KS3 ICT Homework Pack 1: Year 7

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Introduction

Homework is high on the Government's list of educational priorities. In ICT, the setting of homework has traditionally been difficult. Whilst it has always been possible to set homework, it has often been difficult to make it relevant to skills taught and the National Curriculum.

This is the first in a series of three packs providing ready to use, purposeful homeworks for ICT. This pack for Year 7 includes 30 homeworks covering the four strands of ICT. There are a variety of tasks, which include crosswords and wordsearches as well as materials which require more organisation on the part of the student. As with all homework, it needs to be relevant and appropriate, so the order in the pack can be varied to suit. Some of the activities lend themselves to a practical follow-up, such as the spreadsheet and database exercises.

We have tried to make each task as easy to assess as possible, but you may wish to consider the following suggestion for some of them. We trialled these with colleagues and gave them a photocopied overhead transparency of a completed worksheet (for the wordsearches, the join with lines exercise, etc) which they used as an overlay for each pupil's work. This made checking an easy task.

We have provided answers where relevant, but have not given instructions about awarding marks due to the varying natures of individual schools' marking policies. The summary on page 54 indicates the level for each homework, ie either foundation or higher.

We hope that this pack will lighten your load as far as homeworks are concerned, we know that it has for us!

David Goddard and Chris Guy
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Other titles in this series:
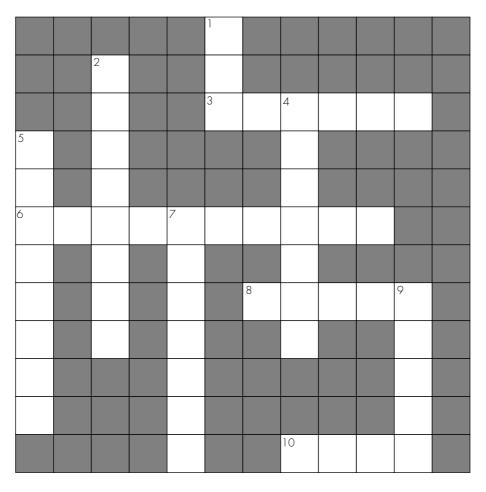
* *KS3 ICT Homework Pack 2: Year 8*

* *KS3 ICT Homework Pack 3: Year 9*

Other titles by the same authors:

* *KS3 ICT Activities Pack 1: Year 7*

* *KS3 ICT Activities Pack 2: Year 8*

* *KS3 ICT Activities Pack 3: Year 9*

Name:...

Form: ....

Computer bits and PCs 1

Across

3   Used to hold programs and data

6   Used to move files from one computer to another

8   Sends information down telephone lines

10   One character

Down

1   Memory that can only be read

2   Has lots of keys

4   You see your work on this

5   Another word for program

7   If you want a hard copy of your work you need one of these

9   Moves the pointer on the screen

Name:..

Form:..
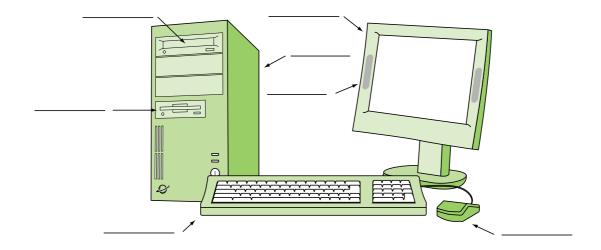
Computer bits and PCs 2

1   Put the following labels in the correct places on the diagram:

Monitor	Keyboard	Floppy disk drive	CD/DVD Drive
Mouse	Built-in speakers	Base unit	

2   Complete the following sentences using your choice of words from this list:

Monitor   Mouse   Printer   Keyboard   Floppy disk drive   Speakers

Base unit   VDU   Modem   CPU   Floppy disk   Hard disk   CD drive

When you are working at the computer, your work can be seen on the screen

which is called the __ __ __ __ __ __ __. Some people call it a __ __ __ or

visual display unit. To enter your work, you type on the __ __ __ __ __ __ __ __.

Sometimes you move the pointer on the screen using the __ __ __ __ __. One

difficulty with the monitor is that you cannot take it with you; if you need a

copy of your work on paper, you would use a __ __ __ __ __ __ __. Large

amounts of information can be read from the __ __   __ __ __ __ __. The

__ __ __ __ __ __ __ __ produce sound.

Sometimes you may want to save your work and take it to another computer; to

do this you would put a __ __ __ __ __ __   __ __ __ __ in the __ __ __ __ __ __

__ __ __ __   __ __ __ __ __ and save your work on it.

Most computers can link up to the Internet. To do this, you use a telephone line

and a __ __ __ __ __. This allows the computer to send and receive signals on a

normal telephone line.

3   Read, try to understand and remember the definitions of the following words:

   •   **Processor** – The processor is the 'brain' of the computer. It is here that all
          the instructions are carried out, and any calculations are made. The more
          powerful the processor, the faster the computer.

   •   **Memory** – The memory of a computer holds the programs and information
          you are using at that time. The more memory a computer has, the better.
          The memory is measured in bytes; one byte holds one character, so
          'FRED' is 4 bytes long. Most modern computers have memory that is
          measured in megabytes or MB – 1 MB is 1 024 000 bytes (most people just
          say one million bytes).

   •   **Hard disk** – All home computers have a hard disk drive inside. This
          allows you to store your programs and work. The size of the hard disk is
          measured in the same units as memory: bytes. They are measured in units
          called gigabytes (GB). A gigabyte is 1000 megabytes. This sounds like a
          lot of space, but with today's large programs it soon gets used up.

   •   **CD-ROM** – ROM stands for Read Only Memory. A CD-ROM uses a
          compact disc (like a music one) to hold computer data and programs. It's
          like memory but you cannot change or erase what is on it, hence it's called
          Read Only. One CD can hold about 650 MB.

   •   **CD-RW** – RW stands for Rewritable. You can put data on a CD-RW and
          read it from a CD drive. CD drives are available on most computers. This
          is a useful way of storing information because floppy disks do not have
          enough space for items like photographs.

Name:...

Form:...

Computer bits and PCs 3

John would like a new computer for home. He has talked to his father who has collected some adverts from a magazine. Here are a couple of the adverts:

Maximo's Super PC Pentium III processor 64 MB memory 14 inch monitor 20.0 GB hard drive 48x CD-ROM Sound card Keyboard, mouse, speakers Software pre-installed	**Hypodrive Computer** **Pentium III processor** 128 MB RAM 10.0 GB hard drive Modem built-in 15 inch colour monitor 52x CD-ROM drive Sound card Keyboard, mouse Speakers extra

John's father knows very little about computers and has written some questions about the adverts. Can you answer his questions?

