



# Digi-Trailblazers

## Sample

## Marking Scheme

This marking scheme has been prepared as a **guide only** to markers. This is not a set of model answers, or the exclusive answers to the questions, and there will frequently be alternative responses which will provide a valid answer. Markers are advised that, unless a question specifies that an answer be provided in a particular form, then an answer that is correct (factually or in practical terms) **must** be given the available marks.

If there is doubt as to the correctness of an answer, the relevant NCC Education materials should be the first authority.

**Please note that marks should not be deducted for poor spelling and grammar unless this presents a significant barrier to comprehension and therefore the assessment of the quality of knowledge and thought.**

**Throughout the marking, please credit any valid alternative point.**

**Where markers award half marks in any part of a question, they should ensure that the total mark recorded for the question is rounded up to a whole mark.**

## Part A: Understanding Computing (20 marks)

Circle ONE (1) correct answer from A, B, C or D for each question

Each question is worth 4 marks

### Question 1

Which ONE (1) of the following can be used to protect your identity online?

- A An ALU  
B Firewall  
C Web browser  
D Forum

4 marks

**Answer:**

**B Firewall**

**Award 4 marks for the correct answer**

### Question 2

Which ONE (1) of the following is a connection point between hardware and software?

- A A router  
B The keyboard  
C A port  
D Word-processing software

4 marks

**Answer:**

**C A port**

**Award 4 marks for the correct answer**

### Question 3

Which ONE (1) of the following is **not** part of a CPU?

- A A CU
- B A mouse
- C A register
- D An ALU

4 marks

**Answer:**

**B A mouse**

**Award 4 marks for the correct answer**

### Question 4

Which ONE (1) of the following is an image file?

- A .pdf
- B .txt
- C .jpeg
- D .wav

4 marks

**Answer:**

**C .jpeg**

**Award 4 marks for the correct answer**

### Question 5

A process that repeats in a computer program is called...

- A A branch
- B An iteration
- C An IDE
- D Java

4 marks

**Answer:**

**B An iteration**

**Award 4 marks for the correct answer**

## Part B: Computing in Focus (30 marks)

Write the correct answer for each question in the space provided

### Question 6

a) List ONE (1) way that you could collect data.

*Questionnaire, data capture form, interview, observation*

*1 correct example required for 1 mark*

1 marks

b) Design a spreadsheet that models the number of days that it has rained each month between January and April. The number of days that it has rained are:

- January: 14
- February: 10
- March: 12
- April: 4

Plan your design in the template below:

	A	B	C	D	E	F
1	Total days of rain between January - April					
2						
3	January	February	March	April		
4	14	10	12	4		
5						
6						
7						
8						
9						
10						

*Award 1 mark for each month being included and 1 mark for the inclusion of the number of days that corresponds to each month.*

8 marks

Question 6 continues on the next page

**Question 6 (continued)**

c) Write a formula to calculate the number of days that it has rained since January.

***=SUM(B4:D4) (for the example answer above)***

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***An appropriate formula would be =SUM(first cell:last cell)  
Award 2 marks for any appropriate formula.  
Award 1 mark for a good formula with a minor error.***

**2 marks**

d) How can you test the accuracy of the spreadsheet?

***Award 2 marks for describing or demonstrating the use of a manual calculation.  
Marks may be awarded for any credible alternative answer provided.***

**2 marks**

**Question 7**

a) List TWO (2) different computer models.

***1 mark for each correct example, maximum of 2 marks. Examples include expert system, artificial intelligence, robotics, traffic lights, medical diagnosis, weather forecasting system, financial analysis etc.***

**2 marks**

b) List TWO (2) different things that use a computer system.

***1 mark for each correct example, maximum of 2 marks. Examples include washing machines, cameras, mobile phones, cameras, printers, cars, etc.***

**2 marks**

c) Convert the number 60 into binary.

***111100***

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**2 marks**

### Question 8

- a) List TWO (2) tasks performed by operating system software.

*Manages a computer's hardware, manages a computer's software, enables interaction with a user*

*1 mark for each correct example, maximum of 2 marks.*

**2 marks**

- b) What search terms would you type into a search box if you wanted to find recipes that do not contain meat?

*recipe NOT meat*

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**2 marks**

### Question 9

- a) You should always plan the different steps that a computer program needs to follow before you write the code. Give ONE (1) example of how you might do this.

*Produce pseudocode, produce an algorithm, produce a flowchart*

*Award 2 marks for an appropriate example.*

**2 marks**

- b) List TWO (2) reasons why your school might connect its computers using a bus network topology.

*Easy to install, cheap to install, easy to extend, does not require extensive cables*

*1 mark for each correct example, maximum of 2 marks.*

**2 marks**

### Question 10

a) List TWO (2) reasons why you should use anti-malware software.

1 *To avoid viruses affecting work/personal data files*

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2 *To avoid viruses damaging the software*

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*1 mark for each correct example, maximum 2 marks.*

**2 marks**

b) You have discovered that one of your friends has been bullying another pupil on a social networking site. What could you do about this?

1 *The friend could be told that this sort of cyberbullying is not acceptable.*

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2 *If the friend still doesn't stop doing this then they could be reported to a relative, a teacher, a police officer or an anti-bullying organisation (for example, Childline or CEOP in the UK).*

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*1 mark for simply stating that the abuse could be reported, 1 mark for suggesting who it may be reported to.*

**2 marks**

## Part C: Using Computers (50 marks)

### Question 11

- a) Use presentation software to produce THREE (3) slides with the titles shown on each slide below.

