Year 7 Curriculum Overview ICT 2023-24

	Autumn Introduction to the systems	Autumn Algorithms and Physical computing	Spring Networks- From semaphores to the internet (7.3)	Summer 2 Modelling data (7.5)
Approximate Number of Lessons	1	6	6	6
Curriculum Content	Students will be introduced to the school computer systems and how to access them	Students will be introduced to algorithms through physical computing using Micro:bits	Students will study networks and how they are created as well as how they are used.	Students will study how data can be stored and manipulated using spreadsheets. This will help them to understand their uses.
Links to prior learning	Students will build on their understanding of computer systems from primary school.	This will link to any programming experience from primary school	This will build on students understanding of the internet from their daily lives.	This unit assumes that students have no prior understanding of spreadsheets but do understand basic Maths.
Cultural Capital Opportunities	Use technology responsibly in personal life Career bios One minute mentor videos	Consideration of automation around us Career bios One minute mentor videos	Find out how your devices connect to the internet Visit Computing history centre in Cambridge or the National museum of computing at Bletchley park Watch Wreck it Ralph: Breaks the Internet Career bios One minute mentor videos	Find out how the census is used Create a spreadsheet to budget your pocket money Career bios One minute mentor videos
Assessment Focus	Online assessment – 40 marks.		Online assessment – 40 marks.	End of year assessment out of 50
Name of Knowledge Organiser/Link to Organiser	n/a	7.2 Physical computing	7.3- Networks knowledge organiser	7.5- Modelling data knowledge organiser

General ICT skills

What do I need to know?

- How to log on (including creating passwords)
- How to create folders and sensible file names
- How to access 'the cloud'
- How to upload work to 'the cloud'
- How to use a range of Office software
- How to format text and other content appropriately
- How to identify key information from a client brief
- How to search the internet

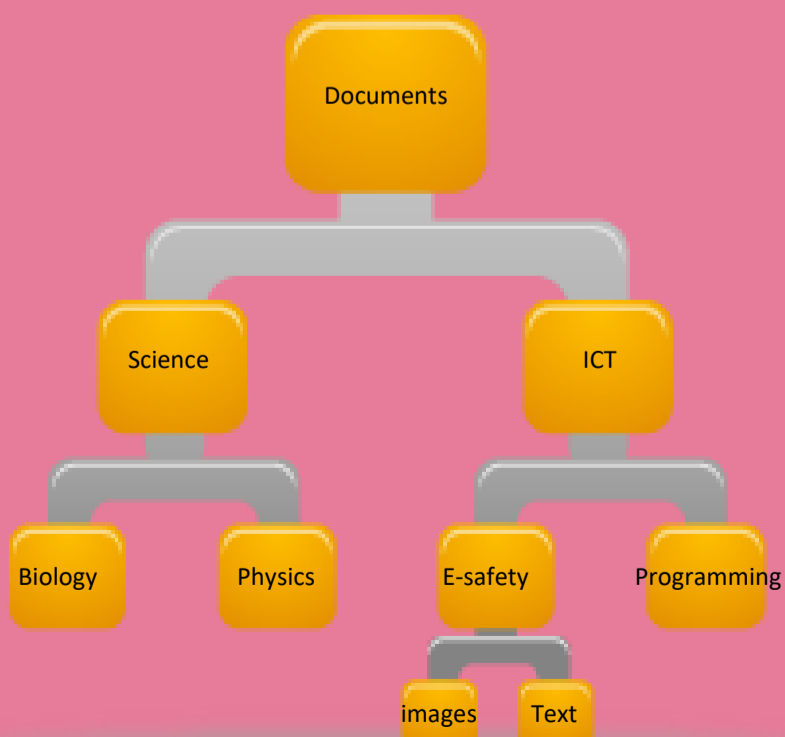## The cloud (Office 365)

MCA Student Intranet

Daily Notices | Office 365 | 6th Form Notices

Folder structure

- Separate folders should be set up for different topics
- Each folder should have sub folders to help organise the files inside it

Using the Internet

- Use appropriate search terms– not full questions. What are the key words you are interested in
- How do you know the information is reliable?
  - Was it written recently?
  - Can you find the same information somewhere else
  - Is it a generally trustworthy source?
  - Does the website look professional?
  - Is there bias? For example, a company writing about their own product is unlikely to highlight the negatives
- Make sure you can write an email correctly
  - Include a subject
  - Make sure it is written in full English (not text speak)
  - Keep it to a minimum. Essays are not needed
  - Keep it formal
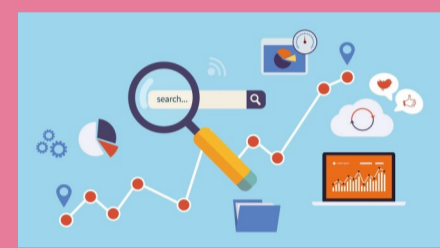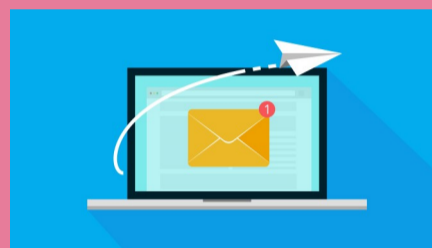
Office tools

1) Formatting tools– generally found on the Home tab of office software

2) Insert tab– Used to add pages, images, shapes, page numbers, symbols and much more

3) Page design tab– Used to change the size, layout and colours of a page

4) Review tab– Used to help improve your work. You should make use of the spell check on all work to check for mistakes.