Questions

1   Which computer has the larger memory?

      ....

2   Which of the two computers could use the Internet without any more equipment?

      ....

3   Which computer can save the most information on its hard disk?

      ....

4   Which CD-ROM is the faster?

      ....

5   What is software?

      ....

6   Which computer has software ready to use?

      ....

7   What does MB stand for?

      ....

8   What does a sound card do?

      ....

Name:...

Form:...

Hardware wordsearch

Below is a wordsearch which contains ten of the 11 words below. Find the words and then circle the word in the list which is not in the grid.

A	G	T	F	U	E	G	F	K	L	E	U	I	Q
R	P	K	E	T	O	D	K	R	O	W	T	E	N
S	D	G	T	G	T	F	O	S	N	O	P	L	J
T	H	S	M	O	U	S	E	P	J	I	T	P	T
G	B	I	S	O	R	C	D	O	Y	Z	N	V	U
S	K	M	V	I	N	E	X	Y	S	L	Y	E	F
H	R	O	O	I	T	I	S	K	K	P	A	E	I
U	Q	A	S	R	C	Y	T	P	P	A	P	U	T
E	R	L	N	L	D	J	D	O	X	P	T	I	S
V	E	E	E	U	S	C	L	I	R	E	D	I	S
W	T	K	E	K	I	F	S	A	N	R	X	S	W
I	N	K	E	Y	B	O	A	R	D	L	E	F	N
S	I	Y	E	R	Q	Y	S	H	L	C	B	R	S
O	R	T	G	S	J	K	F	H	O	D	R	T	Y
W	P	J	F	X	B	Y	F	R	W	R	J	K	X
R	U	J	G	D	S	K	P	D	G	J	T	F	D
A	Y	P	Z	W	A	D	W	E	G	L	F	K	G
D	T	U	N	D	R	A	C	D	N	U	O	S	T
A	S	K	U	O	E	U	F	D	B	G	J	Y	R
M	S	S	W	F	Y	J	G	E	R	J	B	A	U

FLOPPY	MOUSE	MONITOR
KEYBOARD	SCANNER	PAPER
PRINTER	CDROM	NETWORK
SOUND CARD	WORDPROCESS	

Name:..

Form:..

Using the computer's secret code!

Computers work in a code called ASCII. (This is pronounced 'askey' and stands for the American Standard Code for Information Interchange. What this means is that all computers can have a common language to enable data from any type of computer to be passed to any other.)

Every letter, number and symbol on the keyboard (and some which are not there!) can be input by using the appropriate number code.

Write the code for each letter. Some have been done for you:

A	B	C	D	E	F	G	H	I	J	K	L	M
65										75		

N	O	P	Q	R	S	T	U	V	W	X	Y	Z
							85					

There is a gap here, because numbers 91 to 96 are not letters. The people who designed the code wanted the gap between a capital letter and the equivalent lower case letter to be 32. The reason for this is to make changing from one to the other easier using a different code called binary.

a	b	c	d	e	f	g	h	i	j	k	l	m
97			100					105				

n	o	p	q	r	s	t	u	v	w	x	y	z
110					115					120		

Now you and your friends have this code, you could use it to send each other secret messages.

Task

Write the following messages in ASCII. (The ASCII code for a space is 32.)

1   Hello

    ....

2   This is a secret message

    ....

3   Only clever people understand ASCII

    ....

    ....

Name:..

Form:..

Word processing terms 1

Draw a line from each word on the left-hand side to the most appropriate explanation on the right:

Font   Vertical blocks of text

Size   To find a particular piece of text

Cut   A piece of text appearing at the bottom of every page

Paste   How large the letters are, usually shown as a number of points

Search   Regular gaps across a page, which can be set by the user

Replace   The page is taller than it is wide

Portrait   Usually, large dots at the start of the line to emphasise points made

Landscape   To place cut or copied text somewhere else

Columns   To put another word or phrase in place of one selected

Bullets   To make the text line up in a particular style, in the centre, for example

Justify   The way the letters are formed – the style of the type face

Tabs   To remove a portion of the text completely

Header   Suggestions for similar words or phrases

Footer   A piece of text appearing at the top of every page

Thesaurus   The paper is wider than it is tall

Now write the words on the left in alphabetical order below:

....

....

....

....

....

Word processing terms 2

This passage contains gaps, which can be filled using the following words or phrases. Complete the passage so that it makes sense:

<div align="center">

alternative   font   underscore

cut and paste   document   slope

</div>

Word processing makes producing a neat __ __ __ __ __ __ __ __ easy. Many of

the features are common to most word processing packages. You can alter the

appearance of your text by using a different type style, or __ __ __ __. You can make

the text a different size by changing how many points the text size is.

You can emphasise some words by making them appear thicker and stronger, by

making them bold, or by making them __ __ __ __ __, using italics, or putting a line

under them using the __ __ __ __ __ __ __ __ __ feature.

The text can be made to take up less width by changing the margins. Text can be

moved to a different place by using a feature called __ __ __ __ __ __ __ __ __ __ __ ,

or it can be duplicated by using the copy feature.

Before it is printed it can be checked for accuracy by using the spell check, and

__ __ __ __ __ __ __ __ __ __ words can be found by using the thesaurus.

Name:...

Form:...

Word processing puzzle

The wordsearch below contains 20 words. Find them and then circle the words.

