Goal: To identify, evaluate, graph and write linear equations.

I. Warm Up: Complete the table using the following flowchart:

| Choose a number | Multiply by 9 | Subtract original number | Divide by 4 |

Make a prediction about any number. Will this always be true? Explain.

II. Function Notation: Linear equations can be written as $y = 3x - 6$. Another way to write this equation using **function notation** is _____.
"Why in the ever-beautiful world might I want to write it like this?!" you may ask. Well, here's why:

Ex 1: Evaluate $g(x) = -2x + 4$ when $x = -3$.

$g(x) = -2x + 4$

Try It! Evaluate each function below when $x = -3$.

a. $f(x) = 7x + 13$

b. $h(x) = -\frac{2}{3}x - 11$

c. $g(x) = 5 - 3x$

III. Write a Linear Function Rule

Change in life is inevitable. And constant change the essential characteristic of a
_____. We call this change the _____
or, graphically, the s_____.

Ex 2: The cost to make 4 bracelets is shown in the table. How can you determine the cost to make any number of bracelets?

       Step 1: Determine relationship

number of bracelets	1	2	3	4
cost	17	32	47	62

       Step 2: Write function using slope-
            intercept form.

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

       Step 3: Find the value of b.

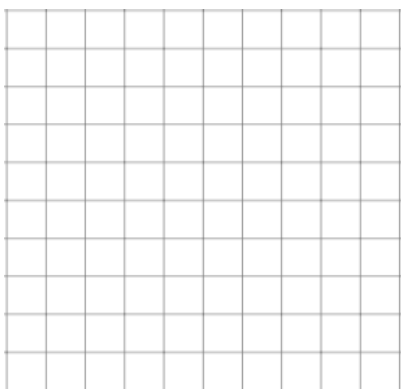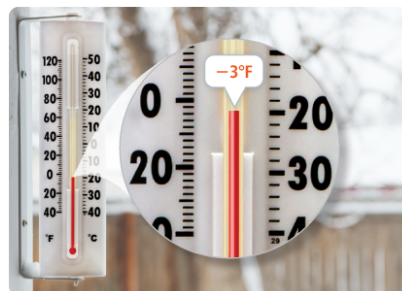**Try It!** Write a linear function for the data in each table using function notation.

x	1	2	3	4
y	6.5	13	19.5	26

a.

x	1	2	3	4
y	1	4	7	10

b.

III. Application

Ex 3: Tamika records the outside temperature at 6:00 a.m. The temperature increases by 2ºF every hour for the next 6 hours. If the temperature continues to increase at the same rate, what will the temperature be at 2:00 p.m.?
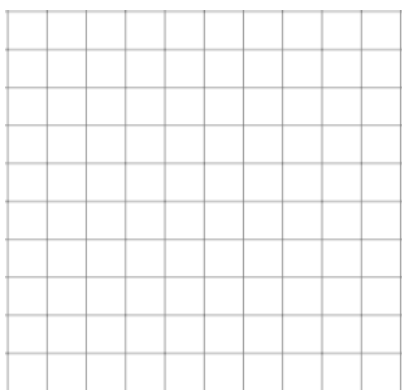
Does using a linear function realistically represent the function for the domain of $0 < x < 24$?

Try It! Sketch the graph of each function.

a. $f(x) = -x + 1$

b. $g(x) = 3x + 1$

Algebra 1

3-2 Linear Functions   **A#3**

Concept List

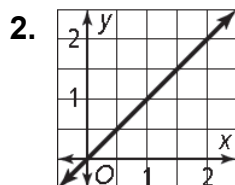| linear equation	function	domain
range	input	linear function
ordered pairs	output	function notation

Choose a concept from the list that best represents the item in each box. Each concept can be used more than one time.

1. (1, 2), (2, 4)	**2.**	**3.**		
		x	y	
		1	2	
		2	4	
		3	6	
		The shaded portion of the table		

4. $f(x)$	**5.**		**6.** $f(4) = 11$
	x	y	↑
	2	4	This value
	4	8	
	6	10	
	Each input is paired with exactly one output value.		

7.		**8.** $f(4) = 11$	**9.** $y = -3x - 2$
x	y	↑	
1	2	This value	
2	4		
3	6		
The shaded portion of the table			