Math Strategies for Grades 7-12

Instructional Strategies

Experiment

Who said experiments were just for Science? Try this [stacking cups activity](#) from Math=Love (adapted from [Dan Meyer](#)) with Algebra 1 students. It may feel disorganized at times, but it is hands on and brings the math to life. Pose the question, "How many cups tall am I?" and put students to work using actual cups. Ultimately, it led the students to solve the problem with a linear equation.
Here are some other experiments:

[Exponential Relations](#) – Penny a Day
[Writing Expressions to Solve Problems](#) – Hot Dog Eating Competition
[Systems of Equations](#) – Do Hybrid cars pay for themselves?

Assessment Strategies

Quick Writes

Quick writes give teachers a visual of student learning. Provide students with an open-ended question and set an amount of time for having them write--from two to five minutes. Tell students not to worry about the conventions of writing but rather focus on getting their ideas down on paper.
When the time is up, ask students to put their pencils down. Look through the quick writes for valuable information regarding the knowledge and understanding your students have about a given topic. Using a quick write at the start of class is also a great way to activate the prior knowledge of your students.

Standards of Mathematical Practices

Construct Viable Arguments and Critique the Reasoning of Others

- Understand and use stated assumptions, definitions, and previously established results in constructing arguments.
- Make conjectures and build a logical progression of statements to explore the truth of their conjectures.
- Analyze situations by breaking them into cases, and recognize and use counterexamples.
- Justify conclusions, communicate them to others, and respond to the arguments of others.
- Reason inductively about data, making plausible arguments that take into account the context from which the data arose.
- Compare the effectiveness of two plausible arguments, distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in an argument—explain what it is.
- Determine domains, to which an argument applies, listen or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments.
[Standards for Mathematical Practice Grade Level Emphasis*](#)

Classroom / Time Management Strategies

Call-and-Response

Call-and-response is a fun and quick way to capture attention, signal a transition, or start/end an activity in any classroom. In the classroom, the teacher might audibly issue a 1-3 word call, to which the entire class would (ideally) stop what they are doing and respond. Examples include: "Stop…collaborate and listen!" "Marco…Polo!" and "We are..limitless!". It may take a few times for a class to get the call-and-response strategy down. Make sure to give ample opportunities for practice in the initial period of learning the strategy. It can also be a great idea to give students the chance to come up with new call-and-response pairings. While this technique works for any age level, teachers should strive to make sure the phrasing is mature and age-appropriate.

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