

# Studio 2 - REDOWNLOAD CODE FROM CANVAS WHEN YOU GET HERE

Variables, Math, & If Statements

# Goals for Today

1. More practice changing variables
2. Practice translating math to code
3. Intro to If statements



# PART 1: Mathematical Expressions in Python

Operator	Name	Example
+	Addition	$x + y$
-	Subtraction	$x - y$
*	Multiplication	$x * y$
/	Division	$x / y$
%	Modulus	$x \% y$
**	Exponentiation	$x ** y$
//	Floor division	$x // y$

## PART 2: Gallery Wall

Given:

- a number of paintings of a certain size
- a set wall size

Calculate:

- Will the paintings fit on the wall?
  - If so, how much space needs to be between each painting

# PART 2: Gallery Wall

Correct! :)

Painting	Painting	Painting	Painting	Painting
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Incorrect :(

--	--	--	--	--

Incorrect :(

--	--	--	--	--

Incorrect :(

--	--	--	--	--

# If Statements

- If statements work by checking a given condition, and **if that condition is true, the code below will be executed**
- If the condition is false the code will continue running and pass the code within the if statement.
- For example:

```
if x == 2:  
    print("hi")
```

```
print("bye")
```

# If Statements

- For example:

```
if x == 2:  
    print("hi")
```

```
print("bye")
```

- If  $x = 1$ , what will happen?

# If Statements

- For example:

```
if x == 2:  
    print("hi")
```

FALSE  
Will NOT print "hi"

```
print("bye")
```

Will exit and print "bye"

- If  $x = 1$ , what will happen?



# If Statements

- For example:

```
if x == 2:  
    print("hi")
```

```
print("bye")
```

- If  $x = 2$ , what will happen?

# If Statements

- For example:

```
if x == 2:
    print("hi")
```

TRUE  
Will print "hi"

```
print("bye")
```

Will exit and print "bye"

- If  $x = 2$ , what will happen?

# If/Else Statements

- What if you only want your code to print “bye” if x is not equal to 2?

# If/Else Statements

- What if you only want your code to print “bye” if x is not equal to 2?

```
if x == 2:  
    print("hi")  
else:  
    print("bye")
```

# If/Else Statements

- What if you only want your code to print “bye” if x is not equal to 2?

```
if x == 2:  
    print("hi")  
else:  
    print("bye")
```

- If x = 2, what will happen?

# If/Else Statements

- What if you only want your code to print “bye” if x is not equal to 2?

```
if x == 2:
    print("hi")
else:
    print("bye")
```

TRUE  
Will print “hi”

WILL NOT ENTER ELSE  
Will NOT print “bye”

- If x = 2, what will happen?

# If/Else Statements

- What if you only want your code to print “bye” if x is not equal to 2?

```
if x == 2:  
    print("hi")  
else:  
    print("bye")
```

- If x = 1, what will happen?

# If/Else Statements

- What if you only want your code to print “bye” if x is not equal to 2?

```
if x == 2:
    print("hi")
else:
    print("bye")
```

FALSE  
Will NOT print “hi”

WILL ENTER ELSE  
Will print “bye”

- If x = 1, what will happen?



# Multiple Conditions

- What if you have multiple conditions?
  - Way 1: Multiple If statements
    - Use this if you want to check all conditions regardless if multiple conditions are true
    - The code will go through every condition for each If statement
  - Way 2: If/Elif/Else statements
    - Use this if you want to check the conditions until one is true, then stop checking the rest of the conditions
    - The code will run through the if statements until one condition is true, then exit

# Multiple If Statements

```
if x == 2:  
    print("hi")
```

```
if x%2 == 0:  
    print("cat")
```

```
print("bye")
```

- If  $x = 4$ , what will happen?

# Multiple If Statements

```
if x == 2:  
    print("hi")
```

FALSE  
Will not print "hi"

```
if x%2 == 0:  
    print("cat")
```

TRUE  
Will print "cat"

```
print("bye")
```

Will exit and print "bye"

- If  $x = 4$ , what will happen?

# Multiple If Statements

```
if x == 2:  
    print("hi")
```

```
if x%2 == 0:  
    print("cat")
```

```
print("bye")
```

- If x = 2, what will happen?

# Multiple If Statements

```
if x == 2:  
    print("hi")
```

TRUE  
Will print "hi"

```
if x%2 == 0:  
    print("cat")
```

TRUE  
Will print "cat"

```
print("bye")
```

Will exit and print "bye"

- If x = 2, what will happen?

# If/Elif/Else Statements

```
if x == 2:  
    print("hi")  
  
elif x%2 == 0:  
    print("cat")  
  
else:  
    print("bye")
```

- If  $x = 2$ , what will happen?

# If/Elif/Else Statements

```
if x == 2:           TRUE  
    print("hi")      Will print "hi"  
  
elif x%2 == 0:      WILL PASS NEXT CONDITION  
    print("cat")     Will NOT print "cat"  
  
else:               WILL PASS ELSE  
    print("bye")     Will NOT print "bye"
```

- If  $x = 2$ , what will happen?

# If/Elif/Else Statements

```
if x == 2:  
    print("hi")  
  
elif x%2 == 0:  
    print("cat")  
  
else:  
    print("bye")
```

- If  $x = 4$ , what will happen?



# If/Elif/Else Statements

```
if x == 2:           FALSE  
    print("hi")      Will NOT print "hi"  
  
elif x%2 == 0:      TRUE  
    print("cat")     Will print "cat"  
  
else:               WILL PASS ELSE  
    print("bye")     Will NOT print "bye"
```

- If  $x = 4$ , what will happen?

# If/Elif/Else Statements

```
if x == 2:  
    print("hi")  
  
elif x%2 == 0:  
    print("cat")  
  
else:  
    print("bye")
```

- If  $x = 1$ , what will happen?

# If/Elif/Else Statements

```
if x == 2:           FALSE
    print("hi")      Will NOT print "hi"

elif x%2 == 0:       FALSE
    print("cat")     Will NOT print "cat"

else:                WILL ENTER ELSE
    print("bye")     Will print "bye"
```

- If  $x = 1$ , what will happen?