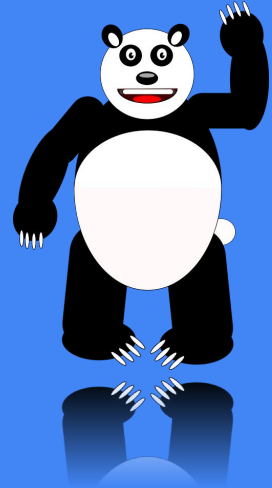


# Welcome To Programming

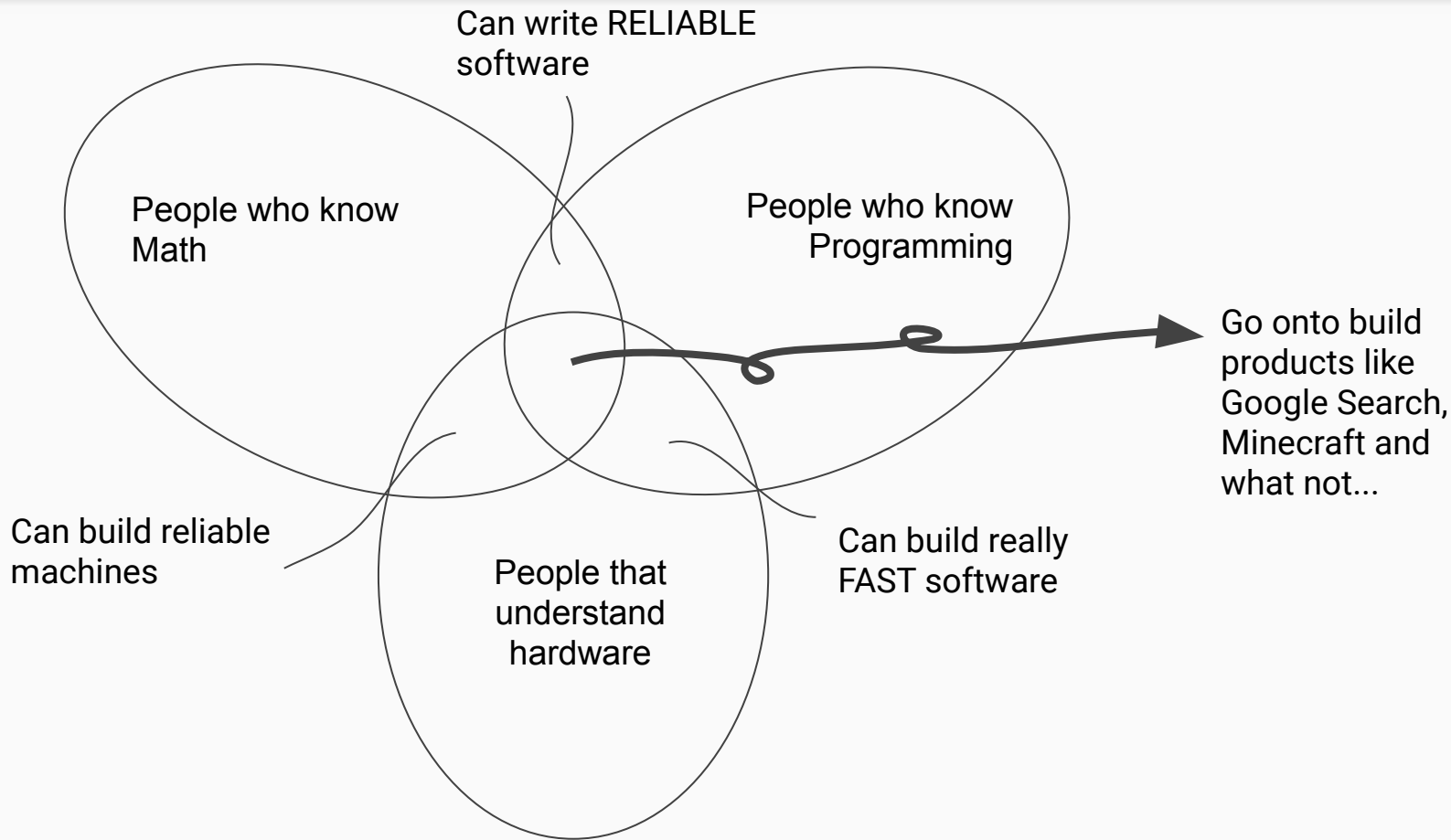
Fun forever...



# What will you learn?

1. Understanding how computer stuff works
  - How they came to be.
2. Solve Problems with Programming
  - How programmers think about real-world problems
3. Programming with Javascript

# Why?



# Why Javascript?

## DEMOs

[https://beinternetawesome.withgoogle.com/en\\_us/interland/tower-of-treasure](https://beinternetawesome.withgoogle.com/en_us/interland/tower-of-treasure)

