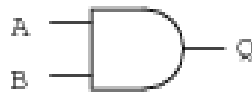# Boolean Algebra Worksheet
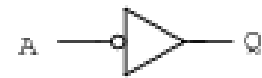
1. Write the Boolean expression underneath each symbol:

A
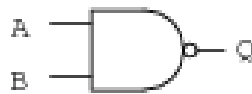B ──▷── Q

Q =

A
B ──D── Q

Q =

A ──▷o── Q

Q =

A
B ──▷o── Q
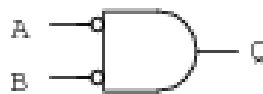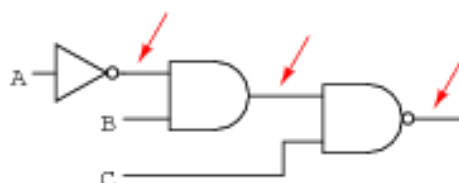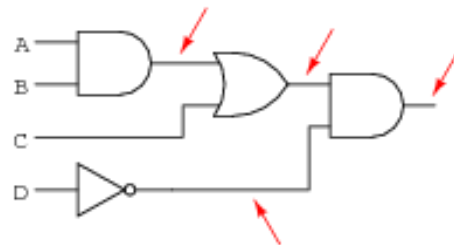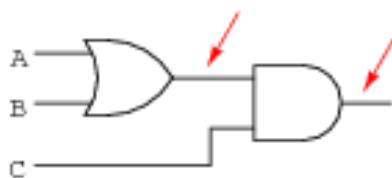
Q =
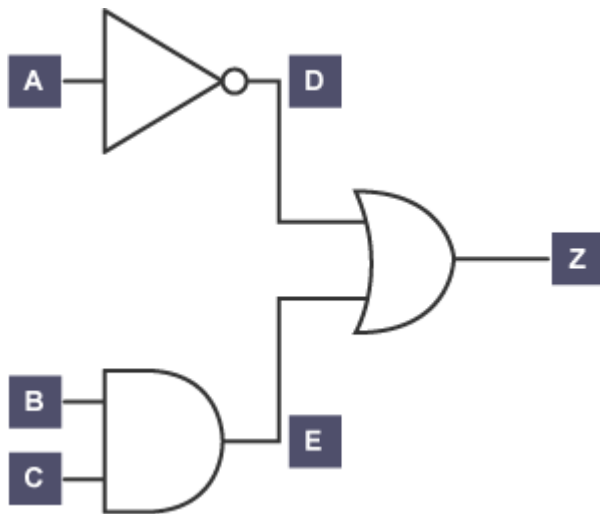
A
B ──Do── Q

Q =

A
B ──▷o── Q

Q =
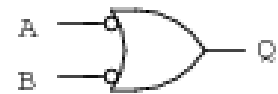
A
B ──Do── Q

Q =

Look at these two simple logic circuits. Are they equivalent? Does it matter where the NOT gates occur?

2. Convert each logic circuit into a Boolean expression, writing each gate's output next to the arrows:

A
B ──▷── C ──D──

A
B ──D── C ── D ──▷──

A ──▷o── B ──D── C ──Do──

3. Complete the truth table for the following logic circuit:

A	B	C	D=!A	E=BC	Z=D+E
0	0	0			
0	0	1			
0	1	0			
0	1	1			
1	0	0			
1	0	1			
1	1	0			
1	1	1			

4. Write the final Boolean expression (Z) for the above diagram using the inputs A, B and C in your answer.

Boolean Algebra Expression Symbols Reference:

Logic Gate	Boolean Symbol	Examples of Use
AND	·	A · B (common)
	x	A x B
	*	A * B
	v	A v B
	[no gap or symbol]	AB (common)
OR	+	A + B (common)
	^	A ^ B
XOR	⊕	A⊕B
NOT	‾	$\overline{A}$ (common)
	!	!A
	¬	¬A
	'	A'