Creating and Sharing Mathematics through Puzzle Apps: In School and Out

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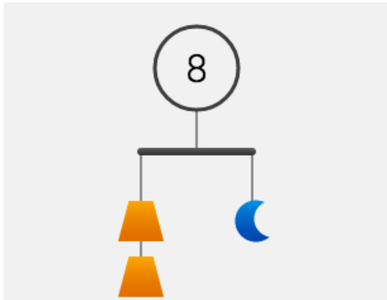
Why Puzzles?

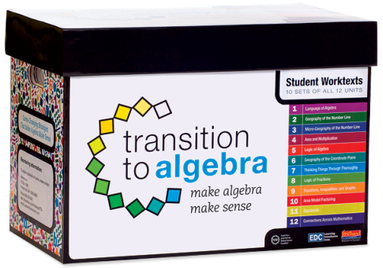
Mathematical Puzzles:

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

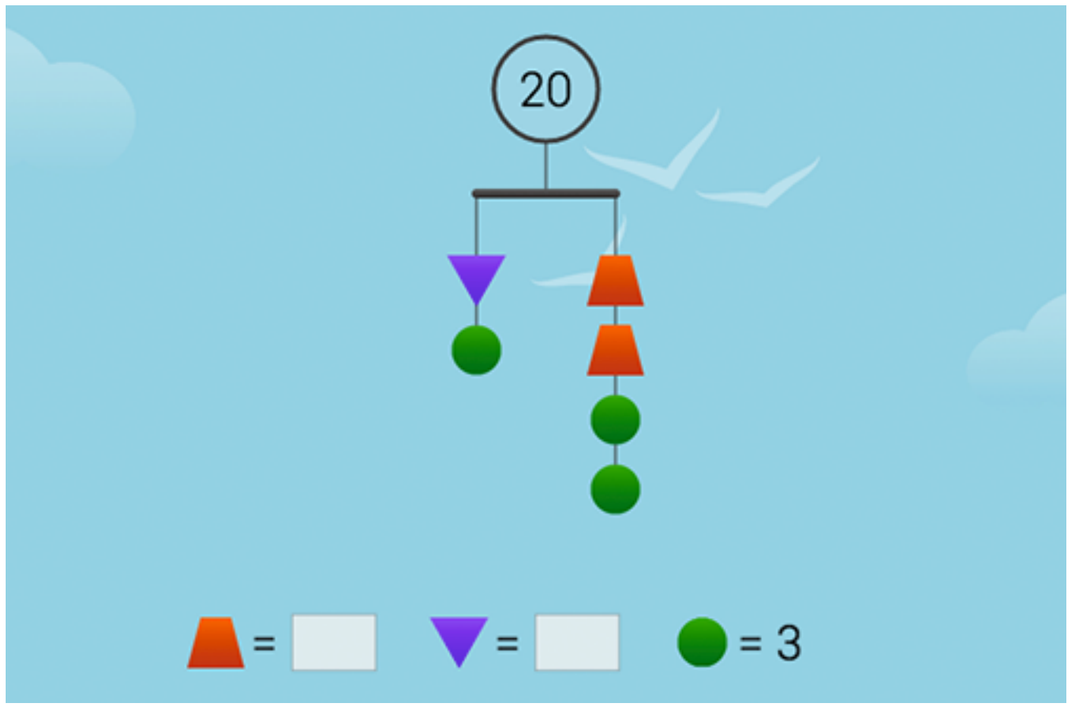


Our Research and Development

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



Playing SolveMe Mobiles

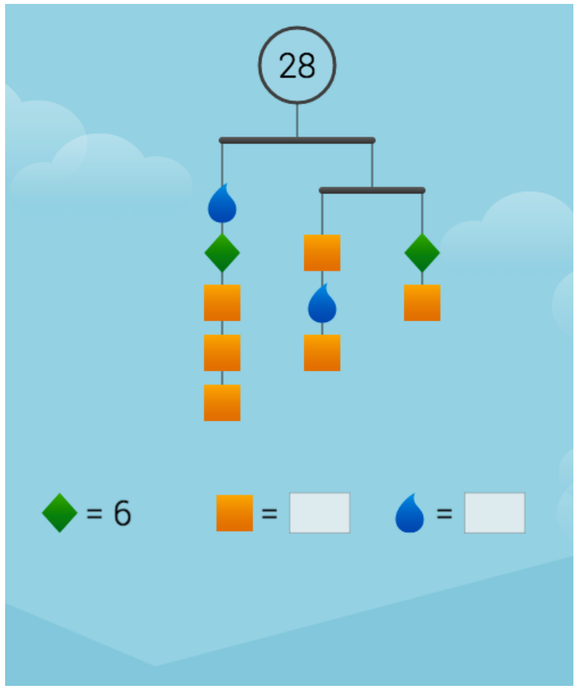


Playing SolveMe Mobiles

solveme.edc.org

for iPads and Laptops

Choose **Play** for now.

