**Python Numbers**

Number data types store numeric values. They are immutable data types, means that changing the value of a number data type results in a newly allocated object.

Number objects are created when you assign a value to them. For example −

var1 = 1

var2 = 10

You can also delete the reference to a number object by using the **del** statement. The syntax of the del statement is −

del var1[,var2[,var3[....,varN]]]]

You can delete a single object or multiple objects by using the **del** statement. For example −

del var

del var\_a, var\_b

Python supports four different numerical types −

* **int (signed integers)** − They are often called just integers or ints, are positive or negative whole numbers with no decimal point.
* **long (long integers )** − Also called longs, they are integers of unlimited size, written like integers and followed by an uppercase or lowercase L.
* **float (floating point real values)** − Also called floats, they represent real numbers and are written with a decimal point dividing the integer and fractional parts. Floats may also be in scientific notation, with E or e indicating the power of 10 (2.5e2 = 2.5 x 102 = 250).
* **complex (complex numbers)** − are of the form a + bJ, where a and b are floats and J (or j) represents the square root of -1 (which is an imaginary number). The real part of the number is a, and the imaginary part is b. Complex numbers are not used much in Python programming.

### Examples

Here are some examples of numbers

|  |  |  |  |
| --- | --- | --- | --- |
| int | long | float | complex |
| 10 | 51924361L | 0.0 | 3.14j |
| 100 | -0x19323L | 15.20 | 45.j |
| -786 | 0122L | -21.9 | 9.322e-36j |
| 080 | 0xDEFABCECBDAECBFBAEL | 32.3+e18 | .876j |
| -0490 | 535633629843L | -90. | -.6545+0J |
| -0x260 | -052318172735L | -32.54e100 | 3e+26J |
| 0x69 | -4721885298529L | 70.2-E12 | 4.53e-7j |

* Python allows you to use a lowercase L with long, but it is recommended that you use only an uppercase L to avoid confusion with the number 1. Python displays long integers with an uppercase L.
* A complex number consists of an ordered pair of real floating point numbers denoted by a + bj, where a is the real part and b is the imaginary part of the complex number.

## Number Type Conversion

Python converts numbers internally in an expression containing mixed types to a common type for evaluation. But sometimes, you need to coerce a number explicitly from one type to another to satisfy the requirements of an operator or function parameter.

* Type **int(x)** to convert x to a plain integer.
* Type **long(x)** to convert x to a long integer.
* Type **float(x)** to convert x to a floating-point number.
* Type **complex(x)** to convert x to a complex number with real part x and imaginary part zero.
* Type **complex(x, y)** to convert x and y to a complex number with real part x and imaginary part y. x and y are numeric expressions