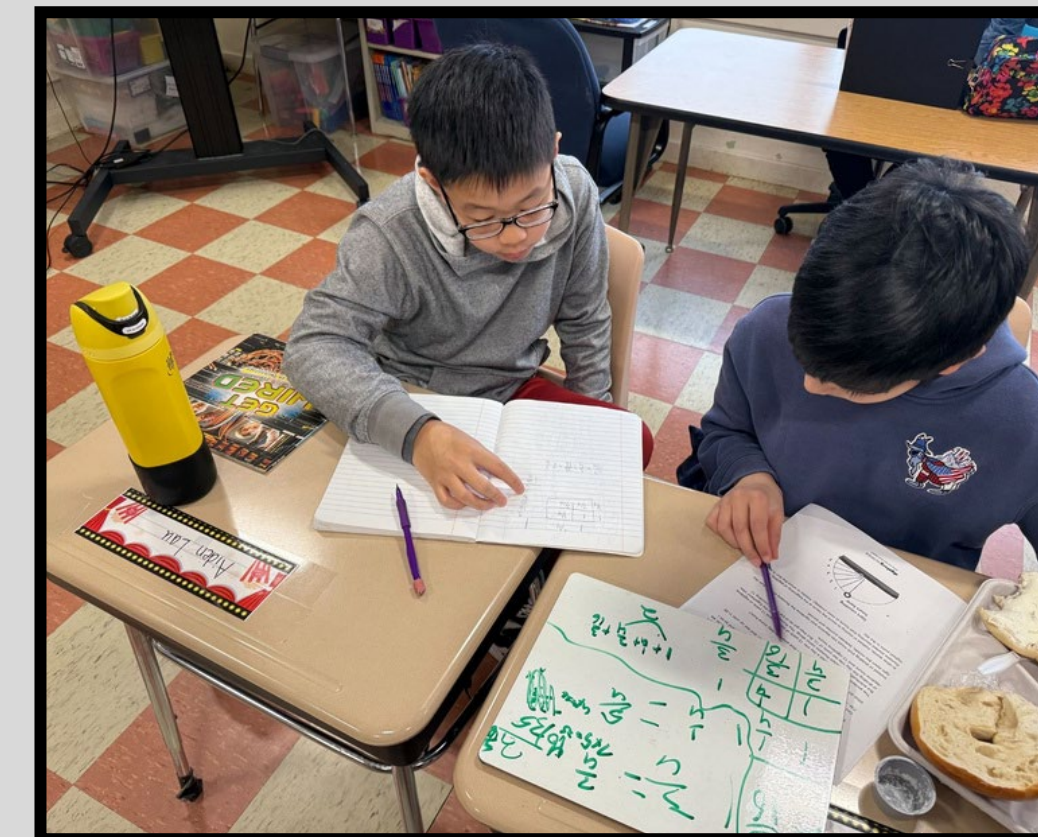
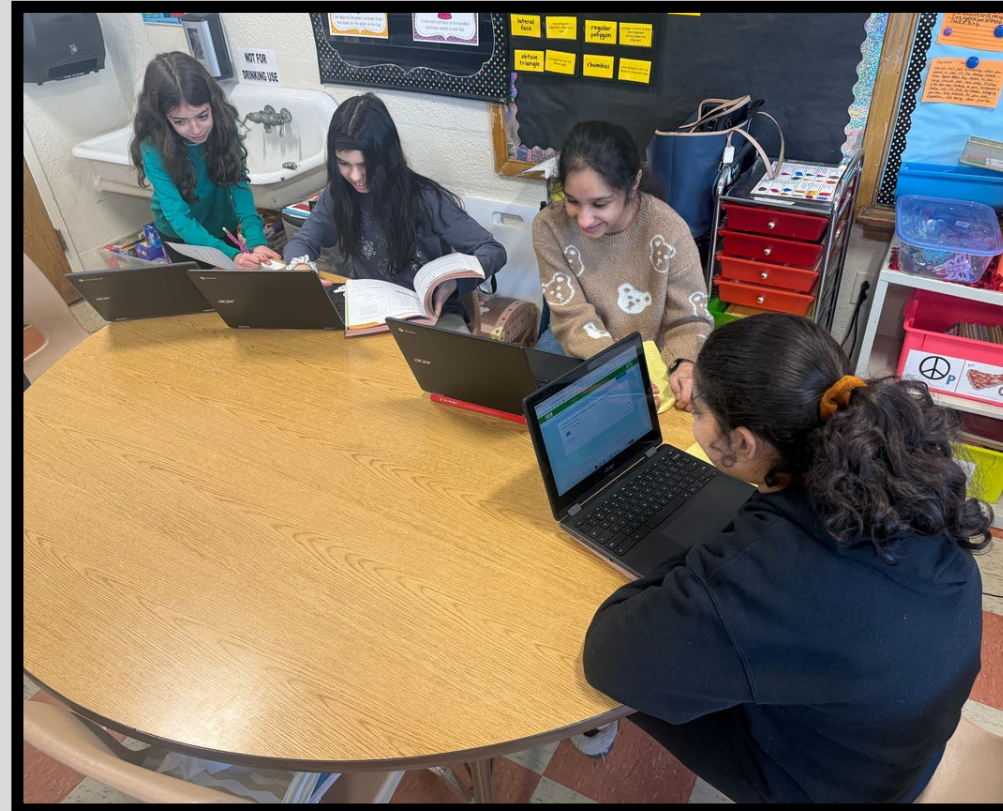
Who is correct? Support your thinking with numbers, words, or pictures.



