

Topic 2: Vars and Expressions

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Announcements

- 1 Homework 2 (Part 2) and Post-Reading for Topic 3 (Part 1) are posted and due Friday.
- 2 Participation Topic 3 (Part 1) is due Friday
- 3 Challenge Activities for Topic 2 are due Sunday.

Review Poll Questions

Poll Question:

How many of the following characters are visible on the screen?

```
1 print("\t\\n\\t")
```

- ☐ A 1
- ☐ B 2
- ☐ C 3
- ☐ D 4
- ☐ E 5

Math Operators

Poll Question: Multiplication

What is the result of the following?

```
1 x = 4(10 + 2)
2 print(x)
```

- ☐ A 24
- ☐ B SyntaxError
- ☐ C TypeError
- ☐ D ValueError

Poll Question: Multiplication

What is the value of y after this code executes?

```
1 x = 2
2 y = x + 3
3 x = 3
```

- ☐ A 2
- ☐ B 3
- ☐ C 5
- ☐ D 8
- ☐ E 10

Poll Question: Multiplication

What is the value of y after this code executes?

```
1 x = 7
2 y = x
3 x = x + 2
```

- ① 2
- ② 5
- ③ 7
- ④ 9

Poll Question: Multiplication

What is the value of this expression?

1 `-3 ** 2`

2 ① -9

② -8

③ 8

④ 9

Poll Question: More Math Operators

Which computes how many (whole) apples I can give to each friend?

- ① `num_apples / num_friends`
- ② `num_friends // num_apples`
- ③ `num_apples // num_friends`
- ④ `num_friends % num_apppples`
- ⑤ `num_apples % num_friends`

Poll Question: More Math Operators

Which computes how many (whole) apples you have left over if you give `num_apples` to `num_friends`?

- ❶ `num_apples / num_friends`
- ❷ `num_friends // num_apples`
- ❸ `num_apples // num_friends`
- ❹ `num_friends % num_appples`
- ❺ `num_apples % num_friends`

Division, Floor Division, and Modulo

- ➊ Division operator ($/$) gives best approximation to true result and *always return a float*.
- ➋ Floor division ($//$) rounds down the closet whole number. The type of the result will follow the normal rules.
- ➌ Modulo operator($\%$) performs a division and returns the remainder. The type of the result will always be the same.
- ➍ For any numbers x and y , the following equality holds:
$$(y == (y // x) * x + (y \% x))$$

Orders of Operation

Order of Operations in Python

- Parentheses
- Exponentiation
- Positive and negative
- Multiplication, Division, Modulo
- Addition, Subtraction

Highest



Lowest

Note: Python evaluates from left to right within a precedence level

Math Module

Poll Question: Rounding

What is the result of this code if the user types in 4.51 and 5.9?

```
1 x = math.ceil(float(input()))  
2 y = math.floor(float(input()))  
3 print(x + y)  
4
```

- ☐ A SyntaxError
- ☐ B NameError
- ☐ C 10
- ☐ D 10.0

Poll Question: Rounding

What is the result of this code if the user types in 4.1 and 5.9?

```
1 import math
2 x = math.ceil(float(input()))
3 y = math.floor(float(input()))
4 print(x + y)
5
```

- ☐ A 10
- ☐ B 10.0

Poll Question: More Math Operators

Which of the following will print the value of π ?

- ☐ A `print(math.pi)`
- ☐ B `print(pi)`
- ☐ C `import math.pi`
`print(math.pi)`
- ☐ D `import math`
`print(math.pi)`

Math Module

- Ⓐ Should I memorize (operators, function, modules, module functions, etc.)?
- Ⓑ Yes and no.
- Ⓒ Google + `help()` function are your friends
- Ⓓ Modules vs Scripts: Modules are just (for the purposes of what we've discussed so far) scripts that someone else wrote that you can use in your own scripts.

To get information on a module:

```
1 import math
2 help(math)
3
```

`__name__` and `"__main__"`

- 1 When you run a script in python it gets a few "environment variates".
- 2 For the script you run (e.g, `test.py`) the `__name__` variable will always be `"__main__"`.
- 3 For any scripts/modules you import `__name__` variable will always be the name of that script/module.

Lab

Lab 1

Section 1 - Python + TextEditor

Section 2 - Git Setup

Section 2 - GitHub Setup

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