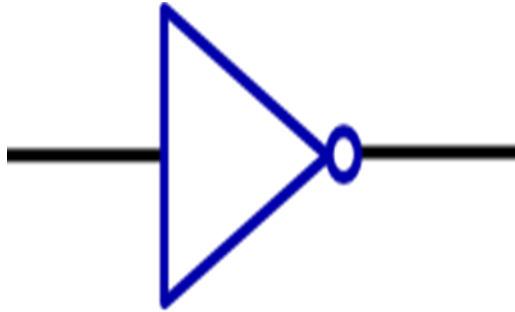


## 2.4 BOOLEAN LOGIC

### NOT GATE

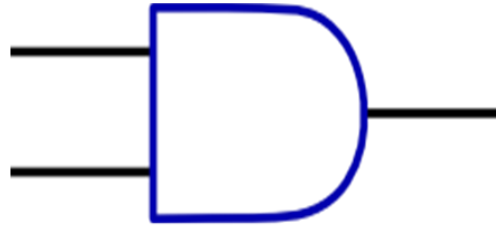
A NOT gate takes an input and outputs the opposite.



Input	Output
0	1
1	0

### AND GATE

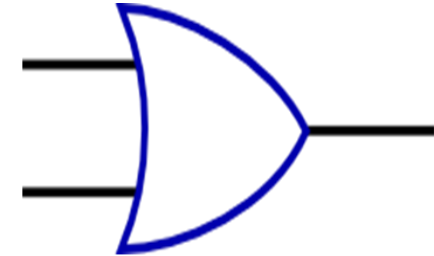
For an AND gate to give an output of 1, both inputs must be 1.



Input A	Input B	Output
0	0	0
1	0	0
0	1	0
1	1	1

### OR GATE

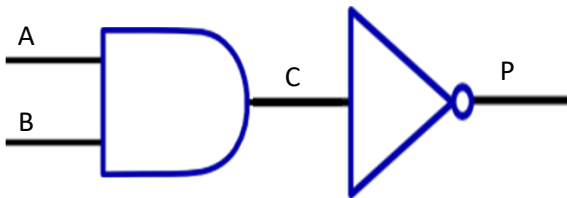
For an OR gate to give an output of 1, either inputs must be 1.



Input A	Input B	Output
0	0	0
1	0	1
0	1	1
1	1	1

### COMBINED GATES

Logic gates can be combined:



A	B	C	P
0	1	0	1
1	0	0	1
1	1	1	0
0	0	0	1

### LOGIC EXPRESSIONS

The table below shows the logic gate expressions and notations that you need to know:

Gate	Expression	Notation
NOT	NOT A	$\neg A$
AND	A AND B	$A \wedge B$
OR	A OR B	$A \vee B$

### WHY COMPUTERS USE BINARY

Computers use 1s and 0s to represent the flow of electricity in their circuits.

0 = off

1 = on

Bit = a single bit (0 or 1)

Nibble = 4 bits

Byte = 8 bits

Kilobyte = 1000 bytes

Megabyte = 1000 kilobytes

Gigabyte = 1000 megabytes

Terabyte = 1000 gigabyte

Petabyte = 1000 terabytes