

2.1 Intro to Functions finished

	Topic: Functions
	EQ: What is the definition of a function and how can I determine if a relationship is a function from a table, graph or real world problem?
	Notes:

Aug 27-3:58 PM

Learning Target 2.1:

I understand the definition of a function, and can identify functions from

- graphs
- tables
- real world situations

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locker to class.

Section 2.1A

Read each story, look carefully at the graphs, then determine if each story is represented by one of the graphs. Record your thoughts after each scenario (#1-2).

1) I started to walk to class, but I realized I had forgotten my notebook, so I went back to my locker and then I went quickly at a constant rate to class.

2) I was rushing to get to class when I realized I wasn't really late, so I slowed down a bit.

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Now you draw a graph for the following situation.

3) I started walking at a steady, slow, constant rate to my class and then, realized I was late, so I ran the rest of the way at a steady, faster rate.

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What is a relation in math?

- *a relationship between variables that change together
- *they have an input (independent event)
- *they have an output (dependent event)

Sep 26-9:35 AM

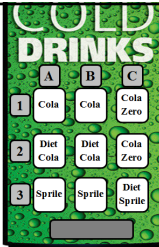
One type of relation is a **Function**

-a function is a relation where there is exactly one output for every input.

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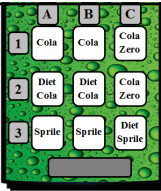
Pictured to the right is a vending machine in the school lobby.



Read through each situation below. Assuming you inserted the correct amount of money for each purchase, tell whether you think the vending machine in each situation is:

- "working properly"
- "broken", or
- "other" (for other, write in what you think is happening with the machine).

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Read through each situation below. Assuming you inserted the correct amount of money for each purchase, tell whether you think the vending machine in each situation is:

- "working properly"
- "broken", or
- "other" (for other, write in what you think is happening with the machine).

Situation A

Purchase 1: You press A1 and a bottle of Cola comes out. working properly

Purchase 2: You press B1 and a bottle of Cola comes out. working properly

Purchase 3: You press B2 and a Diet Cola comes out. working properly

Purchase 4: You press C3 and a Diet Sprite comes out. working properly

Purchase 5: You press C3 again and a Diet Sprite comes out. working properly

What do you think?

Situation B

Purchase 1: You press A1 and a bottle of Cola comes out. working properly

Purchase 2: You press A1 and a bottle of Sprite comes out. broken

Purchase 3: You press C2 and the machine says "Out of Sprite". broken

Purchase 4: You press B2 and a Diet Cola comes out. working properly

Purchase 5: You press B2 and a Diet Cola as well as a Sprite comes out. broken

What do you think?

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1) If "pushing a button" is the **input** and "receiving a soda" is the **output**, make an input - output table to describe the relationship between the inputs and outputs for Situation A, Situation B and Situation C.

Situation A		Situation B		Situation C	
INPUT	OUTPUT	INPUT	OUTPUT	INPUT	OUTPUT
A1	Cola	A1	Cola		
B1	Cola	B1	Sprite		
B2	Diet Cola	B2	Diet Cola		
C3	Diet Sprite	C3	Diet Sprite		

2) How many machines are *functioning correctly*? Which one(s) and why?

3) How many machines are *not functioning correctly*? Which one(s) and why?

4) In terms of input and output, what determines whether a machine is *functioning correctly* or not?

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5)

INPUT (x)	FUNCTIONS	OUTPUT (y)	INPUT (x)	NOT A FUNCTION	OUTPUT (y)
1, 2, 3	→ 4, 5, 6		1, 2, 3	→ 4, 5, 6	
-2, 0, 6	→ -1, 4		-1, 3	→ 0, 2, 5	

How can you tell when input/output tables (mapping) are functions?

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Functions = From a Table

6)

FUNCTIONS		NOT A FUNCTION	
x	y	x	y
-1	2	-1	2
0	1	-2	1
2	-5	0	-5
3	2	-2	4
-2	4	-4	-2
5	4	0	0
0	1	3	1
2	0	3	2

How can you tell when tables are functions?

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7) Identify the **input** and the **output** in each scenario below.

FUNCTIONS	NOT A FUNCTION
Each student at Champlin Park High School is assigned a student id number. Input: <u>Student ID</u> Output: <u>ID</u>	Every day during the school year, Andover High School recognizes student birthdays. Input: <u>days of the week</u> Output: <u>Students Birthday</u>
Every country has a capital. Input: <u>Country</u> Output: <u>Capital</u>	A mascot is at every school. Input: <u>Mascots</u> Output: <u>Schools</u>

How can you tell when real-world situations are functions?

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2.1 Intro to Functions finished

Functions from a Graph
Vertical Line Test:
**helps us determine if a graphed line is a function*

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Function or not?

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#9 – 12: What is the input and output? Is the relation a function or not?

9) $\{(4, 2), (0, 5), (3, 3), (-1, 5)\}$

input:
output:
Is the relation a function?

10) $\{(3, 5), (-2, 8), (9, -1), (-2, -1)\}$

input:
output:
Is the relation a function?

11) $\{(blonde, flute), (brunette, saxophone), (blonde, clarinet)\}$

input:
output:
Is the relation a function?

12) The number of cars in the parking lot compared to the number of axels.

input:
output:
Is the relation a function?

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4) Write a story for each of these graphs.

a)

b)

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HW: Pg 71 (3ad, 4cd)
Pg 72 (2, 3, 6, 8, 11, 14, 17, 20)

Sep 13-9:09 AM