

# Computing (GCSE)

## Walking Talking Mock 2 - Spring 1 Computer Science

OCR ExamBuilder process constraints mean you may see slight differences between this paper and the original.

Candidates answer on the Question Paper.  
A calculator may be used in this paper.

### OCR supplied materials:

Additional resources may be supplied with this paper.

### Other materials required:

- Pencil
- Ruler (cm/mm)

**Duration: 45 mins**

Candidate forename		Candidate surname	
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Centre number						Candidate number				
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## INSTRUCTIONS TO CANDIDATES

- Write your name, centre number and candidate number in the boxes above. Please write clearly and in capital letters.
- Use black ink. HB pencil may be used for graphs and diagrams only.
- Answer **all** the questions.
- Read each question carefully. Make sure you know what you have to do before starting your answer.
- Where space is provided below the question, please write your answer there.
- You may use additional paper, or a specific Answer sheet if one is provided, but you must clearly show your candidate number, centre number and question number(s).

## INFORMATION FOR CANDIDATES

- The quality of written communication is assessed in questions marked with a pencil or an asterisk.
- The number of marks is given in brackets [ ] at the end of each question or part question.
- The total number of marks for this paper is **36**.

Answer **all** the questions.

1.

Explain the difference between the Internet and the World Wide Web.

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[2]

2(a). Joseph is an author and programmer, and he needs to estimate how many pages his new book will have.

Each page has an average of 300 words. Each chapter starts with a chapter title page.

The number of pages is estimated by;

- dividing the number of words by 300
- ignoring the decimal part of the division
- adding the number of chapters to this total.

Joseph uses the algorithm below to estimate the number of pages, but his algorithm does not give the correct result.

```
01 INPUT numberOfWords
02 INPUT numberOfChapters
03 CONST wordsPerPage = 300
04 numberOfPages = RoundDown(numberOfWords / wordsPerPage)
05 numberOfPages = numberOfWords + numberOfChapters
06 OUTPUT numberOfPages
```

Joseph has used a RoundDown function to remove the decimal part of the division, e.g. RoundDown( 6 . 2 ) would return 6, RoundDown( 7 . 8 ) would return 7.

Joseph's IDE allows him to use both a compiler and an interpreter.

Describe how Joseph could make use of a compiler and an interpreter when producing his program.

Compiler: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Interpreter: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**[4]**

- (b). Identify the most appropriate data type for the following variable `numberOfWords`. Give a reason for your choice.

Data type \_\_\_\_\_

Reason \_\_\_\_\_

[2]

3. A school uses off the shelf, proprietary software for managing pupils' attendance, and customised, open source software for managing pupils' examinations.

Describe the difference between proprietary and open source software.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

[2]

4(a). Security on a computer can be provided directly by the operating system or by using utility programs.

Utility programs include antivirus, file transfer, firewall and system cleanup.

State which **two** of these utilities can be used for security.

1

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2

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**[2]**

(b). Identify and describe **two** methods by which the operating system can provide additional security directly.

1

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2

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**[4]**

5. Graeme is a freelance programmer. He has written a program for a client and gives the client both the high level code and the machine code of the program.

(i) Describe what is meant by

High level code

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Machine code

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(ii) State why Graeme needs a compiler.

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**[1]**

6. A bank uses a local area network to connect all the computers in its head office.

Computers in the network can be identified using both IP addresses and MAC addresses.

Describe **two** differences between IP addresses and MAC addresses.

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[4]

7. A typical smart phone is a computer system with input, output and storage devices.



State **one** input device, **one** output device and **one** secondary storage device that are built into a smart phone.

Input device .....

Output device .....

Storage device ..... [3]

8.

- (i) State the purpose of an **input** device in a computer system.

..... [1]

- (ii) State the purpose of an **output** device in a computer system.

..... [1]





### Mark Scheme

Question			Answer/Indicative content	Marks	Guidance
1			<ul style="list-style-type: none"> <li>WWW is the web pages (that are stored on servers)</li> <li>Internet is the infrastructure // collection of networks</li> </ul>	2	<p><b>Examiner's Comments</b></p> <p>Many candidates did not understand the difference between the Internet and the WWW, a significant number knew the difference but got it the wrong way around, stating that the WWW was the hardware, and the Internet was the websites. Many candidates guessed incorrectly, and assumed that World Wide meant it could be accessed internationally and the Internet was only local.</p>
			<b>Total</b>	<b>2</b>	
2	a		<p>Max 2 for compiler, 2 for interpreter</p> <p>Compiler</p> <ul style="list-style-type: none"> <li>To convert to low-level in one go</li> <li>Create an executable // export the file</li> <li>To distribute the software</li> <li>Users will have no access to source code...</li> <li>...so no-one can edit / steal / copy the code / program</li> <li>Use for error detection</li> </ul> <p>Interpreter</p> <ul style="list-style-type: none"> <li>To convert to low-level line by line</li> <li>To test the program // to find errors</li> <li>stops running when it finds an error // shows the location of the error when found</li> <li>it is quicker (compared to compiler) to re-interpret than recompile</li> </ul>	4	<p>The uses must be different for compiler and interpreter</p> <p><b>Examiner's Comments</b></p> <p>This question was appropriate programming theory and techniques.</p> <p>Many candidates did not answer the question, instead giving definitions of compilers and interpreters, instead of describing how they were used when producing a program. The most common answers involved checking for errors.</p>