## Refinement of Skills

Teachers provide multiple pathways for practice, review, and skill development to strengthen mastery:

- Practice
- Reinforcement
  - IXL & Waggle
- Math Centers
  - Game-like Practice
  - Spiral Review



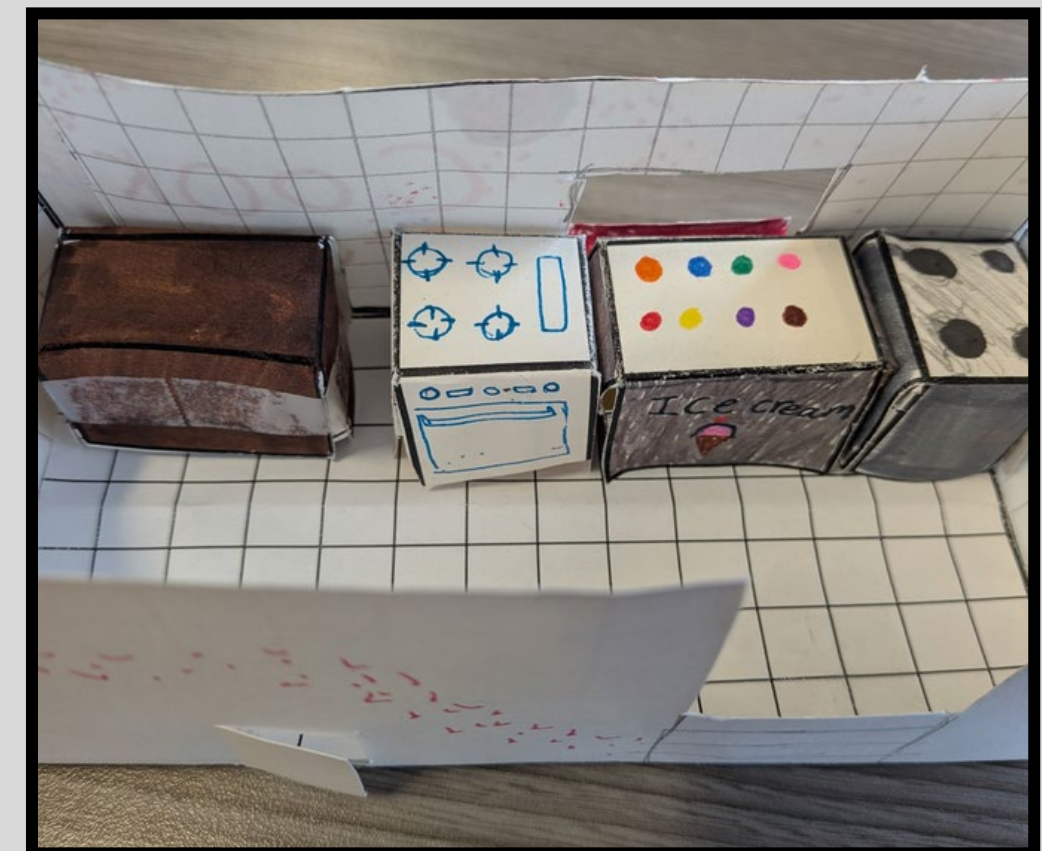
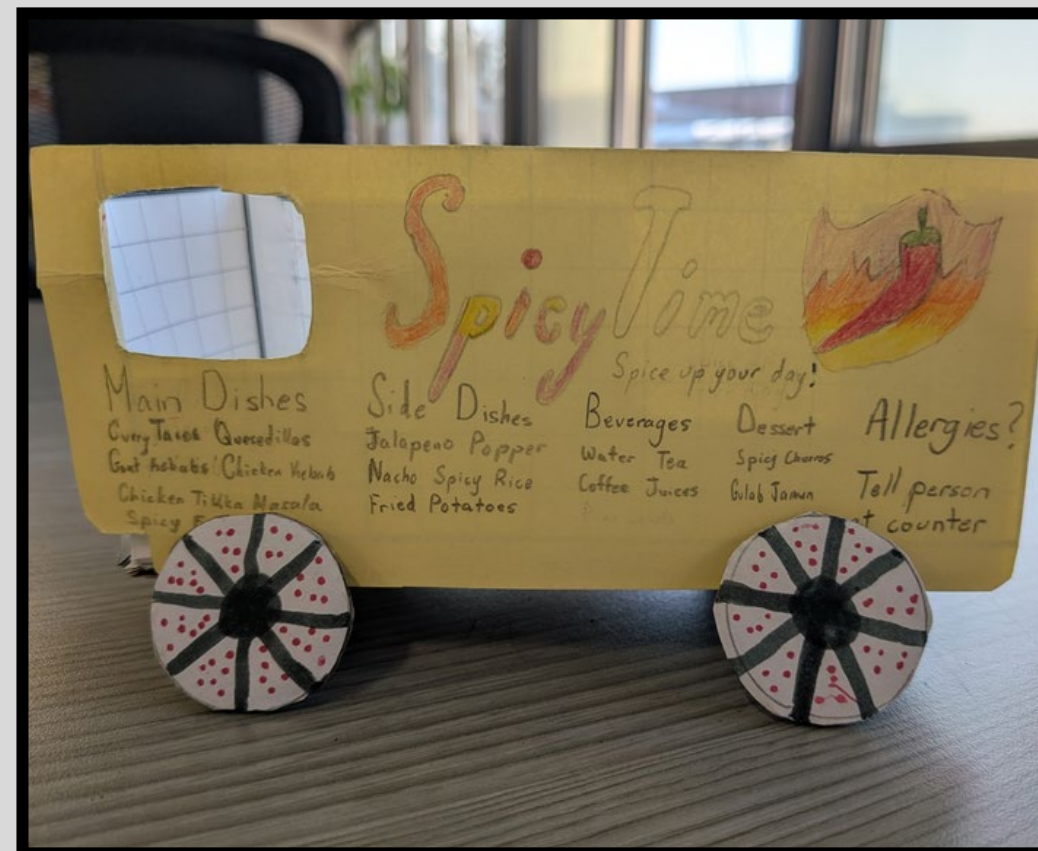
# Elevating Learning

Teachers engage students in authentic learning that connects math to real-world problem solving.

## Food Truck Project

- Geometry
- Fractions and mixed numbers
- Decimals
- Area and Perimeter

Type of Ad:	People Reached:	Cost:
Social Media Food Influencer	LI Food Tour = 17,000 followers	\$250.00 per post for every 10,000 followers
	Long Island Foodies = 38,000 followers	
	Eating Long Island = 135,000 followers	



# Elevating Learning

Intentional project design weaves mathematics across disciplines to deepen understanding and relevance.

