Year 7
Computing
2. Parts and Programming

STUDENT			WORKING AT GRADE	
TEACHER			TERM TARGET	
CLASS			YEAR TARGET	

The long answer questions in this booklet are designed to stretch and challenge you. It is important that you understand how they should be answered. You should structure your answer like this:

1st Paragraph – should explain the key term e.g. give a definition.

2nd Paragraph – should make a point (could be an advantage or disadvantage) and explain the point fully giving an example where necessary.

3rd Paragraph – should make another point (could be an advantage or disadvantage) and explain the point fully giving an example where necessary.

4th Paragraph – should make a point (could be an advantage or disadvantage) and explain the point fully giving an example where necessary.

You should have at least 1 advantage and 1 disadvantage.
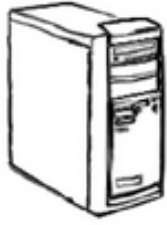
Progress against termly target												
ABOVE												
ON												
BELOW												
TERM	1		2		3		4		5		6	

	Learning Outcomes		
	Levels		
Lesson	**3**	**4**	**5**
1	I know that computers collect data from various input devices, including sensors and application software.	I know why and when computers are used.	I know the function of the main internal parts of basic computer architecture.
2	I know that computers collect data from various input devices, including sensors and application software.	I know why and when computers are used.	I know the function of the main internal parts of basic computer architecture.
3	I know the difference between data and information.	I know why and when computers are used.	I know that computers transfer data in binary.
4	I know the difference between hardware and application software, and their roles within a computer system.	I know the main functions of the operating system.	I know that there is a range of operating systems and application software for the same hardware.
5	Achieves a level 3 in the end of term assessment	Achieves a level 4 in the end of term assessment	Achieves a level 5 in the end of term assessment
6	I can create programs that implement algorithms to achieve given goals.	I can show an awareness of tasks best completed by humans or computers.	I know that programming bridges the gap between algorithmic solutions and computers.

1. What exactly is your computer?

Choose the word that best describes the picture and write the word in the blank.

scanner	tower case	monitor
mouse	digital camera	printer
keyboard	trackball	speakers

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

Name **two** things computers are used for:

_____

_____

Explain **why** computers are used for these tasks:

_____

_____

_____

_____

_____

_____

What is collected from peripherals?

_____

Label each peripheral as either an input or output device

1. _____	2. _____	3. _____
4. _____	5. _____	6. _____
7. _____	8. _____	9. _____

Input and output devices aren't just the ones you can see in the classroom although these are some of the more common ones.

Research an assistive peripheral and draw a picture of it here:

This is a _____

It is used for _____
_____
_____
_____

This works by _____
_____
_____
_____
_____
_____

This device is used by people who _____
_____

2. The inner workings of that box

Computer Peripherals

Write the letter of the correct definition next to each keyword.

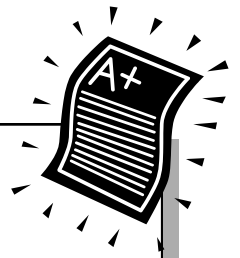|	Keyword	Definition
1. _____	Output device	a. An input device, often used in games, that allows a user to move a pointer or a character by tilting a handle backwards, forwards, left or right.
2. _____	Input device	b. A device that allows data to be entered into a computer by transforming it into an electronic form.
3. _____	Digital camera	c. An input device that makes electronic images or video clips
4. _____	Braille keyboard	d. An input device that allows a user to control a computer by moving their eye, for example by working out what the user is looking at on a display
5. _____	Eye tracker	e. An input device that consists of a set of keys that can be pressed by a user to enter characters into the computer system.
6. _____	Ink-jet printer	f. A device that takes data which has been processed by the computer and translates it a human readable form.
7. _____	Joystick	g. An input device with a small number of keys that can be used to enter characters as a combination of these keys.
8. _____	Keyboard	h. An input device that converts sound into an electrical signal which can be processed by a computer.
9. _____	Microphone	i. A screen used to display the output of a computer as a series of individual dots or pixels which can be updated as necessary.
10. _____	Monitor	j. A type of printer that works by projecting tiny droplets of ink onto a sheet of paper.