### Mark Scheme

Question			Answer/Indicative content	Marks	Guidance
	b		<ul style="list-style-type: none"> <li>Integer / Int</li> <li>It is a whole number / you can't have half a word</li> </ul>	2	<p>Do not allow 'need to ignore the decimal' Cannot get reason if data type incorrect</p> <p><b>Examiner's Comments</b></p> <p>This question was appropriate programming theory and techniques.</p> <p>This question was answered well by many candidates, who were able to identify the appropriate data type. Many candidates did not know what a data type was, and gave other responses.</p>
			<b>Total</b>	<b>6</b>	

### Mark Scheme

Question			Answer/Indicative content	Marks	Guidance
3			<ul style="list-style-type: none"> <li>Proprietary software cannot be copied / altered (without permission of the copyright owner)</li> <li>Open source software can be modified (provided it remains open source)</li> <li>Proprietary software is distributed only as a compiled program / source code not available</li> <li>Open source software is distributed with its source code.</li> </ul> <p>Mark in pairs</p>	2	<p>Not cost / free</p> <p><b><u>Examiner's Comments</u></b></p> <p>□□</p> <p>This part was a little disappointing. The question asked candidates to give the fundamental differences between the types of software given, and instead candidates listed everything they knew about them in particular their relative benefits and disadvantages (and often not the crucial fundamental difference). It was sufficient to say that open source licences require that source code be made available while proprietary software restrict the availability and public use of sort code. We still have several candidates who write that the difference is that open source software is free of charge – this is true of a lot of proprietary software.</p>
			<b>Total</b>	<b>2</b>	
4	a		<ul style="list-style-type: none"> <li>antivirus</li> <li>firewall</li> </ul>	2	
	b		<p>e.g.</p> <ul style="list-style-type: none"> <li>(User name and) password</li> <li>Only allows you to use the system if you are authorised</li> <li>Encryption</li> <li>Prevents hackers from understanding any data if accessed (e.g. passwords)</li> <li>Access rights</li> <li>To prevent files from being modified / deleted</li> <li>User access control</li> <li>Prevents users from making changes to the system</li> </ul> <p>Marks in pairs</p>	4	<p><i>Accept any security measure that is provided by the operating system itself but not by standard utility programs (even if the utility program is normally bundled with operating systems).</i></p> <p><i>The first bullet is for identifying or a brief description of a measure.</i></p> <p><i>The second bullet is for a further more detailed description or a description of how the measure ensures security.</i></p> <p>Any reasonable biometrics is acceptable.</p>
			<b>Total</b>	<b>6</b>	

### Mark Scheme

Question			Answer/Indicative content	Marks	Guidance
5		i	<p>High level code :</p> <ul style="list-style-type: none"> <li>• human oriented code / written by programmers</li> <li>• contains words for commands / closer to English / natural language</li> <li>• Machine independent / Portable to different systems</li> <li>• Needs to be translated before it can be executed.</li> <li>• Problem based</li> <li>• One (high level) command equates to many machine code instructions.</li> </ul> <p>Machine code:</p> <ul style="list-style-type: none"> <li>• Code for the CPU to execute / not readily understandable by humans</li> <li>• binary instructions</li> <li>• specific to a particular (type of) computer / not portable to different systems</li> <li>• does not need to be translated</li> </ul> <p>[max 2 marks for each type of code]</p>	4	<p>Award marks for correct points about machine code made under high level code and vice versa.</p> <p>Do not accept Machine code is in Hex</p>
		ii	<ul style="list-style-type: none"> <li>• To translate the high level code into machine code</li> <li>• To pick up (syntax) errors</li> </ul>	1	<p>Translate to object code is acceptable</p> <p>Accept "errors" on its own, but do not accept answers referring specifically to logic or runtime errors.</p>
			<b>Total</b>	<b>5</b>	