<http://paperjs.org/showcase/>

<http://evanw.github.io/glfw.js/>

# What will you have to do?

1. Read the notes



2. Do the assignments



3. Listen in the class



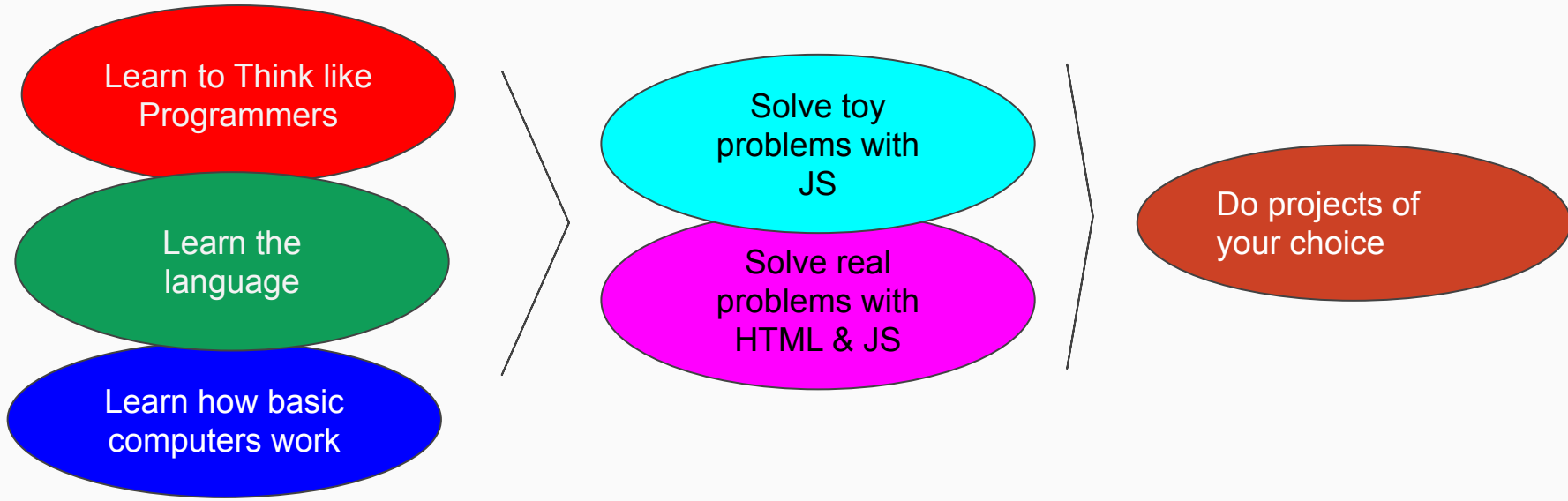
# Course Plan

Week 1: Daily classes

Week 2-3: Twice a week doubt-clearing sessions

Week 4-: Weekend classes

# Progression



# Assignments

Must DO.

This course will fail if you don't try the assignments.

Can't stress enough.



# Assignments

## Submission Procedure:

1. Collect all your files into a single folder.
2. Create a zip file of that folder
3. Goto this link and upload it

<https://goofoo-979.appspot.com>

*Note that this site costs me for each upload/download. So, please avoid resubmissions.*

# Course website

<https://github.com/mayurhemani/programming>

## **Notes section:**

<https://github.com/mayurhemani/programming/tree/master/notes>

## **Assignments Section:**

<https://github.com/mayurhemani/programming/tree/master/assignments>

## **Slides:**

Will share as time permits.

# What will you need?

1. Desktop or Laptop computer with Windows, Mac OS X or Linux, and an Internet connection.
2. Software (Let's do this now):
  - a. For Mac/Windows Git Bash <https://git-scm.com/downloads>
    - For Linux users (e.g. ubuntu - use *sudo apt-get install git* in the terminal)
  - b. Node.js
    - `curl -o- https://raw.githubusercontent.com/nvm-sh/nvm/v0.37.2/install.sh | bash`
    - `export NVM_DIR="$([ -z "${XDG_CONFIG_HOME-}" ] && printf %s "${HOME}/.nvm" || printf %s "${XDG_CONFIG_HOME}/nvm")"`
    - `[ -s "$NVM_DIR/nvm.sh" ] && \. "$NVM_DIR/nvm.sh" # This loads nvm`
    - `nvm install 10.0`
  - c. Sublime Text / Brackets / Atom
    - (<https://www.sublimetext.com/>, <https://atom.io/> or )
  - d. Chrome web browser

# Let's Start

Or did you think we won't do anything today?

# Visit to the zoo

Say you live 30 kms from the zoo.

Say you have an electric scooter that runs at 30 km/hour with a constant speed.

How long will it take you to get to the zoo?

# Visit to the zoo

Say you live **50 kms** from the zoo.

Say you have an electric scooter that runs at 25 km/hour with a constant speed.

How long will it take you to get to the zoo?

# Visit to the zoo

Say you live **5 kms** from the zoo.

Say you have an electric scooter that runs at **10 km/hour** with a constant speed.


How long will it take you to get to the zoo?

How are you doing this?

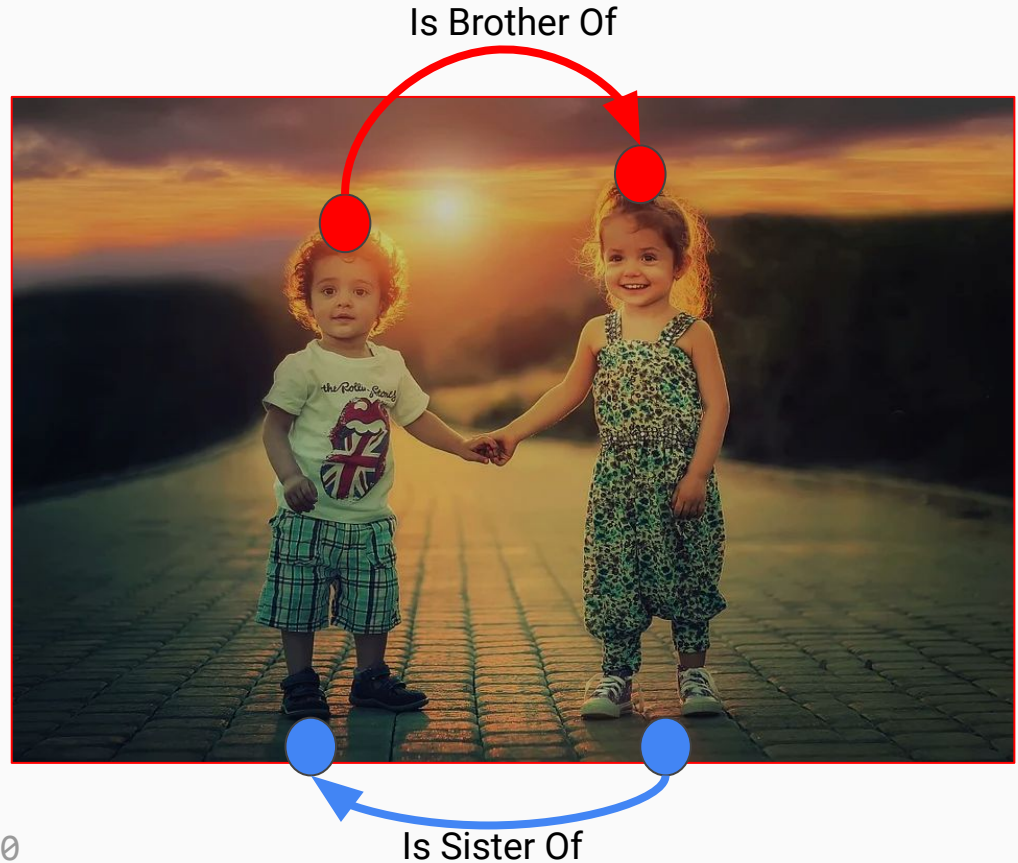


$$\text{Time to the Zoo} = \frac{\text{Distance To Zoo}}{\text{Speed of Scooter}}$$

$$\text{Time to the Zoo} = \frac{\text{Distance To Zoo}}{\text{Speed of Scooter}}$$