Below there is an image of a computer exploded. Can you name all the parts?
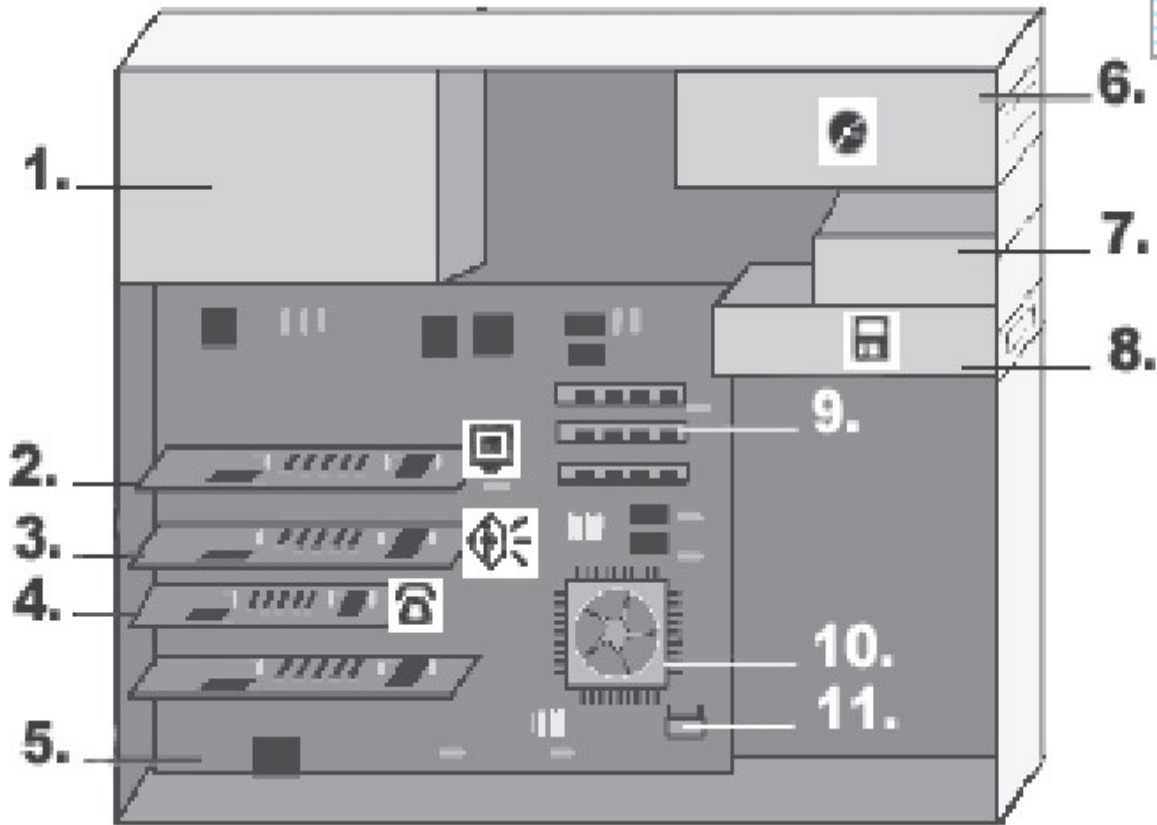
1. _____   2. _____

3. _____   4. _____

5. _____   6. _____

7. _____   8. _____

9. _____   10. _____

11 _____

Your teacher has a computer which has been taken apart. You are going to get into groups of 2-3 and each get 1 part of the computer to research the purpose of and then present your findings to the rest of the group.

Write down the purpose of each component as identified by each group:

ROM _____

_____

RAM _____

_____

HDD _____

_____

Motherboard _____

_____

CPU _____

_____

Power Supply _____

_____

CD ROM Drive _____

_____

Network Card _____

_____

Self Assessment:	Exit Ticket: What does the CPU do?
R A G	

3. So how do all these parts do anything?

Unscramble some of the keywords from last lesson:

1. ooBt oarpgrm

    _____

2. PUC

    _____

3. MAR

    _____

4. ROM

    _____

5. roinMot

    _____

6. ntPrier

    _____

7. ecannrS

    _____

8. hencToursce

    _____

9. DDH

    _____

10. rhdaeMoobtr

    _____

When we work with computers we often talk about data and information—but what is the difference between them? Fill in the missing words and give an example to show your understanding of data and information.

