

## Lesson 2: Review of graphing

- Function notation  $y = f(x)$
- ordered pair: first coordinate and second coordinate
- plot pairs of numbers
- 1<sup>st</sup> coordinate axis for input (x – axis)
- 2<sup>nd</sup> coordinate axis for output (y – axis)
- To graph a function  $f(x)$
- Graphing equations using the TI-84 Calculator

Function notation:

$$f(x) = \underbrace{-2x - 3}_{\text{output}}$$

↑  
input

**Forward problem:** function evaluation to find outputs

Given a function and an input value, find the corresponding output.

1. Evaluate each of the following functions at the given input.

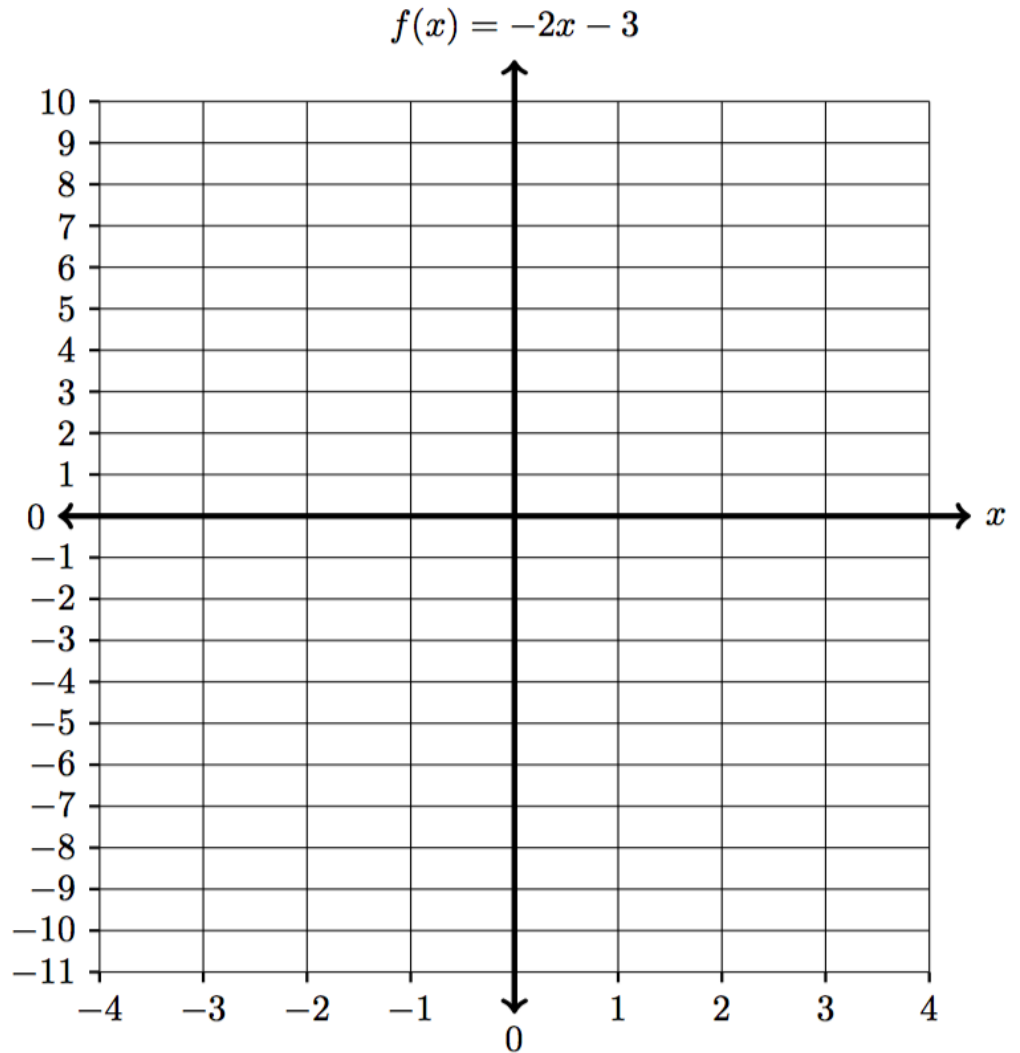
A. Let  $f(x) = -2x - 3$ . Find  $f(-4)$

B. Let  $f(x) = -2x - 3$ . Find  $f(4)$

## 2. Forward Problem: Linear Function Evaluation

- Fill in the tables below
- Plot these points on the axis provided.
- Interpolate between the points you plotted to create the graph of this function.