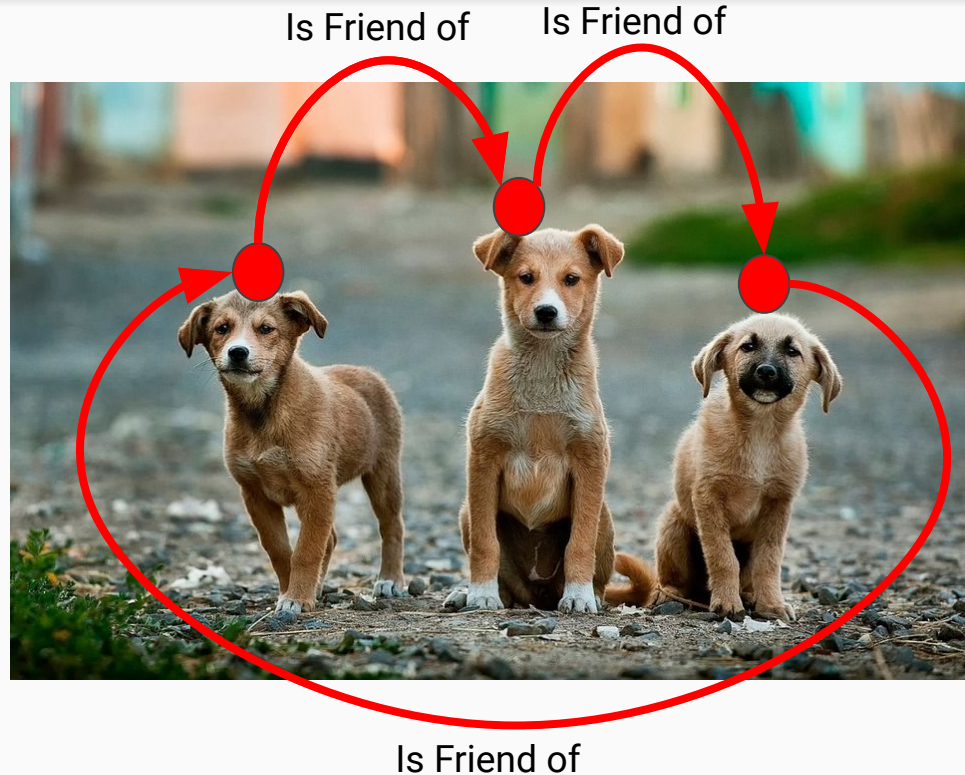
  
*Relationship*

Relationships are  
everywhere

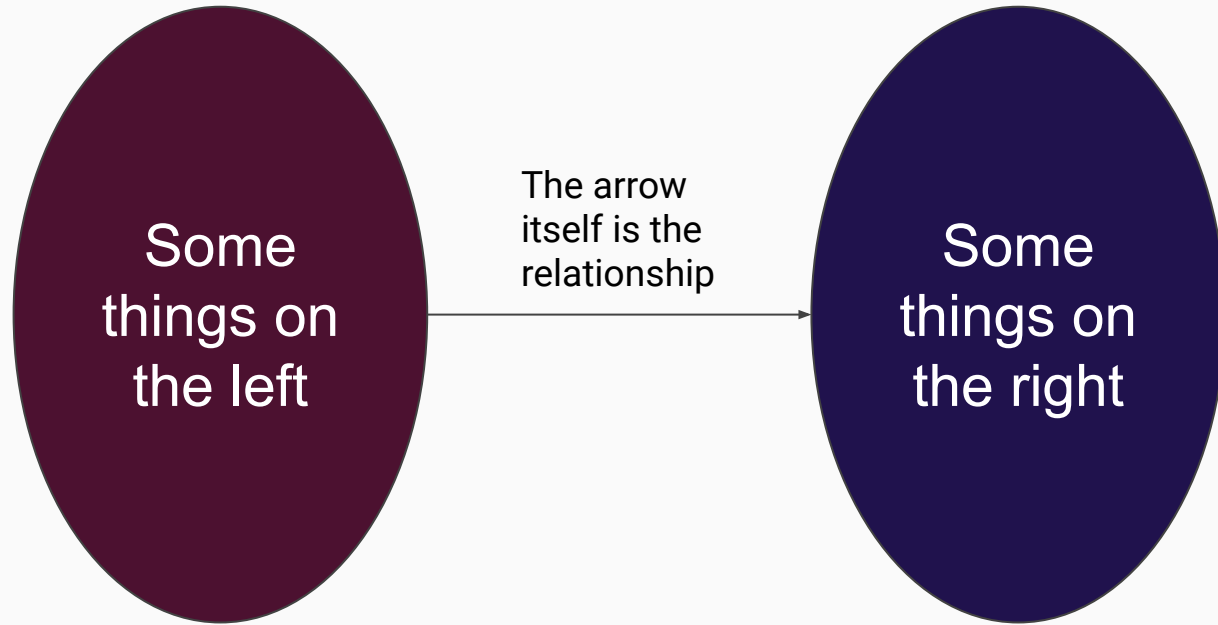


# Relationships are everywhere

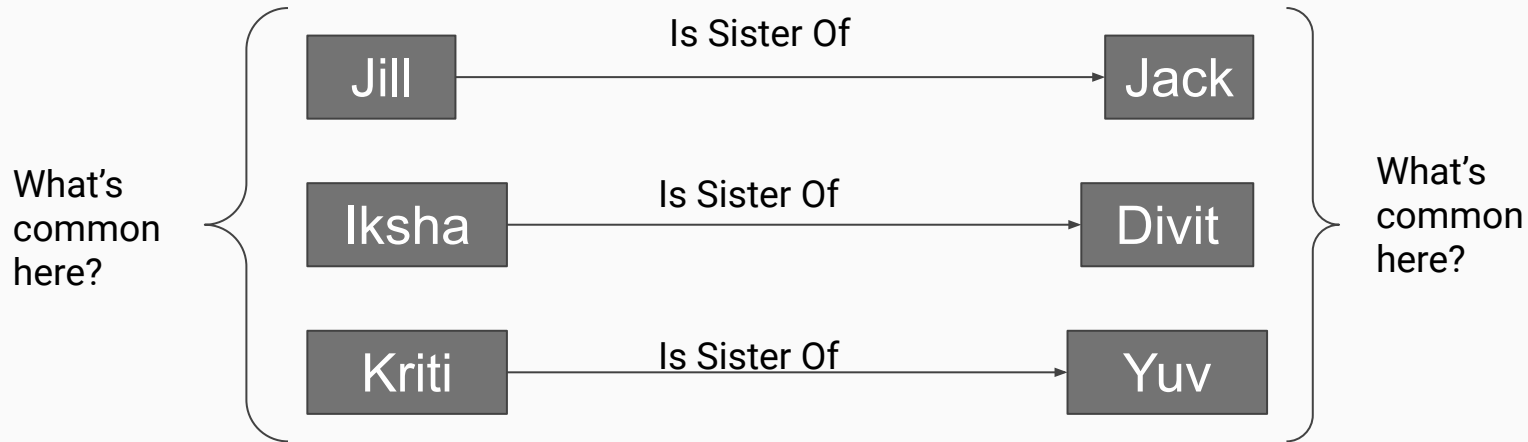
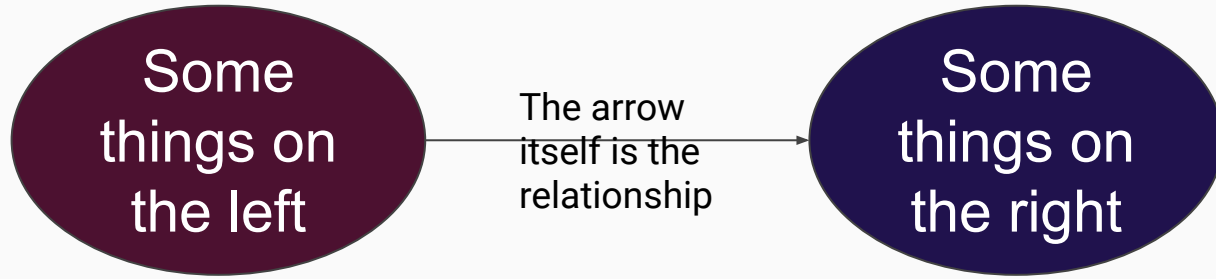
