

## Eliciting and Using Evidence of Student Thinking to Target the other 7 Effective Teaching Practices



**How can we plan and enact instruction that values a multiplicity of ideas, while eliciting, responding to, and extending student thinking in the classroom?**

**“A KEY CHALLENGE IS TO BUILD ON AND HONOR STUDENT THINKING WHILE ENSURING THAT MATHEMATICAL IDEAS AT THE HEART OF THE LESSON REMAIN PROMINENT.”** *Orchestrating Discussions* by Margaret S. Smith et al (NCTM 2009)

“The act of listening for students’ mathematics requires at the outset a commitment to setting aside our own mathematics and picking up that of our students as if it were our own; we agree to centralize the mathematics being shared by students and relinquish control over the evaluation of those ideas, and we do not engage or act on our own desires about what we wish students would say or ways they would say it.” *Enhancing Classroom Practice* edited by Denise A. Spangler and Jeffrey J. Wanko p 93

*“In listening to students, we create a space for making conjectures, forming and critiquing arguments, making connections, and promoting a culture of student reasoning and mathematical autonomy.” Enhancing Classroom Practice p 91*

### **Problems used for looking at student work:**

1. How many bows that are  $\frac{5}{12}$  yards long can be made from 3 yards of ribbon?
2. **If  $x > y$ , then which is greater?  $x + a$  or  $y + a$**   
Make a convincing argument using a representation such as a diagram, story, or number line to support your answer. (from task 4.4 Greater Than?)
3. **I know that  $5 > 4$ . Which is greater?  $5a$  or  $4a$**   
Make a convincing argument using a representation such as a diagram, story, or number line to support your answer. (from task 4.4 Greater Than?)
4. Elvira, the cafeteria manager, has just received a shipment of new trays with the school logo prominently displayed in the middle of the tray. After unloading 4 cartons of trays in the pizza line, she realizes that students are arriving for lunch and she will have to wait until lunch is over before unloading the remaining cartons. The new trays are very popular and in just a couple of minutes 24 students have passed through the pizza line and are showing off the school logo on the trays. At this time, Elvira decides to divide the remaining trays in the pizza line into 3 equal groups so she can also place some in the salad line and the sandwich line, hoping to attract students to the other lines. After doing so, she realizes that each of the three serving lines has only 12 of the new trays.  
**“That’s not many trays for each line. I wonder how many trays there were in each of the cartons I unloaded?”** (from task 4.1 Cafeteria Actions and Reactions)

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5. SECONDARY MATH I // MODULE 3  
FEATURES OF FUNCTIONS – 3.1

### 3.1 Getting Ready for a Pool Party *A Develop Understanding Task*



Sylvia has a small pool full of water that needs to be emptied and cleaned, then refilled for a pool party. During the process of getting the pool ready, Sylvia did all of the following activities, each during a different time interval.

Removed water with a single bucket	Filled the pool with a hose (same rate as emptying pool)
Drained water with a hose (same rate as filling pool)	Cleaned the empty pool
Sylvia and her two friends removed water with her three buckets	Took a break

1. Sketch a possible graph showing the height of the water level in the pool over time. Be sure to include all of activities Sylvia did to prepare the pool for the party. Remember that only one activity happened at a time. Think carefully about how each section of your graph will look, labeling where each activity occurs.