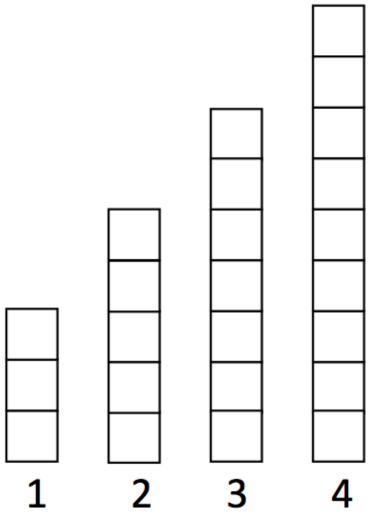
1.3 Scott's Macho March

A Solidify Understanding Task

After looking in the mirror and feeling flabby, Scott decided that he really needed to get in shape. He joined a gym and added push-ups to his daily exercise routine. He started keeping track of the number of push-ups he completed each day in the bar graph below, with day one showing he completed three push-ups. After four days, Scott was certain he could continue this pattern of increasing the number of push-ups for at least a few months.



1. Model the number of push-ups Scott will complete on any given day. Include both explicit and recursive equations.

Scott's gym is sponsoring a "Macho March" promotion. The goal of "Macho March" is to raise money for charity by doing push-ups. Scott has decided to participate and has sponsors that will donate money to the charity if he can do a total of at least 500 push-ups, and they will donate an additional $10 for every 100 push-ups he can do beyond that. So now Scott is going to track the total number of push-ups done up to any given day of the month.

2. Estimate the total number of push-ups that Scott will do in a month if he continues to increase the number of push-ups he does each day in the pattern shown above.

3. Draw the diagram that shows the total number of pushups that Scot has done in the month at the end of each day.

4. How many push-ups will Scott have done after a week?

5. Model the total number of push-ups that Scott has completed on any given day during "Macho March". Include both recursive and explicit equations.

6. Will Scott meet his goal and earn the donation for the charity? Will he get a bonus? If so, how much? Explain.

1.3

READY, SET, GO! Name Period Date

READY

Topic: Multiplying two binomials

In the previous RSG, you were asked to use the distributive property on two different terms in the same problem. Example: *Multiply and simplify* $3x(4x+1)+2(4x+1)$.

You may have noticed that the binomial $(4x+1)$ occurred twice in the problem.

Here is a simpler way to write the same problem: $(3x+2)(4x+1)$.

You will use the distributive property twice. First multiply $3x(4x+1)$; then multiply $+2(4x+1)$. Add the like terms. Write the x^2 term first, the x-term second, and the constant term last.

$\mathbf{3x(4x+1)+2(4x+1)} \rightarrow \mathbf{(12x^2+3x)+(8x+2)} \rightarrow \mathbf{12x^2+[3x+8x]+2} \rightarrow \underbrace{\mathbf{12x^2+11x+2}}_{\text{Simplified form}}$

like terms

Multiply the two binomials. (Your answer should have 3 terms and be in this form ax^2+bx+c.)

1. $(x+5)(x-7)$
2. $(x+8)(x+3)$
3. $(x-9)(x-4)$
4. $(x+1)(x-4)$
5. $(3x-5)(x-1)$
6. $(5x-7)(3x+1)$
7. $(4x-2)(8x+10)$
8. $(x+6)(-2x+5)$
9. $(8x-3)(2x-1)$

SET

Topic: Distinguishing between linear and quadratic patterns

Use first and second differences to identify the pattern in the tables as *linear, quadratic*, or *neither*. Write the recursive equation for the patterns that are linear or quadratic.

10.

x	y
-3	-23
-2	-17
-1	-11
0	-5
1	1
2	7
3	13

a. Pattern:
b. Recursive equation:

11.

x	y
-3	4
-2	0
-1	-2
0	-2
1	0
2	4
3	10

a. Pattern:
b. Recursive equation:

12.

x	y
-3	-15
-2	-10
-1	-5
0	0
1	5
2	10
3	15

a. Pattern:
b. Recursive equation:

13.

x	y
-3	24
-2	22
-1	20
0	18
1	16
2	14
3	12

a. Pattern:
b. Recursive equation:

14.

x	y
-3	48
-2	22
-1	6
0	0
1	4
2	18
3	42

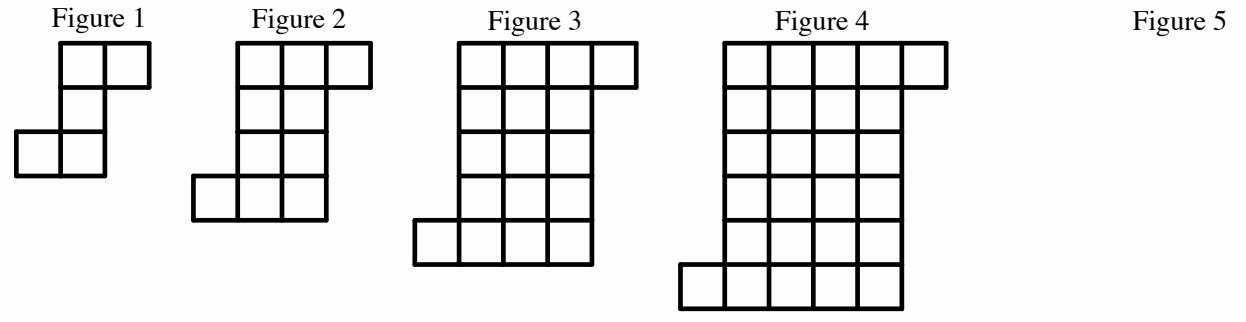
a. Pattern:
b. Recursive equation:

15.

x	y
-3	4
-2	1
-1	0
0	1
1	4
2	9
3	16

a. Pattern:
b. Recursive equation:

16.



a. Draw figure 5.
b. Predict the number of squares in figure 30. Show what you did to get your prediction.

GO

Topic: Interpreting recursive equations to write a sequence

Write the first five terms of the sequence.

17. $f(0) = -5; f(n) = f(n-1) + 8$

18. $f(0) = 24; f(n) = f(n-1) - 5$

19. $f(0) = 25; f(n) = 3f(n-1)$

20. $f(0) = 6; f(n) = 2f(n-1)$