

Name: Key

Date: _____

Input	Output
2	4
5	10
9	18
11	22

Is this a function? Yes

What is the rule for this table? $2x$

What output would you get for an input of 50? 100

What output would you get for an input of 35? 70

What output would you get for an input of 123? 246

There is a more sophisticated way to write function rules called function notation.

FUNCTION NOTATION:

$f(x)$ = rule

↑ input

The function notation for the table above is : $f(x) = 2x$

EVALUATING A FUNCTION:

For the function given by the table above, the question, "What output would you get for an input of 50" can be written as:

$f(50) = 2x$ in function notation.

When you determine the value of the output, you are evaluating the expression/rule

Find $f(35)$. = $2(35) = 70$

Find $f(0)$. = $2(0) = 0$

Find $f(26)$. = $2(26) = 52$

Find $f(-2)$. = $2(-2) = -4$

Example: For the function $f(x) = 2x - 5$, find:

a) $f(20) =$ 35

$$\begin{aligned} f(20) &= 2(20) - 5 \\ &= 40 - 5 \\ &= 35 \end{aligned}$$

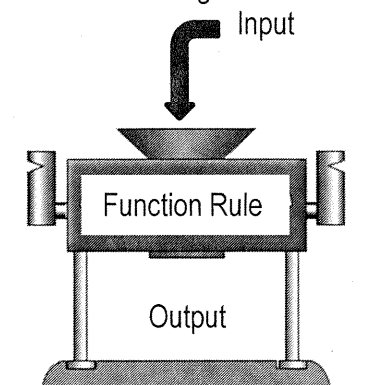
b) $f(-3) =$ -11

$$\begin{aligned} f(-3) &= 2(-3) - 5 \\ &= -6 - 5 \\ &= -11 \end{aligned}$$

c) $f(0) =$ -5

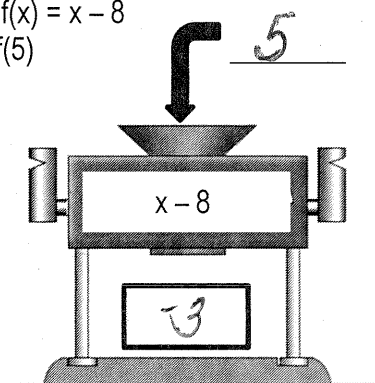
$$\begin{aligned} f(0) &= 2(0) - 5 \\ &= 0 - 5 \\ &= -5 \end{aligned}$$

A function is sometimes thought of as a machine...



The machine serves as the rule, it performs operations on the input that result in the output.

For example: $f(x) = x - 8$
Find $f(5)$

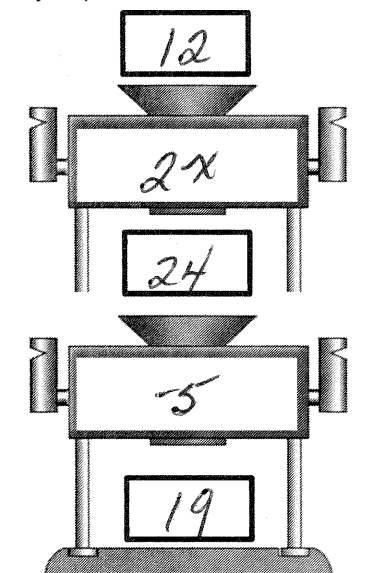


Sometimes functions will have you perform more than one operation on an input. The gizmo you will work with today requires that you use more than one function machine for more than one operation.

For example: $f(x) = 2x - 8$

What operation would you perform first? $2x$ This is the top function rule

What operation would you perform second? -5 This is the bottom function rule.



Find $f(12)$ using the function machines.

Now, find $f(12)$ algebraically.

$$\begin{aligned} f(12) &= 2x - 5 \\ &= 2(12) - 5 \\ &= 24 - 5 \\ &= \boxed{19} \end{aligned}$$