Introduction to Variables

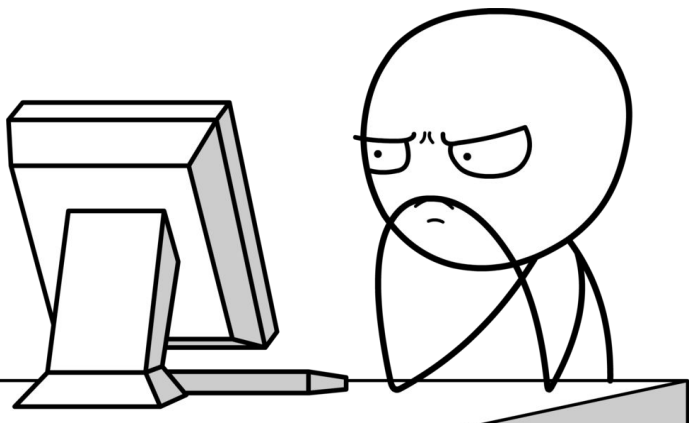$$x = \text{``\textit{awesome}''}$$

Unit 2, Lesson 2

Today's Goals

B1.2 describe the types of data that computers can process and store

B2.2 use variables, expressions, and assignment statements to store and manipulate numbers and text in a program

What is a **Variable**?
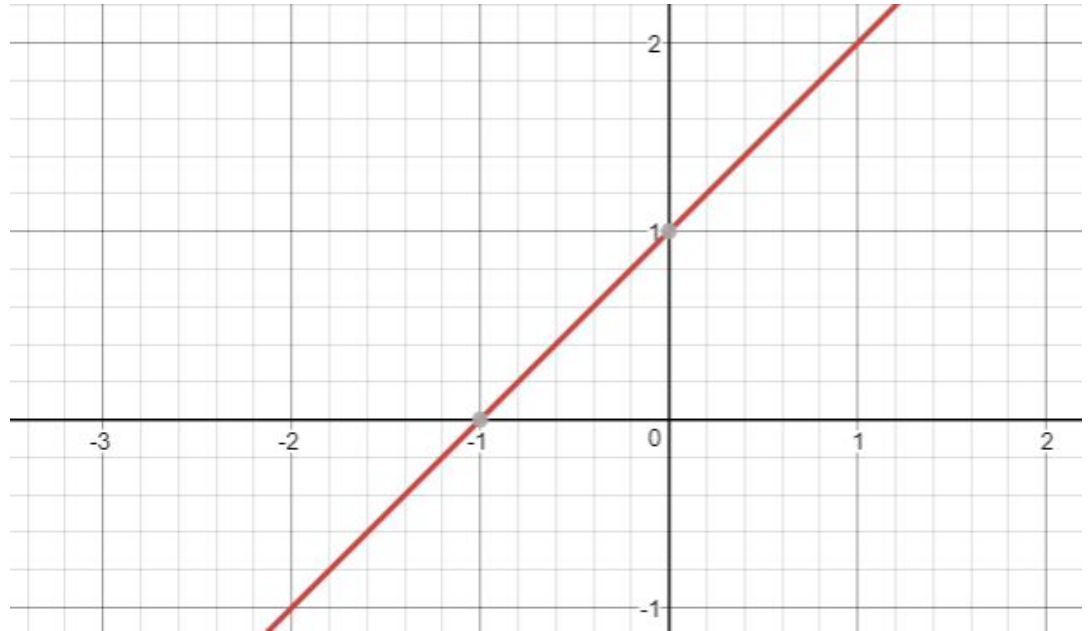
You've seen variables before.

Variables in Mathematics

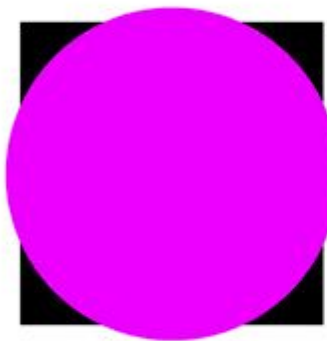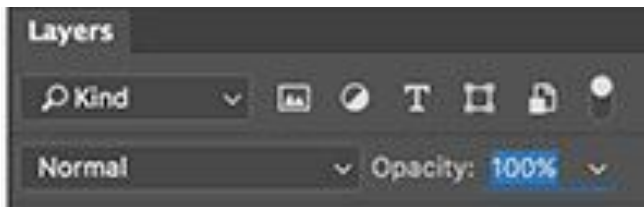## E.G. Graphing

$$y = x + 1$$

x and y are both variables!

If I give a value for x I can find the value of y or vice-versa.

