Describing Patterns Algebraically: Find the Next or Find the Nth?

Tuesday, November 1, 2016: 8:00 AM-9:00 AM
204 C (Pennsylvania Convention Center)

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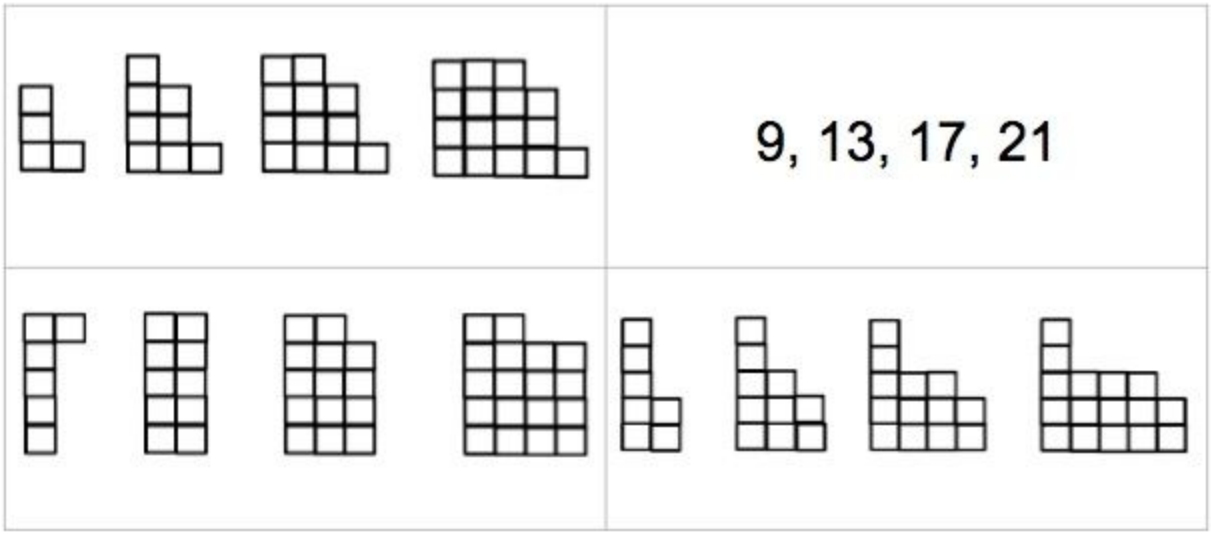
"How do you see this figure growing?" is a simple yet engaging question for the study of patterns and relationships. We'll look at the distinction between describing the next figure in a pattern and the nth figure in a pattern, and how this distinction impacts students' work with proportional relationships, slope, and functions.

Which one doesn't belong?

(Check out more at http://wodb.ca/ and @WODBMath; and at http://www.visualpatterns.org/)



How do you see this pattern growing?

