ENGLAND GCSE COMPUTER SCIENCE AQA · UNIT 1 · 25 QUESTIONS

Fundamentals of Algorithms — Practice Test

This practice test was made by AI and there may be mistakes. If a question or answer looks wrong, use the Flag a mistake button to let Brett know so he can fix it.

1 **A games console repeats a level until the player wins. Which loop checks its condition after each repeat?**

- A WHILE
- B FOR
- C IF used for selection only
- D REPEAT UNTIL

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2 **A robot needs to repeat a task until its battery is low. Which loop should its program use?**

- A FOR
- B IF used for selection only
- C SUBROUTINE used for reusable code only
- D WHILE

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3 **A tablet sorts a list of 5 lap times with a bubble sort. How many passes does it need at most?**

- A 40
- B 3
- C 5
- D 4

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4 **A smartphone sorts a short list of contacts into order. Which sort compares neighbours and swaps them if they are in the wrong order?**

- A Bubble sort
- B Insertion sort
- C Binary search used for finding only
- D Merge sort

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5 **A laptop runs a search to find a file by name. The files are not in any order. Which search should it use?**

- A Bubble sort
- B Binary search
- C Linear search
- D Merge sort used for sorting only

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6 **A keyboard types a list of numbers into a program. The program adds them up in turn. What is the total of 3, 7, 2 and 9?**

- A 22
- B 21
- C 20
- D 210

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7 **In a binary search, what happens after checking the middle item?**

- A The search starts again from the first item
- B The search stops and reports the item is not there, in some situations
- C The search checks every item in the other half
- D The search continues in the half that must hold the item

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8 **What is an advantage of a merge sort?**

- A It is efficient even on large lists
- B It is the simplest sort to understand
- C It needs no extra memory to run at all
- D It sorts a list in a single pass every time

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9 **What is pattern recognition?**

A Writing a program that runs without any errors

B Breaking a problem into smaller parts

C Finding things that are the same in different problems

D Removing detail from a problem to focus on what matters

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10 **In a linear search, when is the item found quickest?**

A When it is the first item checked

B When it is in the middle of the list

C When it is the last item checked

D When the list has not been sorted at all

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11 **A bubble sort sorts a list of 8 items. How many passes does it need at most?**

- A 6
- B 7
- C 70
- D 8

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12 **A binary search checks a sorted list of 64 items. After two checks, at most how many items can still need checking?**

- A 8
- B 640
- C 32
- D 16

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13 **In a flowchart, what does the input output symbol show?**

- A Data going into or out of the algorithm
- B The start and the end of the algorithm
- C A decision that must be made in the algorithm
- D A calculation carried out in the algorithm

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14 **A binary search checks a sorted list of 64 items. After one check, at most how many items can still need checking?**

- A 64
- B 16
- C 640
- D 32

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15 **In AQA pseudocode, how are comments marked?**

- A With a question mark at the end of the line
- B With brackets around the comment text
- C With double quotes around the comment text
- D With a hash symbol at the start of the line

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16 **Which of these is the most efficient way to find an item in a long sorted list?**

- A Linear search
- B Bubble sort
- C Checking every item in a random order
- D Binary search

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17 **A program sets total to 0, then adds each number in the list 3, 7, 2, 9 in turn. What is the value of total at the end?**

- A 22
- B 20
- C 210
- D 21

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18 **When is an insertion sort efficient?**

- A When the list is stored on a slow hard disk
- B When the list is very large and unsorted
- C When the list has no repeated items at all
- D When the list is small or nearly sorted

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19 **What is a flowchart?**

A A visual way of showing an algorithm with symbols

B A way of writing an algorithm using structured English

C A way of storing data in a database for later use

D A real programming language that runs on a computer

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20 **In a bubble sort, which items are compared?**

A The middle item and the items around it

B The first item and the last item only

C Items next to each other in the list

D Items chosen at random from the list

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21 **A bubble sort makes its first pass over the list 4, 1, 2, 3, comparing each pair of neighbours and swapping them if they are in the wrong order. How many swaps are made in this pass?**

- A 30
- B 2
- C 4
- D 3

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22 **A program counts how many numbers in the list 30, 40 are greater than 10. What is the count at the end?**

- A 1
- B 30
- C 2
- D 3

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23 **A linear search checks a list of 40 items. What is the most items it can check before it finishes?**

- **A** 20
- **B** 400
- **C** 40
- **D** 39

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24 **How does a binary search work?**

- **A** It sorts the list and then checks the first item
- **B** It checks only the first and last items in the list
- **C** It checks each item in turn from the start
- **D** It checks the middle item and then halves the list

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25

What is a disadvantage of a merge sort?

A It only works on lists that are already sorted

B It makes more comparisons than a bubble sort always, in some situations

C It cannot sort lists of numbers at all

D It needs extra memory to hold the lists being merged

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ANSWER KEY

1.	D	**10.**	A	**19.**	A
2.	D	**11.**	B	**20.**	C
3.	D	**12.**	D	**21.**	D
4.	A	**13.**	A	**22.**	C
5.	C	**14.**	D	**23.**	C
6.	B	**15.**	D	**24.**	D
7.	D	**16.**	D	**25.**	D
8.	A	**17.**	D		
9.	C	**18.**	D		

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