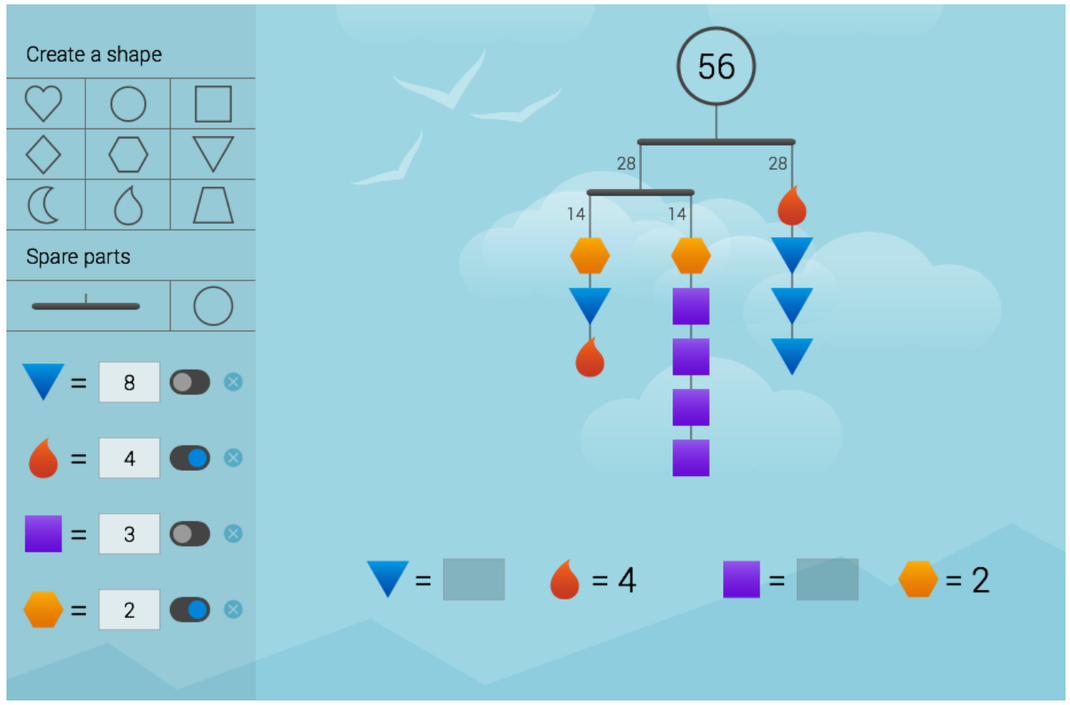


Why Have Students Create Puzzles?