![Ps] **Variables in Digital Art**

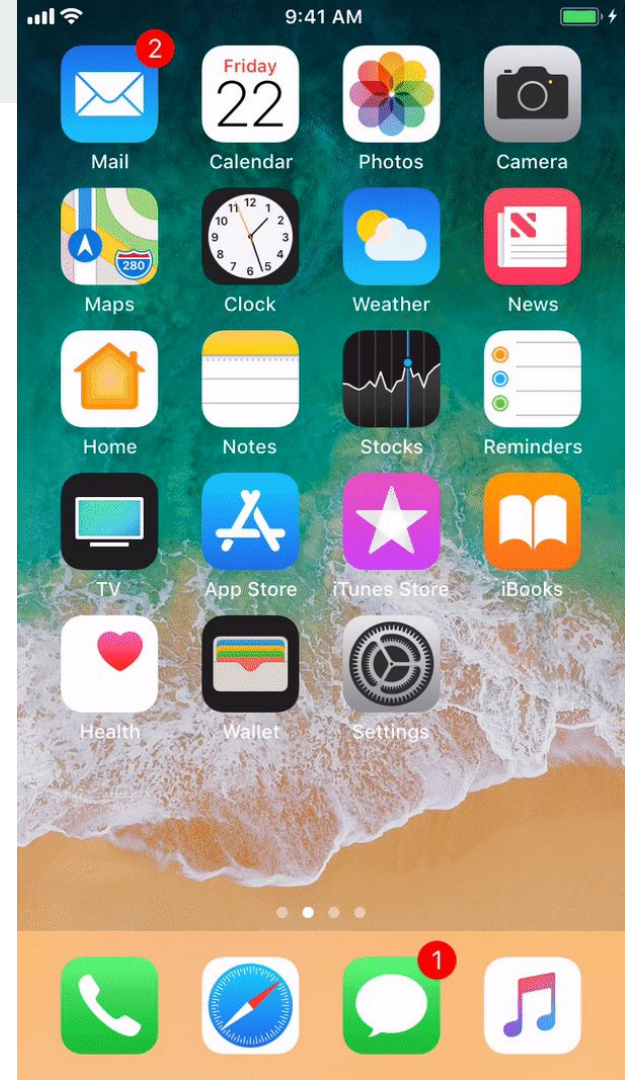# Ever changed the *Opacity* of something in photoshop / gimp / etc. ?

Opacity (how transparent something is) is an example of a variable because it is a property that can be changed.

Variables in your PHONE!

🔊 **Volume** is variable

☀ **Screen Brightness** is a variable

Variables are Everywhere!

Ever answered a fill-in-the-blanks question?

What is your favorite fruit? ___**Banana**___.

Who is your favorite musician? ___**Taylor Swift**___.

What is your favorite movie of all time? ___**Spirited Away**___.

Ever answered a fill-in-the-blanks question?

If we collected all the answers and wanted to organize them we could give each answer a name so that it's easier to find…

We could use a name like "Answer 1", etc.

Answer 1 = **Banana**

Answer 2 = **Taylor Swift**

Answer 3 = **Spirited Away**

Ever answered a fill-in-the-blanks question?

The problem with a name like "Answer 1" is that it doesn't give us any clues to what the value might be. We could use "favorite fruit" but that is a bit long.

Solution: Let's Use Good Names But Shorten Them a Bit

favFruit = **banana**

favArtist = **Taylor Swift**

favMovie = **Spirited Away**

How might that look in Python?

```
favFruit = "banana"
favArtist = "Taylor Swift"
favMovie = "Spirited Away"

print("My favorite fruit is...")
print(favFruit)

print("My favorite musician is...")
print(favArtist)

print("My favorite movie is...")
print(favMovie)
```

```
My favorite fruit is...
banana
My favorite musician is...
Taylor Swift
My favorite movie is...
Spirited Away
>>>
```

Variable DATA TYPES

Variables have a few main *data types* in programming languages.
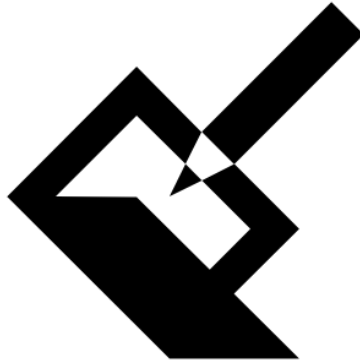In Python, the VALUE of a variable determines its *type*:

String	Integer	Float	Boolean
Letters, words, and sentences.	Positive and negative whole numbers	Positive and negative decimal numbers	True or False values
`myName = "Lanz"`	`myAge = 28`	`myHeight = 175.26`	`isHungry = True`

To Summarize, variables have **3 characteristics:**

1. Name: A unique identifier for the variable.

2. Value: The data being stored in the variable.

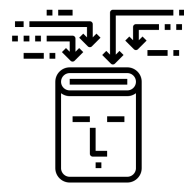3. Data Type: What kind of data is it? (String, Int, Float, Bool)

Let's Take Note of What We've Learned So Far

Python Vocabulary and Reference

By _____

Name / Keyword	Definition	Example(s)
Python Script	A text document that contains lines of code written in the Python programming language; Python scripts are saved with the extension .py; Python scripts can be run from command line (windows), terminal (mac), or from Python's Shell.	MyGame.py
print(5)	A function used to generate OUTPUT. The values inside the brackets will become output to the screen when the program is run. Print can output values directly or can be used to output a variable.	print("Hello World") print(5) print(156.028) print(myVariable)
Variable		

Python Activity 2

How many hours per week do we spend in school?
How many hours per week do we spend sleeping?

Using VARIABLES we can create a simple program to
keep track of the ways we spend our time!