

Function Notation

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- Function notation is a naming system for equations.
- The output (y) is replaced with $f(x)$ or another letter.
 - f is the name of the function
 - It does NOT mean multiply f times x
 - We say this as "f of x".
 - Other letters can be used too: $g(x)$, $h(x)$

Ex. Rewrite using function notation:

a) $y = 2x - 5$

$f(x) = 2x - 5$

have to match

x = input

$f(x)$ = output

b) $y = \frac{x}{3} + 1$

$g(x) = \frac{x}{3} + 1$

d) $C = 5n + 3$

$C(n) = 5n + 3$

cost + number of items

c) $y = x^2 - 25$

$h(x) = x^2 - 25$

e) $b = 10a - 7$

$f(a) = 10a - 7$

OR $b(a) = 10a - 7$

Ex. Rewrite as an equation:

a) $f(x) = 6x - 5$

$y = 6x - 5$

* we can input an x -value and solve for the $f(x)$ output. The $f(x)$ is your "y"-value, so the solution can be thought of as an ordered pair:

$$(x, f(x)) \quad \text{or} \quad (x, y)$$

Ex. Given 2 functions $f(x) = x^2 + 3$ and $g(x) = 3x - 4$

a) $f(3)$ sub $x=3$ into function fred

$$f(x) = x^2 + 3$$

Name $f(3) = (3)^2 + 3$

$$f(3) = 9 + 3$$

$$f(3) = 12$$

↑ x-value input
↑ y-value output

$$(3, 12)$$

b) $g(-1)$ sub $x=-1$ into george

$$g(x) = 3x - 4$$

Name $g(-1) = 3(-1) - 4$

Nothing to evaluate $g(-1) = -3 - 4$

$$g(-1) = -7 \quad (-1, -7)$$

c) $f(x+1)$ $f(x) = x^2 + 3$
 $f(x+1) = (x+1)^2 + 3$
 $= x^2 + 2x + 1 + 3$
 $= x^2 + 2x + 4$

FOIL
 $(x+1)^2 = (x+1)(x+1)$
 $= x^2 + 1x + 1x + 1$
 $= x^2 + 2x + 1$

d) $f(x) = 12$ (output)

$$f(x) = x^2 + 3$$

$$12 = x^2 + 3$$

$$\sqrt{9} = \sqrt{x^2}$$

$$\boxed{\pm 3 = x}$$

x is not 12

the output (y) is 12

Replace $f(x)$ with 12, solve for x

e) $g(x) = 11$

$$g(x) = 3x - 4$$

$$11 = 3x - 4$$

$$\frac{15}{3} = \frac{3x}{3}$$

$$\boxed{5 = x}$$