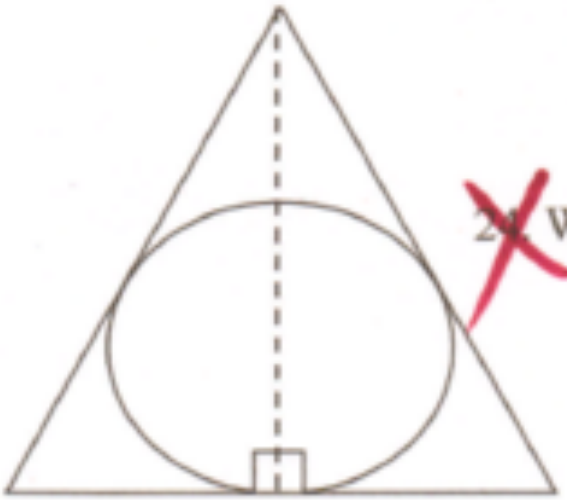


2) What is the dotted line called? the elder wand

Reflecting on Practice 2012

Day 8

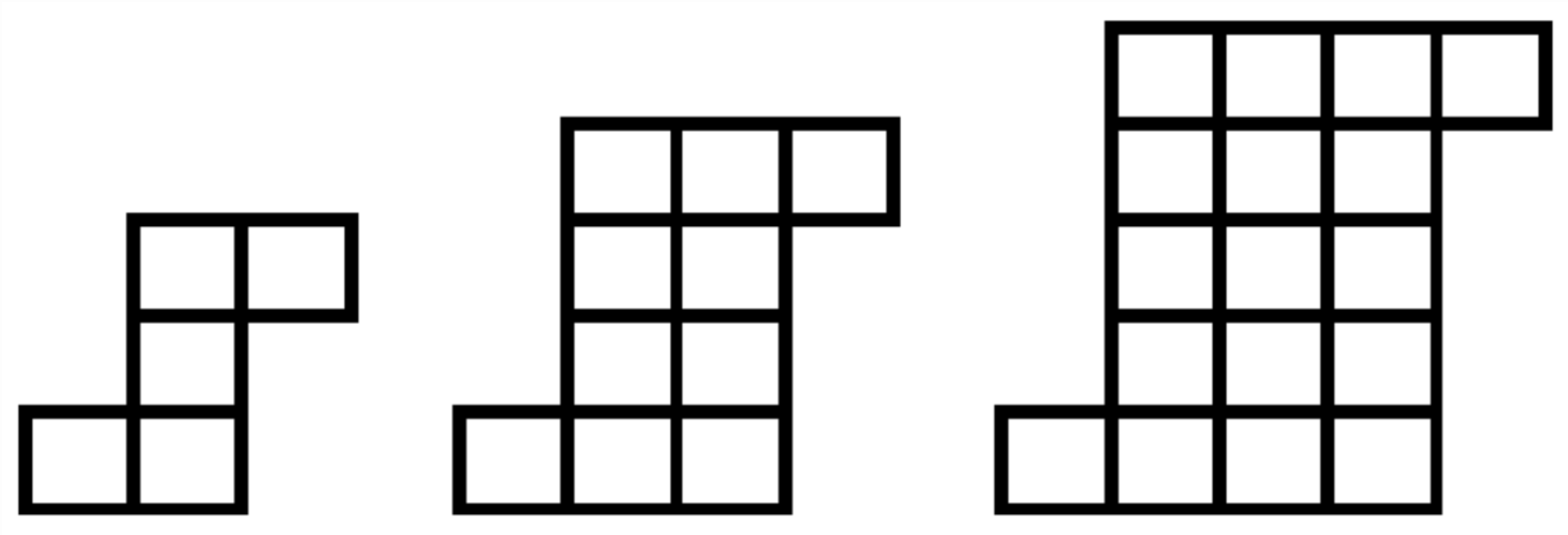
Applying our lens in other contexts

- You have been given a framework for categorizing teacher questions based on one laid out by Mark Driscoll in his book *Fostering Algebraic Thinking*
- Consider each of Driscoll's questions through the lens of "Pushing and Probing", and decide which category each falls into.

