Promoting Independent Learners and Creative Collaboration through Mathematical Puzzles

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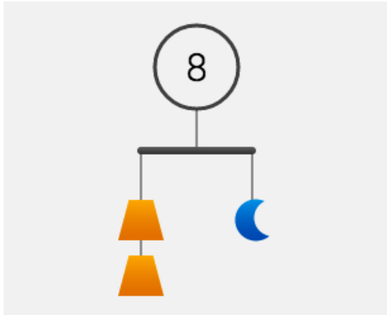
Why Puzzles?

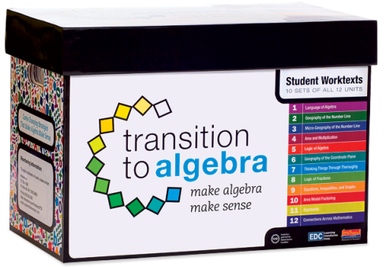
Mathematical Puzzles:

- are genuine problems
- are fun and engaging
- support number sense
- encourage logical reasoning
- help students develop strategy in problem solving
- promote constructive collaboration
- encourage perseverance and stamina

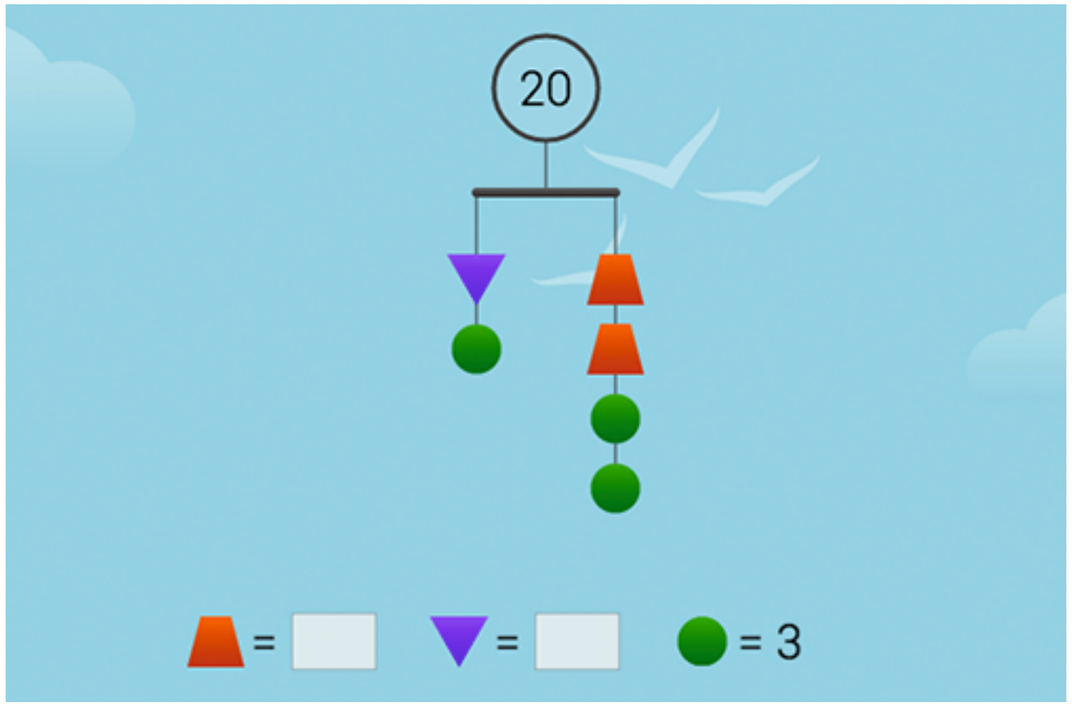


Our Research and Development

- Funded by the National Science Foundation
- Based on paper-based R&D with puzzles embedded in elementary and high school curricula