Crosscutting concepts:

- Art and design
- Music
- Persuasive writing
- Scientific reasoning
- Financial planning

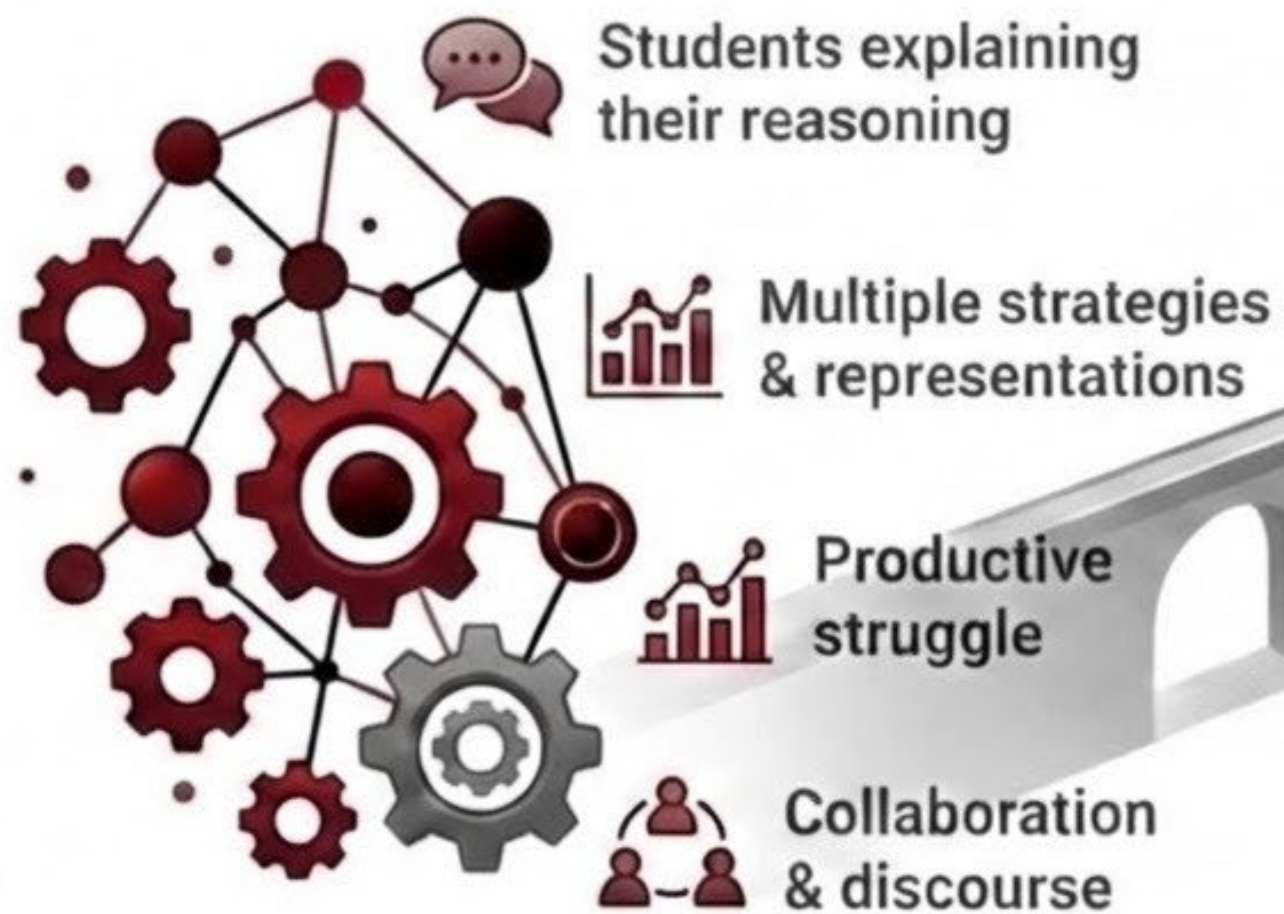
Main Dishes		Side Dishes	
Sushi	\$12.50	Kimchi	\$0.99
Spicy Salmon, Tuna Roll, California Roll		Crunchy and spicy	
Korean Galbi	\$17.50	Fried Rice	\$6.99
Chewy and juicy meat		Shrimp, Kimchi, and Chicken Fried Rice	
Russian Pelmeri	\$7.99	Korean Kimchi Pancake	\$7.15
Soft dough-like dumplings		Soft and Crunchy with bits of kimchi and vegetables	
Russian Syrniki	\$7.99	Beverages	
Soft with sweet filling inside		Lemonade	\$1.75
Desserts		Bottled Water	\$0.75
Mochi	\$1.50	Bubble Tea	\$ 2.99
Chewy Sweetened Red Bean Paste with Ice cream Filling.			
Napoleon Cake with Zefir	\$3.50		