Notice the arrows... every arrow starts somewhere and ends somewhere...



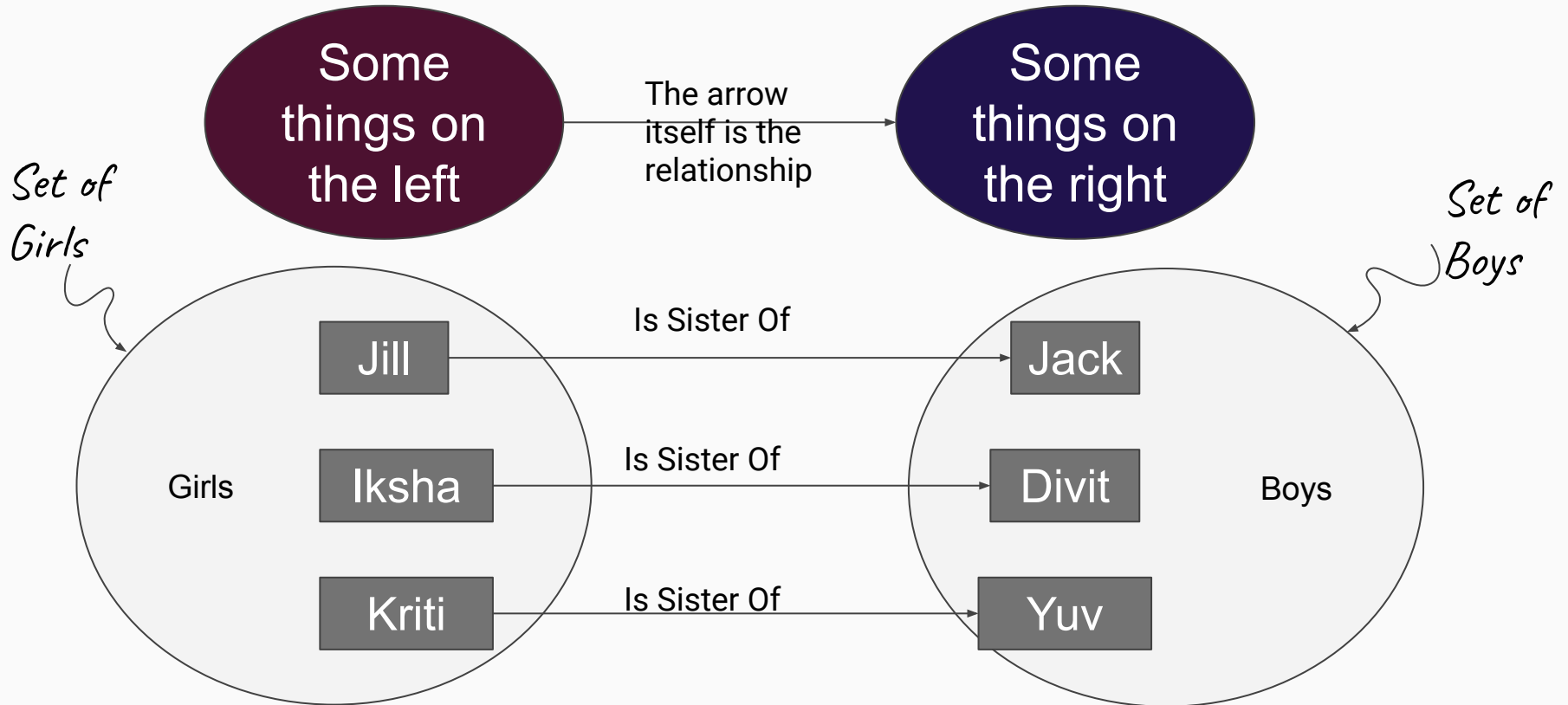
In every relationship



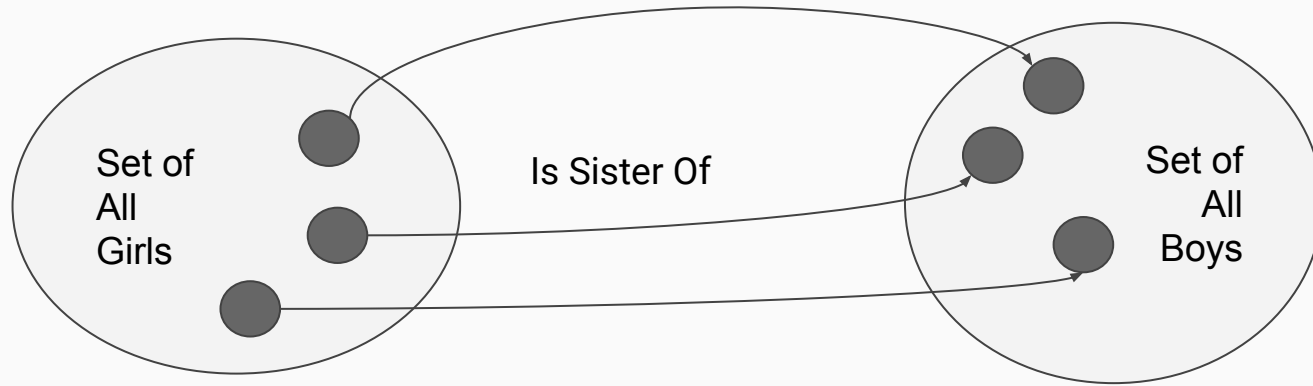
In every relationship...