U	D	P	H	H	L	D	Z	G	F	J	R	Y	G	I
N	E	R	M	B	Y	M	N	K	R	I	F	I	K	J
D	L	O	B	Z	Q	I	T	R	F	I	M	P	W	D
E	R	F	Y	I	L	C	O	O	T	P	L	X	R	V
R	A	C	O	L	U	M	N	S	O	A	Z	O	B	K
L	B	A	E	T	Y	T	U	R	B	S	K	Z	C	L
I	K	P	Y	N	S	J	T	U	F	T	A	B	K	H
N	S	I	Z	E	T	R	K	C	H	E	G	V	H	X
E	A	T	G	D	N	R	A	Y	D	J	D	V	E	F
C	T	A	X	N	I	T	E	H	S	I	Y	N	H	B
Z	P	L	M	I	R	Y	L	R	E	H	Y	G	V	Z
J	Y	B	B	G	P	B	M	Y	X	W	V	V	F	T
T	E	I	G	R	I	U	X	O	Q	Q	N	V	J	Z
V	S	A	M	A	A	K	N	D	A	A	P	G	K	B
Q	W	O	I	M	T	P	V	T	N	V	N	W	T	J

BOLD	IMPORT	SAVE
CAPITAL	INDENT	SIZE
CENTRE	JUSTIFY	SPELLING
COLUMNS	MARGIN	TAB
CURSOR	PAGES	TASK BAR
CUT	PASTE	UNDERLINE
FONT	PRINT	

Proofreading

Sometimes, when people type, they can make mistakes. Learning to spot mistakes is an important skill when you are using Information and Communication Technology. The passage here contains 15 mistakes – circle them. (All the facts are correct!)

```
Koram uses a computter at work, and is very happy usingit.
He puts informaition into the computer using a keybord, and
a mouse, as well as pictures using a scanner. Sometimes he
has to use a didgital camera. This is similar to an ordinary
camera, but the pictures are stored as a series of 1's and
0's, rather than using flim.

The informaition comes out of the computer onto an monitor,
where he can see a very sharp colour display, and he is
able to make a permanent copy of anything on the screan by
printing it out using a laser printer for black and white,
or an ink-jet for coulor copies, which are nearly as good
as photographs.

Koram uses his computor at work to communicate with people
all around the world using a modem. This allowshis computer
to send data down a telephone line to another computer, as
long as that computer has a modem too. From time to time,
he relaxes by looking at information on the Internet. He is
verry Interested in space, and space travell, and can get a
great deal of information this way.
```

Questions

There are no mistakes from here on. Answer these questions – you may have to look up some of them.

1   Find out the names of another device for putting information into, and getting information out of, a computer.

In ....

Out ....

2   What advantage does a laser printer have over an ink-jet printer?

....

3   The passage mentions digital data. What does analogue data mean?

....

4   What disadvantage could there be in getting information from the Internet, compared with a CD-ROM or a book?

....

Getting the message across

Computers are controlled through graphical user interfaces (GUI). The mouse and keyboard are used to input information, and the mouse can also use shortcuts by clicking on an icon. An icon is one of the small buttons with a picture on, as shown below:

Icons need to be intuitive – this means that it should be obvious what they do. Design icons for the following functions in a new word processing package:

• Sort a list into order

• Make a copy of the whole document

• Make all the first letters in a sentence capitals

• Launch a graphics package

• Send a document to a modem

Notes

A graphics package allows the user to draw a picture and choose to insert it into a document.
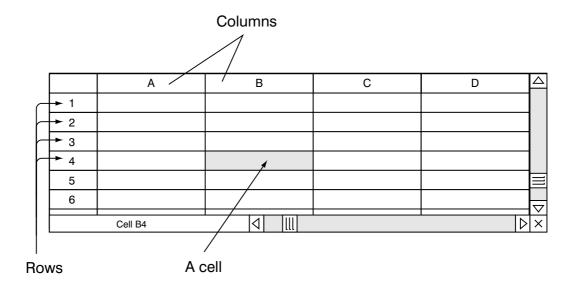
A modem allows a computer to send information down a telephone line.

Spreadsheets 1

What is a spreadsheet?

A spreadsheet is a very useful tool for working with numbers or drawing graphs. Spreadsheets are used for modelling, or investigating what happens if you change some of the figures of a formula.

The diagram below shows some of the features of a spreadsheet. Look at the diagram and try to answers the questions below.

Columns

	A	B	C	D	
1					
2					
3					
4					
5					
6					

Cell B4

Rows   A cell

Questions

1   The columns are labelled using..

2   Which cell in the diagram is shaded in?

     ....

3   How many rows are in the diagram?

     ....

4   On the diagram, shade in cell C3.

5   How many cells are shown in the diagram?

     ....

Look at the spreadsheet below. Then answer the questions about it.

	A	B	C	D
1	Name	MARK FOR TEST 1	MARK FOR TEST 2	TOTAL MARK
2				
3	JOHN	23	21	44
4	HELEN	22	23	45
5	PETER	25	22	47
6	JANE	34	21	55
7				
8				
9				
10				
11				
12				

6   Write down the reference of a cell containing text.

....

7   Which column contains the marks for test 1?

....

8   What was Helen's mark for test 2?

....

9   Which cell contains Peter's mark for test 1?

....

10   Which column contains formulae?

....

11   Jane's mark for test 1 should be 24, which cell should be changed?

....

12   When Jane's mark for test 1 is changed, which other cell would change as
     a result?

....

Name:...

Form:...

Spreadsheets 2

Aim

To work out the profit from a sponsored swim.

Information

A club has hired a pool for a sponsored swim and they are trying to work out the profit.

The following are **costs**:

• Pool £30.00 per hour. The pool is needed for three hours

• Adverts £40.00

• Certificates £2.00 for a pack of ten

Tasks

Use the following grid to calculate expected income assuming that each person raises £10 and the total number of people is 40.

|	A	B	C	D	E
1	Item	Cost	How many	Total	
2					
3	Pool	£30	3	=B3*C3	
4					
5					
6					
7					
8					
9					
10					
11					
12					
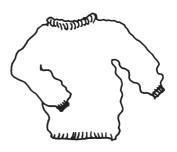
Also on the grid show how to:

1 Find the total of the costs.

2 Find the total amount raised.

3 Calculate the profit. (Profit = Amount raised – total costs)

Name:..

Form:..

Spreadsheets 3

This is an exercise in spreadsheet planning. You should plan out your spreadsheet on the grid below before trying it out on the computer.

Rebecca is setting up a business making knitted jumpers on a knitting machine. She needs to work out the cost of making the same jumper out of three different materials. She is using:

- Acrylic = £4.95
- Wool = £5.50
- Mohair = £6.75

The different materials take different times to make:

- Acrylic and wool jumpers each take six hours
- Mohair jumpers take seven hours

Rebecca will charge £3 per hour for her time. Your aim is to find out the cost of each jumper.

	A	B	C	D	E	F
1	Material	Cost (£)	Time	Labour	Cost of labour	Total cost
2						
3	Acrylic	4.95	6	£3	=C3*D3	
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						

Hint

To find out the cost: Add the cost of materials to the charge per hour multiplied by the time taken for each jumper.

Name:..

Form:..