Playing SolveMe Mobiles

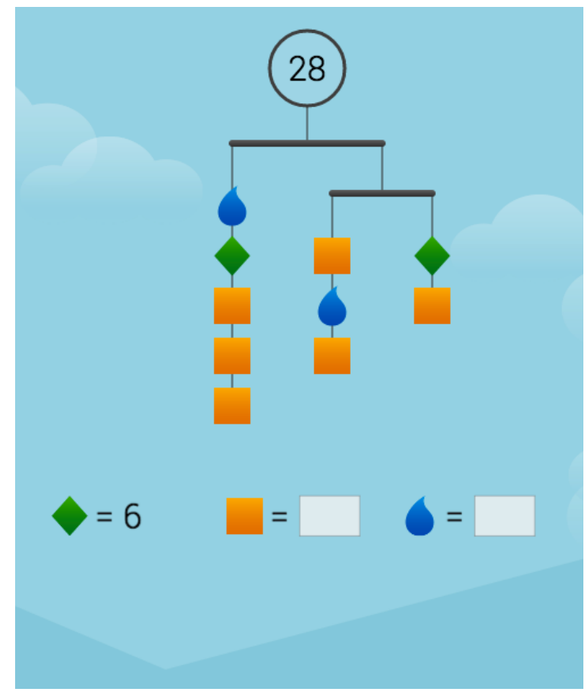


Playing SolveMe Mobiles

solveme.edc.org

for iPads and Laptops

Choose **Play** for now.

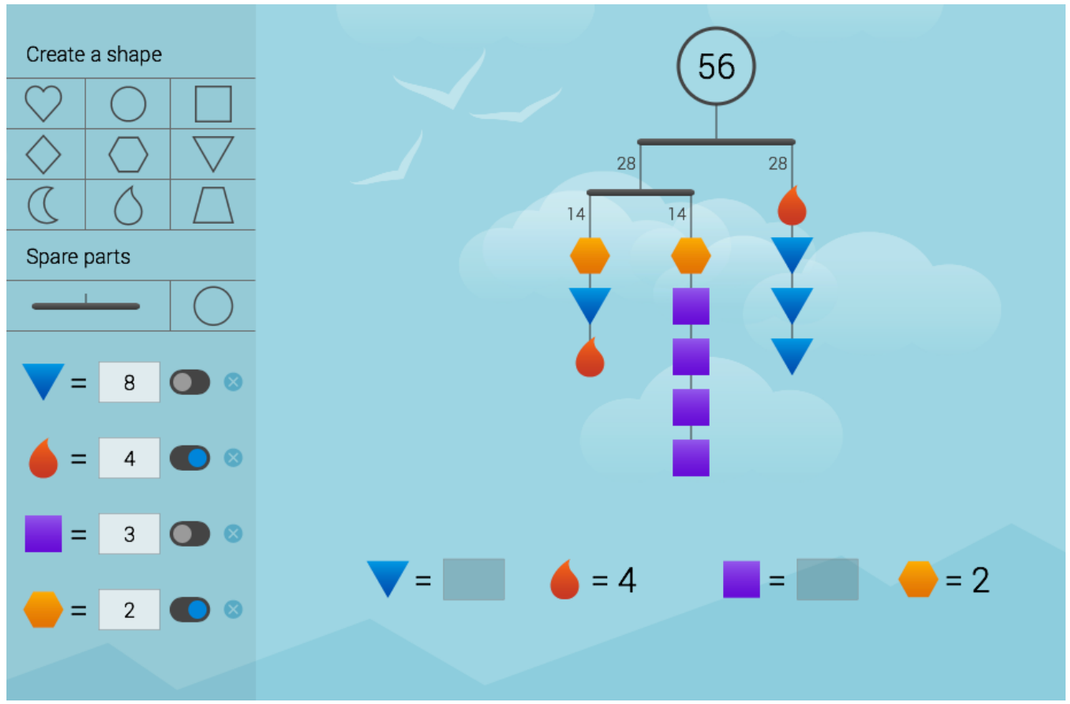


Why Have Students Create Puzzles?

