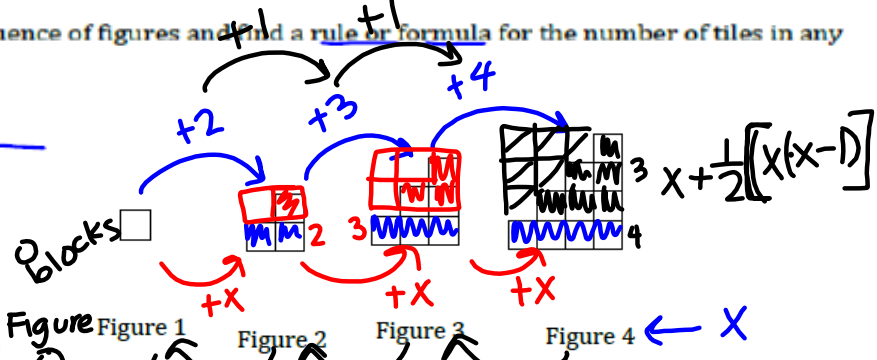


A5: Get out your books and start talking about what the explicit equation would be for our pattern in 1.1, pg. 3.

We will finish that up and go over any HW questions you have after Ms. Hansen takes attendance.

3. Examine the sequence of figures and find a rule or formula for the number of tiles in any figure number.

x	y
1	1
2	3
3	6
4	10
5	15
6	21
7	28
8	36
9	45
10	55
...	...
x	



Recursive Formula (of sorts)

$$36 = 8^2 - 28$$

$$45 = 6^2 - 28$$

$$y = x^2 - m$$

$m = \# \text{ of blocks in figure before}$

Explicit Formula

$$x + \frac{1}{2}[x(x-1)] =$$

$$x + \frac{1}{2}[x^2 - x] =$$

$$x + \frac{1}{2}x^2 - \frac{1}{2}x =$$

$$\frac{1}{2}x^2 + \frac{1}{2}x$$

Test: $\frac{1}{2}x^2 + \frac{1}{2}x$

$$\frac{1}{2}(10)^2 + \frac{1}{2}(10) = 55$$

$$55 = 55 \checkmark$$

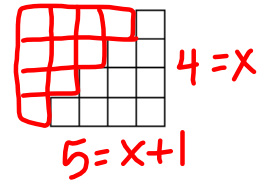
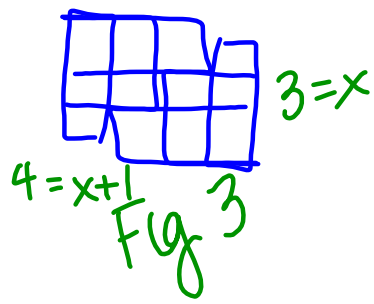
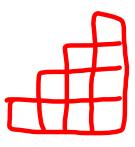


Figure 4

$$\frac{1}{2}(x(x+1)) =$$

$$\frac{x(x+1)}{2}$$



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Simplify the following expressions

1. $3(2x + 7)$	2. $-12(5x - 4)$
3. $5a(-3a + 13)$	4. $9x(6x - 2)$
5. $\frac{2x}{3}(12x + 18)$ <i>$(\frac{2}{3}) * 12x + (\frac{2}{3}) * 18$ $8x^2 +$</i>	6. $\frac{4a}{5}(10a - 25b)$
	7. $\frac{-4x}{11}(121x + 22) =$ <i>$-\frac{484x^2}{11} + \frac{-88x}{11} =$ $-\underline{44x^2 - 8x}$</i>

Set Topic: Recognizing linear, exponential, and quadratic equations.

In each set of 3 functions, one will be linear and one will be exponential. One of the three will be a new category of function. List the characteristics in each table that helped you to identify the linear and the exponential functions. What are some characteristics of the new function? Find an explicit and recursive equation for each.

