# Problem of the Week
## Problem C
## Burger Boxes

At the local burger restaurant, Patty always cooks burgers one at a time. After cooking a burger, she places it into one of three different boxes: one with dots, one with stripes, and one plain box. The first burger she places in a box with dots and puts it on the top of the stack. The second burger she places in a box with stripes and puts it on the top of the stack. The third burger she places in a plain box and puts it on the top of the stack. If she has cooked three burgers, she would have a stack as shown in Image 1.
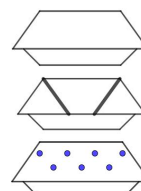


Image 1

Patty then repeats the pattern of placing the burgers in boxes. As she cooks a burger, she places that box on the top of the stack of not yet sold burgers, and continues to cycle through the three different boxes (dot, stripe, plain, dot, stripe, plain, ...) into which to place the burger. If she cooked two more burgers, she would have a stack as shown in Image 2.
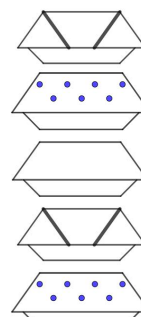
At the same time, Tom sell burgers one at a time and always takes the uppermost box from the stack. Patty cooks faster than Tom can sell the burgers.



Image 2

Shortly into a new shift, Patty has cooked some burgers and Tom has sold some burgers. The stack of unsold burgers looks like the stack in Image 3. What is the fewest number of burgers sold by Tom? Explain your answer.
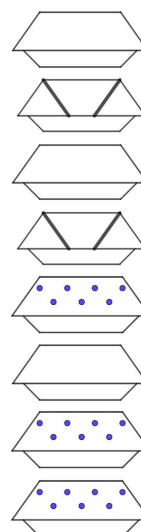


Image 3

**STRANDS**   NUMBER SENSE AND NUMERATION, PATTERNING AND ALGEBRA