

Viva Exam – Computing – Year 9 – HT 3

9.3 Computational Thinking

In this unit, you developed core problem-solving skills used by computer scientists. You learned how to break down complex problems (decomposition), remove unnecessary details (abstraction), and plan clear steps to solve tasks (algorithms). You explored the use of logical thinking and Boolean operators (AND, OR, NOT), created and interpreted logic gates, and understood how loops and conditions make programs more efficient. You also looked at how data is compressed and transmitted using binary, helping you understand how digital systems work behind the scenes.

Now, you will speak about one of these topics, showing what you know and answering questions about it. Your teacher will pick the topic

Your Viva exam supports you in developing your confidence, self-expression and curricular understanding. It does so by improving your oracy.

Across this Half Term you will prepare for a Viva exam on Computational Thinking, which will be instead of your End of Term exam. Your teacher will help you prepare by suggesting topics, checking your progress, and giving you feedback.

Expectations

Speak unaided and without interruption for three minutes on a Computational Thinking topic.

Answer two questions from your teacher or peers following your speech.

Cue cards may be used, but higher marks will be awarded for confident delivery without aids.

Name:	Total Score:	
	Percentage:	
Topic:	Grade:	

Topics and Suggested Talking Points

1. Logical Thinking & Boolean Operators

Explain how logical thinking helps solve problems.

You might include:

- Boolean values (true/false)
 - Using AND, OR, NOT
 - How good questions remove lots of options
 - A real-life example of logical deduction
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2. Logic Gates and Truth Tables

Talk about how computers use logic.

You could explain:

- AND, OR, NOT gates
 - Why computers use 1s and 0s
 - What a truth table shows
 - A simple example like a security alarm
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3. Algorithms & Efficiency

Explain what an algorithm is and how to make it better.

You might mention:

- Step-by-step instructions
 - Loops and nested loops
 - Removing repeated steps
 - Directing a robot or solving a maze
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4. Compression

Talk about how and why we compress data.

You could include:

- Lossy vs lossless
 - Letter frequency
 - Why videos and photos need compression
 - Making an algorithm more efficient
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5. Abstraction

Explain why we remove unnecessary detail in Computing.

You might include:

- Maps
 - Room plans
 - Maze → network diagrams
 - Making information clearer for the user
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6. Decomposition & Data Transmission

Explain how big problems are broken into parts.

You could mention:

- Converting images to pixels
- ASCII for text
- Data packets travelling through a network
- Why decomposition makes complex tasks easier

Marking and Grading

	Level	Mark
Preparation		
Level 3 (4-5 Marks): Complete and exemplary evidence of preparation.		
Level 2 (2-4 Marks): Purposeful but incomplete evidence of preparation.		
Level 1 (0-2 Marks): Limited or no evidence of preparation.		
Timing and Content		
Level 3 (4-5 Marks): Speaks full time with clarity and focus.		
Level 2 (2-4 Marks): Speaks most of the time with some gaps or uncertainty.		
Level 1 (0-2 Marks): Speaks less than half the time or strays off topic.		
Manner and Presentation		
Level 3 (4-5 Marks): Confident, projects voice, uses rhetorical skill.		
Level 2 (2-4 Marks): Inconsistent projection, some rhetorical skill.		
Level 1 (0-2 Marks): Little or no projection or presentation skill.		
Response to Questioning		
Level 3 (4-5 Marks): Thoughtful responses to both questions.		
Level 2 (2-4 Marks): Responds to one or partially to both questions.		
Level 1 (0-2 Marks): Unable to respond clearly to either question.		
	Total Score:	
	Percentage:	
	Grade:	

90-100%	9
80-89%	8
70-79%	7
60-69%	6
50-59%	5
40-49%	4
30-39%	3
20-29%	2
10-19%	1
0-9%	U