8. Linear, exponential, or a new kind of function.

a.	<table border="1"><thead><tr><th>x</th><th>f(x)</th></tr></thead><tbody><tr><td>6</td><td>64</td></tr><tr><td>7</td><td>128</td></tr><tr><td>8</td><td>256</td></tr></tbody></table>	x	f(x)	6	64	7	128	8	256	b.	<table border="1"><thead><tr><th>x</th><th>f(x)</th></tr></thead><tbody><tr><td>6</td><td>36</td></tr><tr><td>7</td><td>49</td></tr><tr><td>8</td><td>64</td></tr></tbody></table>	x	f(x)	6	36	7	49	8	64	c.	<table border="1"><thead><tr><th>x</th><th>f(x)</th></tr></thead><tbody><tr><td>6</td><td>11</td></tr><tr><td>7</td><td>13</td></tr><tr><td>8</td><td>15</td></tr></tbody></table>	x	f(x)	6	11	7	13	8	15
x	f(x)																												
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In each set of 3 functions, one will be linear and one will be exponential. One of the three will be a new category of function. List the characteristics in each table that helped you to identify the linear and the exponential functions. What are some characteristics of the new function? Find an explicit and recursive equation for each.

8. Linear, exponential, or a new kind of function.

a.

x	f(x)
6	64
7	128
8	256
9	512
10	1024

Type and characteristics?
exponential
 Explicit equation:
 $f(x) = 2^x$
 Recursive equation:
 previous term $\cdot 2$
 $f(x) = [f(x-1)] \cdot 2$

b.

x	f(x)
6	36
7	49
8	64
9	81
10	100

Type and characteristics?
new (quadratic)
 Explicit equation:
 $f(x) = x^2$
 Recursive equation:
 previous $\cdot x$
 $f(x) = [f(x-1)] \cdot x$

c.

x	g(x)
5	11
6	13
7	15
8	17
9	19

Type and characteristics?
linear
 Explicit equation:
 $f(x) = 2x - 1$
 Recursive equation:
 previous $+ 2$
 $f(x) = f(x-1) + 2$

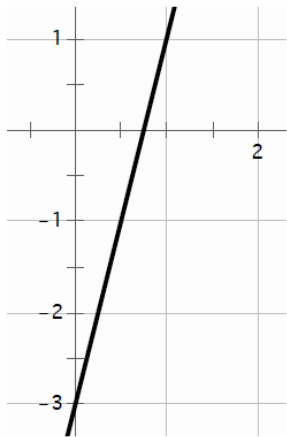
$y = mx + b$
 $y = 2x - 1$

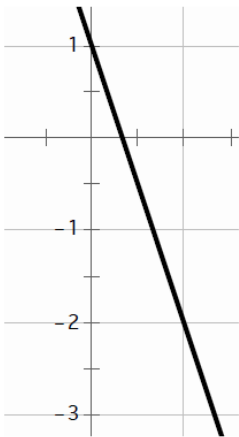
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11. 

12. 

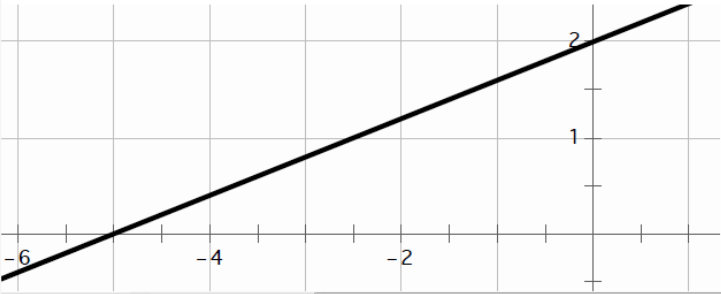
13.