Spreadsheets 4

Maggie wants to keep a record of her test marks using a spreadsheet. She has set one up as shown below:

	A	B	C	D	E	F
1						
2	My marks					
3		Test 1	Test 2	Test 3	Total	Average
4	Maths	65	71	80		
5	History	55	69	87		
6	Geography	59	66	70		
7	Science	78	82	76		
8	English	88	80	79		
9	ICT	95	77	92		

This spreadsheet uses the following formulae:

- To add up cells E11 to E15, you would need to enter @SUM(E11..E15)

- To find the average of cells E11 to E15, you would need to enter @AVG(E11..E15)

The @ tells the computer that it is a formula and not just writing. The brackets show where the range should be averaged from, and the two dots tell the computer to use all the cells between the E11 and E15, not just those two. Obviously, you can use other rows and columns besides the ones used in the example.

Questions

1   What would Maggie need to enter into the following cells for her spreadsheet to work?

E4..   E5..

E6..   E7..

E8..   E9..

F4 ....   F5..

F6..   F7..

F8..   F9..

2   Do you think there could be a better way than entering each cell individually? If so, what would you like to be able to do to save time and effort?

....

....

3   If Maggie wanted to find the average of all the averages, which cell might be suitable to store it, and what would the formula be?

....

....

Mail merge 1

Ruth wants to use her computer to write thank you letters for her Christmas presents. She has decided to use mail merge. First, she needs to set up a database file to hold the information. Her letter is then typed into the word processor and special markers are put in places where information is needed from the database.

When the letter is printed using the mail merge facility, the items from the database are automatically put in where the markers are. This makes the letter look as if it was typed just for that person. Letters can be sent to everyone in the database or certain ones can be selected using the database before merging it.

This method would save Ruth time because she does not have to keep changing the letters; the computer will do all that for her. Her first task is to set up a suitable database to hold the information for her letters. It looks like this:

	A	B
1	Name	Present
2	Uncle Dave	puzzle
3		
4		
5		
6		
7		

Tasks

1   Make up some more records to fill up the database.

2   Write a simple thank you letter in the space below, putting field markers in the place where you want to put your information from the database. Your field markers should look like this <<Name>>.

Mail merge 2

Have you ever wondered how all those junk mail letters look as if they are typed out just for you? Well here's how.

It's called mail merge. First a database file is set up to hold the information needed. The letter is then typed into the word processor and special markers are put in places where information is needed from the database.

When the letter is printed using the mail merge facility, the items from the database are automatically put in where the markers are. This makes the letter look as if it was typed just for that person.

Letters can be sent to everyone in the database or certain ones can be selected by using the database before you merge it.

The following database is for Spifton Beekeepers Association. There are ten records in the example:

A	B	C	D	E	F	G	H	I
Title	Surname	Forename	Add1	Add2	Postcode	Status	Type	Cost
Mr P	Edwards	Peter	297 Bromsgrove Road	Spifton	SP12 9JW	PAID	JUNIOR	£7.00
Mr A	Harter	Adrian	6 Tree Road	Spifton	SP10 3RJ	PAID	FULL	£15.00
Mr J	Hardson	John	38 Hungary Ave	Spifton	SP1 3JW	PAID	FULL	£15.00
Mr S	Jefferies	Steve	11 Vicarage Road	Spifton	SP3 5TW	UNPAID	FULL	£15.00
Mr N	Donald	Neil	12 West Road	Spifton	SP2 9AW	PAID	JUNIOR	£7.00
Mr J	Jones	John	3 South Road	Spifton	SP13 9HW	PAID	FULL	£15.00
Mr A	Baker	Adam	7 Court Road	Spifton	SP32 9WS	UNPAID	JUNIOR	£7.00
Mrs S	Bishops	Susan	1 Sand Road	Spifton	SP14 9PL	PAID	FULL	£15.00
Mr M	Prichard	Martin	4 Grange Road	Spifton	SP12 9FR	PAID	FULL	£15.00
Mrs B	Silver	Becky	15 Hearne Drive	Spifton	SP12 3RE	PAID	FULL	£15.00

Tasks

Try to answer these questions.

1   If you merged a letter to **all** members, how many letters would you send?

     ....

2   If you merged a letter to only the **full** members, how many would you send?

     ....

3   Here is a sample letter for people who have not paid their fees this year. The fields from the database are put into the letter where there are markers like this <<Surname>>. The surname from the database would be placed here.

Here is the master copy of the letter:

> Spifton Beekeepers
>
> <<Add1>>
> <<Add2>>
> <<Postcode>>
>
> Dear <<Forename>>
>
> According to my records you do not seem to have paid your <<Type>> membership subscription for this year.
>
> I would be grateful if you could let me have your subscription of <<Cost>> as soon as possible.
>
> Yours faithfully
>
> A Bee

Now it's your turn to play computers. Fill in the blanks in the letters below. Remember the letter is only going to those who have not paid.

> Spifton Beekeepers
>
> _____
> _____
> _____
>
> Dear _____
>
> According to my records you do not seem to have paid your _____ membership subscription for this year.
>
> I would be grateful if you could let me have your subscription of _____ as soon as possible.
>
> Yours faithfully
>
> A Bee

> Spifton Beekeepers
>
> _____
> _____
> _____
>
> Dear _____
>
> According to my records you do not seem to have paid your _____ membership subscription for this year.
>
> I would be grateful if you could let me have your subscription of _____ as soon as possible.
>
> Yours faithfully
>
> A Bee

Name:...

Form:...

Penfriend databases

Your school is organising a penfriend club for its pupils. Information has been collected from people who are willing to be penfriends and this has been put into a database.

The database is printed out below:

Forename	Surname	Age	Gender	Town	Interest
Robert	Jones	12	M	Whitby	Cars
Jane	Plant	11	F	Birmingham	Pop music
John	Davies	13	M	Blackwood	Drums
Betty	Birch	14	F	Dublin	Photography
Paul	Biddle	155	M	Birmingham	TV
Catherine	Shelton	12	F	Boston	Cookery
Tom	Brennan	10	M	Swansea	Pop music
Barbara	Coe	13	F	Lowestoft	Photography
Amanda	Gaul	11	F	Windsor	Pets
Jane	Mansell	15	F	Curdworth	Keep fit
Gerry	Robinson	10	M	Darlington	Sport
June	Stanley	15	F	Wolverhampton	Sport
Lesley	Walker	12	F	Guildford	Gardening
Sandra	Fountain	11	F	Taunton	Reading

Questions

Using the information from the database, answer the following questions.

