

An Introduction to STEM Programming with Python 3 – Chapter 1 Literals and Arithmetic

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In this video we will cover:

- The `print` function with expressions.
- Basic mathematical operators (`+` `-` `*` `/` `**`)
- Special integer operators (`%` `//`)
- String concatenation and multiplication
- Comment statements

Literals

- In Python we can insert numbers and strings into our programs as literal values.

- Numbers come in two types: integers and floats.

`2323, 32423, -4543, 0, 435.435, 0.0, -342.67`

- Strings are sequences of characters surrounded by quotes or by triple-quotes.

```
'a string', "BR549",  
"""A 'foo' and a "bar".""",  
'''sdasddasd344553'''
```

Comment Statements

- Lines in Python or line endings that start with # are ignored.
- We call them comment statements.
- Used for separation, notes, and to make your program more readable.
- Usually programmer will sign, describe, and date a program at the top.

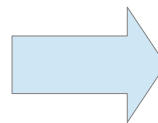
Basic Mathematical Operators

- We can use Python to calculate for us.
- Basic Operators:

Operator	Action
+	Addition
-	Subtraction
*	Multiplication
/	Float Divide
**	Exponentiation
()	Parenthesis

Basic Mathematical Operators

```
1 # show basic mathematical operators
2 # j.m. reneau
3
4 print(2 + 3)
5 print(3 * (7+3))
6 print(5/8)
7 print(5**2)
8 print(2**0.5) # square root
9
```



```
5
30
0.625
25
1.4142135623730951
```

Special Integer Operators

- These operators work with integer values and return integer values
- These give results like in old "long-division"

divisor $\overline{\hspace{1.5cm}}$ quotient *r* remainder
dividend

Operator	Action
%	Remainder of Integer Division
//	Quotient of Integer Division

Special Integer Operators

```
1 # integer operators
```

```
2 # j.m. reneau
```

```
3
```

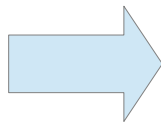
```
4 #
```

```
5 # result of long division 7 | 104
```

```
6
```

```
7 print("quotient", 104 // 7)
```

```
8 print("remainder", 104 % 7)
```



```
quotient 14
```

```
remainder 6
```

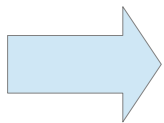

String Operators

- There are also a couple of operators that we can use on strings.
- Concatenation (+) – Join one string to the end of another.
- Repeat (*) - Repeat the string a certain number of times.

Operator	Action
+	Concatenation (join two strings)
*	Repeat a string (specific number of times)

String Operators

```
1 # string operators
2 # j.m. reneau
3
4 print("abc" + "xyz")
5
6 print('abc' * 10)
```



abcxyz
 abcabcabcabcabcabcabcabc

Thank you

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