Creating Puzzles:

- supports deeper understanding the of the logic and mathematics of the puzzles
- helps students develop sense of agency as producers not just consumers of mathematics
- focuses on creative element of doing mathematics
- offers a social mathematics activity

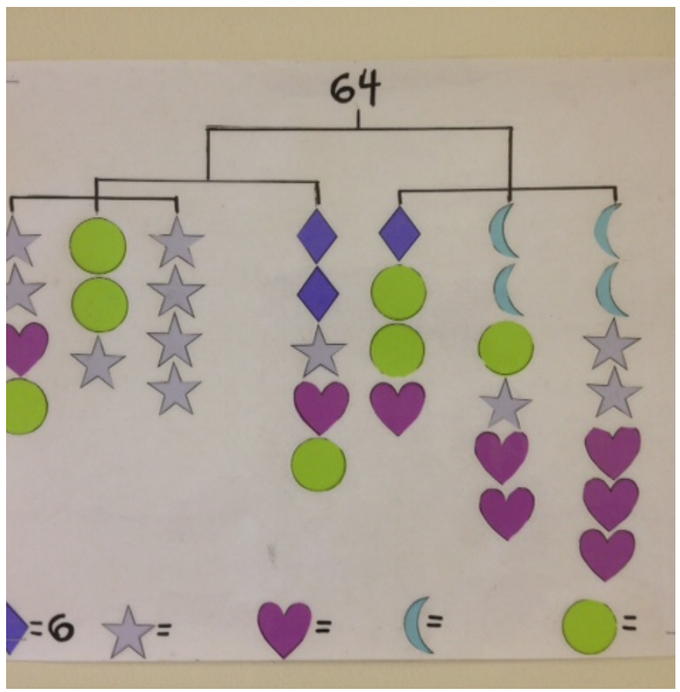
Building SolveMe Mobiles Puzzles



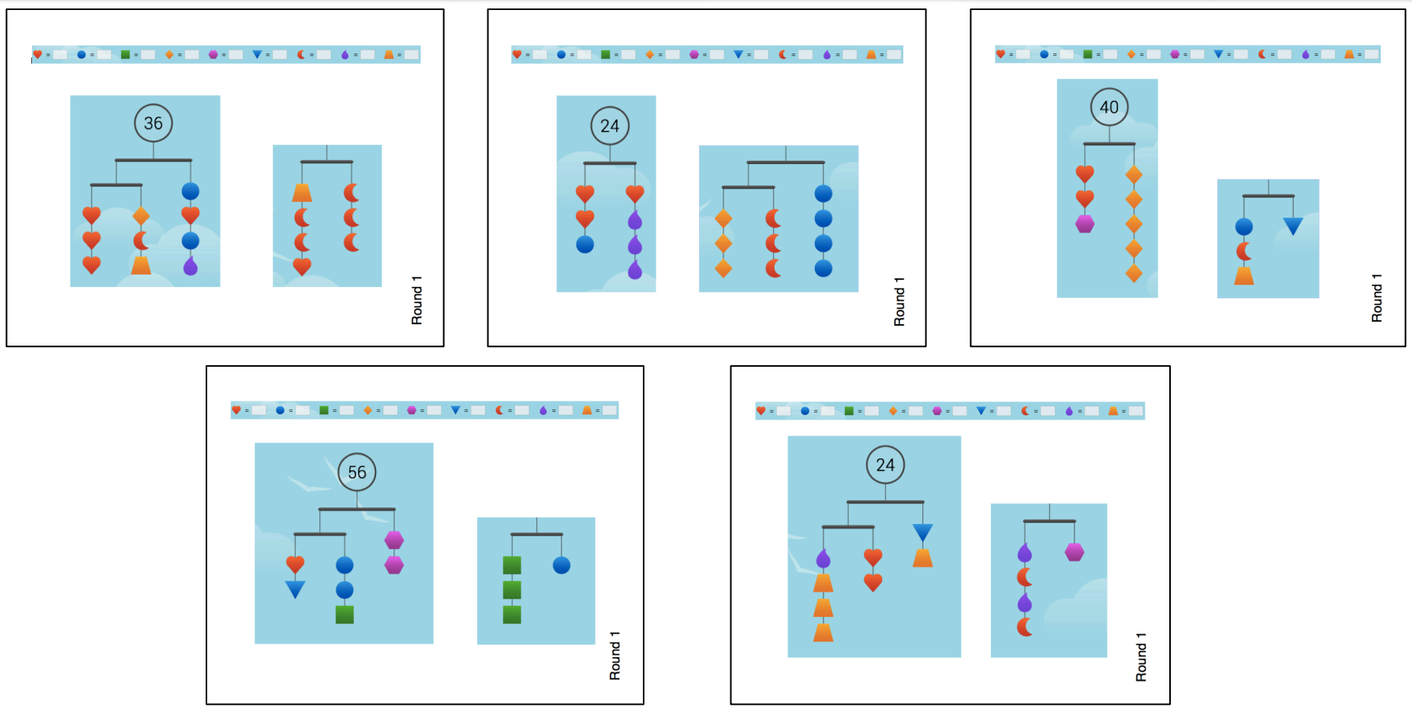
Building Independent Learners

- Introduce apps *briefly*—allow for exploration
- Ask for good next steps (multiple entry points, no "right way")
- Ask for another way to solve same puzzle
- Focus on students' logic over algebra at first
- Students know when they have the solution