1   How many fields are there in the database?

    ....

2   How many records are there?

    ....

3   One item of data looks wrong. Which item is it? Why is it wrong?

    ....

    ....

4   The gender field uses only two letters, M and F. What do these stand for?

   ....

5   How many girls are there in the database?

   ....

6   John, who is 11, would like a penfriend who shares his interest in sport. How
     many people in the database like sport?

   ....

7   How many people in the database are aged under 13?

   ....

8   What other piece of information do you think is needed in the database
     and why?

   ....

   ....

9   The organiser of the club has received a letter asking for a penfriend. Read the
     letter and fill in the blank line in the database below:

   23 Database Street
   Liverpool

   Dear Mr Hutton

   I have heard that you are looking for
   people to be penfriends to pupils in your
   school. I am 15 years old and like listening
   to pop music.

   If you could find me a penfriend, I would
   be very pleased.

   Yours sincerely

   John Patten

Forename	Surname	Age	Gender	Town	Interest

Interpreting data

Often data is used in the form of a code. There are several reasons for this, the obvious one being to save space. On the line below, write another thing that coding data can save.

....

Now look carefully at the coded data below about some of the people who work in a shop selling computer games, videos and compact discs.

The information is held like this: the first field contains their name, the second a code about their gender, the third shows which department they belong to, the fourth shows their hours of work, the fifth shows how much discount they are entitled to when they buy goods, and the last one shows their payroll number (a unique number to identify them).

The payroll number has three numbers, then a letter, and then three more numbers. If it does not fit this pattern, it is incorrect. This is known as validating the data.

How many characters (numbers and letters) do there have to be in a valid payroll number? There have to be .... characters.

Here is the data:

1	2	3	4	5	6
Arnold, J	F	V	T	H	133Q421
Aston, P	F	C	T	H	619A142
Birchfield, R	M	V	T	R	773D701
Dobson, P	M	C	P	S	66E4601
Easton, D	F	G	T	S	721S192
Fellows, J	F	V	P	R	403F901

The table above is impossible to understand if you do not have the key to what the data means. Write down an advantage to keeping the key a secret...............................

....

Here is what the letters mean:

- M = Male
- V = Works in the video department
- G = Works in the games department
- T = Works full-time
- H = Entitled to half staff discount
- F = Female
- C = Works in the CD department
- P = Only works part-time
- S = Entitled to full staff discount
- R = Not entitled to any staff discount

Questions

Now answer the following questions by interpreting the codes.

1   Write down the names of the people who work in the CD department.

....

2   Are there more males or females?

....

3   Write down the names of the people who work part-time.

....

4   Is D Easton a male or female?

....

5   Who is not entitled to any staff discount?

....

6   Whose payroll number is not valid?

....

7   How many full-time workers are female?

....

8   How many males are entitled to a full staff discount?

....

9   What advantage could there be in including a letter in the payroll number?

....

....

10   Paul Gorstone will be joining the company next week. His details need to be coded. Until he has worked for the company for six months, he will not receive any discount. He will not be allocated to the video or CD department, he will work full time, and his payroll number will be 847G322.

Write his coded data below:

1	2	3	4	5	6

A new sensation!

There have been boy bands and girl bands, and occasionally a mixture. The biggest hit of the year so far is the recent Number One – Spice That! They were formed in Cheltenham, Gloucestershire at the start of last year by manager Chiz Chizzard. Recently, they rocked the pop world with mega sales of their first single Wannabe With Ya.

The group is made up of the following people:

• **Jimmy Oldham** – Jimmy was born on 25 January 1978 in Charlton Kings, where he lives in a house he has just bought. He is 1.80 m tall and weighs 68 kg. He has blue eyes and fair, curly hair. His favourite food is pasta, he likes going to the cinema, and plays the guitar.

• **Lisa Jelouski** – Lisa was born in Staverton and currently lives in Cheltenham. She was born on 24 May 1977, and is a very slim 60 kg. She is tall – 1.7 m – and has red, straight hair, and blue eyes. She is an Internet fan, likes dolphin-friendly tuna, and plays the keyboard. In her free time she loves to read.

• **Mikey Nicholls** – Mikey is a drummer. He is 1.65 m tall and remains a thin 62 kg, thanks to his favourite diet of boiled rice. He loves cooking and plays bass guitar. He was born in Winchcombe, but now lives in Innsworth. He is exactly one month older than Lisa. He is famous for his short, spiky purple hair. He has brown eyes.

• **Emma Trent** – Emma was born in the village where Mikey now lives, and lives in the town where Lisa was born! She is the same weight as Lisa, and 3 cm shorter than her. She too has red hair, but green eyes. She plays the same instrument as Jimmy. She was born on Christmas Day, the same year as Jimmy. She loves to drive her new green sports car, whilst eating her favourite food – chocolate!

Task

Chiz wants to put their details into a computer database, so that he can answer fans' questions, such as "Where was Jimmy born?" or "Who likes to cook?". He needs to organise their details onto the form over the page. Do it for him!

Surname	First name	Place of birth	Now lives	Star sign	Hair colour	Eye colour	Height	Weight	Food	Hobby	Instrument

Name:...

Form:..

Making a database of your own

These are the details about some people in your class. Your teacher would like you to enter their details in the database grid provided on the next page.

1   Jeffrey has brown hair and was born on 13 January, 11 years ago. He lives with the rest of the Brown family and like all of them, he has blue eyes.

2   Shakeel was born exactly a month later than Jeffrey, and has black hair. His eyes are brown and his last name is Khan.

3   Mary has the same colour eyes as Shakeel, and the same colour hair as Jeffrey. Her last name is O'Hara, and she was born two months and three days later than Jeffrey.

4   Clifton is Mary's twin brother, although they are not identical. He has the same colour eyes as Jeffrey, and was born 11 minutes after Mary. He has blond hair.

5   Elaine was born on Christmas Day, the same year as Mary. She has green eyes and red hair. Her last name is Woods.

Below is some additional information about their interests. The people are identified by their number above. Choose a suitable field name and add the data as appropriate:

5 – Dance   3 – Music   2 – Judo   4 – Watching TV   1 – Reading

In the last column, choose a suitable field name, and insert the numbers 1 to 5 to show who is the youngest (1) through to the oldest (5).

Can you think of a way that the data could have been collected to make it easier to put it into the database?

....

....

....

