Principles to Actions: Elicit and Use Evidence of Student Thinking

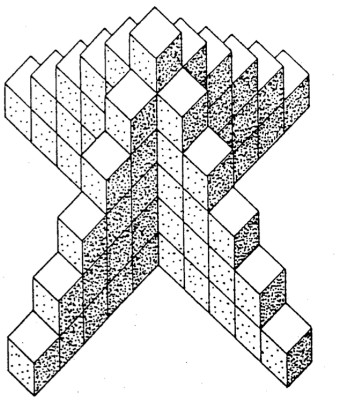
Link to Howard County Public School System Resources:
https://hcpss.instructure.com/courses/1609

Link to Presentation Resources: http://tinyurl.com/nctm17tasks

Elicit and use evidence of student thinking	
What are teachers doing?	**What are students doing?**
Identifying what counts as evidence of student progress toward mathematics learning goals. Eliciting and gathering evidence of student understanding at strategic points during instruction. Interpreting student thinking to assess mathematical understanding, reasoning, and methods. Making in-the-moment decisions on how to respond to students with questions and prompts that probe, scaffold, and extend. Reflecting on evidence of student learning to inform the planning of next instructional steps.	Revealing their mathematical understanding, reasoning, and methods in written work and classroom discourse. Reflecting on mistakes and misconceptions to improve their mathematical understanding. Asking questions, responding to, and giving suggestions to support the learning of their classmates. Assessing and monitoring their own progress toward mathematics learning goals and identifying areas in which they need to improve.

Source: Leinwand, S., Brahier, D.J., Huinker, D. (2014). *Principles to actions: ensuring mathematical success for all.* Reston, VA: NCTM, National Council of Teachers of Mathematics. p. 56

Skeleton Tower Task



1. How many cubes are needed to build this tower?
2. How many cubes are needed to build a tower like this, but 12 cubes high? Explain your reasoning.

Extensions:

3. How would you calculate the number of cubes needed for a tower *n* cubes high?
4. Describe the pattern for building the tower.

This task was adapted from Shell Centre for Mathematical Education, University of Nottingham, 1984.

Skeleton Towers and Towering Numbers adapted from: Driscoll, M. (1999). *Fostering Algebraic Thinking: A Guide for Teachers Grades 6-10.* Heinemann. p. 100.
Baseball Shop Task: Howard County Public Schools, Mathematics 8 Task, Unit 3

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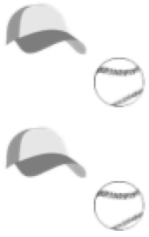
The Baseball Shop

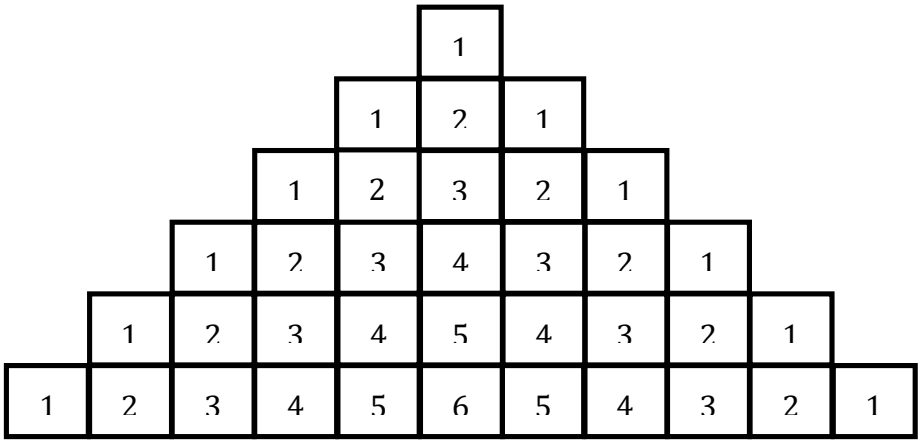
The Task **(8.EE.C.8)**

A baseball souvenir shop is offering the following packages for signed baseballs, hats, and bats:

Couple's Package $46.00	Autograph Hunter Package $31.00	Let's Play Ball Package $33.00
		

If the baseball shop sells each item individually, what is the cost of each item?

Towering Numbers



1. There are six rows in the tower pictured above. How many bricks would be in the seventh row?
2. Suppose you wanted to build a tower with 25 rows using the same design. Describe how you could figure out how many bricks you would need for the twenty-fifth row.
3. A very large tower was build using the same design. The longest row had 299 bricks in it. How many rows of bricks did the tower have?

Extensions:

4. If somebody told you how many rows of bricks were in a tower, how could you figure out the number of bricks in the longest row?
5. If somebody told you how many bricks were in the longest row of a tower, how could you figure out how many rows there were?

Skeleton Towers and Towering Numbers adapted from: Driscoll, M. (1999). *Fostering Algebraic Thinking: A Guide for Teachers Grades 6-10.* Heinemann. p. 100.
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