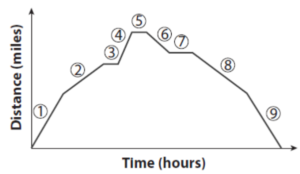
Created by Mr. Lischwe

## Warmup $8/(6^2 - 2^2 - 1^2)$

1) The distance a delivery van is from the warehouse varies throughout the day. The graph shows the distance from the warehouse for a day from 8:00 am to 5:00 pm. Write a story to match the graph to describe what the van did throughout the day.




## Check Homework

## Game: "Guess My Rule"

- I am thinking of a rule in my head.
- I will call on somebody to give me an **input**.
- I will use my rule to figure out the **output**, then tell you.
- Your job is to figure out the rule I am thinking of. When you think you know it, raise your hand.

## Play "Guess My Rule" in pairs

- Let me know if you have nobody to join with!
- Take turns thinking of rules. You may make the rule whatever you want, but you may not use a calculator!!!

## Would this be a fair rule?

| Input | Output |
|---|---|
| **9** | **45** |
| **5** | **31** |
| **1** | **7** |
| **-4** | **-18** |
| **5** | **27** |

## Would this be a fair rule?

| Input | Output |
|---|---|
| **10** | **45** |
| **7** | **19.5** |
| **3** | **-0.5** |
| **6** | **13** |
| **10** | **45** |
| **-6** | **19** |

## Would this be a fair rule?

| Input | Output |
|---|---|
| 1 | -6 |
| 2 | -3 |
| 3 | 2 |
| 5 | 18 |
| 7 | 42 |
| 10 | 93 |

## Would this be a fair rule?

| Input | Output |
|---|---|
| 5 | 6 |
| 2 | 6 |
| 97 | 6 |
| -3.2 | 6 |
| 0 | 6 |

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What is a Function? 5

**Objective:**

**-Be able to tell if something is a function or not**

## Vocab

- **A function is a rule. Each input must only have one output.**
- **(It has to be "fair"!!!)**

## Function? (COPY THIS ONE FOR YOUR NOTES)

| x | y |
|---|---|
| 3 | 6 |
| 5 | 10 |
| 5 | 12 |
| 8 | 14 |
| 12 | 18 |

**No; the input "5" has more than one output.**

## Function?

| x | y |
|---|---|
| -8 | 16 |
| 10 | -20 |
| 1 | -2 |
| 4 | -8 |
| 1 | -2 |

**Yes; there is a repeated input, but the output is the same.**

## Function?

| x | y |
|---|---|
| 1 | 5 |
| 1 | 6 |
| 2 | 7 |
| 2 | 8 |
| 3 | 9 |

**No; the inputs "1" and "2" have more than one output.**

## Function?

| x | y |
|---|---|
| 1 | 24 |
| 2 | 9 |
| 3 | -6 |
| 4 | -21 |
| 5 | -36 |

**Yes; each input has only one output.**

## Function?

| x | y |
|---|---|
| 1 | -2 |
| 2 | -2 |
| 3 | -2 |
| 4 | -2 |
| 5 | -2 |

**Yes; each input has only one output. (You can have the same output for multiple inputs!)**

## Function?

**(2, 8); (-5, 9); (7, 9); (2, -4), (7, 4)**

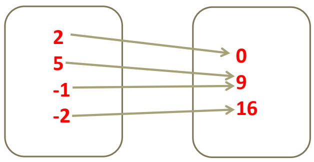
**No; the input "2" has more than one output.**

## Function?

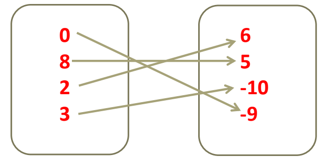
**(1, 5); (8, 19); (4, 11); (-8, -13), (1, 5)**

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

- **Mapping Diagram:**
- Express the relation **(2,0), (5, 9), (-1, 9), (-2, 16)** as a mapping diagram.