Last name	First name	Date of birth	Hair colour	Eye colour		

Library database

The information below is part of the data file held on the books in your school library:

Author	Title	Reference number	Price (£)	Type	Order
Taskett, A	Flowers of Kent	133907	6.99	NF	
Spurner, T	Raid on Ice Tree	244921	7.99	F	
Jacob, S	Grasses of Central Asia, The	166924	14.50	NF	
Remora, T	Sharks and their Followers	122109	16.75	NF	
Biddle, F	My Sister, Amy	122157	5.95	NF	
Wilson, R	Harvey Goes for Broke	211090	3.99	F	
Surly, V	My Wife's Other Friend	241021	2.99	F	
Tresketh, O	Octopus: A Misunderstood Species, The	68024	14.95	NF	
Harvey, T	Planet of the Lost, The	200100	6.85	F	
Lottersby, F	Shoot the Moon	210102	4.95		
Hughes, D	Eric Bloodaxe – Viking Hero?	166022	21.95	NF	
Biddle, A	My Sister, Faye	122156	5.95	NF	

The reference number is six numbers (characters) long. The first number shows at a glance if it is a fiction book (type F) or a non-fiction book (type NF). The last five characters are allocated as a sequence 00000 to 99999. This identifies the book as an individual copy – there may be more than one copy of a book if it is a popular title.

Tasks

1   Put in the missing first number and type.

2   In the order field, put in the numbers 1 to 12 if the books were sorted into order by their reference number. **Ignore the first character**.

3   There are two books which have **consecutive** reference numbers (one after the other). Write their reference numbers here:

....

....

4   Write down the title of the oldest book in the library. (Look at the order field.)

....

5   If the books were sorted by author, which title would be first?

....

6   Why do you think two of the books have 'The' as the last word in their title?

....

....

....

7   Suggest another field that a real library might include in a database of books.

....

8   How might this field be useful in processing the data?

....

....

....

9   Use the fields 'Author', 'Title', 'Reference number', 'Price' and 'Type'. Make the first reference number one more than the highest used in the data on the previous page, and add the details for six books in your school library – use three fiction and three non-fiction.

....

....

....

....

....

....

Databases: A soapy lot!

A television soap opera is very popular. It is called Wilson's Walk and is set in a small street in a fictional town called Spifton.

Task

The company making the soap opera has decided to keep details about the characters on a computer database. They have started it using the script editor's accurate notes below. Can you spot and correct the errors?

Name	Character	Home town	Age	Start date	House number
Bruce Philips	Lancelot Remington	London	43	1996	24
Beverley Lambeth-Angell	Susan Remington	Birmingham	30	1996	25
Don Haywood	Alfred Holyoak	London	27	2000	14
Tracey O'Hara	Mary Hollyoak	Bedford	24	2001	14
Alec Laird	James Lucas	Glasgow	63	1986	16
Marie Leary	Margie Lucas	Newcastle	61	1986	18
Gerry Haig	Vince Robinson	Southport	20	1999	18
Daoud Ali	Shiraz Khan	Gloucester	19	1999	23
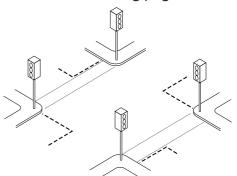
- Bruce Philips plays Lancelot Remington, who joined the show in March 1996. He and his wife, Susan (played by Beverley Lambeth-Angell), share house number 24. Lancelot is 43 and is 13 years older than his wife. Lancelot is often ridiculed for his strong Birmingham accent, while his wife has a more refined London edge to her voice.

- Alfred Holyoak (27) and his wife Mary Holyoak (24) are played by Don Haywood and Tracy O'Hara. These newlyweds from London and Bedford respectively, live at number 14, having both joined the show in 2000.

- James and Margie Lucas are the longest serving characters, having joined in 1987. Alec Laird and Marie Learey have played their characters through many ups and downs, including a divorce in 1995, when Newcastle-born Margie moved next door from their original home of number 16 to occupy number 18. She is 61 years old, three years younger than her husband, who will soon retire and hopes to return to Glasgow.

- Having left Southend in 1999 to move to Spifton, Vince Robinson (in real life Gerry Haig), is one of the youngest residents at 20. He moved into house number 20 on his twentieth birthday.

- Shiraz Khan, played by Daoud Ali, comes from Gloucester and is a year younger than Vince. He joined the same year as Vince and they became onscreen friends. He lives in number 23.

Computers in control 1

Read the passage below and then answer the questions on the following page.

Computers can be used to control many everyday items or events. You may think that all computers are like the ones you see most days at school with a screen, keyboard and monitor. However, they can be much smaller and simpler than that. A microprocessor, sometimes called a microchip, can provide all the power needed to control a household item. Many household items are controlled in this way – CD players, videos, toys and games are just a few examples. Outside the home, things like traffic lights, displays in shops and alarm systems can all be computer-controlled.

Before these things can be run by computer, someone has to work out a series of commands and make sure they are in the correct order. These commands together make up what is called a computer program.

As well as making things happen, the computer can also obtain information from devices called sensors. A sensor is a device connected to the computer which sends a signal when something happens. When the computer receives this signal it carries out the set of instructions it has been programmed to do. There are several types of sensor.

• Digital sensors only have two states – ON or OFF. A press button is a digital sensor; normally when you push it, an ON signal is sent to the computer. Your program would then act on this signal.

• Analogue sensors measure data that is variable, like temperature or air pressure. The signal from a temperature sensor will change continually as the temperature changes.

Any data going in to the computer is called INPUT, and any data signals going out of the computer are called OUTPUT.
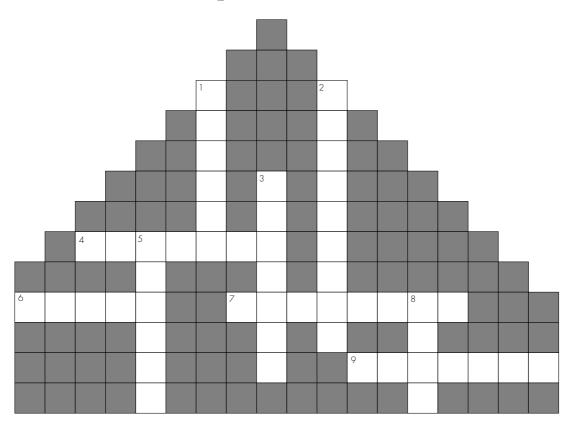
Questions

1   What are the instructions called that a computer follows?

....