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



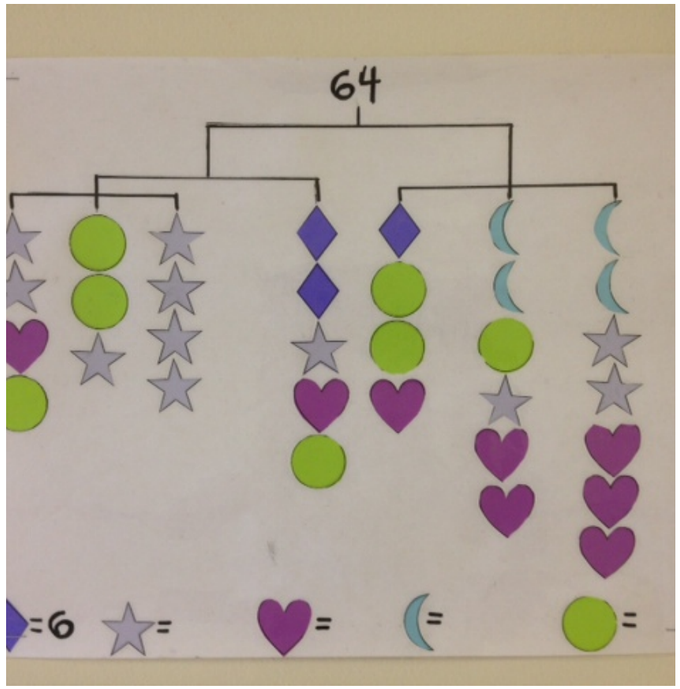
Using Mathematics Apps Effectively

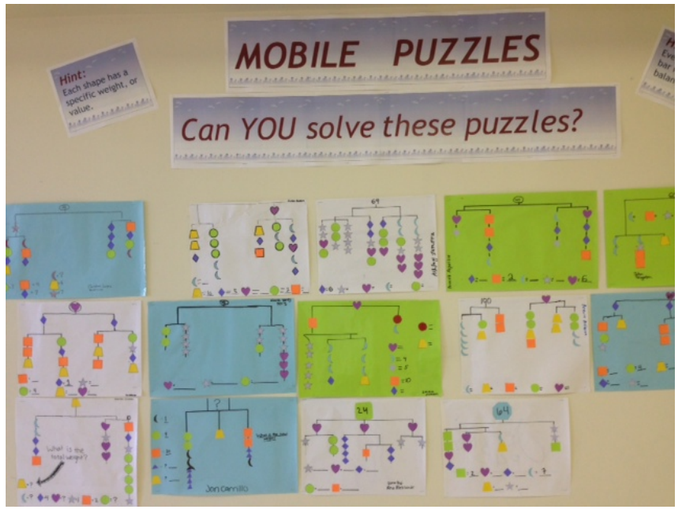
- Get to know the app well first (use help pages)
- Introduce apps *briefly*—allow for exploration
- Have students "play" before "building"
- Assign benchmarks (in class or as HW)
  - solving specific puzzles (easy to differentiate)
  - earning certain badges or trophies (e.g. "solve 5")
  - building puzzles with particular characteristics

Other Tips for Success

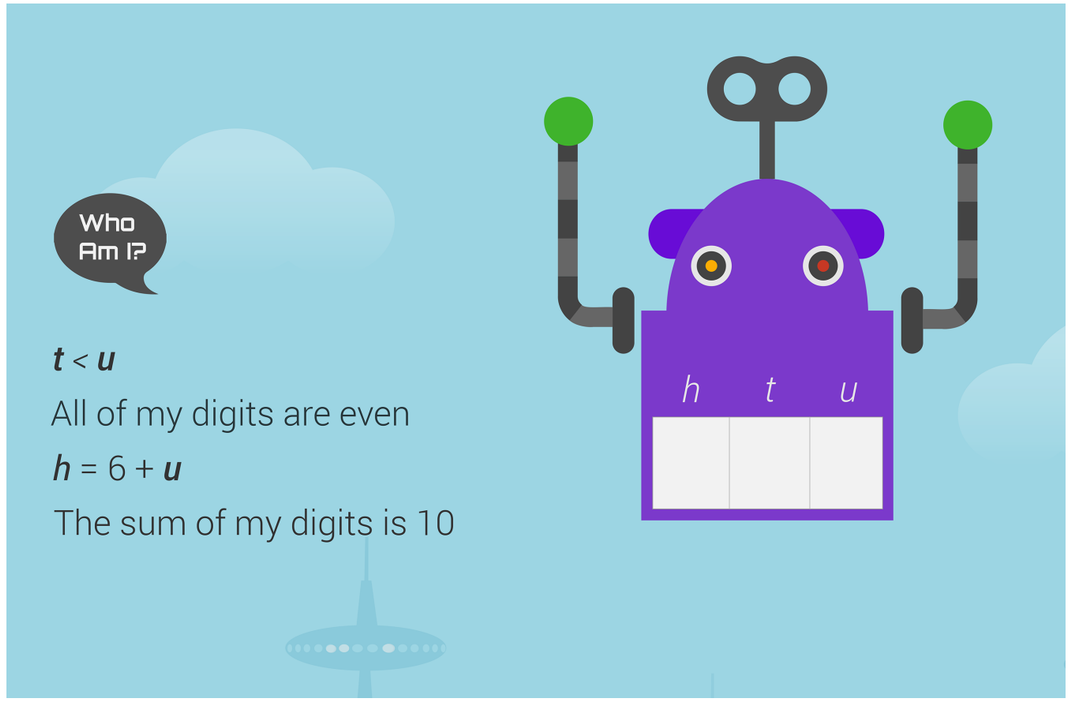
- Use a projector or an interactive white board
- Have students demonstrate solving
- Ask for "good next steps" (no "right way")
- Ask for "another way" to solve same puzzle
- Focus on students' logic over algebra at first
- Turn off devices during group discussions