In every relationship...



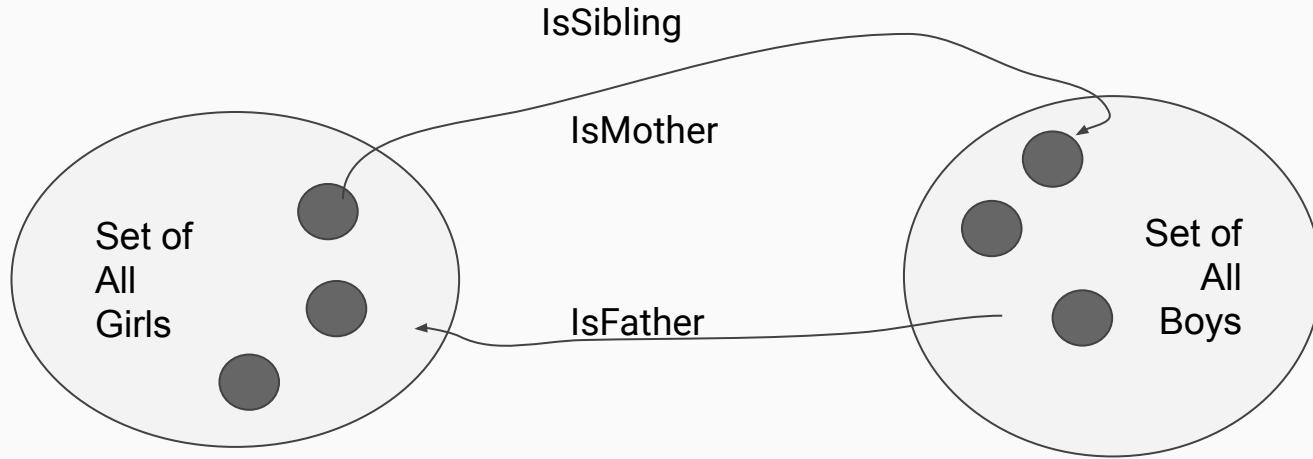
This can also be seen as:



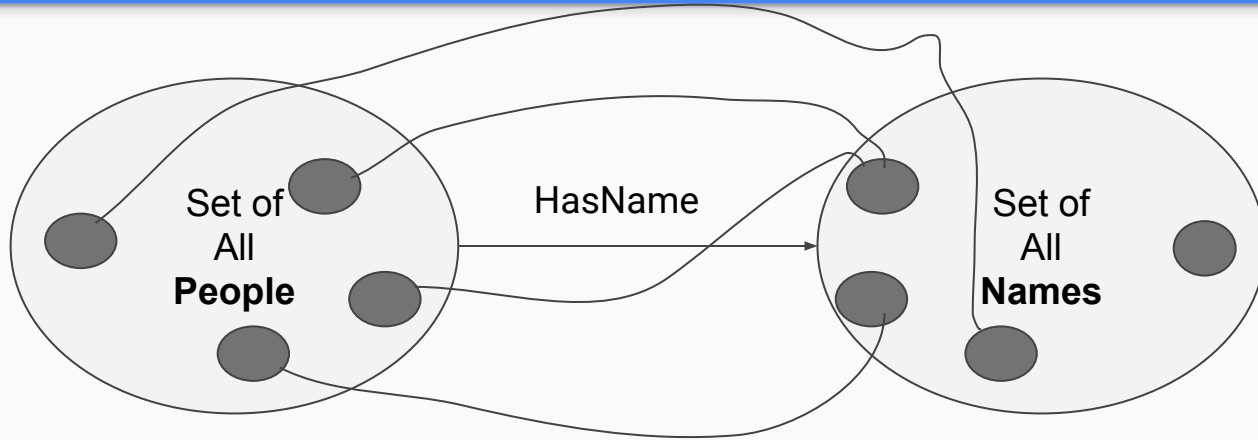
“IsSisterOf” is a **RELATION**  
**from** the Set of All Girls  
**to** the Set of All Boys.



Any other relations you can tell me:

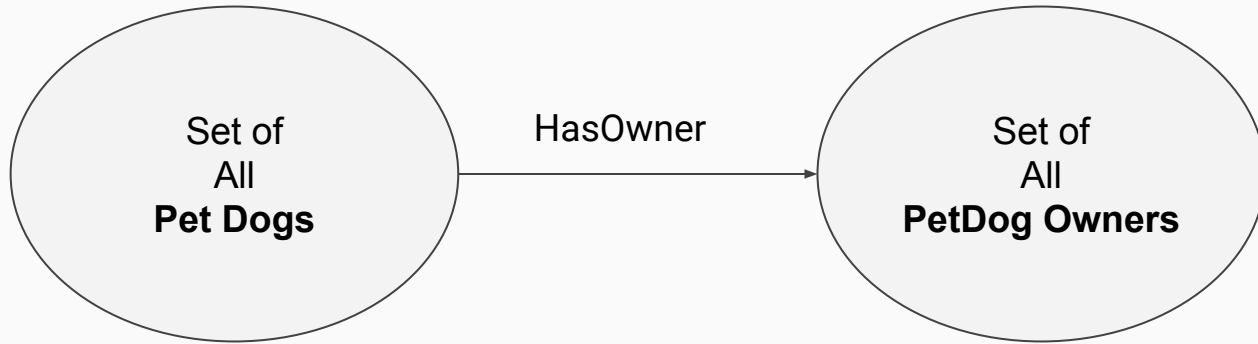


Some relationships are special:



**Everyone in the set of people  
has a name**

Some relationships are special:



**Every pet dog has an owner**

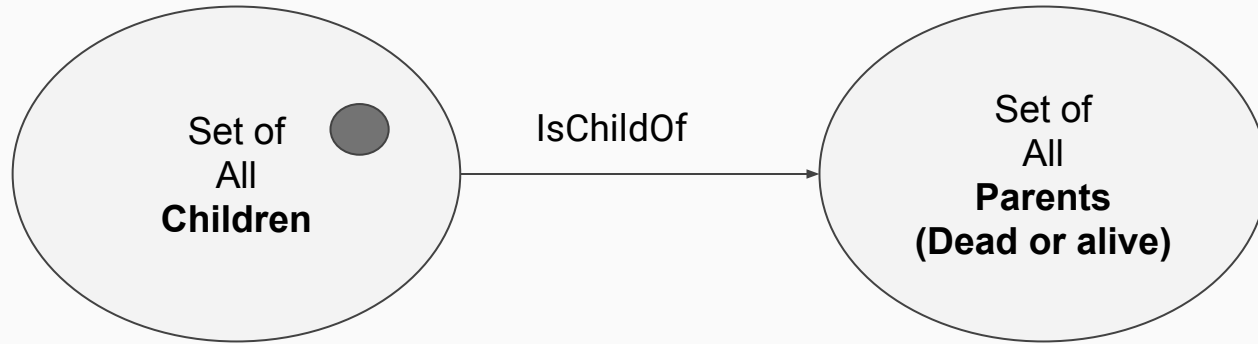
Such relations are called FUNCTIONS

**When there is an arrow for every item of the set on the left to some item of the set on the right...**

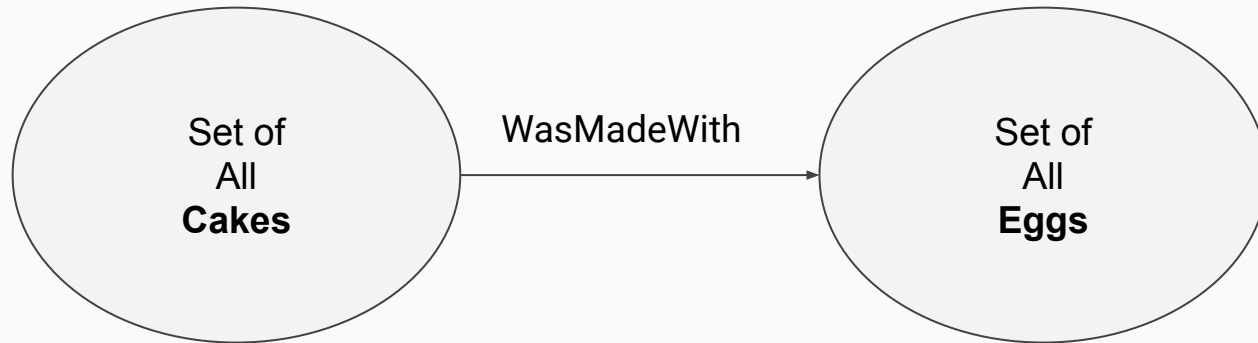
**The relationship is called a FUNCTION**

# Function or relation?

Q1.



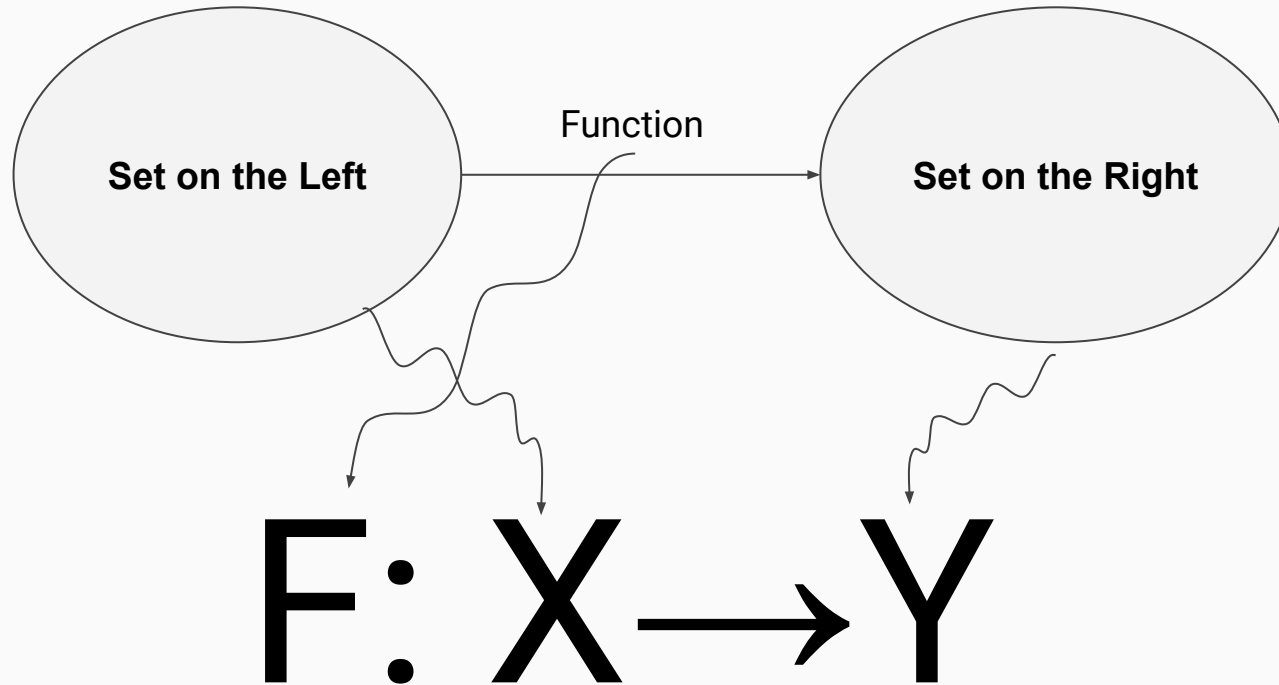
Q2.