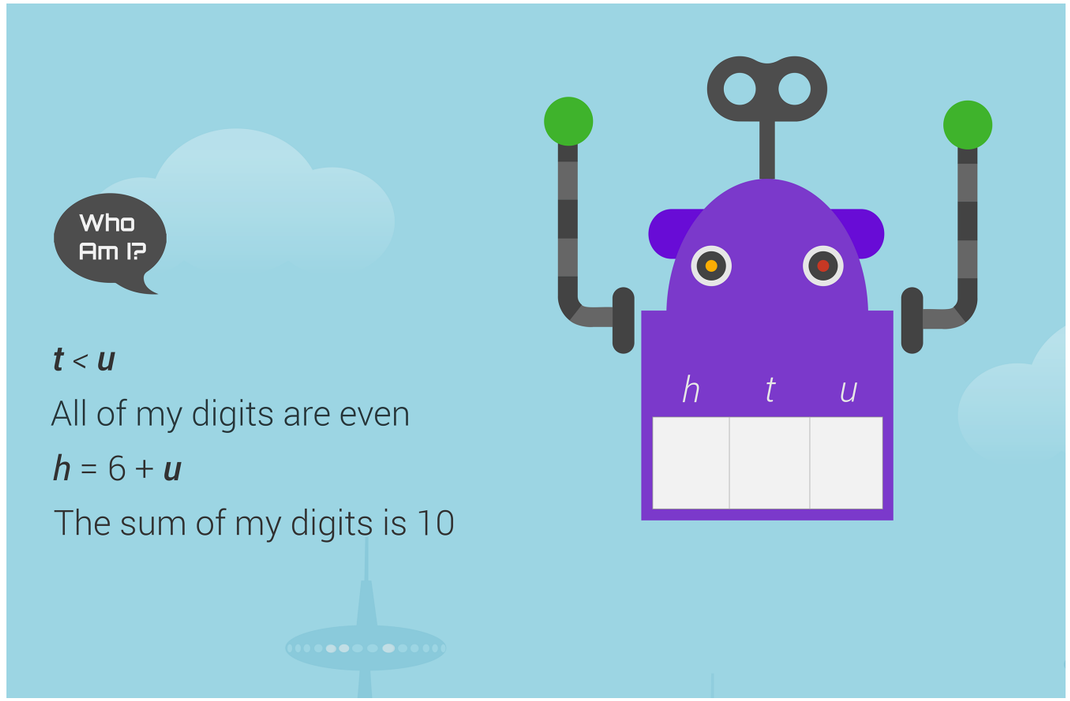
In the Classroom



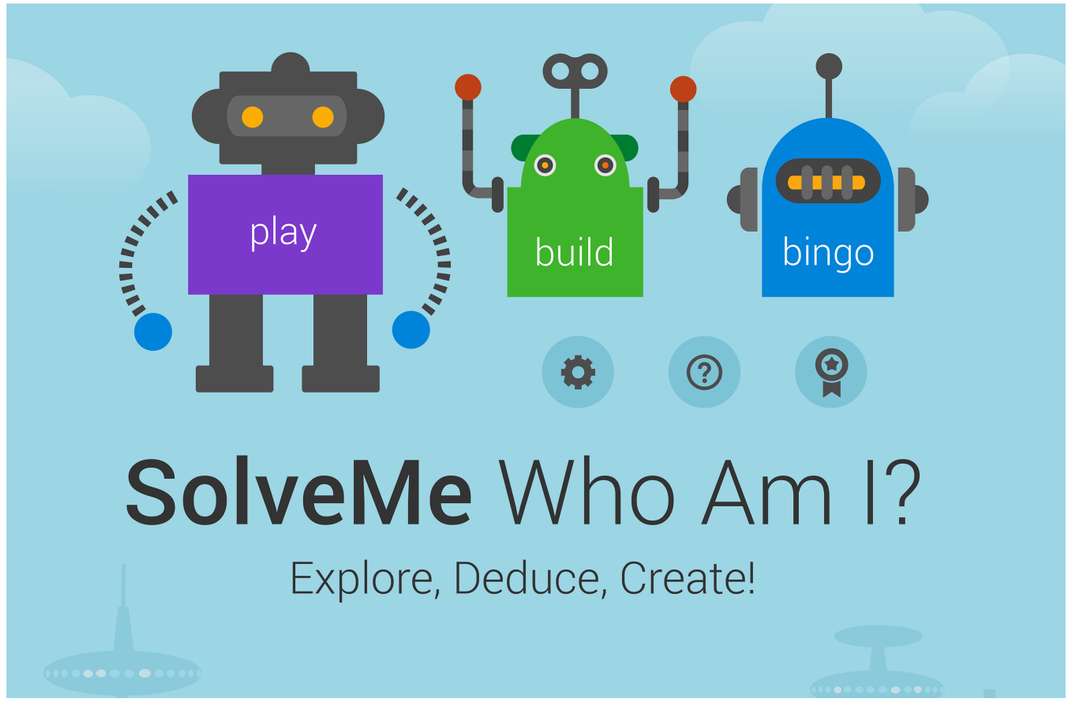
Collaborative Game



Playing SolveMe Who Am I?



