



Year 6

Introduction to Python

Key Learning

- To understand that Python is a text-based coding language and enter simple commands.
- To use Python to perform mathematical calculations.
- To be able to use repetition and Python library functions.
- To understand how Python in Pieces can be used to program a graphical user interface.

Key Resources



Key Vocabulary

Command

A single instruction of code. In Python, this could be print ("Hello") which would print the word Hello to the screen.

Library

A Python library is a collection of files (called modules) that contains functions that can be used in programs.

Sprite

A picture or character that can move or be controlled on screen.

Co-ordinate

A pair of numbers (x and y) that show a sprite's exact position on the screen.

Loop

A way to repeat a set of instructions over and over again.

String

Text or a combination of text characters and numbers: A sequence of characters, which could form words, phrases or even whole sentences.

Floating Point Number

A number with a decimal point.

Modulo Operator

Uses the % symbol and gives you the remainder after division.

Range

A function that lets a user get a series of numbers without having to type them all out.

Floor Division

Divides one number by another but only keeps the whole number part of the answer, ignoring any remainder or decimal.

Print

A function in Python that will print different things to the screen.

Variable

A named area in computer memory. A variable has a name and a value. The program can change this variable value. Variables are used in programming to keep track of things that can change while a program is running.

Function

A sequence of code that you can access when you need it. In Python, the print function is an inbuilt piece of code that can be called to print something to the screen.

Sleep

A function in Python that will pause when the next line of code is executed. Users can specify the amount of time the sleep function runs for by creating a sleep command.



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Key Images

```
1 print ("Hello World")
```

Outputting a String to the screen

```
1 print("What is 138 + 456?")  
2 print(138 + 456)
```

Outputting a String and outputting the sum of two integers

```
1 for i in range(10):  
2     print("Python is fun!")
```

A 'for loop' that repeats a string output ten times

```
1 from time import sleep  
2 alien.x = 540  
3 alien.y = 460  
4 alien.up()  
5 sleep(1)
```

Code to change the position of a sprite

```
1 from time import sleep  
2 for clock in range(8):  
3     print("tick")  
4     sleep(1)  
5     print("tock")  
6     sleep(1)
```

A 'for loop' that uses the sleep command to control print output

Key Questions

What are the benefits of using a text-based language like Python?

Code uses code blocks to create programs, whereas Python uses text-based language. A user is limited by the code blocks available to them to create programs. However, programs created in Python can be almost unrestricted in the possibilities for creating a program.

What are some examples of functions available in Python?

Print and sleep are both examples of functions that are available in Python. Print will output something to the screen such as a string or the value of a variable. Sleep will pause the next line of code for a set period. The functions in Python enable someone to create code efficiently without having to write lots of lines of code to make something happen. Python has lots of in-built functions available.

What is a 'for loop'?

A 'for loop' is a type of loop that can be set to repeat nested code a set number of times. Unlike a 'while loop', a 'for loop' does not rely on a condition to be met in order for it to be run.