Keyword		
Meaning	_____ is raw, unorganised facts that need to be processed. _____ can be something simple and seemingly random and useless until it is organised.	When _____ is processed, organised, structured or presented in a given context so as to make it useful, it is called _____.
Example		

Computers transfer data using binary—this is because computers are actually made up of lots of switches which can either be on or off and this is then represented using binary numbers:

1 = on, 2 = off. When you enter a number into your computer this is converted into binary.

Using the binary calculator to help you, work out what the following numbers are in binary / decimal.

8	4	2	1

1)   8 in decimal is _____ in binary.

2)   1111 in binary is _____ in decimal.

3)   14 in decimal is _____ in binary.

4)   1010 in binary is _____ in decimal.

5)   0001 in binary is _____ in decimal.

6)   4 in decimal is _____ in binary.

7)   2 in decimal is _____ in binary.

8)   0101 in binary is _____ in decimal.

BINARY These sums are all ADDING. Work out the decimal, then add together the binary and work out the decimal. Does it add up correctly?

8's	4's	2's	1's	Total (Decimal)
0	1	0	1	
0	1	1	0	

8's	4's	2's	1's	Total (Decimal)
1	1	0	0	
0	0	1	0	

8's	4's	2's	1's	Total (Decimal)
1	0	0	1	
0	1	1	0	

8's	4's	2's	1's	Total (Decimal)
1	0	0	0	
0	1	1	0	

8's	4's	2's	1's	Total (Decimal)
0	1	1	1	
0	1	1	0	

Self Assessment: **R A G**	Exit Ticket: What do computers transfer data in?
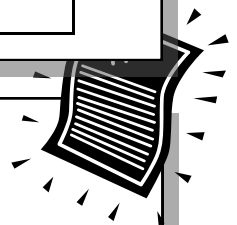
4. How to get that machine to do what it's told!

1. The _____ Program is the program that is used to start the computer. It is automatically loaded so that its _____ can be _____ when the computer is turned on, and it eventually loads the _____ system.

   > fetched operating peripherals. Boot instructions software System.

2. Operating _____ The low-level _____ that supports a computer's basic functions, such as scheduling tasks and controlling _____

Match up the correct keyword to its definition:

| HARDWARE | the programs and other operating information used by a computer. |
| SOFTWARE | the machines, wiring, and other physical components of a computer or other electronic system. |

There are two main purposes to the operating system. These are: _____

_____

_____

and _____

_____

_____

_____.

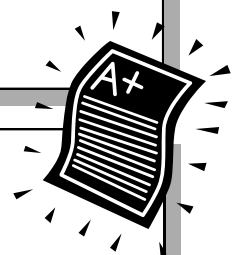Some examples of operating systems are _____

_____

_____

_____.

Draw a diagram in the space below to show how the operating system interacts with the computer systems hardware and software.
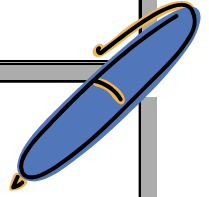
| Self Assessment: | Exit Ticket: What does the operating system do? |
| R   A   G | |

