The Function of X

Functions are so important that they have their own notation called a **function notation**. A *function notation* is a way to name a function defined by an **equation**. An *equation* is a mathematical sentence stating that the two **expressions** have the same value, connected by an equal sign (=). Think of a function as a math machine that will work problems the way you instruct it.

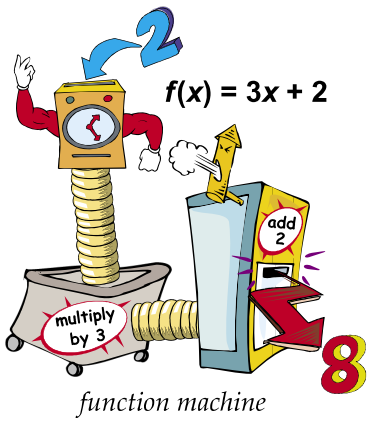
Function Machine

$f(x) = 3x + 2$

Notice the notation on the function machine above—$f(x) = 3x + 2$. The $f(x)$ is read "the function of x." We sometimes shorten that and read the entire sentence as f of x equals $3x + 2$.

The machine works when you put in numbers from a domain (set of x-values). So if our domain is {2, 4, 5, 9} and we use the function machine, we get the following.

2	$f(x) = 3x + 2$	8	because $3(2) + 2 = 8$
4	$f(x) = 3x + 2$	14	$3(4) + 2 = 14$
5	$f(x) = 3x + 2$	17	$3(5) + 2 = 17$
9	$f(x) = 3x + 2$	29	$3(9) + 2 = 29$



function machine

So now we see our range (y-values) is {8, 14, 17, 29}.

Together the domain and range give us the relation.

{(2, 8), (4, 14), (5, 17), (9, 29)}

This relation is a function because no y-value is repeated.

Although $f(x)$ is most commonly used, it is not unusual to see a function expressed as $g(x)$ or $h(x)$ and occasionally other letters as well. Did you notice we work these the same as if the problem had read $y = 3x + 2$?

Let's practice a bit, shall we?