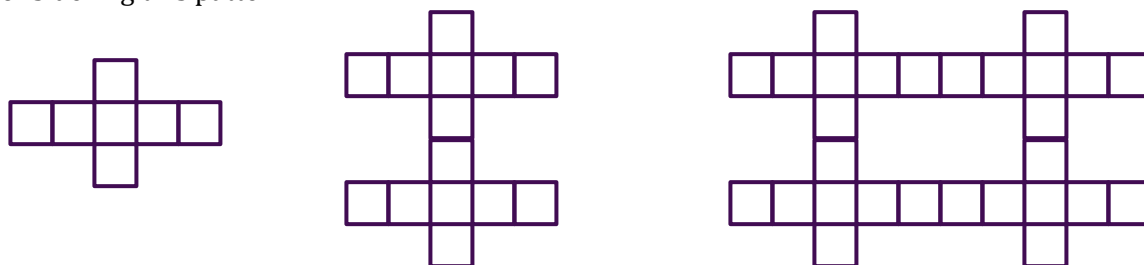


2.5 Making My Point:

A Solidify Understanding Task

Zac, Sione and Mark are looking at some quilt patterns that contain square blocks. They are considering this pattern.



Zac: In this pattern the number of square blocks is double so I new it was exponential. The first one has seven blocks and then it is doubling so the equation must be $f(x) = 3.5(2)^x$.

Sione: I don't know about that. I agree that it is an exponential function—just look at that growth pattern. But, I made this table:

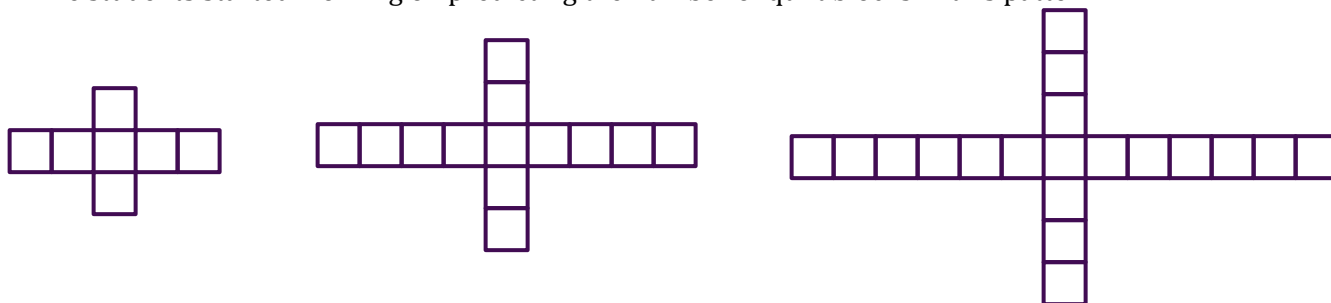
x	1	2	3	4
$f(x)$	7	14	28	56

I used the numbers in the table and got this equation: $f(x) = 7(2)^{x-1}$.

Mark: Very good work. I think those are both great and I think we can create a bunch more equations that will also work. See, $f(x) = 14(2)^{x-2}$, $f(x) = 28(2)^{x-3}$ all create that same table of values on my calculator.

1. How did Zac get 3.5 in the equation?
2. How did Sione get an $x-1$ in his equation?
3. Is Mark correct? Can you use any of the equations? **Why?**

The students started working on predicting the number of quilt blocks in this pattern:



When they compared their results, they had an interesting discussion:

Zac: I got $f(n) = 6n + 1$ because I noticed that 6 blocks were added each time so the pattern must have started with 1 block at $n = 0$.

Sione: I got $f(n) = 6(n - 1) + 7$ because I noticed that at $n = 1$ there were 7 blocks and at $n = 2$ there were 13, so I used my table to see that I could get the number of blocks by taking one less than the n , multiplying by 6 (because there are 6 new blocks in each figure) and then adding 7 because that's how many blocks in the first figure. Here's my table:

1	2	3	4	n
7	$7+6 = 13$	$7+6+6=19$	$7+6+6+6 = 25$	$6(n-1) + 7$

Mark: Again, I think we can make a lot of equations that will work. I have these on my calculator and they are all the same: $y = 6(n-2) + 13$, $y = 6(n-3) + 19$, $y = 6(n-4) + 25$

4. Can all of the equations the students suggest work? Show why or why not?
5. If all the equations suggested work, then can you make another one that would work? What would it be?
6. Make an equation for each table below. (Use Mark's strategy.)

a.

x	y
32	50
33	55
34	60

b.

x	y
26	78
28	70
30	62

c.

x	y
-15	32
-14	39
-13	46

2.5 Get to the Point – Teacher Notes

A Solidify Understanding Task