4.7 Graph Linear Functions

Before	You graphed linear equations and functions.
Now	You will use function notation.
Why?	So you can model an animal population, as in Example 3.

Key Vocabulary
- function notation
- family of functions
- parent linear function

You have seen linear functions written in the form $y = mx + b$. By naming a function f, you can write it using **function notation**.

$$f(x) = mx + b \qquad \text{Function notation}$$

The symbol $f(x)$ is another name for y and is read as "the value of f at x," or simply as "f of x." It does *not* means f times x. You can use letters other than f, such as g or h, to name functions.

EXAMPLE 1 **TAKS PRACTICE: Multiple Choice**

> What is the value of the function $f(x) = 2x - 13$ when $x = -4$?
>
> **A** -21 **B** -5 **C** 5 **D** 21

Solution

$$f(x) = 2x - 13 \qquad \text{Write original function.}$$
$$f(-4) = 3(-4) - 13 \qquad \text{Substitute } -4 \text{ for } x.$$
$$= -21 \qquad \text{Simplify.}$$

▶ The correct answer is A. **A** **B** **C** **D**

✓ **GUIDED PRACTICE** for Example 1

1. Evaluate the function $h(x) = -7x$ when $x = 7$.

EXAMPLE 2 **Find an x-value**

For the function $f(x) = 2x - 10$, find the value of x so that $f(x) = 6$.

$$f(x) = 2x - 10 \qquad \text{Write original function.}$$
$$6 = 2x - 10 \qquad \text{Substitute 6 for } f(x).$$
$$8 = x \qquad \text{Solve for } x.$$

▶ When $x = 8$, $f(x) = 6$.