Boolean expressions

Core BUILD THE BASICS

C1 **State** the symbol used for AND. **[1]**

C2 **State** what + means in a Boolean expression. **[1]**

C3 **Complete** the expression for a NOT gate with input C. **[1]**

C4 **State** the Boolean expression for a 3-input AND gate. **[1]**

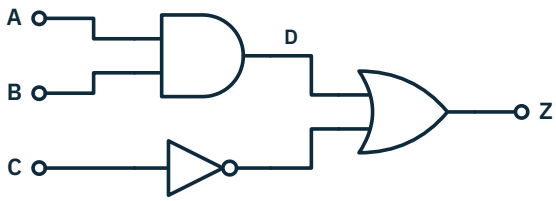
C5 **State** the Boolean expression for 'not A or B'. **[1]**

C6 **State** what brackets show in a Boolean expression. **[1]**

C7 **State** the symbol used for NOT. **[1]**

Stretch GO FURTHER

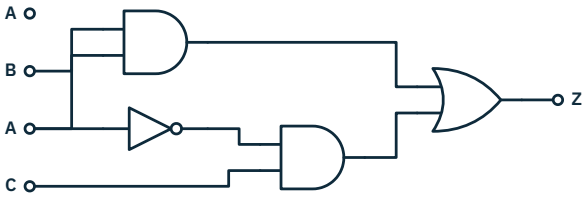
S1 **Complete** the Boolean expression for this circuit. **[2]**



S2 **Complete** the logic diagram for $Z = (A + B) \cdot \overline{C}$. **[3]**

Boolean expressions

S3 **Complete** the Boolean expression for this diagram. **[3]**



S4 **Complete** the logic diagram for $Z = A \cdot \overline{B} \cdot C$. **[2]**

Exam Ready QUALIFICATIONS SCOTLAND STYLE

E1 A greenhouse fan (Z) runs when it is hot (H) or humid (U), unless the vent is open (V). **[2]**
Complete the Boolean expression.

E2 **Complete** the truth table for $Z = \overline{A \cdot B}$ (NOT after AND). **[1]**

A	B	Z
0	0	
0	1	
1	0	
1	1	

E3 A ski-lift (Cairnloch, fictional) runs (Z) when the operator presses start (S) and either the wind is low (W) or the override key (K) is on. **Complete** the Boolean expression. **[2]**

E4 **Complete** the logic diagram for E3 with labelled inputs. **[3]**

Boolean expressions

E5 **Complete** the truth table for E3. **[2]**

S	W	K	Z
0	0	0	
0	0	1	
0	1	0	
0	1	1	
1	0	0	
1	0	1	
1	1	0	
1	1	1	

Total: 27 marks. Use the Data Booklet. Show your working and give units.