$x$	$f(x) = -2x - 3$
-4	
-3	
-2	
-1	
0	
1	
2	
3	
4	



3. What is the y-intercept of this line?

4. What is the slope of this line?

**Algebraic Technique** to solve algebraic equations

To find the solution of an algebraic equation using an algebraic method, isolate the unknown variable by using inverse operations.

5A. Solve the equation  $-2x - 3 = \frac{1}{2}x + 2$  using an algebraic technique. Show your steps.

5B. Resolve the equation  $-2x - 3 = \frac{1}{2}x + 2$  using an algebraic technique. However, this time try to solve this equation in a different way than you did in problem 5

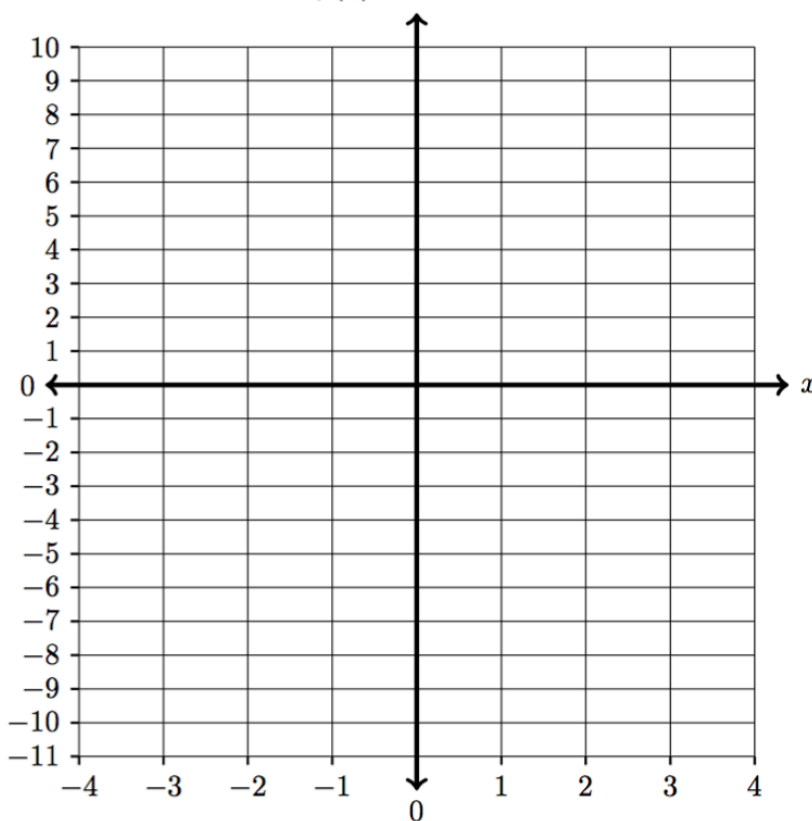
**Graphical Technique** to solve algebraic equations

To find the solution(s) to an algebraic equation using a graphical technique, complete the five steps:

- Step 1: Identify and graph the function on the left-hand side of the equals sign.  
 Step 2: Identify the function on the right-hand side of the equals sign and graph this function on the same axis you used in step 1.  
 Step 3: Find the point(s) of intersection between the graphs of the two functions.  
 Step 4: Write each point of intersection as an ordered pair in the form  $(x, y)$ . Then, identify the 1<sup>st</sup> coordinate (the “x” value) of the points of intersection.  
 Step 5: Set the variable from the equation equal to the 1<sup>st</sup> coordinate of each point of intersection. This represents the solution(s) to the algebraic equation.

6A. Complete the 5 steps outlined above to solve the equation  $-2x - 3 = \frac{1}{2}x + 2$  using a graphical technique.

$x$	Left-hand side: $y_1 = -2x - 3$	Right-hand side: $y_2 = \frac{1}{2}x + 2$
-4		
-3		
-2		
-1		
0		
1		
2		
3		
4		



6B. At what point do the two graphs above intersect? Specifically identify this point on the graph and write it as an ordered pair below.

6C. Based this graphical technique, what is the solution to the equation  $-2x - 3 = \frac{1}{2}x + 2$ ?

7. What do you notice about the solutions you found in problems 5A and 5B and the solution you found in 6C?