In the Classroom

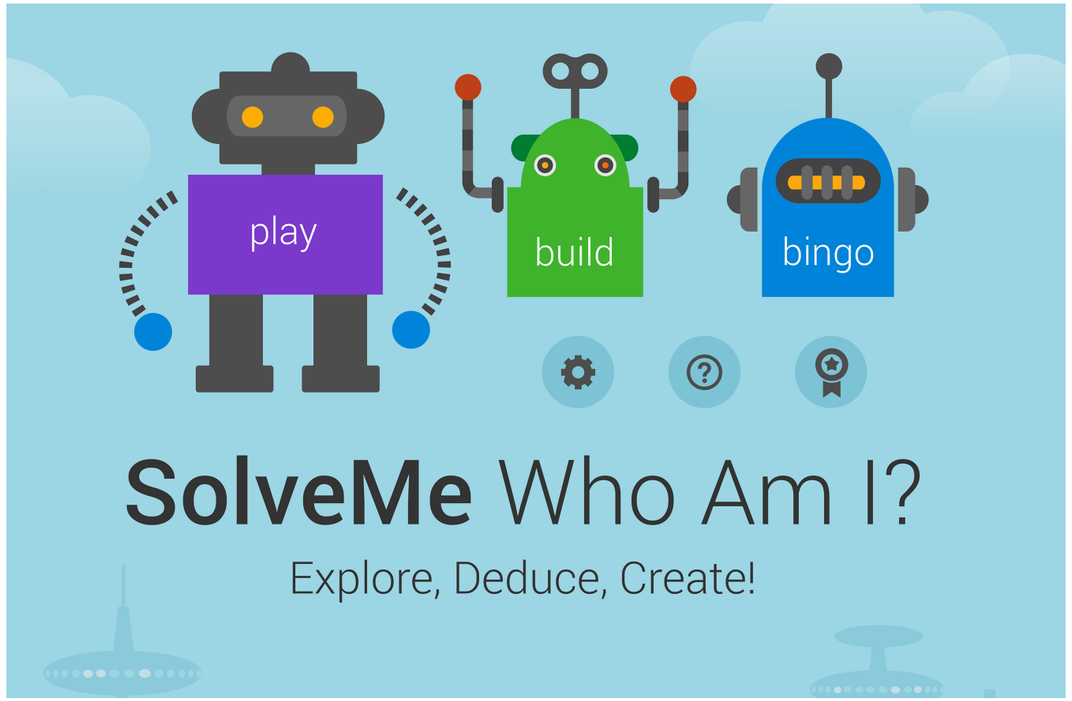




Playing SolveMe Who Am I?



