

Gate And

Truth Tables



$$Y = A \text{ and } B$$

$$Y = A * B$$

$$\left\{ \begin{array}{l} A = 0 \\ A = 1 \end{array} \right.$$

$$\left\{ \begin{array}{l} Y = 0 \\ Y = 1 \end{array} \right.$$

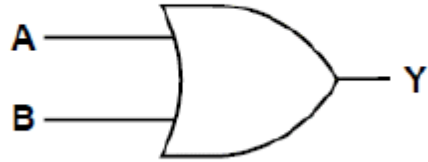
$$\left\{ \begin{array}{l} B = 0 \\ B = 1 \end{array} \right.$$

Truth table

A	B	Y
0	0	0
0	1	0
1	0	0
1	1	1

Y
1
1
1
0

Gate OR



$$Y = A \text{ OR } B$$

$$Y = A + B$$

$$A = 0$$
$$A = 1$$

$$B = 0$$
$$B = 1$$

$$Y = 0$$
$$Y = 1$$

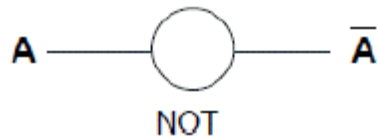
the truth table

A	B	Y
0	0	0
0	1	1
1	0	1
1	1	1

(base 2)
 $1+1 = 10$

boolean algebra

Gate NOT



$$A = 0$$

$$\bar{A} = 1$$

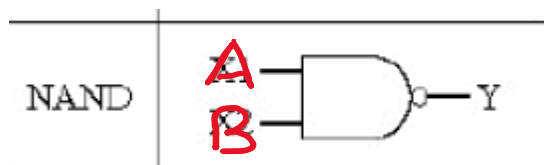
$$A = 1$$

$$\bar{A} = 0$$

$$Y = \bar{A}$$

A	$\bar{A}$
0	1
1	0

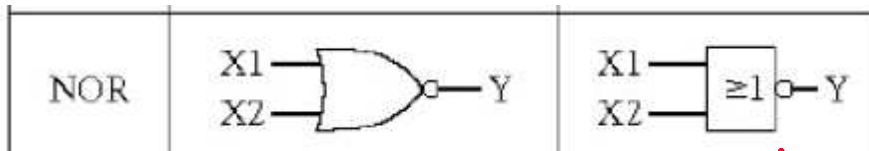
Gate NAND = NOT AND



The truth table

A	B	$Y = \overline{A \times B}$
0	0	1
0	1	1
1	0	1
1	1	0

Gate NOR = NOT OR



A	B	$\overline{A + B}$
0	0	1
0	1	0
1	0	0
1	1	0