Operations on numeric and Boolean data – Part A

In this video we will be talking about the basic maths that is used to make calculations in programming. We will be looking at some of the common operations involved to perform calculations on numeric data.

We will look at how logic operations are calculated and how this can be applied with a Boolean result that is either 'True' or 'False'.

A numerical operator is a specific symbol that is used when programming to perform a mathematical calculation.

Although there are differences depending on the programming language being used, the operators used in Python are as follows:

Addition - this would equal the sum of a and b
Subtraction - this is where a subtracts b
Multiplication - this is where a is multiplied by b
Division - this is where a is divided by b
Integer Division - this is where a is divided by b and only the integer value is returned
Modulo - typically pronounced as a mod b, this is where the remainder value when a is divided by b is given
Exponentiation - here a is raised to the power of b

These arithmetic operators follow the standard precedence and the order of values in a calculation can be changed using brackets to group some calculations together.

Similar in any mathematical operation you might carry out the standard precedence is always followed, brackets are used to prioritise operations as necessary.

If you are unsure the order needed, you could use the acronym BIDMAS to help you understand. This means that first brackets, then indices, then division, multiplication, addition and finally subtraction are calculated.

So now that we know about the basic mathematical operators, let's use these to see how these could be used to perform operations on numeric data.

Notice here we have used the equals symbol to assign the result from each of these calculations to a variable. We would then print the results as follows.

Now, as we stated before if we wanted to perform a more complicated calculation we could use BIDMAS to help us understand the order of operations. Take a look at this example, each one has the same operators and numbers, but will all the results be the same?

As we can see, each result is different.

We have looked at how operations can be carried out using mathematical expressions. We will now look at comparison operators. There are six comparison operators:
Less than
Less than or equal to
Greater than
Greater than or equal to
Equal to
Not equal to

Notice we have the double equal sign here, this is very different to the single equal sign that we saw earlier in this video. In other programming languages this could also be written as colon equal (:=) this means the same thing. What's important is you know the correct syntax for the programming language that you are using.