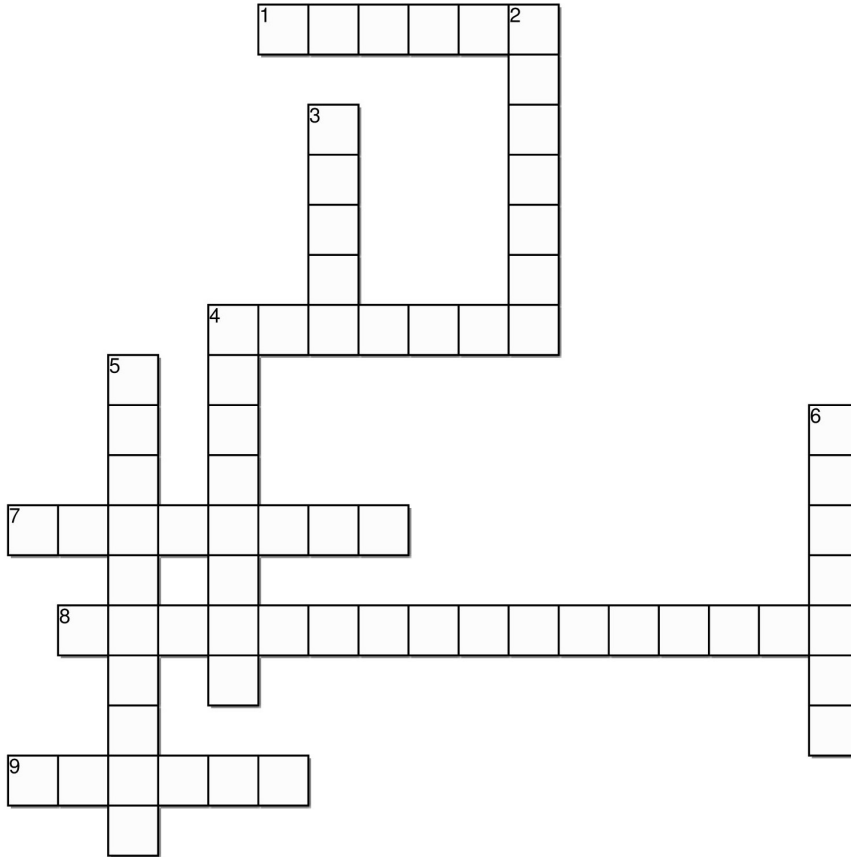| STRENGTH	TARGET	ACTION	EFFORT

Green Pen Activity:

5. Assessment Lesson

Computing Keywords

Complete the crossword below

Created on TheTeachersCorner.net Crossword Maker

Across

1. A digital camera that is used to capture images or, more usually, video, for transmitting immediately over the internet

4. An output device that converts an electrical signal into sound.

7. the machines, wiring, and other physical components of a computer or other electronic system.

8. the low-level software that supports a computer's basic functions, such as scheduling tasks and controlling peripherals.

9. Numbers expressed in base 2.

Down

2. A screen used to display the output of a computer as a series of individual dots or pixels which can be updated as necessary.

3. An input device that can be moved by a user to move a pointer on a screen. It has one or more buttons to allow the user to perform actions on the items on the screen.

4. the programs and other operating information used by a computer.

5. An input device that converts sound into an electrical signal which can be processed by a computer

6. Numbers expressed in base 10.

Self Assessment:	Exit Ticket: How do you think you did?
R A G	
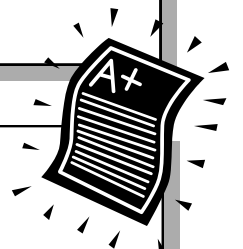
6. Telling that computer what to do!

The robot has lost one of it's cogs and needs your help to find it.

Can you write a set of instructions that the robot can follow and find his cog, the first has been done for you.
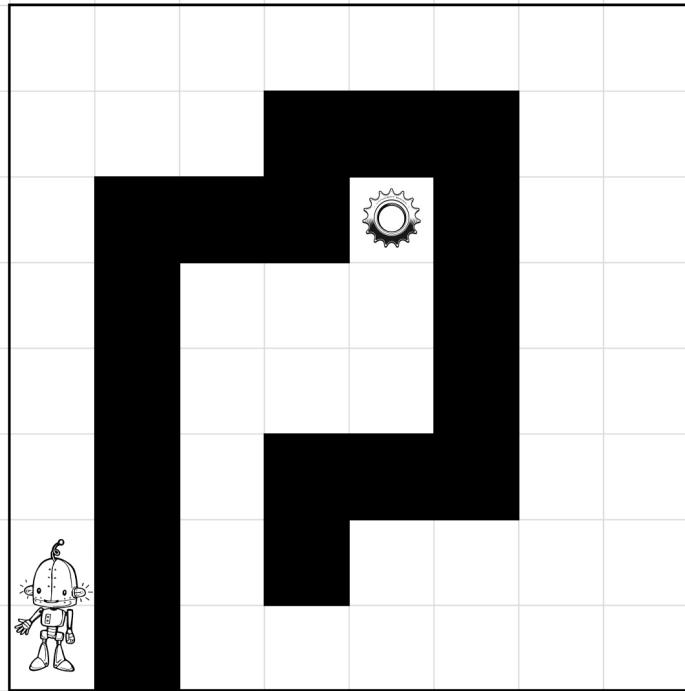
1. Forward (6)

Your first program!