# Functions

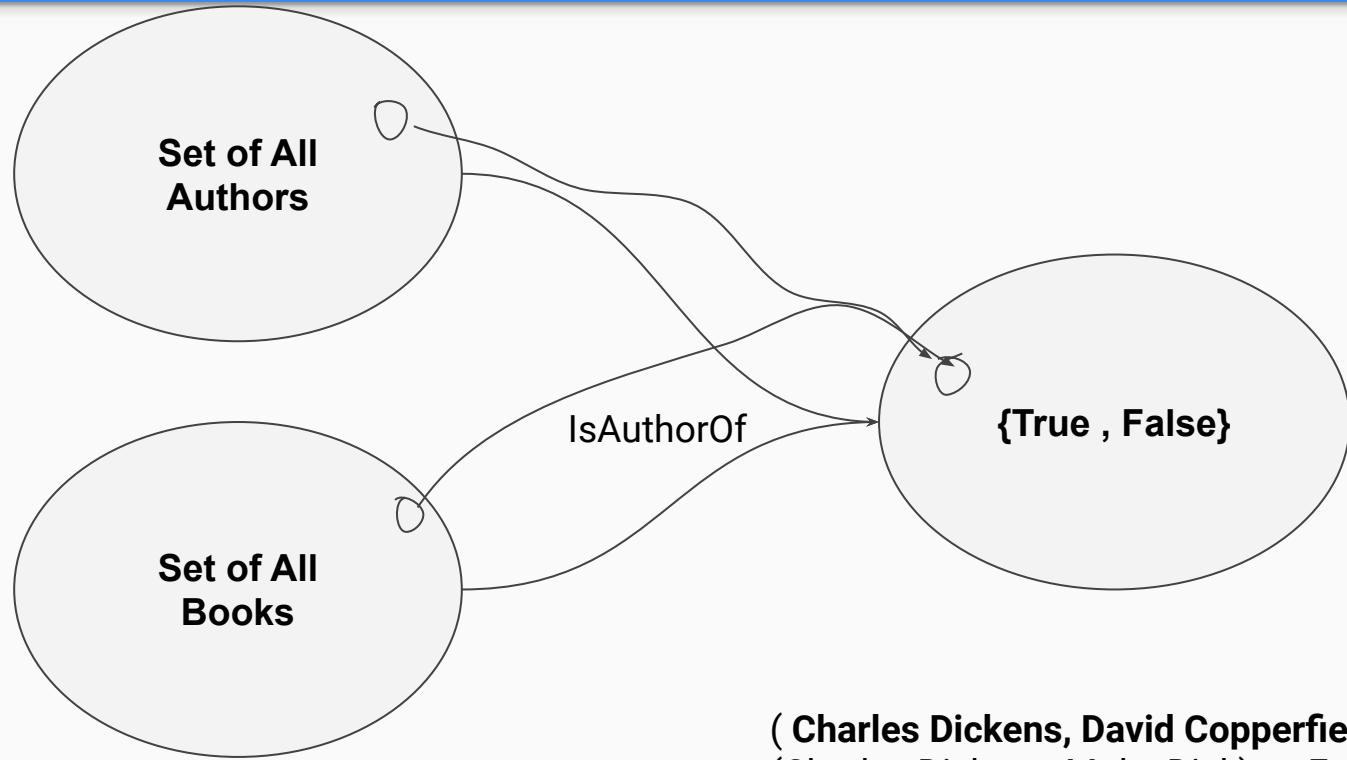
Give me some examples....

# Functions - Summary



And we say..  $F$  is a function **from  $X$  to  $Y$**

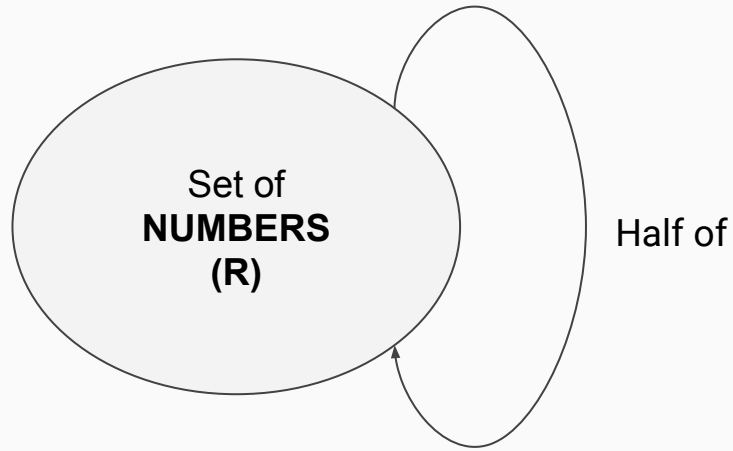
## Functions - More than One Set on the Left



( **Charles Dickens, David Copperfield**) → True  
(Charles Dickens, Moby Dick) → False

