

Topic: Unit 2.4 Boolean Logic

Key vocabulary:	Core knowledge questions	Powerful knowledge crucial to commit to long term memory	Links to previous and future topics
Logic Gate Transistor Bit (B inary D igit) Logic Circuit AND OR NOT (Inverter) $A \wedge B$ (AND) $A \vee B$ (OR)	<ol style="list-style-type: none"> 1. What is a logic gate? 2. What is an AND gate? 3. What is an OR gate? 4. What is a NOT gate? 5. Draw an AND, OR and NOT gate 6. What outputs are achieved by passing specific inputs into each logic gate? 7. Create simple logic diagrams using the operators AND, OR and NOT 8. What are Truth Tables? 9. Complete Truth Tables for each of the three main logic gates 10. Combine Boolean Operators using AND, OR and NOT 11. Apply logical operators in truth tables to solve problems 	<ul style="list-style-type: none"> • Logic gates allow manipulation of bits • Bits are processed by the CPU • The component in a computer that processes bits is called a transistor • Combinations of logic gates can be shown using a diagram • Knowledge of the truth tables for each logic gate (AND, OR, NOT) • Recognition of each gate symbol • Understanding how to create, complete or edit logic diagrams and truth tables for given scenarios • Ability to work with more than one gate in a logic diagram. 	<ul style="list-style-type: none"> • Boolean Logic is covered in Y7 and Y8 • Boolean Logic is fundamental to Computer Science and will be revisited throughout the course. • Binary is fundamental to CS as this is how computers receive, interpret and output instructions. Binary, is also addressed in 1.2.3, 1.2.4 and 2.2.2

We will develop these skills:

Impressive reading	Impressive speaking	Impressive writing	Resilience	Numeracy via:	Digital Literacy via:	Employability via:
Research using the Internet to find relevant and appropriate information about logic gates and circuit diagrams.	Discussion of research findings. Discussion in groups of logic gates and circuit diagrams	Recording research findings appropriately. Writing definitions for each logic gate. Answering exam questions	Developing ability to consistently amend and refine work. Listen to others' opinions	Use of Binary number system	Use of the Internet Use of MS Office Suite	Teamwork – working in groups Flexibility – taking on opinions of others Problem Solving – working out appropriate truth tables for each logic diagram

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- Graduated learning tasks (complexity of circuits)
- Peer Support - Some students may be more aware of Networking Security and associated issues – use these students as Lead Students
- Differentiated Activities and Tasks, choice of tasks for certain activities, support sheets
- Questioning
- Flipped Learning resources for students to study either prior to or after lesson
- Peer Assessment / Support on labelling tasks
- Provision of scaffolded diagrams and writing schemes to allow learners to complete appropriate and accurate definitions