### Mark Scheme

Question			Answer/Indicative content	Marks	Guidance
6			<ul style="list-style-type: none"> <li>• IP addresses can be changed / are allocated as needed</li> <li>• MAC addresses can't be changed / every device has a fixed MC address</li> <li>• IP(v4) addresses are 4 bytes long</li> <li>• MAC addresses are 6 bytes long</li> <li>• IP(v4) addresses are normally written in denary</li> <li>• MAC addresses are normally written in Hex</li> <li>• IP addresses are configured by software</li> <li>• MAC addresses are configured in hardware</li> <li>• IP addresses are used for routing across a WAN / internet</li> <li>• MAC addresses are only used within the LAN</li> </ul> <p>[marks in pairs, maximum 2 pairs]</p>	4	For bullets 3 and 4, accept answers where candidates refer to IPv6 being 16 bytes (128 bits). Award one mark if candidates state that IP addresses and MAC addresses are of different size.
			<b>Total</b>	<b>4</b>	
7			<p>e.g.</p> <ul style="list-style-type: none"> <li>• Input device: touch screen / microphone / accelerometer / (hardware) button/ camera / (hard) keyboard</li> <li>• Output device: screen / speaker / vibrating device / LEDs</li> <li>• Storage device: Solid state memory e.g. SD card, memory card, flash memory, SIM card</li> </ul>	3	<p><i>Accept any devices that can be built-in to a mobile phone.</i></p> <p>Do not accept devices which send or receive binary data as input or output devices (such as those involved with Bluetooth, Wi-Fi, GPS).</p> <p>For output accept display Do not accept headphones as they are not built-in. Do not accept Hard Disk / Hard drive as a storage device.</p>
			<b>Total</b>	<b>3</b>	

### Mark Scheme

Question			Answer/Indicative content	Marks	Guidance
8		i	eg <ul style="list-style-type: none"> <li>To enter data from outside the system for processing</li> </ul>	1	<b><u>Examiner's Comments</u></b> In this part most candidates got full marks for a relatively easy question. Weaker candidates struggled to articulate definitions for input and output devices in their own words, but where their understanding was clear from their response they were still able to gain the marks. However, centres should prepare candidates by ensuring that they learn key definitions of terms in the specification. Questions on these are designed to test basic knowledge and a definition learned by rote is sufficient.
		ii	eg <ul style="list-style-type: none"> <li>To return the results of processing</li> </ul>	1	
			<b>Total</b>	<b>2</b>	

## Mark Scheme

Question			Answer/Indicative content	Marks	Guidance
9			<p>Points may include:</p> <ul style="list-style-type: none"> <li>• Game console has input devices, usually specialised controllers but also keyboards, microphones etc similar to desktop computer</li> <li>• Output is similar to desktop computer on a screen and speakers (sometimes using the same standards eg HDMI, DVI)</li> <li>• Game console usually has an optical drive so that the software to be run can be inserted. Many also have a hard disk drive which is the same as that used on a desktop computer.</li> </ul>	6	<p><b>High Level Response (5–6 marks)</b> A detailed comparison of game consoles and desktop computers referring to input, output and storage devices. There will be few if any errors in spelling, grammar and punctuation. Technical terms will be used appropriately and correctly.</p> <p><b>Medium Level Response (3–4 marks)</b> A comparison is made between desktop computers and game consoles, with at least two of input, output and storage devices mentioned but may not be described in detail. There may be occasional errors in spelling, grammar and punctuation. Technical terms will be mainly correct.</p> <p><b>Low Level Response (1–2 marks)</b> There is an attempt to compare game consoles and desktop computers but some of the statements are incorrect or irrelevant. Information will be poorly expressed and there will be limited, if any, use of technical terms. Errors of grammar, punctuation and spelling may be intrusive.</p> <p><b>Response not worthy of credit (0 marks)</b></p> <p><u>□Examiner's Comments</u></p> <p>□□Many candidates answered this well and obtained a high level mark. Centres should note that this question does not test essay writing skills but the ability to convey technical information effectively in written form. Although some centres appear to have heeded to this advice from previous years, there are still candidates who are clearly anxious to provide a formal essay with an introduction, a middle and a conclusion. Although the use of language is a part of the assessment here this comes within assessing the candidates' ability to convey technical information about Computing effectively. In many "essay"-styled answers the introduction usually just repeats the question and the conclusion usually simply mentions points</p>



## Mark Scheme

Question			Answer/Indicative content	Marks	Guidance
					<p>that have been previously given and so are not needed. On the other hand, using a table in this question would have been a highly effective way of putting the points required here across, but unfortunately very few candidates chose to do this.</p> <p>Candidates should have focused on demonstrating the input, output and storage in a desktop system and a games console, using technical terms correctly. To perform at a higher level, candidates should particularly have demonstrated an understanding of the similarities in the hardware of these devices. The most common technical error made in this question by weaker candidates was to suggest that removable storage devices such as CD-ROMs and USB keys are input (or output) devices – or that devices output to the internet.</p>
			<b>Total</b>	<b>6</b>	