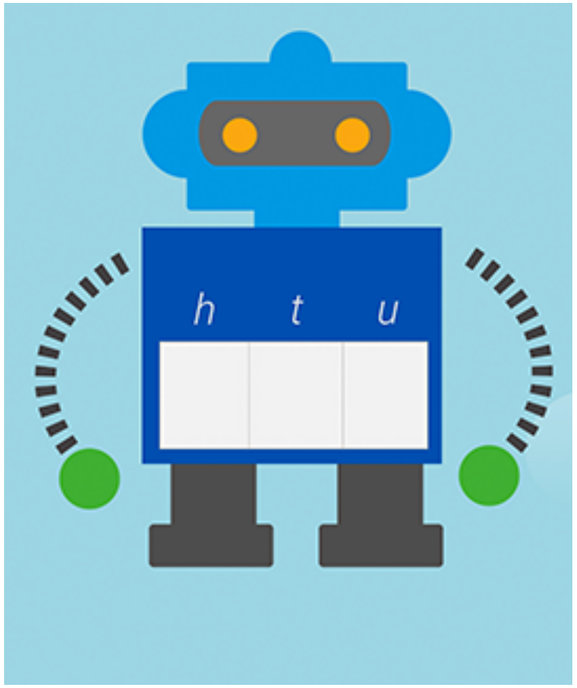
Building SolveMe Who Am I? Puzzles



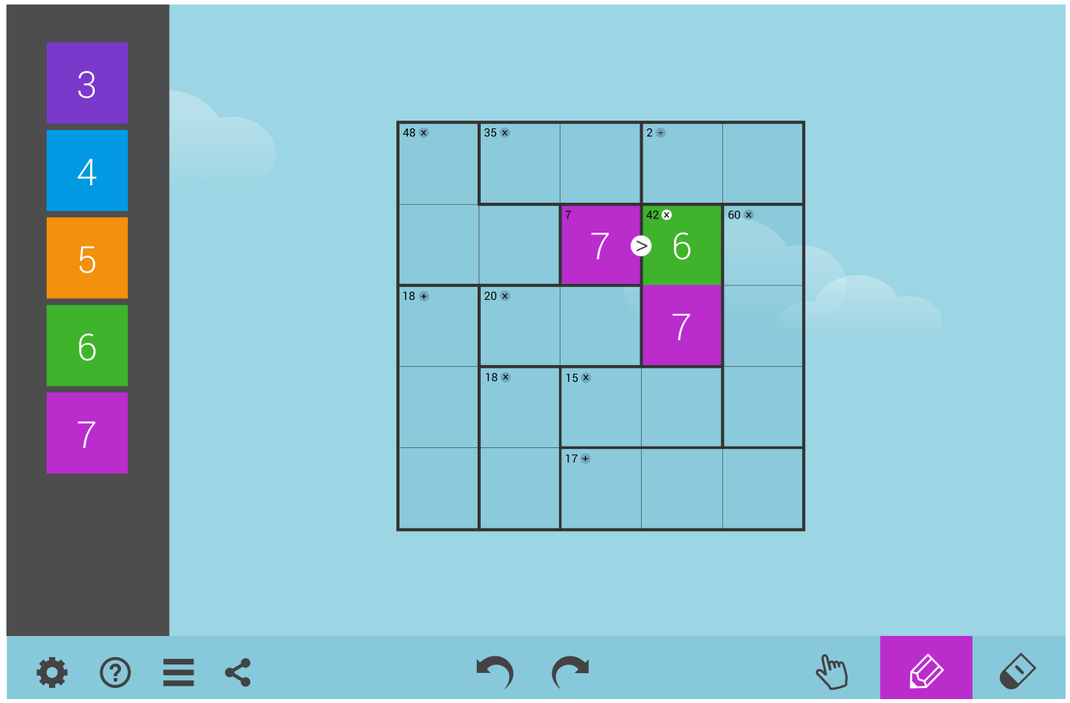
SolveMe Who Am I? Sneak Preview

solveme.edc.org/whoami

for iPads and Laptops



SolveMe MysteryGrid



MysteryGrid – Latin Square Puzzle

- Use the clues to fill in the grid so that every row and every column contains one of each element.

a*, *b*, *c Latin Square

c		a
	c	

MysteryGrid Puzzles

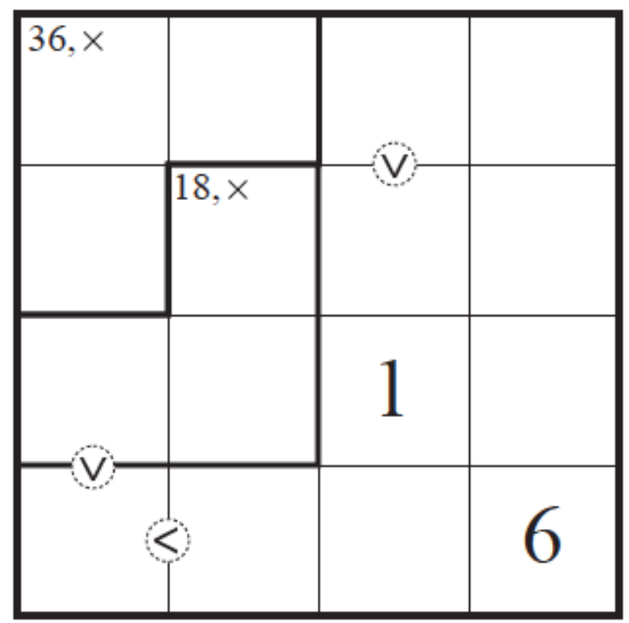
- In MysteryGrid puzzles, the numbers in each "cage" should reach the target number using the given operation.
- For example, a 3-cell, "20, ×" cage means you need to fill that cage with 3 numbers that multiply to 20.

MysteryGrid **1, 3, 4, 5**

4, +		4, ÷	1, −
20, x	12, +		
			2, −
	15, x		

MysteryGrid Puzzles

MysteryGrid 1, 2, 3, 6



SolveMe MysteryGrid Sneak Preview

solveme.edc.org/mysterygrid

for iPads and Laptops

Discussion Questions

- What has been your experience using math apps with students?
  - Which apps have you tried?
  - Which do you like best and why?
- What challenges have you seen or do you expect to see when using apps in the classroom?
- What could help you overcome these challenges?

SolveMe Links

- Primary link: **solveme.edc.org**
- Prototypes:
  - solveme.edc.org/whoami
  - solveme.edc.org/mysterygrid
- Contact: solveme@edc.org
- Curriculum: transitiontoalgebra.com

Thank you for coming!