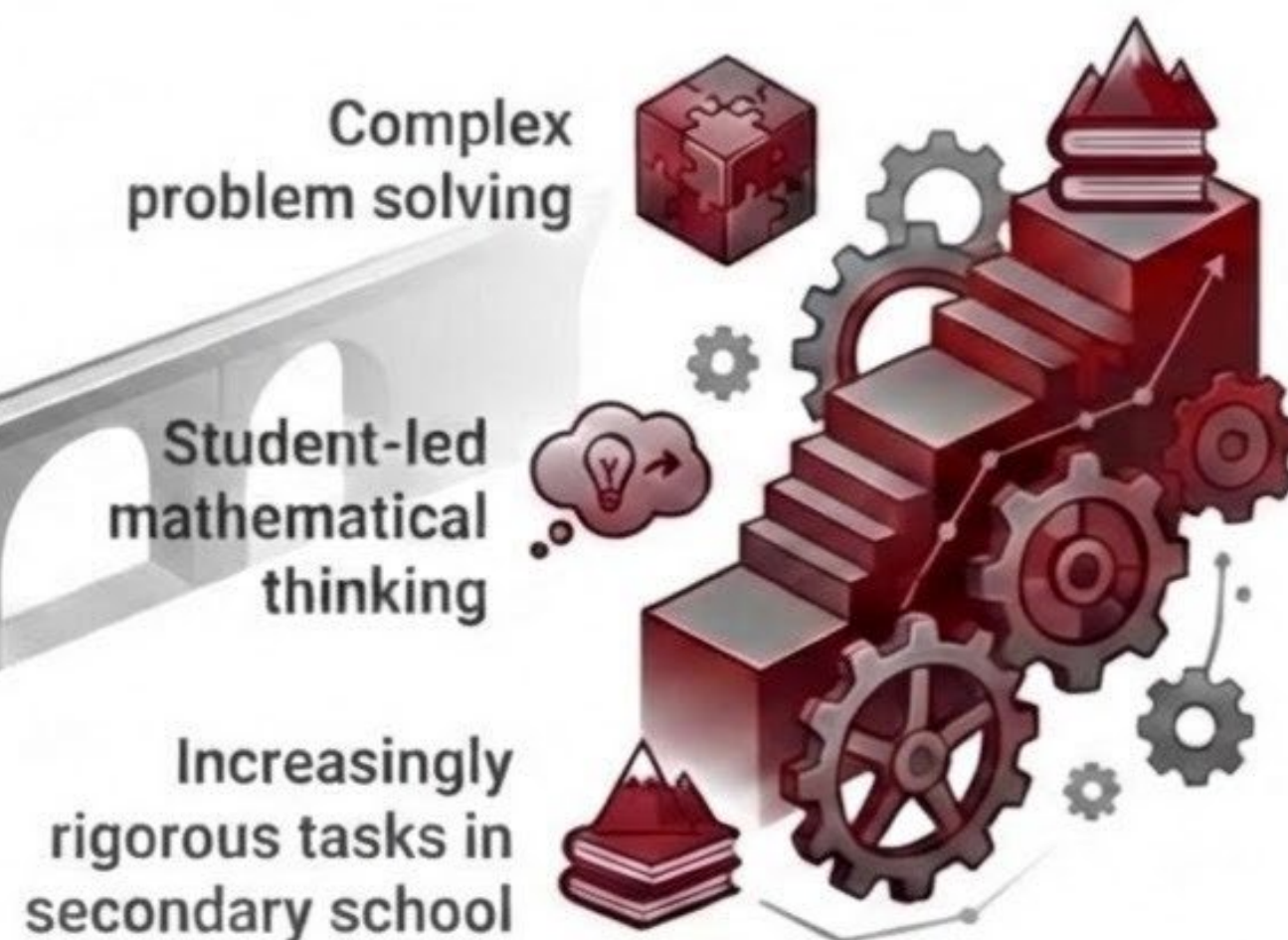
*This is student-generated work.*

# Bridging to Secondary Mathematics

What we just saw:



These foundations prepare students for:



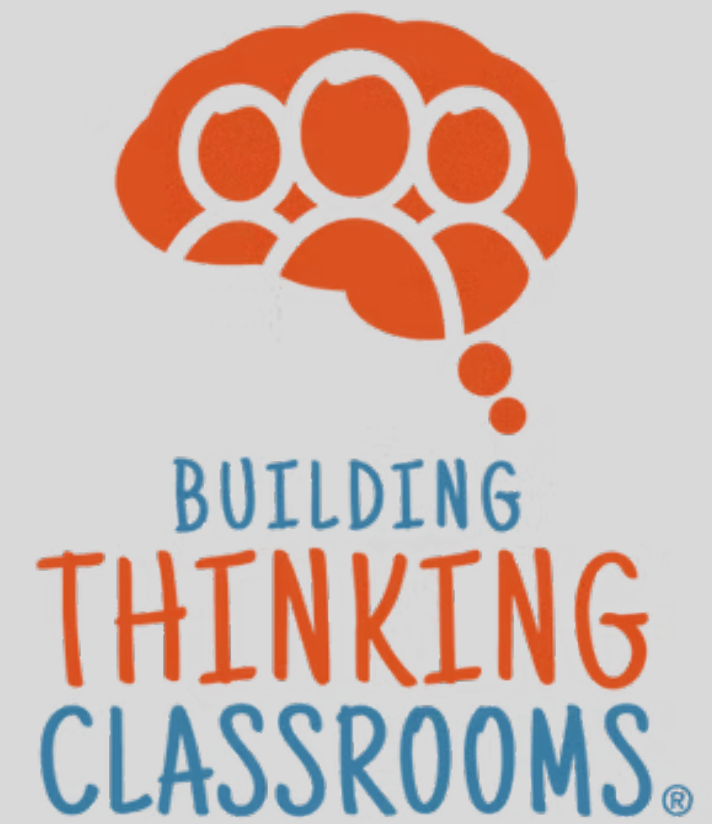
## Instruction for all populations of learners

- Complex problem solving prioritizes *process* over *product*
  - Skills shift
  - Celebrating multiple pathways to the solution
- Skills that go beyond the content
  - Resilience, Collaboration, Communication, Confidence, Critical thinking, Application of Skill, Literacy
- Ensure all students thrive
  - Build independence
  - Fluency across courses
  - Transfer of skills



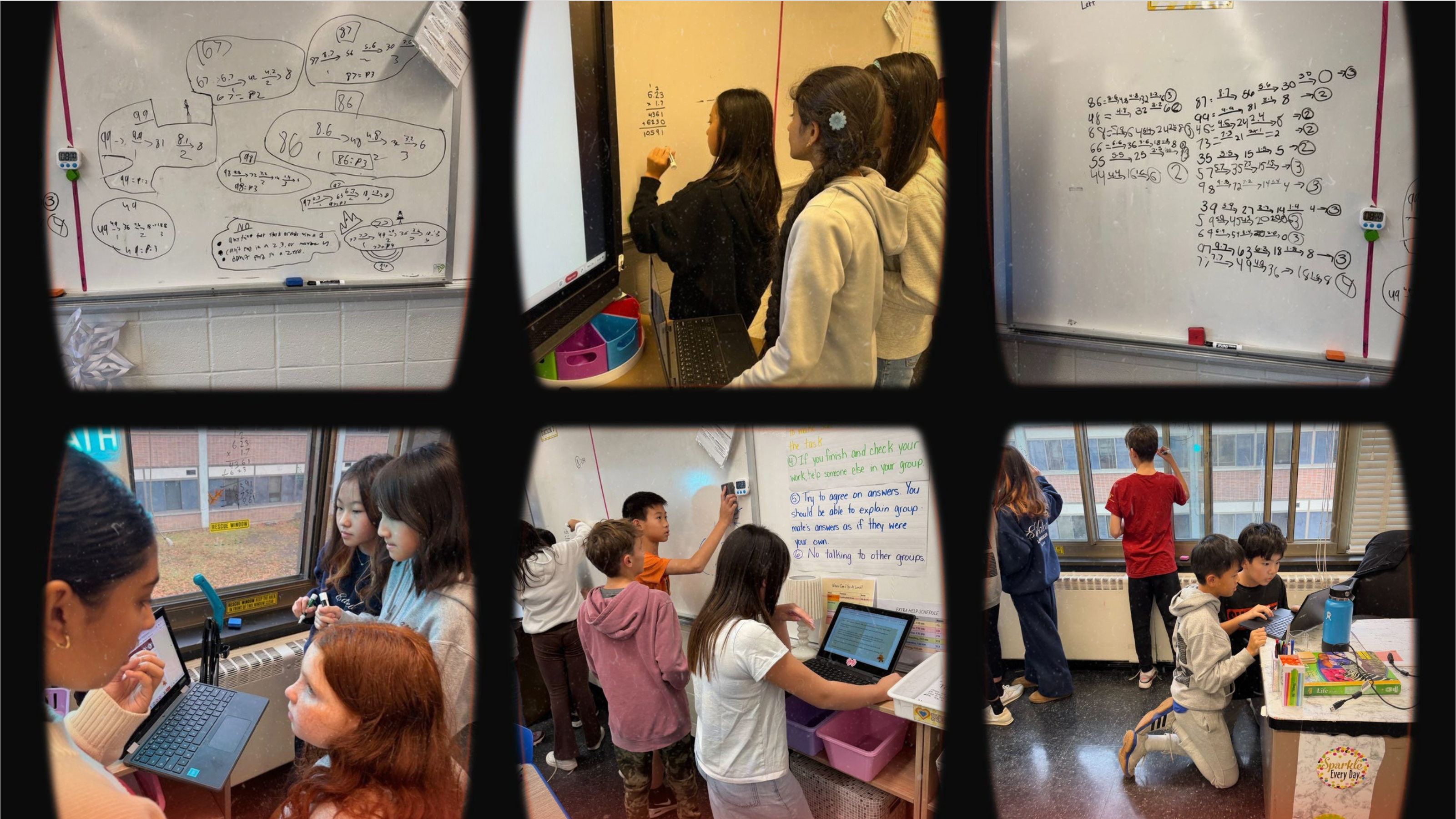
# Why Building Thinking Classrooms?