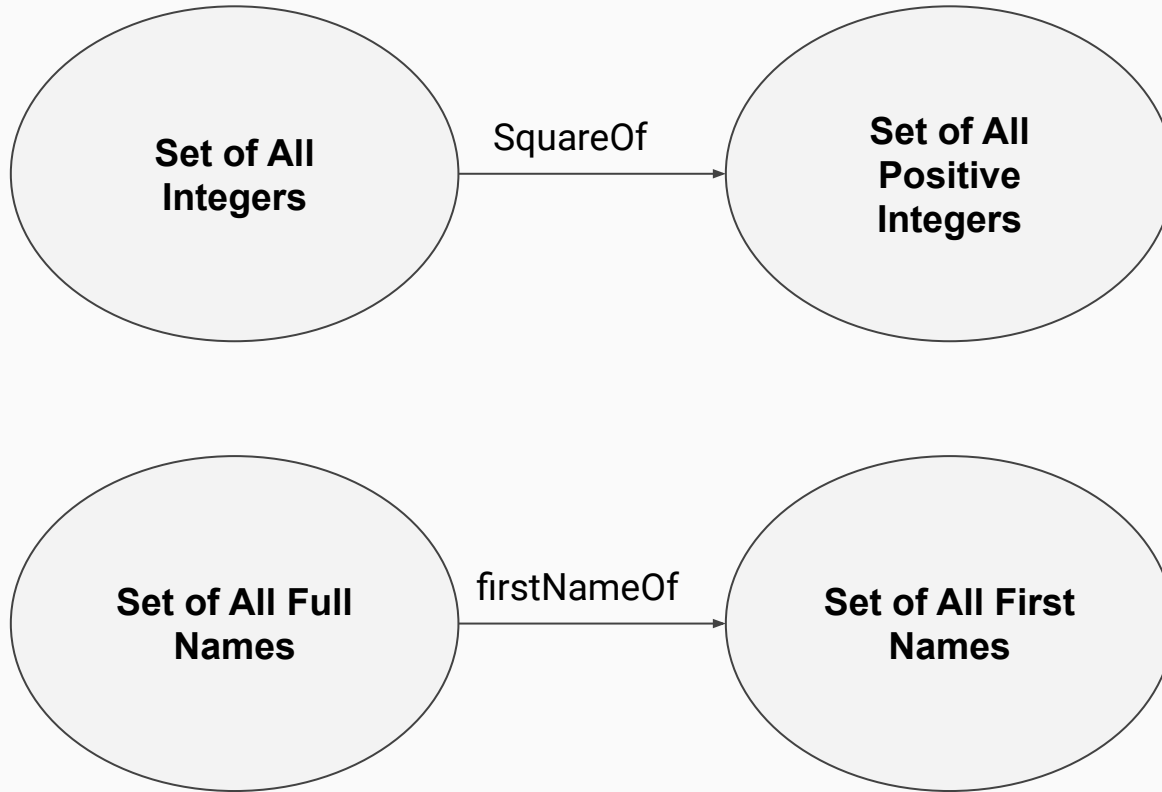


Set on the Left can be the Same as Set on the Right

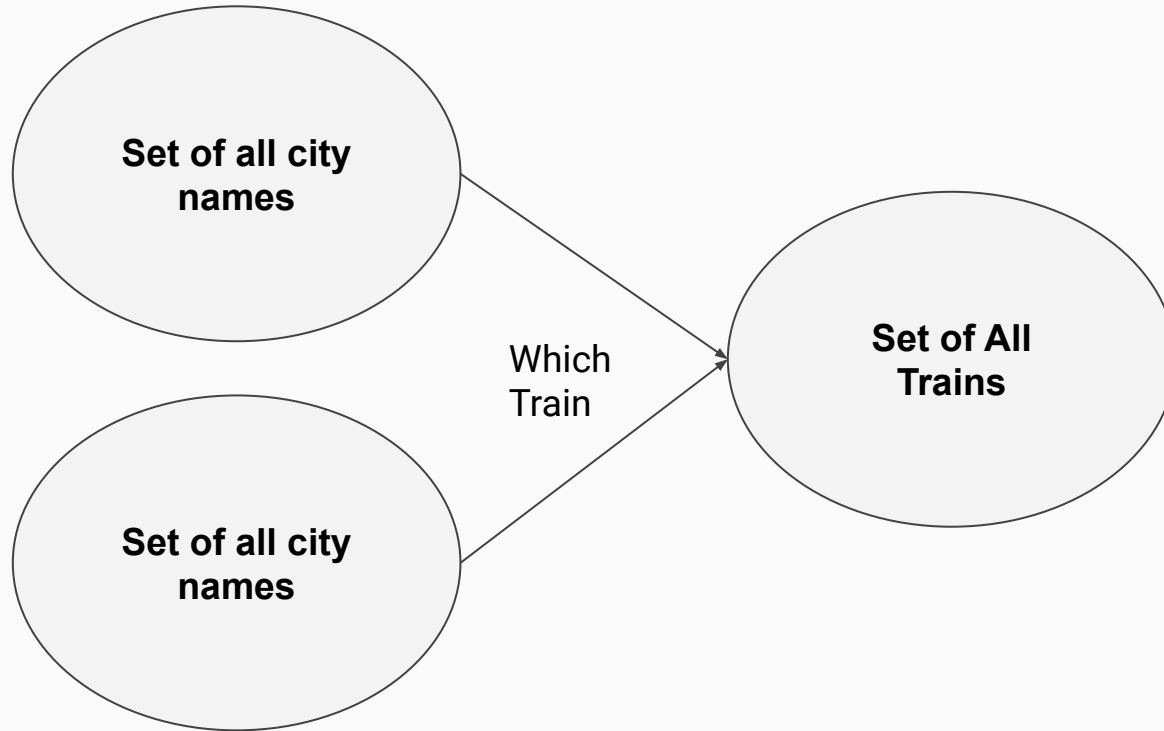


$$F: R \rightarrow R$$

Some functions can be COMPUTED:

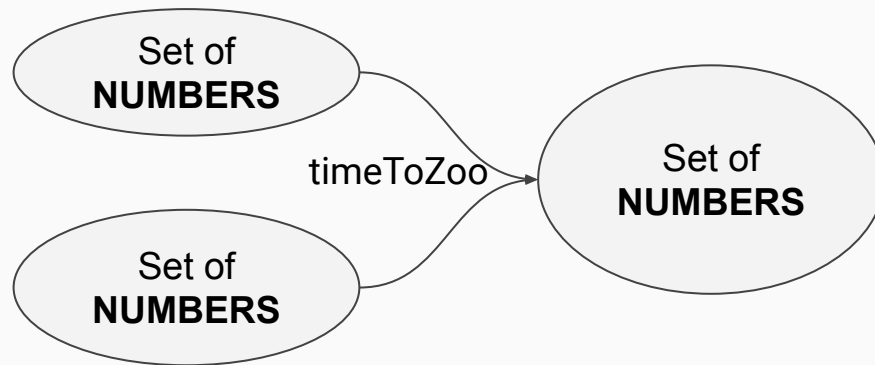


Some functions can be LOOKED-UP:



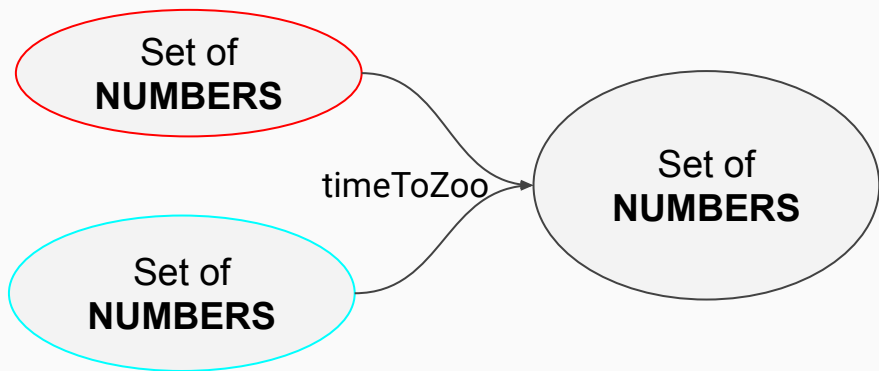
Let's go back to the first example...

$$\text{Time to the Zoo} = \frac{\text{Distance To Zoo}}{\text{Speed of Scooter}}$$



Functions are arrows from a number of  
Sets to some Set

And in case you're wondering - how all of this is related to programming:



$$\text{Time to the Zoo} = \frac{\text{Distance To Zoo}}{\text{Speed of Scooter}}$$

```
function timeToZoo(distanceToZoo, speedOfScooter) {  
    return distanceToZoo / speedOfScooter;  
}
```

## Next Class

1. Using these concepts of functions we will try to build a CPU
2. We will talk about VARIABLES and VALUES.