

10. Boolean logic

Starter Quiz · 课前小测

IGCSE Computer Science

Name: _____ Score: _____

1. An AND gate gives output 1 when:

- ☐ both inputs are 1
- ☐ at least one input is 1
- ☐ the inputs are different
- ☐ both inputs are 0

2. The expression '(A AND B) OR (NOT C)' means:

- ☐ do A AND B, do NOT C, then OR the two results
- ☐ do A OR B only
- ☐ invert A, B and C
- ☐ A AND B AND C

3. An OR gate gives output 0 only when:

- ☐ both inputs are 0
- ☐ both inputs are 1
- ☐ the inputs are different
- ☐ one input is 1

4. How many rows does a truth table have for a circuit with 3 inputs?

5. A XOR gate gives output 1 when:

- ☐ the two inputs are different
- ☐ both inputs are 1
- ☐ both inputs are 0
- ☐ always

6. When drawing a circuit from a problem statement, you should:

- ☐ draw it exactly as the statement says, without simplifying
- ☐ always reduce it to one gate
- ☐ add extra gates
- ☐ ignore the NOT operations

7. A NOR gate with both inputs 0 gives what output (0 or 1)?

8. For $X = (A \text{ AND } B) \text{ OR } C$ with $A=1$, $B=0$, $C=1$, what is X?

- ☐ 1
- ☐ 0
- ☐ cannot tell
- ☐ 2

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1. **both inputs are 1**

AND outputs 1 only when every input is 1.

2. **do A AND B, do NOT C, then OR the two results**

Work out each part — (A AND B) and (NOT C) — then OR them together.

3. **both inputs are 0**

OR is 1 if at least one input is 1, so it is 0 only when both are 0.

4. **8**

Each input doubles the combinations: $2^3 = 8$ rows (000 to 111).

5. **the two inputs are different**

XOR (exclusive OR) is 1 when the inputs differ.

6. **draw it exactly as the statement says, without simplifying**

At IGCSE you draw the circuit as described — simplification is not required.

7. **1**

NOR = NOT OR. OR of (0,0) is 0, so NOR is 1. NOR is 1 only when both inputs are 0.

8. **1**

A AND B = 0; 0 OR C(=1) = 1, so X = 1.