Booleans and Conditionals

Boolean values

Boolean values are True and False (note the capitalization). They have a type 'bool' and are like "yes" or "no" in response to a condition.

Comparison operators

Comparison operators check the relationship between two values. For example, `x == 5` asks if x is equal to 5. If the statement (comparison) is true, the operator will return True. If the statement is not true, it will return a value of False.

Note the difference between = and ==. A single = assigns the value on the right to the variable on the left (`x = 5`). A double == checks to see if the two sides are equal.

Operator	Check to see if…
x == y	x is equal to y
x != y	x is not equal to y
x > y	x is greater than y
x < y	x is less than y
x >= y	x is greater than or equal to y
x <= y	x is less than or equal to y

Logical operators

Logical operators are `and` , `or` and `not` . They are used with comparison operators to check the relationship between conditions.

For example, `x > 5 and x < 10` returns True if x is both greater than 5 and less than 10. If x is 10, False will be returned because one of the conditions is not met.

Truth tables are commonly used to keep track of the outputs of logical operators.

Truth table for `and` :

a	b	a and b
True	True	True
False	True	False
True	False	False
False	False	False

Truth table for `or`:

a	b	a or b
True	True	True
False	True	True
True	False	True
False	False	False

Truth table for `not`:
(Note that `not` only requires one operand.)

a	not a
True	False
False	True

Conditionals

Conditional statements check to see if a certain condition is met and then executes blocks of code according to the answer.

For example, the code below checks to see if x is greater than 2. If `x > 2` is True, the block to print Hello will run. Otherwise, Goodbye will be printed.

```
if x > 2:
  print("Hello")
else:
  print("Goodbye")
```

You cam have check multiple conditions at once:

```
if x > 2:
  print("Hello")
elif x == 2:
  print("Hola")
else:
  print("Goodbye")
```

Note the indentations for each block. The indented blocks go with the statements above them and only run if those statements are True. **Be careful with indentations - incorrect indentations can cause unexpected behavior!**