Three types of digital artefact  1. 2. 3.	Three software tools used to make or revise digital artefacts  1. 2. 3.	Two features of a well-designed digital artefact  1. 2.
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Choose a layout, font and colour scheme for your slides that you think your teacher would like. The colours, font and font size should be the same on all slides.

**6 marks can be awarded if the layout, font and colour scheme is effective and appropriate, 1 mark if it is consistent across all slides. 1 mark for the correct information appearing on each slide (3 marks in total)**

**10 marks**

- b) Apply animation to the title on every slide.

**4 marks if animation has been effectively applied to each slide, reduce marks accordingly if animation is not applied to all three slides.**

**4 marks**

- c) Fill in the information required on each slide.

**Types of digital artefact: web pages/website, podcast, blog, video, wiki, digital photography (1 mark for each correct type, 3 marks in total for this slide)**

**Software tools: photo editing software, web design software, podcast software, blog software, wiki software (1 mark for each correct software tool, 3 marks in total for this slide)**

**Features of a well-designed digital artefact: it works correctly, it is user-friendly/easy to use, it is accessible to a wide range of users (1 mark for each correct feature, 2 marks in total for this slide)**

**8 marks**

## Question 12

- a) Imagine that you have been asked to write a simple calculator program that gives users a choice of adding two numbers together or subtracting one number from another number.

Two examples of the commands and syntax that you would use in a program like this are given below. List TEN (10) more examples.

**Program name**

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**Variables**

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1 *Integers*

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2 *Operator*

---

3 *Parameter*

---

4 *Loop*

---

5 *While*

---

6 *Else If*

---

7 *Add*

---

8 *Subtract*

---

9 *Function*

---

10 *Selection*

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11 *Print*

---

12 *End program*

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*1 mark for each valid answer, maximum 10 marks*

**10 marks**

b) List TWO (2) errors that you might find in the code of your program.

*Students may list specific errors, e.g. incorrect variables, problems with loop, function not being called, parameter not being passed. They may provide broader examples such as syntax errors or logic errors.*

*2 marks for each correct example, maximum 4 marks*

**4 marks**

c) How would you identify and fix an error in your program?

*Students could describe debugging the code or reviewing the code line by line to see why a program is not working correctly. They might suggest manually fixing the error by correcting issues with spelling, syntax or a command being used incorrectly.*

*2 marks for outlining how to identify error and 2 marks for providing an example of how they would fix the error*

**4 marks**

### Question 13

Write an algorithm that shows the steps that you take to arrive at school before 8.30am.

*Steps could include any of the following:*

- *Check the time*
- *Leave home/the house*
- *Walk or bus or train*
- *Check the time*
- *Arrive at school*
- *On time/late?*
- *Yes/No*

*10 marks for a full and accurate algorithm similar to the example above, 3-6 marks for a partially correct algorithm that may have one or two steps that are missing or in the wrong order. 1-2 marks are available for some attempt to produce the algorithm using an appropriate approach and identifying some key steps.*

**10 marks**

## Learning Outcomes matrix

<b>Part A: Understanding Computing</b>	
<b>Question</b>	<b>Learning Outcomes assessed</b>
1	Know how to work safely and securely.
2	Understand the interaction between hardware and software components.
3	Understand how internal hardware components work and communicate with each other. Understand how instructions are stored and executed within a computer system.
4	Understand how different data types can be represented and manipulated.
5	Understand programming terminology.

<b>Part B: Computing in Focus</b>	
<b>Question</b>	<b>Learning Outcomes assessed</b>
6	Understand how to use appropriate methods and devices to collect and analyse data. Know how to design and construct computer models and simulations that represent real-world problems. Know how to use computer models and understand how they model problems and systems. Assess the accuracy and make improvements to computer models that represent real-world problems and physical systems.
7	Understand that there are different types of computer models and simulations. Understand that computer models can be used to break down tasks and problems into manageable parts. Understand that there are different types of computer system. Understand the term binary. Know how to convert binary and decimal numbers.
8	Understand the purpose and application of Boolean logic. Understand the functions of different types of software. Understand the interaction between hardware and software components.
9	Know how to create plans that outline the steps that a computer program will need to follow in order to solve a problem. Understand the interaction between a computer system and a network.
10	Understand the consequences to users of not using technology safely, respectfully, responsibly and securely. Know how to work respectfully and responsibly online. Know how to report concerns about online safety and security.

<b>Part C: Using Computers</b>	
<b>Question</b>	<b>Learning Outcomes assessed</b>
11	<p>Know how to present information clearly and effectively for a designated target audience.</p> <p>Know how to design a digital artefact for a particular target audience.</p> <p>Understand how to use appropriate techniques and technologies to create a digital artefact.</p> <p>Understand how to revise or repurpose a digital artefact.</p>
12	<p>Know how to create plans that outline the steps that a computer program will need to follow in order to solve a problem.</p> <p>Understand programming terminology.</p> <p>Know how to write in code using appropriate data structures.</p> <p>Know how to correct errors in syntax and meaning in a program.</p>
13	<p>Understand that there are different types of algorithm.</p> <p>Know how to develop algorithms that fulfil a range of functions.</p> <p>Understand that a single problem can be solved by using several different algorithms.</p>