x	f(x)
25	65
26	68
27	71
28	74

 $m = \frac{y_2 - y_1}{x_2 - x_1}$

14. $f(0) = 7; f(n + 1) = f(n) + 5$
 $(0, 7)$ *slope*

16. Slope of \overline{AB}
 $A(-3, 12) B(-11, -16)$



8.50 x 11.00 in

1.2 I Rule!

A Solidify Understanding Task

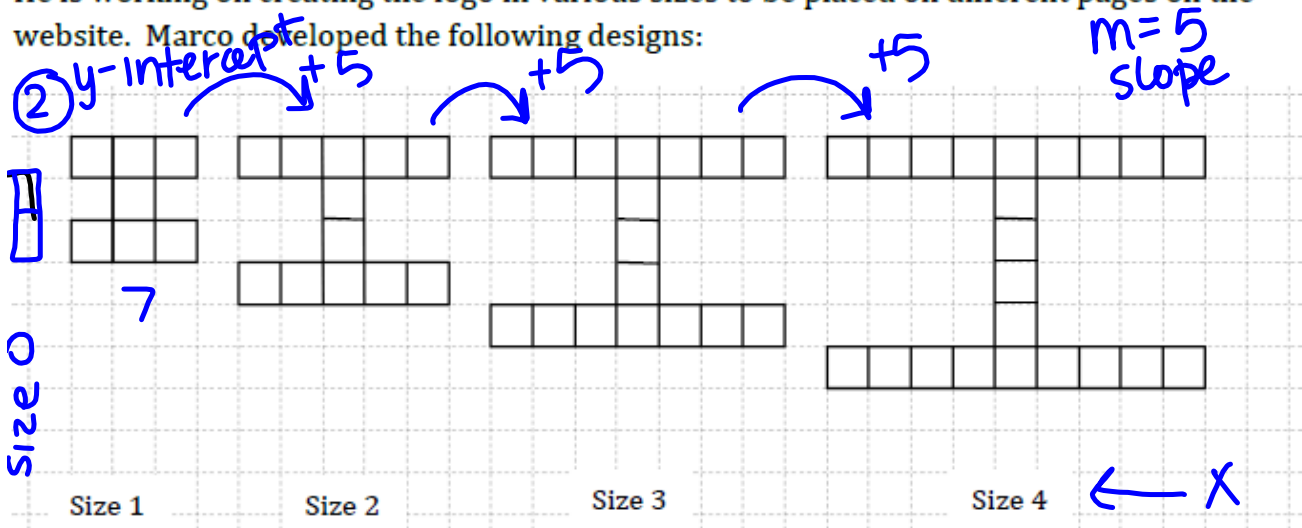


Marco has started a new blog about sports at Imagination High School (mascot: the fighting unicorns) that he has decided to call "I Site". He created a logo for the web site that looks like this:



$y = mx + b$
linear

He is working on creating the logo in various sizes to be placed on different pages on the website. Marco developed the following designs:



1. How many squares will be needed to create the size 100 logo?

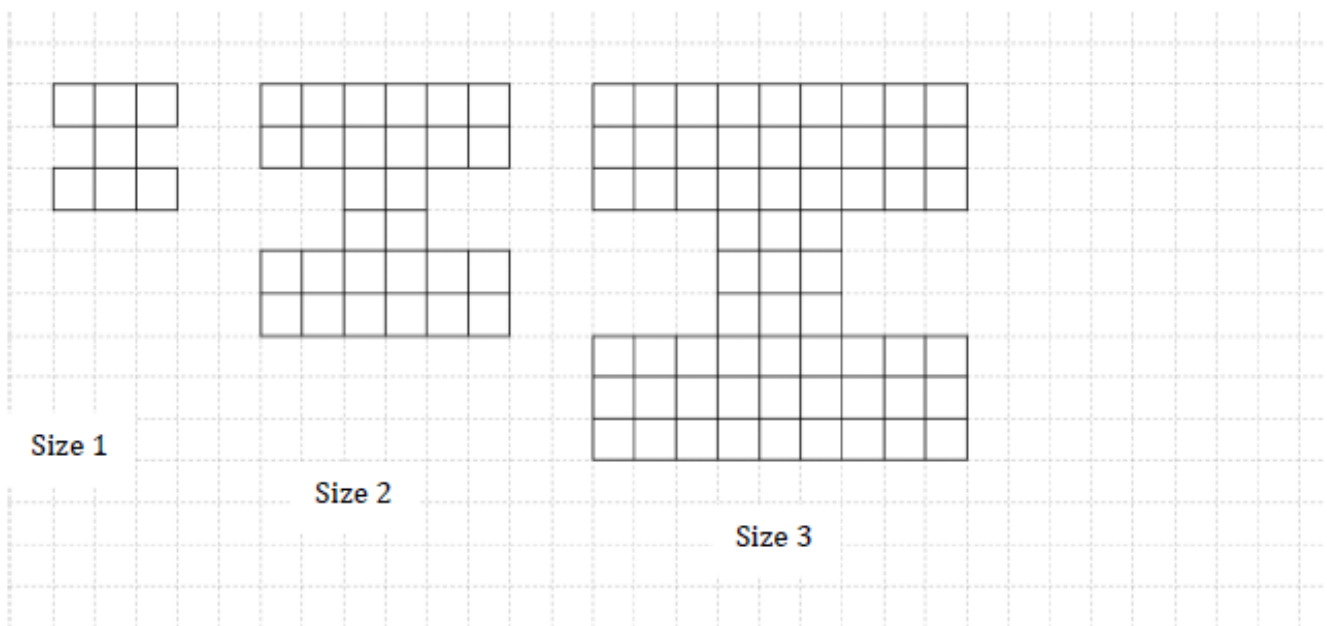
2. Develop a mathematical model for the number of squares in the logo for size n .

$$f(x) = mx + b$$

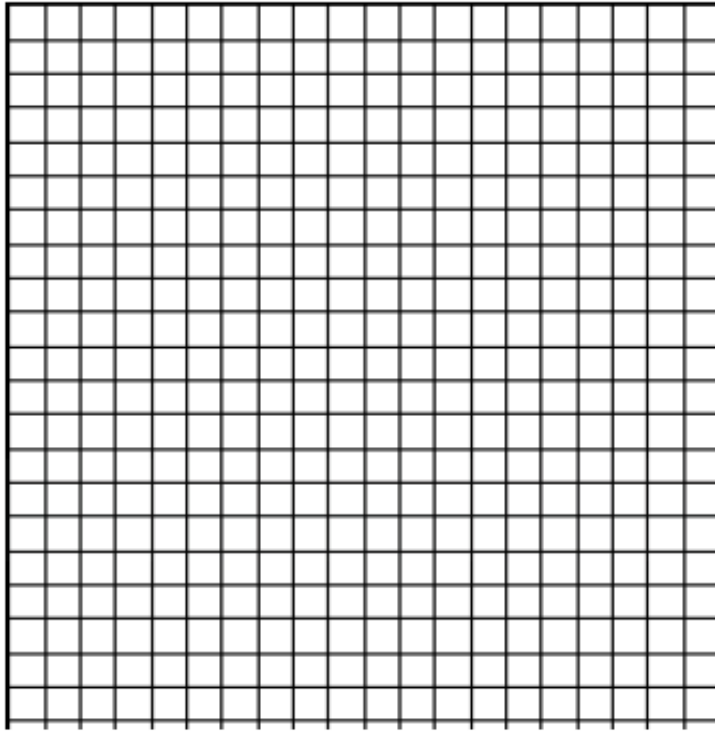
$$f(x) = 5x + 2$$

$$f(n) = 5n + 2$$

Marco decides to experiment with making his logo "blockier" so that it looks stronger. Here's what he came up with:



3. Assuming that Marco continues with the pattern as it has begun, draw the next figure, size 4, and find the number of blocks in the figure.



4. Develop a mathematical model for the number of blocks in a logo of size n .
5. Compare the models that you developed for the first set of logos to the second set of logos. In what ways are they similar? In what ways are they different?

Homework/Classwork

Finish 1.2