1.2

READY, SET, GO! Name Period Date

READY

Topic: Using function notation

To **evaluate** an equation such as $y = 5x + 1$ when given a specific value for x, replace the variable x with the given value and work the problem to find the value of y.
Example: Find y when x = 2. Replace x with 2. $y = 5(2) + 1 = 10 + 1 = 11$.
Therefore, y = 11 when x = 2. The point $(2, 11)$ is one solution to the equation $y = 5x + 1$. Instead of using x *and* y in an equation, mathematicians often write $f(n) = 5n + 1$ because it can give more information. With this notation, the direction to find $f(2)$, means to replace the value of n with 2 and work the problem to find $f(n)$. The point $(n, f(n))$ is in the same location on the graph as (x, y), where n describes the location along the x–axis, and $f(n)$ is the height of the graph.

Given that $f(n) = 8n - 3$ and $g(n) = 3n - 10$, evaluate the following functions with the indicated values.

1. $f(5) =$
2. $g(5) =$
3. $f(-4) =$
4. $g(-4) =$
5. $f(0) =$
6. $g(0) =$
7. $f(1) =$
8. $g(1) =$

Topic: Looking for patterns of change
Complete each table by looking for the pattern.

9.

Term	1st	2nd	3rd	4th	5th	6th	7th	8th
Value	2	4	8	16	32			

10.

Term	1st	2nd	3rd	4th	5th	6th	7th	8th
Value	66	50	34	18				

11.

Term	1st	2nd	3rd	4th	5th	6th	7th	8th
Value	160	80	40	20				

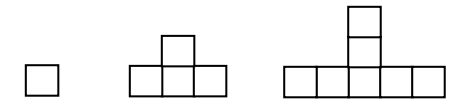
12.

Term	1st	2nd	3rd	4th	5th	6th	7th	8th
Value	-9	-2	5	12				

SET

Topic: Use variables to create equations that connect with visual patterns.

In the pictures below, each square represents one tile.



Step 1 Step 2 Step 3 Step 4 Step 5

13. Draw Step 4 and Step 5.

The students in a class were asked to find the number of tiles in a figure by describing how they saw the pattern of tiles changing at each step. Match each student's way of describing the pattern with the appropriate equation below. Note that *"s"* represents the step number and "*n*" represents the number of tiles.

(a) $\boldsymbol{n = (2s - 1) + (s - 1)}$ **(b)** $\boldsymbol{n = 3s - 2}$ **(c)** $\boldsymbol{n = s + 2(s - 1)}$

14. _____Dan explained that the middle "tower" is always the same as the step number. He also pointed out that the 2 arms on each side of the "tower" contain one less block than the step number.

15. _____ Sally counted the number of tiles at each step and made a table. She explained that the number of tiles in each figure was always 3 times the step number minus 2.

step number	1	2	3	4	5	6
number of tiles	1	4	7	10	13	16

16. _____ Nancy focused on the number of blocks in the base compared to the number of blocks above the base. She said the number of base blocks were the odd numbers starting at 1. And the number of tiles above the base followed the pattern 0, 1, 2, 3, 4. She organized her work in the table at the right.

Step number	# in base + #on top
1	1 + 0
2	3 + 1
3	5 + 2
4	7 + 3
5	9 + 4

GO

Topic: The meaning of an exponent

Write each expression using an exponent.

17. $6\times6\times6\times6\times6$

18. $4\times4\times4$

19. $15\times15\times15\times15$

20. $\frac{1}{3}\times\frac{1}{3}$

A) Write each expression in expanded form. B) Then calculate the value of the expression.

21. 7^1

22. 3^2

23. 5^3

24. 10^4

25. $7(2)^3$

26. $10(8^2)$

27. $3(5)^4$

28. $16\left(\frac{1}{2}\right)^3$