

WARMUP 9/(0.9)

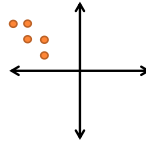
1. What is the main rule to be able to tell if something is a function or not? Try to write it without looking at your notes.
2. Fill in the table with values that would make it **not** be a function.

x	0	2	4	6	6
y					

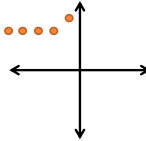
3. Fill in the table with values that would make it be a function.

x	0	2	4	6	6
y					

4) Function?



5) Function?



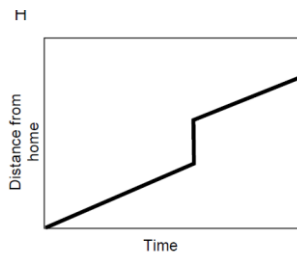
QUIZ TOMORROW!

- Graphs of stories
- Is it a function? Table/Graph/Situation
- Function Notation (Today)
- Write a function rule/identify input and output (Today)

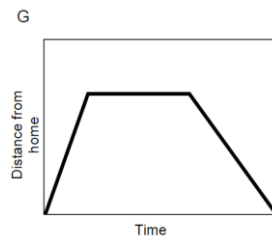
RETAKE FORMS...

- I have them now.
- It gives you the step-by-step process on there...
- Take Form
- Meet with Mr. Lischwe for corrections
- Decide on your retake date
- Turn in Form
- Do extra practice
- Take Retake
- Show improvement!

8 This graph is just plain wrong. How can Tom be in two places at once?



1 Tom ran from his home to the bus stop and waited. He realized that he had missed the bus so he walked home.



### WOULD THIS BE A FUNCTION?

- Input = student in this class
- Output = desk label of the student's assigned seat

**Yes, each input has only 1 output.**

### WITH YOUR GROUP:

- Decide whether each of the relationships are functions. EACH PERSON should be able to explain each one, so discuss well!!!

1. **Input = Facebook user, Output = password**
2. **Input = student, Output = the student's hair color**
3. **Input = student in our class, Output = planet he/she lives on**
4. **Input = word, Output = # of letters in the word**
5. **Input = word, Output = a letter that is in that word**
6. **Input = month, Output = # of days in the month**
7. **Input = # of days in the month, Output = month**
8. **Input = date, Output = temperature outside**
9. **Input = any integer, Output = double that integer**

**1, 3, 4, 9 are functions**

**2, 6 could be, depending on how you interpret the problem**

GO OVER HOMEWORK

### Table of Contents

- p. 1 Adding & Subtracting, Equations & Expressions
- p. 2 Equation Story Problems
- p. 3 Solving Equations with More than one Variable
- p. 4 Solving Inequalities
- p. 5 What is a Function?
- p. 6 Function Notation**

### Function Notation

6

#### **Objectives:**

- Use function notation to evaluate functions
- Write a rule using function notation

### FUNCTION NAMES

- In math, we give each function rule a name. This name is simply a letter of the alphabet.
- Let's name these three functions:
  1. **Input = state, Output = letters in the state's name**
  2. **Input = month, Output = # of days in the month**
  3. **Input = any integer, Output = double that integer**
- What is the output of \_\_\_ for the input \_\_\_?

## FUNCTION NOTATION

- Let's say the function "L" tells you how many letters are in a state's name.
- It's a mouthful to ask "What is the output of L if the input is Iowa"?
- So instead, we use **function notation**. The function name goes first, then the input you want goes in parentheses after the letter.
- $L(\text{Iowa}) = ?$

- Suppose the function **H** takes any number and divides it in half.
- What is  $H(10)$ ?
- What is  $H(44)$ ?
- What is  $H(302)$ ?
- What is  $H(-8.4)$ ?
- Here's how we would write the function:

## FUNCTION NOTATION

This is the name of the function

**f(x)**

This is the variable (the input)

- Read: "f of x"

## EVALUATING FUNCTIONS

- Use the following functions:

$$a(x) = 4x - 2$$

$$b(x) = -9 + x$$

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

- What is  $a(3)$ ?

$$\begin{aligned} a(3) &= 4(3) - 2 \\ a(3) &= 12 - 2 \\ a(3) &= 10 \end{aligned}$$

- What is  $c(-3)$ ?

$$\begin{aligned} c(-3) &= (-3)^2 + 1 \\ c(-3) &= 9 + 1 \\ c(-3) &= 10 \end{aligned}$$

- What is  $b(100)$ ?

$$\begin{aligned} b(100) &= -9 + 100 \\ b(100) &= 91 \end{aligned}$$

$$b(100) = 91$$

MEANS:

"If you plug '100' into the function 'b', you get 91"

The "91" is your answer. The "b(100)" is just labeling your answer. Like " $x = 5$ "

## IMPORTANT

- $f(x)$  DOES NOT MEAN "f times x"**
- $f(5)$  means "What do you get when you plug "5" into the function "f"?"

## EVALUATE THE FUNCTIONS:

$$r(x) = -2x + 8 \quad s(x) = 3x^2 \quad t(x) = |x - 2|$$

1.  $s(5) = 75$
2.  $t(5) = 3$
3.  $r(-6) = 20$
4.  $t(-4) = 6$
5.  $s(-3) = 27$

**VOLUNTEERS TO  
PUT THESE ON  
THE BOARD???**

- Write a rule in function notation to model the situation. Describe what the input and output represent.
- Herb is buying pizzas. Each pizza costs \$12.

$$c(x) = 12x$$

**Input: # of pizzas  
Output: Total cost**

- Write a rule in function notation to model the situation. Describe what the input and output represent.
- Kim walks 4 miles every hour.

$$m(x) = 4x$$

**Input: # of hours  
Output: # of miles walked**

## DEPENDENT &amp; INDEPENDENT VARIABLES

- What is the difference???
- **Independent Variable: the input**
- **Dependent Variable: the output**
- (The dependent variable **depends** on the independent variable!)

- Write a rule in function notation to model the situation. Describe what the input and output represent.
- There are 100 brownies on a tray. 2 brownies are eaten every minute.

$$b(x) = 100 - 2x$$

**Input: minutes  
Output: # of brownies left OR #  
of brownies eaten**

- Write a rule in function notation to model the situation. Describe what the input and output represent.

- Willard has \$150 to spend on iTunes. He is downloading songs, each of which cost \$1.29.

$$f(x) = 150 - 1.29x$$

$$f(x) = 1.29x$$

**Input: # of songs downloaded  
Output: amount of money spent (or amount of money  
he has left)**

○ Write a rule in function notation to model the situation. Describe what the input and output represent.

○ A moving company charges \$130 for truck rental plus \$1.50 per mile driven.

$$f(x) = 130 - 1.50x$$

**Input:** # of songs downloaded

**Output:** amount of money spent (or amount of money he has left)



**HOMEWORK**  
Worksheet