2   From the passage, write down two items in the home that are controlled by computers.

....

....

3   From the passage, write down two items outside the home controlled by computers.

....

....

4   Write down two other items **not** in the passage that might be computer-controlled.

....

....

5   What is another name for a microchip?

....

6   What do computers use to obtain information?

....

7   What is information going **in** to a computer called?

....

8   How many different states has a digital sensor?

....

9   A temperature sensor is an example of what kind of sensor?

....

10   A pelican crossing has a push button for you to use. What kind of sensor is this?

....

Computers in control 2

Across

4 A set of commands

6 Data going in is called

7 Analogue data is this

9 This is either on or off

Down
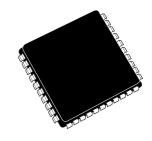
1 Collects information for the computer

2 Another word for microprocessor

3 An instruction given to a computer

5 A signal from a computer

8 A language for controlling a 'turtle'

Name:...

Form: ....

Chips inside

Computers are not the only things which are controlled by computers. There are many items around your home which you need to program in order for them to work.

All of them use **input**, **processing** and **output**. Input gives instructions, processing acts upon these instructions, and the output performs these actions.

According to the instructions for my video, I need to set the channel, the date, the start time and the end time.

Below are some instructions for a video recorder to record a programme which starts at 7.30 at night, lasts for half an hour, and is on BBC2 today. Copy them out in the right order, and put a letter by the side of each to show whether it is input, process or output (I, P or O).

- Record
- Switch off
- Select end time
- Wait for start time
- Wait for end time
- Pick up handset

- Select channel
- Ensure channel is set to selected
- Put down handset
- Display correct lights on video
- Select start time
- Select date

....

....

....

....

....

....

....

....

....

....

....

Logo

Logo is a computer language which will let you draw on the screen. The commands you give will move a pointer or 'turtle' around on the screen, drawing lines as it moves. It looks like an arrow on the screen, as shown on the right.

The simplest of the Logo commands include:

CS	Clears the screen
FORWARD	This moves the turtle forwards by the distance you give, eg FORWARD 50 will move forward by 50 units on the screen
BACKWARD	This moves the turtle backwards by the distance you give, eg BACKWARD 50 will move backward by 50 units on the screen
RIGHT	Turns the turtle to its right by a number of degrees, eg RIGHT 90 will turn right 90 degrees
LEFT	Turns the turtle to its left by a number of degrees, eg LEFT 90 will turn left 90 degrees

When you use the turn commands, the turtle only turns to its right or left. It does not draw a line or move in that direction. The words 'left' and 'right' mean the turtle's left and right, not yours!
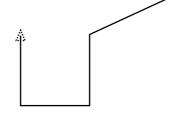
HINT

RIGHT will always turn CLOCKWISE.
LEFT will always turn ANTI-CLOCKWISE.

Questions

1   From the list below, write out the commands to draw the shape. Some commands may be used more than once. The arrow shows you where to start and in which direction you are going.

```
RIGHT 180
LEFT 90
RIGHT 75
FORWARD 60
FORWARD 50
```

....

....

....

....

....

....

2   Look at these commands:

```
FORWARD 50
RIGHT 90
FORWARD 50
RIGHT 90
FORWARD 50
RIGHT 90
FORWARD 50
```

    i   Would they draw a square? ....

    ii   Give a reason for your answer. ....

    ....

3   Write a set of commands that would draw a rectangle with height 50 and length 70.

    ....

    ....

    ....

4   Draw the shape that these commands would draw.

```
FORWARD 50
RIGHT 90
FORWARD 50
RIGHT 90
FORWARD 50
LEFT 90
FORWARD 50
LEFT 90
FORWARD 50
RIGHT 90
FORWARD 50
RIGHT 90
FORWARD 50
LEFT 90
FORWARD 50
```
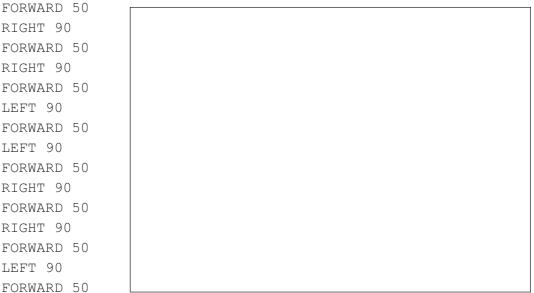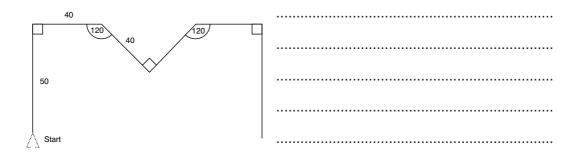
5   Write down some instructions to draw this shape.

    ....

    ....

    ....

    ....

    ....

    ....

Name:..

Form:..

Changes in technology

Geraldine has worked for the same firm since 1977! Her job is to send out letters to other companies, telling them all about her firm's latest offers.

This is how she did it in 1977:

She used to go into her boss's office with a supply of sharp pencils and a notepad. Mr Perrigrew, her boss, used to talk about all his ideas, and Geraldine would write them on the pad, using a code called shorthand. People used to have to study shorthand to be a secretary, and if you did not know how to read it, it looked like a collection of squiggles.

Then Geraldine would go into her own office where a big, heavy (10 kg) typewriter stood. She would have to press the keys very hard to make it work. She would type up a draft of Mr Perrigrew's letter on a sort of paper called 'foolscap' which is a bit longer than A4, and put other pieces of paper called carbon paper behind it to make copies. If she made a mistake, she would have to use a sort of paint called 'liquid paper' on each copy, wait for it to dry, and then type the correct letter over it, then she would take it to him to approve.

When it had been approved, she would have to type it all over again, this time onto something called a 'duplicating skin'. This was a collection of papers, all joined along one edge. The hammers in the typewriter were made of metal, and these used to cut through the first piece of paper, which was very thin. If she made a mistake now, she had to use some pink paint which sealed all the holes, and type over it again.

As Geraldine reached the end of each line, a bell would ring in the typewriter, and she would have to decide whether the word would fit, or to put a hyphen in it, and start a new line. To start a new line, she had to move a handle on the right-hand side of the typewriter.

When she had finished, she would take it to Mr Perrigrew who would sign it using a special sharp pen called a stylus.

