

# Python Type Casting

## Python Numbers

There are three numeric types in Python:

- int
- float
- complex

Variables of numeric types are created when you assign a value to them:

```
x = 1      # int
y = 2.8    # float
z = 1j     # complex
```

To verify the type of any object in Python, use the `type()` function:

```
print(type(x))
print(type(y))
print(type(z))
```

output:

```
<class 'int'>
<class 'float'>
<class 'complex'>
```

## Int

Int, or integer, is a whole number, positive or negative, without decimals, of unlimited length.

```
x = 1
```

```
y = 35656222554887711
```

```
z = -3255522
```

```
print(type(x))
```

```
print(type(y))
```

```
print(type(z))
```

output:

```
<class 'int'>
```

```
<class 'int'>
```

```
<class 'int'>
```

## Float

Float, or "floating point number" is a number, positive or negative, containing one or more decimals.

```
x = 1.10
```

```
y = 1.0
```

```
z = -35.59
```

```
print(type(x))
```

```
print(type(y))
```

```
print(type(z))
```

output:

```
<class 'float'>
```

```
<class 'float'>
```

```
<class 'float'>
```

Float can also be scientific numbers with an "e" to indicate the power of 10.

```
x = 35e3
```

```
y = 12E4
```

```
z = -87.7e100
```

```
print(type(x))
```

```
print(type(y))
```

```
print(type(z))
```

output: same as Above

## Complex

Complex numbers are written with a "j" as the imaginary part:

$x = 3+5j$

$y = 5j$

$z = -5j$

```
print(type(x))
```

```
print(type(y))
```

```
print(type(z))
```

output:

```
<class 'complex'>
```

```
<class 'complex'>
```

```
<class 'complex'>
```

# Type Conversion

You can convert from one type to another with the `int()`, `float()`, and `complex()` methods:

```
x = 1 # int
```

```
y = 2.8 # float
```

```
z = 1j # complex
```

```
#convert from int to float:
```

```
a = float(x)
```

```
#convert from float to int:
```

```
b = int(y)
```

```
#convert from int to complex:
```

```
c = complex(x)
```

```
print(a)
```

```
print(b)
```

```
print(c)
```

```
print(type(a))
```

```
print(type(b))
```

```
print(type(c))
```

```
1.0
```

```
2
```

```
(1+0j)
```

```
<class 'float'> <class 'int'> <class 'complex'>
```

**Note: You cannot convert complex numbers into another number type.**

## Random Number

Python does not have a `random()` function to make a random number, but Python has a built-in module called `random` that can be used to make random numbers:

Import the `random` module, and display a random number between 1 and 9:

```
import random
```

```
print(random.randrange(1,10))
```