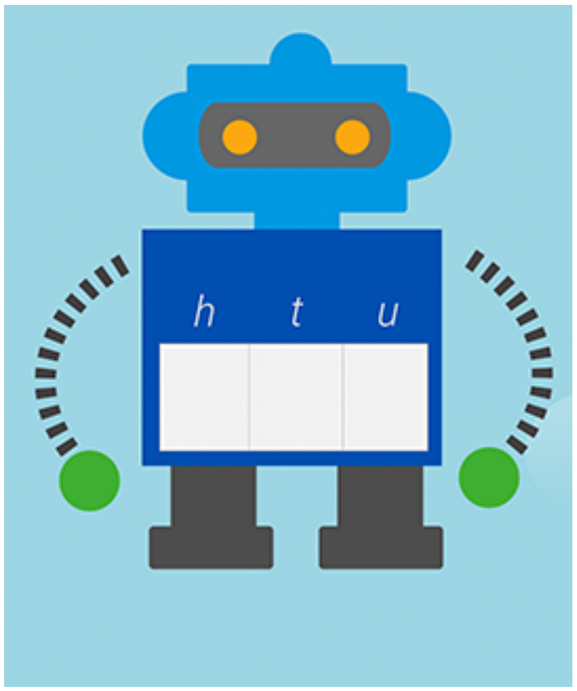
Building SolveMe Who Am I? Puzzles



SolveMe Who Am I? Sneak Preview

solveme.edc.org/whoami

for iPads and Laptops

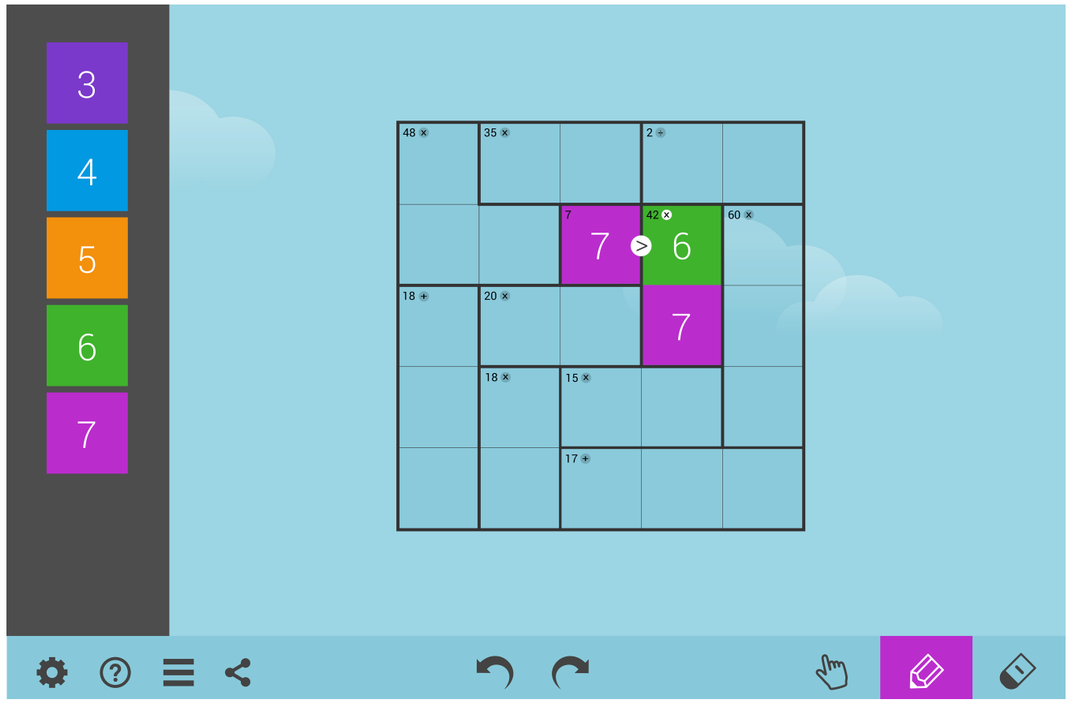


Adapting Who Am I? Puzzles

Choose or build puzzles with relevant content:

- place value
- parity: evens and odds
- inequalities
- squares and roots
- multiples
- primes
- divisibility
- factors
- GCD & LCM
- algebraic expressions
- factoring (ex: $t + u = 12$ and $tu = 36$)

SolveMe MysteryGrid



SolveMe MysteryGrid Sneak Preview

solveme.edc.org/mysterygrid

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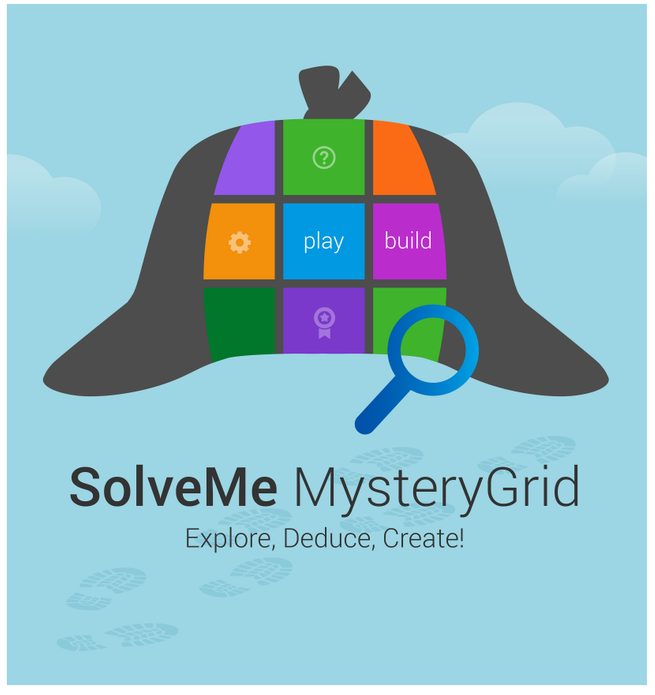

Discussion Questions

- 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!