

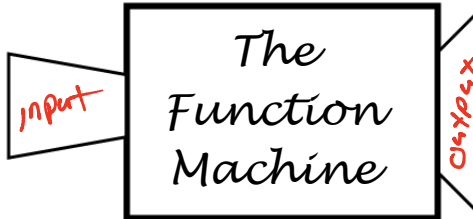
2.1 Function Intro

Write your questions and thoughts here!



= pause the video and try the problem on your own.

= a graphing calculator is required (or recommended) to complete this problem.



Input	Output
-2	25
-1	0
1	-4
-2	-13

-2 ↗ 25
↘ -13

NOT Function

Input	Output
-56	4
$\frac{1}{2}$	4
0	4
1	4

Function

Input	Output
13	7
0	-2
-38	-18
13	7

Function

Other Names for Input and Output:

INPUT:	Independent variable	Domain	OFTEN X
OUTPUT:	Dependent variable	Range	Y

Function Notation:

$f(x)$ = an expression in terms of x .

name of the function (input variable) = output variable

Example: $f(x) = x^2 - x + 1$

a) $f(2) = (2)^2 - (2) + 1$
 $= 4 - 1$
 $f(2) = 3$

b) $f(2x - 1) = (2x - 1)^2 - (2x - 1) + 1$
 $= 4x^2 - 4x + 1 - 2x + 1 + 1$
 $= 4x^2 - 6x + 3$

c) $f(\odot) = (\odot)^2 - (\odot) + 1$
 $= \odot^2 - \odot + 1$



Calculator trick:

TRACE
Table Ask
Function Notation

window
[-10,10]
[-10,100]

$f(x) = 3x^2 - 0.2x + 37$

$f(2) = 48.6$ Trace
 $f(-3.4) = 72.36$ Table
 $f(107) = 34,362.6$

↪ Home Screen $Y_1(107)$

2.1 Function Intro

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Organizing input/output values:

Table of Values (T – Chart)	Ordered Pairs	Function Notation						
<table border="1"> <tr><td>3</td><td>-5</td></tr> <tr><td>$-\frac{7}{3}$</td><td>16</td></tr> <tr><td>0.8</td><td>0</td></tr> </table>	3	-5	$-\frac{7}{3}$	16	0.8	0	$(3, -5)$ $(-\frac{7}{3}, 16)$ $(0.8, 0)$	$f(3) = -5$ $f(-\frac{7}{3}) = 16$ $f(0.8) = 0$
3	-5							
$-\frac{7}{3}$	16							
0.8	0							

Identifying a function from a scenario:

“... depends on ...” is equivalent to saying “... is a function of ...”

The number of gray hairs on Mr. Brust’s head **is a function of** the number of students in his Algebra 1 class. This is the same as saying the number of gray hairs on Mr. Brust’s head **depends on** the number of students in his Algebra 1 class.

Take the function G , where s is the number of students in Mr. Brust’s Algebra 1 class and $G(s)$ is the number of gray hairs on Mr. Brust’s head. What does the following mean?

$G(14) = 513$ ^{students} gray hairs
 If 14 students are in Mr Brust's Algebra class, then he has 513 gray hairs.

$G(27) = 2,088$ ^{students} gray hairs
 If 27 students are in Mr Brust's Algebra class, then he has 2,088 gray hairs.

Vertical Line Test:

A graph is a function if any vertical line drawn through the graph intersects the graph no more than once.

In the space below each graph, write whether the graph defines a function or is not a function.

1. NO	2. Yes	3. NO	4. Yes	5. Yes	6. Yes
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Now summarize what you learned!