Let's do some math!

- This is a problem from the 1996 12th grade National Assessment of Education Progress. Take a few minutes to work on it yourself. If you find an answer before the time is up, find as many other ways as you can that a student might think about the pattern.

What did you see?

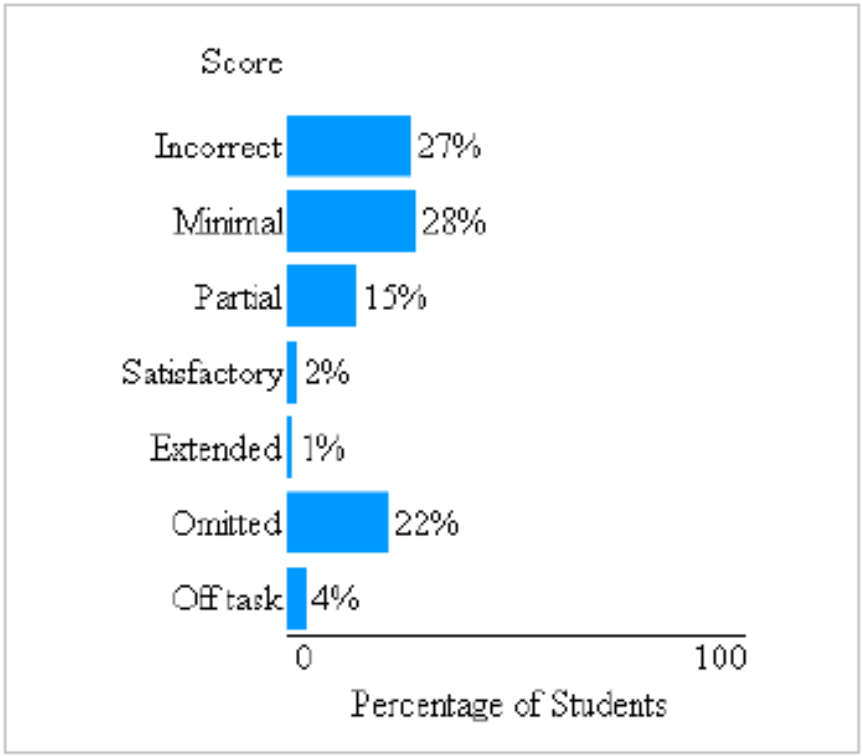


Important Points

- The problem requires respondents to use the physical context in justifying answers.
- Requires some precision in relating figure# to #of tiles.
- Has multiple solution pathways.

NAEP national performance results in Mathematics at grade 12: 1996

Describe Pattern of Squares in 20th Figure



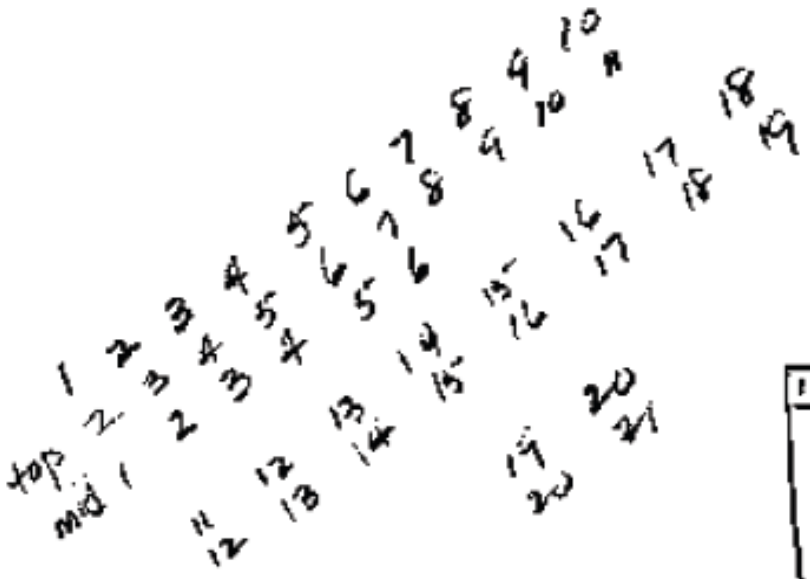
NOTE: These results are for public and nonpublic school students. Percentages may not add to 100 due to rounding. Off task applies to responses that do not address the question presented, are illegible, or cannot otherwise be scored.

