

Routines, Lessons, Problems, and Projects:

Mastering the Elements of Math Instruction

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Author: *Necessary Conditions: Teaching Secondary Math with Academic Safety, Quality Tasks, and Effective Facilitation* (available from Stenhouse)

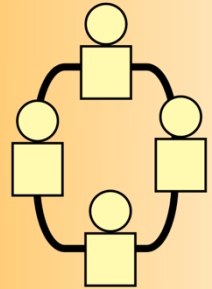
ROUTINES

Routines are well-understood structures that encourage discourse, sensemaking, and equity in the classroom. A teacher may have many different types of routines in her toolbox and utilizes them daily.



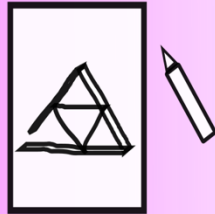
LESSONS

Lessons include any activity that involves transmitting or practicing content knowledge. Lessons can vary from whole class lectures to hands-on manipulative activities.



PROBLEMS

Problems are complex tasks, not immediately solvable without further knowhow, research or decoding of the prompt. Problems can take anywhere from one class period to three or four class periods.



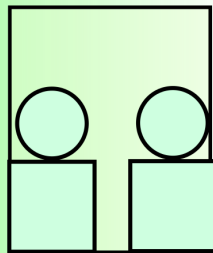
PROJECTS

Projects apply mathematical knowhow to an in-depth, authentic experience. A project occurs over the course of two to four weeks. Ideally, projects are outward facing, community based, and/or personally relevant to students.



ACTIVE CARING

Active caring involves demonstrating kindness and finding heartfelt value for each student. It involves a two-way relationship and potential disruption of social and academic status.



Additional evidence of Active Caring (bonus: define what it would look like as *passive* caring)

Additional Notes:

Problem: Will it Topple?

Define the Problem	
What is the problem about? What is it asking you to do?	
Routine: Analyze the Problem – Know / Need-to-Knows	
What do you know from the problem scenario or lessons that can help solve the problem?	What concepts or information do you need to know in order to solve the problem?
Brainstorm Strategies for Solving the Problem	
What strategies might you use to solve the problem? How will you start the problem?	

Quality Task Scoring Guide

Hallmarks of a quality task	1	2	3
Initiates curiosity and foster engagement	I'm not immediately curious about the task scenario.	I'm intrigued by the task scenario and would consider working through it, if I had the time.	I am compelled to attempt this task.
Yields creativity and lead to new ideas	The task is straightforward; students don't have the opportunity to test out ideas.	Students will have the opportunity to create new artifacts or test out ideas within this task.	Students will naturally create a new, never-before-seen mathematical artifact while completing this task.
Promotes access for all students in the classroom*	Some students will not understand or be able to access this task.	Every student will be able to engage with the task on some level.	Every student in the classroom will be able to access and be challenged by this task.
Requires and conveys deep, crucial mathematical content	The task is unaligned to crucial content and/or is rote or procedural.	The task is aligned to crucial standards for my course.	The task necessitates the use of mathematical content on a deep and permanent level.
Connects and extends content	The task basically "stays in its lane." It doesn't require or hint at other content.	The task draws upon content from previous or different content areas.	Students will <i>notice</i> that the task draws upon content from previous or different content areas.
Total =			

* - This row is non-negotiable. A quality task *must* be accessible.