- Process oriented approach
- Research based framework
- 14 Instructional practices that enhance thinking and other competencies
- Building mental muscles - shifting from “Tell me what to do” to “Look what I can do”



# What is a Building Thinking Classroom in action?

MIDDLE SCHOOL



How do you like to learn math best and why?

## Classroom Activities that build Skills

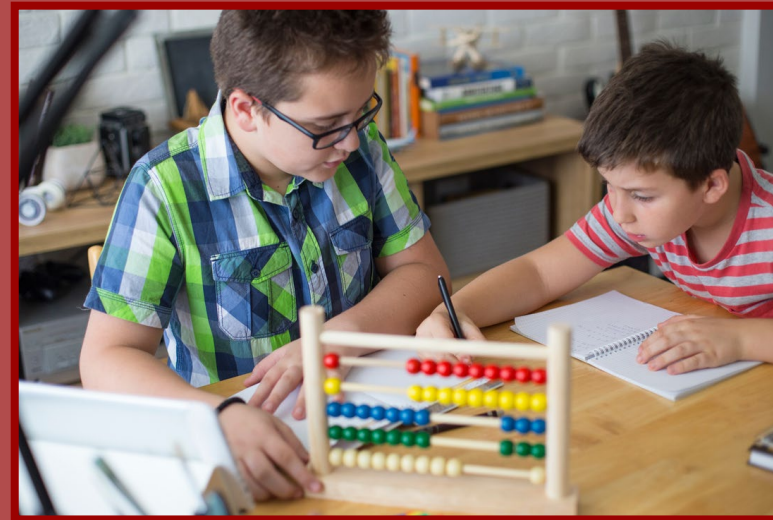
- Example 1: The Real-World Professional (Law of Cosines): Acting as interior designers to fit furniture in NYC apartments.
  - **Skill: Practical Application.** Math becomes a tool for living, not just a diploma requirement.
- Example 2: The Student-to-Teacher Shift (Coordinate Geometry): Students "invent" the steps for altitudes and medians, then teach their peers.
  - **Skill: Effective Communication.** Mastery is proven through the ability to explain.
- Example 3: The Innovation Mindset (Dilations): Navigating complex transformations without a textbook guide.
  - **Skill: Innovative Strategy.** Finding "workarounds" for challenges that haven't been seen before.



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## Developing Skills for the Future



# Thank You!

Preparing students to thrive in both the *future we imagine*  
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