Copy the following code into the BBC basic emulator and then press enter

PRINT "HELLO WORLD"

What does it do?

_____

_____

_____

_____

Now try this:

CLS
What does it do?

_____

_____

_____

_____

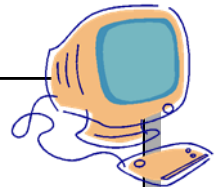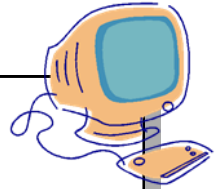Your second program!

Now try this code:

10 PRINT "HELLO WORLD"
20 GOTO 10
RUN

What does it do?

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

When programmers write software—first they plan it using either pseudocode or a flow chart.

Write pseudocode to plan a snake game (the first three lines have been written for you):

INPUT   TURN RIGHT   MOVE FORWARD   IF   COLLISION DETECTED

INPUT right arrow key _____

TURN RIGHT _____

MOVE FORWARD _____

_____
_____
_____
_____ —
_____
_____
_____
_____
_____
_____

Self Assessment:	Exit Ticket: Why use a computer to create a game?
R A G	
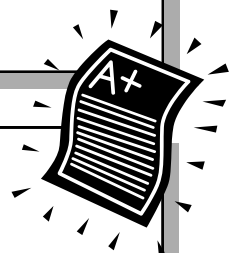
STRENGTH	TARGET	ACTION	EFFORT

Green Pen Activity:
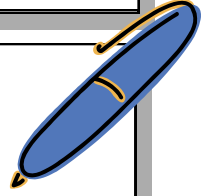
Keywords

Laser printer	A type of printer that works by using a laser to cause powdered ink to form the desired pattern on a sheet of paper.
Microphone	An input device that converts sound into an electrical signal which can be processed by a computer.
Monitor	A screen used to display the output of a computer as a series of individual dots or pixels which can be updated as necessary.
Mouse	An input device that can be moved by a user to move a pointer on a screen. It has one or more buttons to allow the user to perform actions on the items on the screen.
Software	The programs and other operating information used by a computer.
Pseudocode	A description of a computer programming algorithm that uses the structural conventions of a programming language, but is intended for human reading rather than machine reading.
Output device	A device that presents the result of processing. It converts binary data into a form which can be read by a user, or into binary data into a form which can be read by a user, or into a result in the external world.
Hardware	The machines, wiring, and other physical components of a computer or other electronic system.
Printer	An output device for producing hard copies of documents and images on paper.
Refreshable Braille display	An output device that has a row of mechanical dots which can be raised or lowered as required to make Braille characters.
Scanner	An input device that converts printed documents and images into a digital form.
Speaker	An output device that converts an electrical signal into sound.
Binary	Numbers expressed in base 2.
Decimal (denary)	Numbers expressed in base 10.
Central Processing Unit (CPU)	The main component of the computer. It carries out all the processing by fetching and executing instructions.
Touchscreen monitor	An input/output device that allows a user to interact with the image displayed by touching it.
Tracker ball	An input device that allows a user to move a pointer by moving a ball which is fixed in a socket.
Webcam	A digital camera that is used to capture images or, more usually, video, for transmitting immediately over the internet.
Algorithm	A set of rules specifying a how to solve a problem.
Random Access Memory (RAM)	Memory that is used to store the programs and data currently in use by a computer. It is volatile, which means that it gets erased when the computer is switched off.
Read-Only Memory (ROM)	Memory that is used to store programs permanently and in the same location, such as the boot-up program. This memory is non-volatile and is not deleted when the computer is switched off.