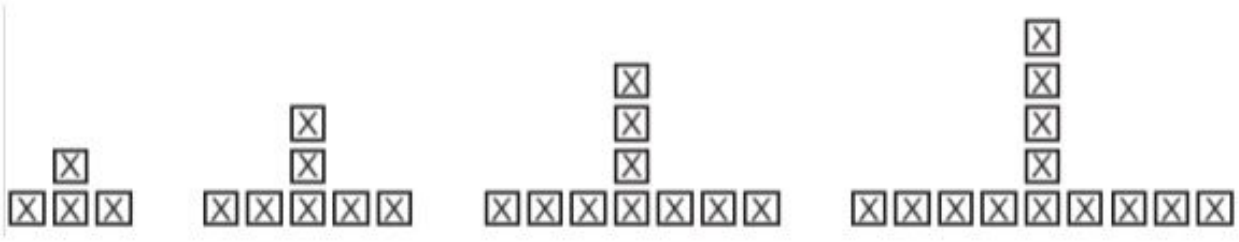
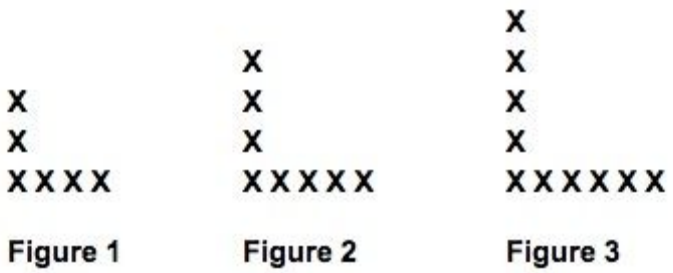
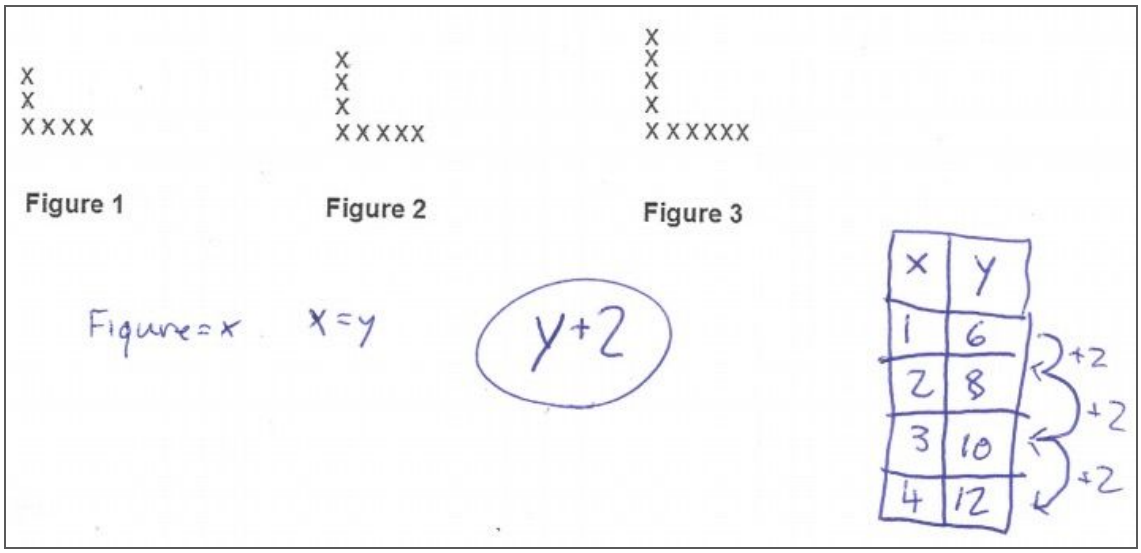