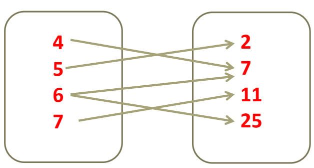



## Function?



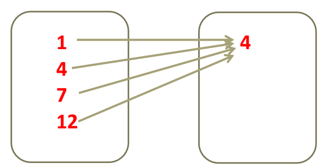

**Yes, each input has only 1 output.**

## Function?



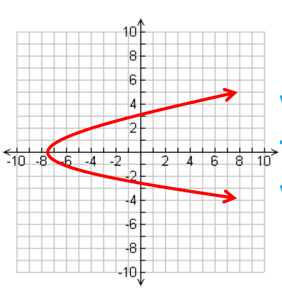

**No; the input "6" has more than one output.**

## Function? **(COPY THIS ONE FOR YOUR NOTES)**



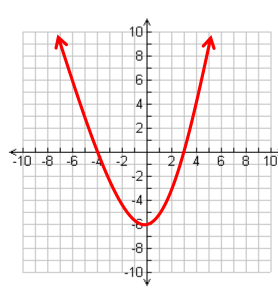

**Yes, each input has only 1 output.**

## Function? **(COPY THIS ONE FOR YOUR NOTES)**



**No; most x-values have two different y-values**

## Function? **(COPY THIS ONE FOR YOUR NOTES)**

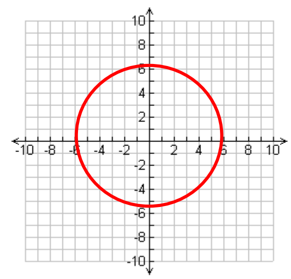


**Yes**

## Rules for graphs of functions

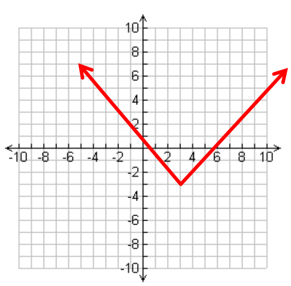
- <u>**ON A GRAPH:**</u>
  - **The x-value (horizontal) is the INPUT and the y-value (vertical) is the OUTPUT.**
  - **To be a function, each x-value can only have one y-value.**

## Function?



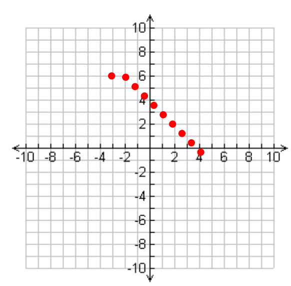

**No**

## Function?



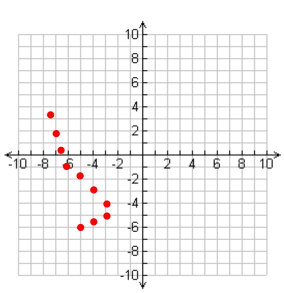

**Yes**

## Function?



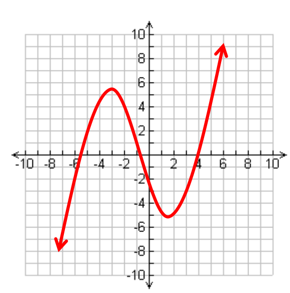

**Yes**

## Function?



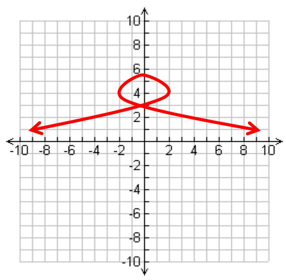

**No**

## Function?



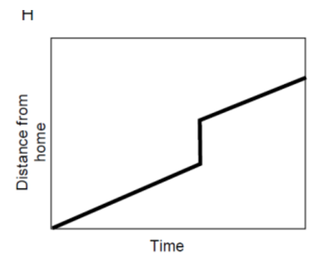

**Yes**

## Function?

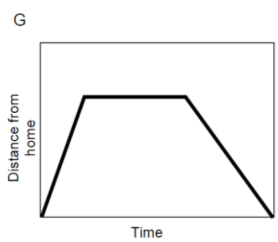



**No**

**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 = state, Output = # of letters in the state's name**
5. **Input = month, Output = # of days in the month**
6. **Input = # of days in the month, Output = month**
7. **Input = date, Output = temperature outside**
8. **Input = password, Output = Facebook user**
9. **Input = any integer, Output = double that integer**

**1, 2, 3, 4, 5, 9 are functions**

## Homework

- Worksheet