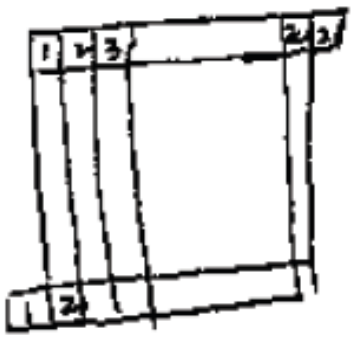
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 1996 Mathematics Assessment.

Looking at Student Work

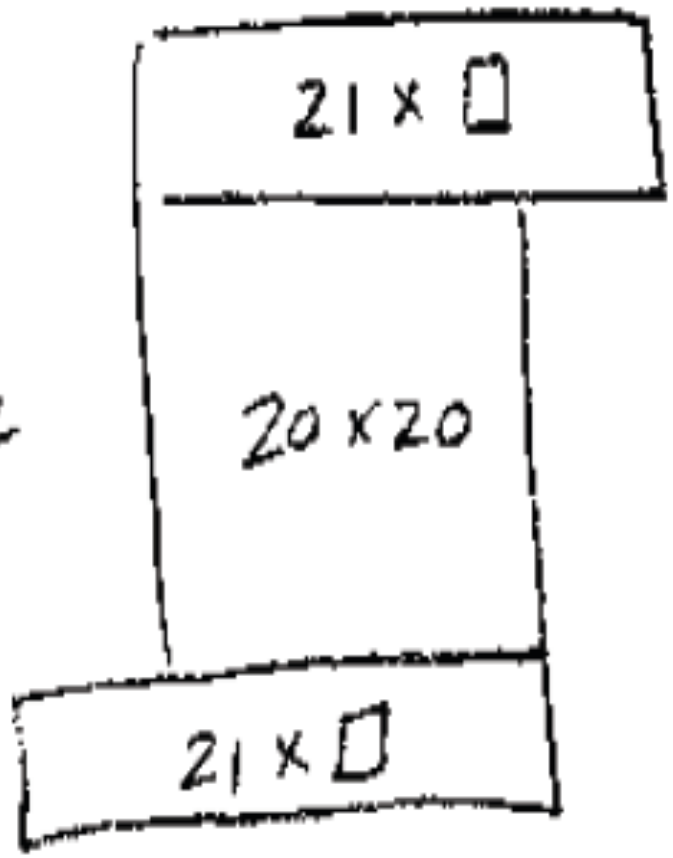
- In your folders, find Handout #3 with student work.
- Using Driscoll's questions as a starting point, craft at least two questions for each student.
- Ask yourself: Do you need to probe or push this student's thinking?
- Try to get through all of them in the next 20 minutes.

- What did your group think about the pieces of student work you examined?


top
mid



20th figure will have 442 tiles. Starting with the first pattern there is 2 greater



Each figure increases 1 layer in height and 1 middle layer in width for every succession relative to the first. For example, for the n^{th} section, the figure will be $n+1$ units across the base, n units wide, $n+1$ units across the top, and $n+2$ units high. This is the pattern. The 20th figure will be 21 units across on the bottom length, 20 units wide in the middle, 22 units high, and 21 units at the top. The increase is linear.

Total number of tiles it contains:

$$21 + (20 \times 20) + 21 = 442$$

The inner square is always $(n \times n)$ units