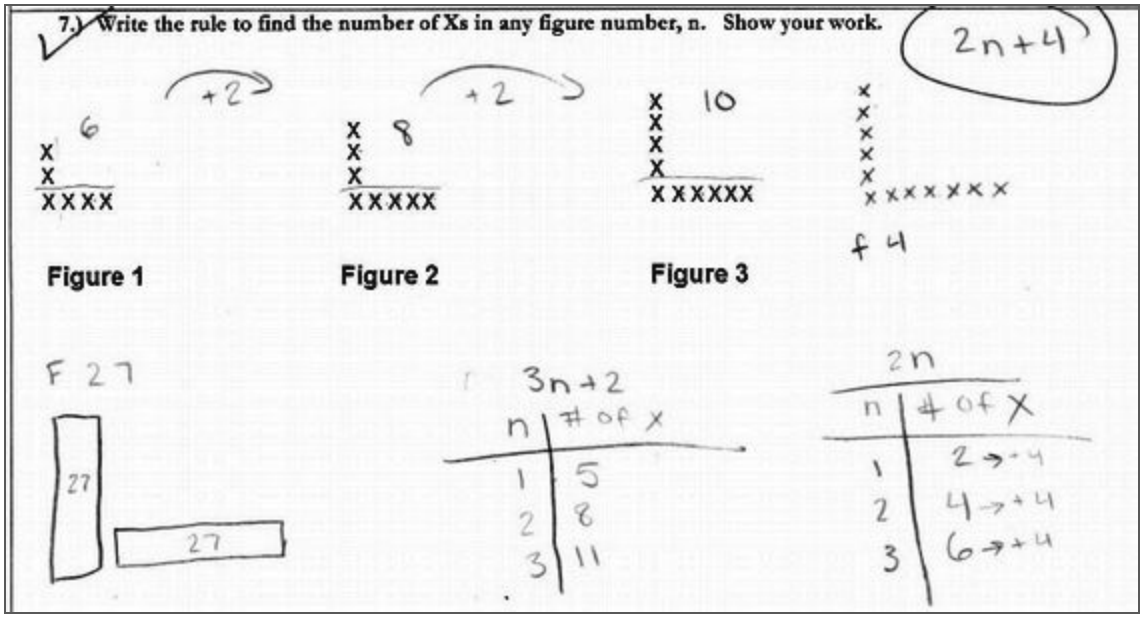
Figure 1 Figure 2 Figure 3 Figure 4

Sketch the 10th figure.	Sketch the 27 figure.
If you know what Figure 12 looks like, what would you do to draw the next figure?	How would you figure out how many X's are in the 100th figure?

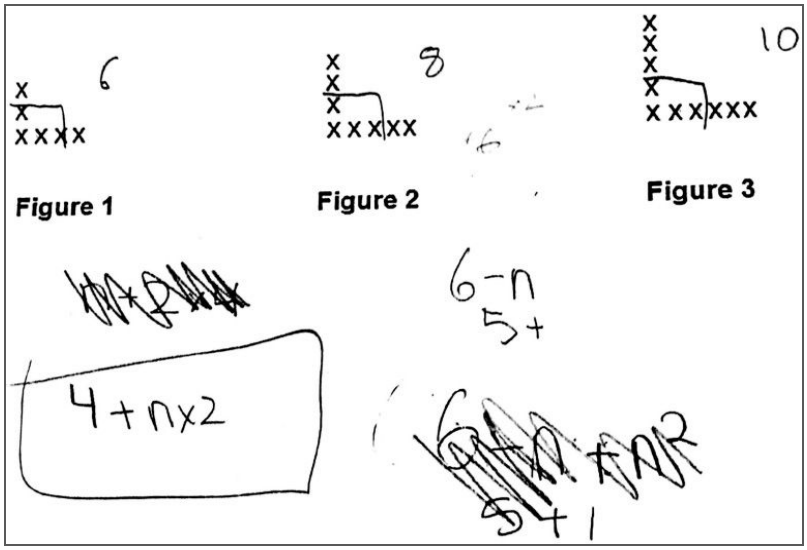
Student work for this pattern:

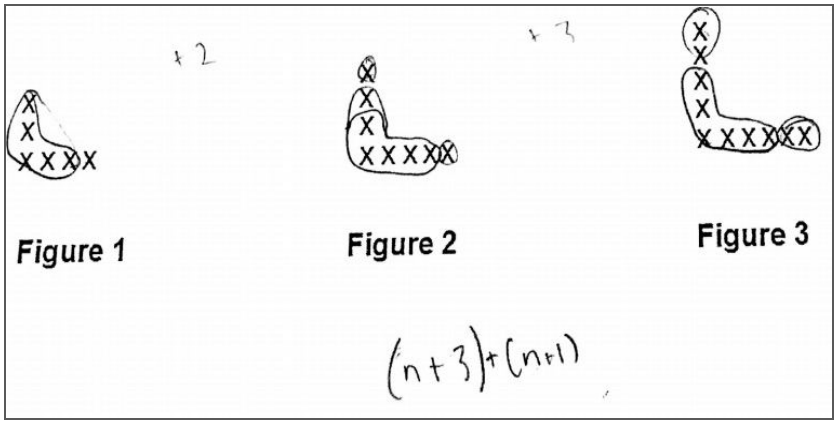






What's the same? What's different?





Practical Tips

- Don't discourage recursive thinking. It's the entry point!
- Do lot's of drawing!
    - Draw the next and draw the 27th
    - What's changing and what's not?
- Teach them how to organize their thinking when they become disorganized.
- Look for and describe the connections
    - Between recursive rule and functional rule
    - Between different forms of the functional rule
- Do these often!