



# Python Cheat Sheet

## The `print()` Function

The `print()` function prints the specified message to the screen, or other output device. The message can be a string, or any other object that is converted into a string before being written to the screen.

```
print("Hello World!")
```

### Printing a math solution

```
x = 9
y = 2
print("Sum: " + str(x + 9))
```

## Data Types and Type Conversion

### Integers

-2, -1, 0, 1, 2, 3, 4, 5  
`int()`

### Floats

-1.25, -1.0, -0.5, 0.0, 1.0  
`float()`

### Strings

"Hello", "This is a string."  
`str()`

## Comments

### Inline Comment

```
# This is a comment.
```

### Multiline Comment

```
# This is a
# multiline comment.
```

### Code with Comment

```
a = 1    #initialization
```

## Variables

Variables can be named anything as long as:

- It is only one word.
- Only uses letters, numbers, and the underscore character.
- It can't begin with a number.
- Starting with an underscore is considered "unuseful."

```
name = Alice
```

## Input

Your programs can prompt the user for input. All input is stored as a string.

### Prompting for a String

```
name = input("Who are you?")
print("Hello " + name)
```

### Prompting for a Value

```
age = int(input("How old are
you? "))
print(age)
```

## Calculations with Variables

Math operators follow order of operations.

### Exponent

```
**      2 ** 3 = 8
```

### Modular Division

```
%      22 % 8 = 6
```

### Division

```
/      22 / 8 = 2.75
```

### Multiplication

```
*      3 * 3 = 9
```

### Subtraction

```
-      5 - 2 = 3
```

### Addition

```
+      2 + 2 = 4
```

## Math Functions

```
import math
```

### Square Root

```
math.sqrt()
```

### Absolute Value

```
math.fabs()
```

### Raising to a Power

```
math.pow(x, y)
```

## Random Numbers

```
import random
```

### Random Integer between x and y

```
random.randint(x, y)
```

### Random Number from 0 to .999999999999

```
random.random()
```

### Specifying a Seed for a sequence of Random Numbers

```
random.seed(x)
```

### Pick a random element from a sequence

```
animal = random.choice(["cat",
"dog", "fish", "snake"])
```

## Min and Max

`min` and `max` are functions in Python that can find the minimum or maximum of a list of numbers.

### `min()`

```
min(4, 6, 2, 7, 1, 9)
```

### `max()`

```
max(4, 6, 2, 7, 1, 9)
```

## Simple Plot

The first parameter ('Sample') is the title. The second and third are the width (400) and height (300) of the graph. The fourth and fifth label the x and y axes. The next parameter contains our x and y values. The last two are optional. The True in this example says that we want to indicate the points on our graph and the last parameter gives a legend for the graph.

```
import simpleplot

dataset1 = [(1, 4), (1, 5), (2, 7), (4, 9)]
dataset2 = [(1, 2), (2, 7), (2, 5), (7, 6)]

simpleplot.plot_lines('Sample',
    400, 300, 'x', 'y',
    [dataset1, dataset2], True,
    ['dataset1', 'dataset2'])
```