Geraldine then separated the sheets, and put the top, thin copy on a duplicating machine's barrel (making sure that it was back to front!), loaded it with special thick, sticky ink, and wound the barrel round to feed in sheets of duplicating paper, and press an image of the writing onto them. They were often very blurred and smudged easily.

The letters had to be folded, the envelopes addressed, stamps stuck on, the envelope sealed, and individually addressed on the typewriter.

From start to finish the process could take as much as three to four hours.

Now, however, the process is very much simpler and quicker:

Arnold, Geraldine's boss, dictates his letter into a tape recorder and passes the tape to her. She keys it into her word processing package, checks the spelling and the grammar using features of the software, changes some words using the thesaurus, and saves it onto the network server.

Arnold can then look at it at his convenience, and approves it by adding a digitised image of his signature. Geraldine then uses a database of names and other individual personalising touches (such as the person's company details, and phrases like "We must get together for that game of golf soon") so that the person getting the letter thinks it has been specially written for them.

When this data has been mail-merged into the original letter, she prints off individual copies to be sent using a laser printer, which will produce many copies in a minute. They are automatically folded by a machine, put into envelopes, so that the address shows through a window in the envelope, automatically sealed, and put through another machine called a franking machine, which does away with the stamp.

From start to finish, the whole job could be completed in under ten minutes.

Task

Cross out any of the following phrases which are not true:
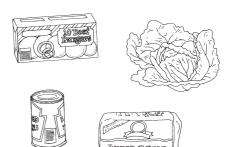
- Geraldine's work was harder in 1977.

- Geraldine needed more skills in 1977.

- Some skills were needed in 1977 and now.

- There was less machinery involved in 1977.

- Using the present system is more efficient.

- The letters of 1977 were better presented.

- It was easy to make people think that the duplicated letter was more personal in 1977.

- Computers have made people care less about the products they produce, because it takes less time.

- People still need to learn shorthand.

- Geraldine has had to learn many new things since 1977.

- If computers disappeared, Geraldine could not do her job now.

- The equipment needed to produce a letter is less expensive now.

Computers in a supermarket

Read the following passage carefully:

Supermarkets use computers a great deal. They keep track of the number of items in stock, the number of items they sell, the hours that the staff work and, more recently, information about their customers.

Many supermarkets now give out 'Loyalty Cards'. The advantage to the customer is that they can collect points for the money they spend, and when they have collected enough, they can swap them for goods, services or other rewards.

There is a far bigger advantage to the supermarkets, though.

How do you think the people who organise supermarkets know which products to stock? The answer is that partly they stock items they have always stocked – providing they sell, but now it is by knowing what people in a certain location really want to buy.

They could find this out by using people to fill in questionnaires, but questionnaires are hard to get right. Supermarkets therefore use computers to find out what people with loyalty cards are buying.

Using this system – called data mining – they can find out what thousands of people are buying. For example, they can tell if people who buy chickens buy stuffing at the same time.

A danger to the customer is that the individual customer's buying habits can be identified. For example, Mr Smith buys a bottle of whisky every week. He can be identified as someone who drinks alcohol, and if an insurance company was given that information they may consider Mr Smith to be a greater risk.

In fact Mr Smith buys the whisky for his neighbour, Mr Jones, who is housebound and cannot get to the supermarket.

Task

Decide if **you** think that data mining helps customers by giving them what they want to buy, or if you think it is a way of prying into people's private lives.

Write a paragraph on a separate sheet of paper to explain your point of view.
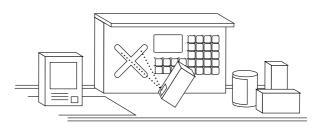
Name:..

Form:..

More supermarket computer uses

If you go to a supermarket now, you take it for granted that virtually every item will have a bar code on it. These are not designed for people to read easily, but the data they contain can be input to a computer very easily.

They are read using a bar code reader. There are several different 'languages' used for bar codes. The language used for most supermarket bar codes is EAN13. EAN stands for European Article Number and 13 shows that there are 13 digits in the code. The bar code reader can take a variety of forms such as a small hand-held wand, a hand-held gun, or a scanner built into the checkout.

Bar codes being scanned at a checkout till

It is important that the numbers are entered accurately, so the last digit is called a check digit – it checks that all the other digits are correct. The system to calculate real bar codes is too difficult to do without a calculator, so here is an easier version of working out a check digit.

Let's just use a 3-digit number, for example 746.

Add all the digits together: $7 + 4 + 6 = 17$

Add the new digits together until there is only a single digit: $1 + 7 = 8$

Add that as a check digit so the number now becomes 7468.

Tasks

1   Work out the check digits for these numbers and write them in the spaces below:

i	853......................................	ii	521......................................
iii	909......................................	iv	855......................................
v	329......................................	vi	317......................................
vii	123......................................	viii	391......................................
ix	147......................................	x	622......................................

2   Bar codes do not contain the price of the item. Write down why you think this might be.

   ....

3   The first digit in a supermarket bar code shows the country of origin. Write down the number which shows Great Britain...

   Which number shows France?...

A computer-controlled burglar alarm system

Mr Jones is being visited by a salesman from a burglar alarm company. This is what the salesman says about the system:

"The heart of the system is the control pad. This has a pad with the numbers 0–9 on it, an enter button and some other buttons to check the system and check lights. When you wish to make the alarm active, you key in a four-digit number only you know, and then key it in again when you return to turn the system off. The system is a wireless system, so there are no cables running anywhere. The control pad also houses the computer which runs the system, and sends and receives signals by radio.

Under the carpet by the front and back doors, there are pressure pads. If anyone steps on these it will set off the alarm if it is turned on. On all the doors and windows there are magnetic switches called reed switches which will send a signal to the control unit if anything is opened when it should not be. Also, by the front door, is a panic button to set off the alarm should you get unwelcome people at the door.

There are also passive infra-red sensors which will detect changes of heat in each room, and motion sensors to detect movement. If you wish, you can choose which of these to turn on.

Finally, there is a connection to the telephone line which will alert our company if the alarm goes off. If it does go off, a minute after we have been phoned, the siren on the wall outside will sound and a powerful blue light called a strobe will be lit up. This computer-controlled system will give you good service, Mr Jones."

The computer system has inputs, it processes data, and it outputs.

Questions

1   Name five devices which send information to the computer, ie input devices.

....

....

2   What decision – processing – would the computer make?

....

3   Write two outputs from the computer.

....

4   Suggest another way Mr Jones could use to turn the system on and off without using a keypad code.

....

5   Write down one method that the computer uses to communicate.

....