

Please write clearly in block capitals.

School _____

Class _____

Name _____

Teacher _____

GCSE COMPUTER SCIENCE

COMP SCI

Paper 1: Computational thinking and programming skills · 2025 series · mapped to the AQA 8525 specification

Time allowed: 2 hours

Materials

For this paper you must have:

- no calculator is allowed.
- answer all questions in the spaces provided.

Instructions

- Answer all questions.
- Use black ink or black ball-point pen.
- In programming answers you may use any clear high-level language or AQA-style pseudocode.
- All questions, data and code in this paper are original materials written for practice and do not reproduce any real exam content.

Information

- The maximum mark for this paper is 90.
- The marks for questions are shown in brackets.
- You are reminded of the need for good English and clear presentation.

For Examiner's Use	
Question	Mark
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TOTAL	

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Answer all questions in the spaces provided.

1 Answer all questions.

This paper assesses computational thinking, algorithms and programming.

- 1.1** Trace a loop starting with total = 0. For n from 1 to 4, set total = total + n. Write total after each iteration and state the final output.

[4 marks]

- 2.1** Define the terms 'algorithm' and 'decomposition'.

[4 marks]

- 3.1** A loop adds together all the whole numbers from 1 to 5 inclusive. Complete a trace and state the final total that is output.

[4 marks]

- 4.1** Write an algorithm, using pseudocode or a high-level language, that inputs 10 numbers and outputs the largest of them.

[5 marks]

5.1

Explain the difference between a WHILE loop and a FOR loop. Give one example of when each would be the better choice.

[5 marks]

6.1

A program reads in exam marks until the user enters -1. Write a program that outputs the average (mean) of the marks entered (not counting the -1).

[6 marks]

7.1

Describe how a linear search and a binary search work. State one advantage of a binary search and the condition the data must meet for it to be used.

[6 marks]

8.1

Define the terms 'variable', 'constant' and 'data type'.

[3 marks]

9.1

State the most appropriate data type (integer, real, Boolean or string) for each of: a person's age; a product price; whether a user is logged in; a person's surname.

[4 marks]

10.1

Explain what is meant by 'robust' programming. Describe two different validation checks a program could use on user input.

[5 marks]

11.1

The list [5, 2, 8, 1] is to be sorted into ascending order using a bubble sort. Show the list after each complete pass.

[6 marks]

12.1

Compare a bubble sort and a merge sort in terms of how they work and their efficiency on a large list. [8 marks]

13.1

Define the term 'subroutine' and give one benefit of using subroutines in a program.

[3 marks]

14.1

Explain the difference between a procedure and a function.

[4 marks]

15.1

Write a function isPrime(n) that returns TRUE if the whole number n is prime and FALSE otherwise.

[5 marks]

16.1

A program awards a grade from a percentage: 70+ = Distinction, 40-69 = Pass, below 40 = Fail. Write the nested selection (IF) statements to output the correct grade for a variable 'score'.

[6 marks]

17.1

This loop should output 1 to 5: FOR n = 1 TO 4: OUTPUT n. Identify the error, correct it and state the output.

[4 marks]

18.1

Discuss why testing is an important part of producing a program. In your answer describe normal, boundary and erroneous test data, giving an example of each. [8 marks]

Do not
write
outside the
box

END OF QUESTIONS