5) View tab– Helps you to get a clearer view of your work. You can zoom in and view navigation menus

6) Master/ template pages– Used to help create a consistent look for each page in a document
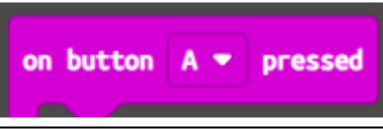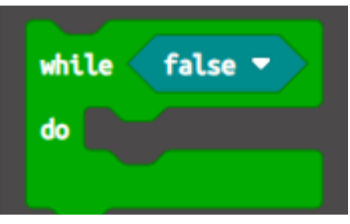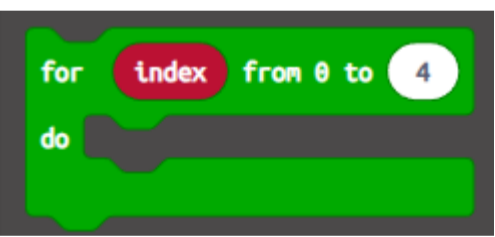
Vocabulary

File	A document on a computer which contains text, images and other content. For example, Word documents.
Folder	A way of grouping together files with similar content to help organise your documents.
Cloud	An online storage system.
Office 365	The cloud used at Mildenhall College Academy. This includes the use of OneNote.
Office software	Collective term for software used to help with work in an office environment. Examples are Word,
Client brief	A document provided to the team completing a project. It provides the information needed to make the project a success.
Formatting	This is how text, images and shapes look. Formatting tools include font styles, colours, borders, alignment etc.
Upload	The term used to save work into the cloud or other online storage areas.

Physical computing

What do I need to know?

- **Explain the three programming constructs**
- **Describe what algorithms will do**
- **Use a range of programming functions, for example:**
  - **Output**
  - **Input**
  - **Variables**
  - **Loops**
  - **If statements**
- **Understand the term physical computing**
- **Interpret and create programs which make use of different input and output devices**

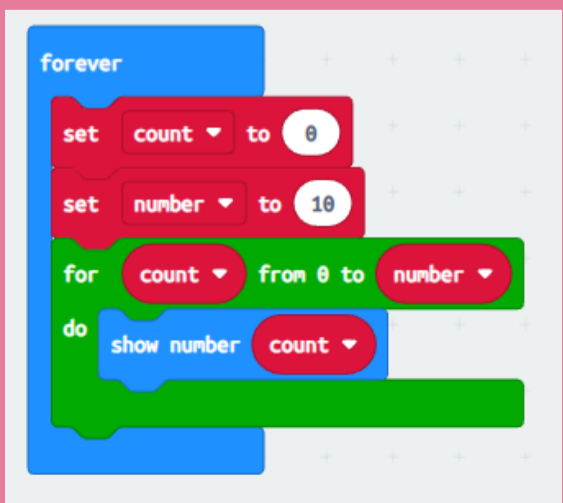## Programming examples

Task	Make code
Output	show number 0 / show string "Hello!"
Input	on button A pressed
Selection	if true then / else
Conditional loop - While Unknown number of iterations	while false do
Count controlled Loop - FOR Known number of iterations	for index from 0 to 4 do

Understanding code

The code shown will count from 0 up to 10.

- Firstly it sets the count variable to 0
- It then sets number to 10
- A loop is set up to repeat from count to number
- The loop will display count and then add 1 on to count

```
forever
set count to 0
set number to 10
for count from 0 to number
do
show number count
```

Programming constructs

There are 3 main elements that make up computational thinking. As you learn to program you will learn to use these building blocks to create ever more complex solutions to problems. The 3 programming constructs are explained below.

Sequence- This is a set of instructions in order.

```
show icon
wait (µs) 4
show icon
wait (µs) 4
```

```
repeat 4 times
do
show icon
wait (µs) 4
show icon
wait (µs) 4
```

Iteration- This is the process of repeating a set of instructions. Also known as a loop.

Selection- Where the **algorithm** makes a decision based on a choice of different paths.

```
if button A is pressed then
show icon
else
show icon
```

Vocabulary

Algorithm	A set of instructions to complete a task.
Logic error	An error which doesn't stop the program from running but gives an unexpected result, e.g. used + instead of -.
IDE	The software used to help write the code.
String	Data consisting of collections of characters (text).
Float/ real	Data which is a decimal number.
Integer	Data that is a whole number.
Boolean	Data that is either True or False.
Mathematical operator	An operator used for Mathematical calculations (+, -, /, *, **, %)
Comparison operator	An operator used to compare two values (==, !=, <, <=, >, >=)
Variable	A named location in memory to store a piece of data
Input	Providing data to the program for it to process
Output	Getting information from the program after it is processed
GPIO	General Purpose Input/ Output used to connect devices to the Micro:bit

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Networks

What do I need to know?

- I can describe the purpose of networks
- I can describe the role network hardware plays in a network
- I can describe the advantages and disadvantages of types of network
- I can explain how data is sent over the internet
- I can explains the issues linked to the Internet of things
- I can explain the link between URLs and IP addresses

Key terms

|	
World Wide Web	A set of technologies that serve websites over the internet
Browser	A piece of software used to access web pages
Search Engine	Software which indexes information about webpages
Web Server	A specialized sever that hosts webpages
HTTP	A set of rules used to send pages over the internet
Domain	Naming system used for websites

Key terms

Network	Independent devices connected together
Protocol	Rules used to facilitate communication
Cable	Physical wire used to connect devices
Hub	Device used to send data within a network
Router	A device used to send data between networks
Server	A device used to store files on a network so that they can be shared
Bandwidth	The amount of data transferred per second
Download/ Upload	Data received / sent
Internet	A network of networks all over the world
Packet	A small part of a file ready for transit
Internet Protocol	A set of rules used to send data over the internet
IP Address	A unique number to identify a connected device on the internet.

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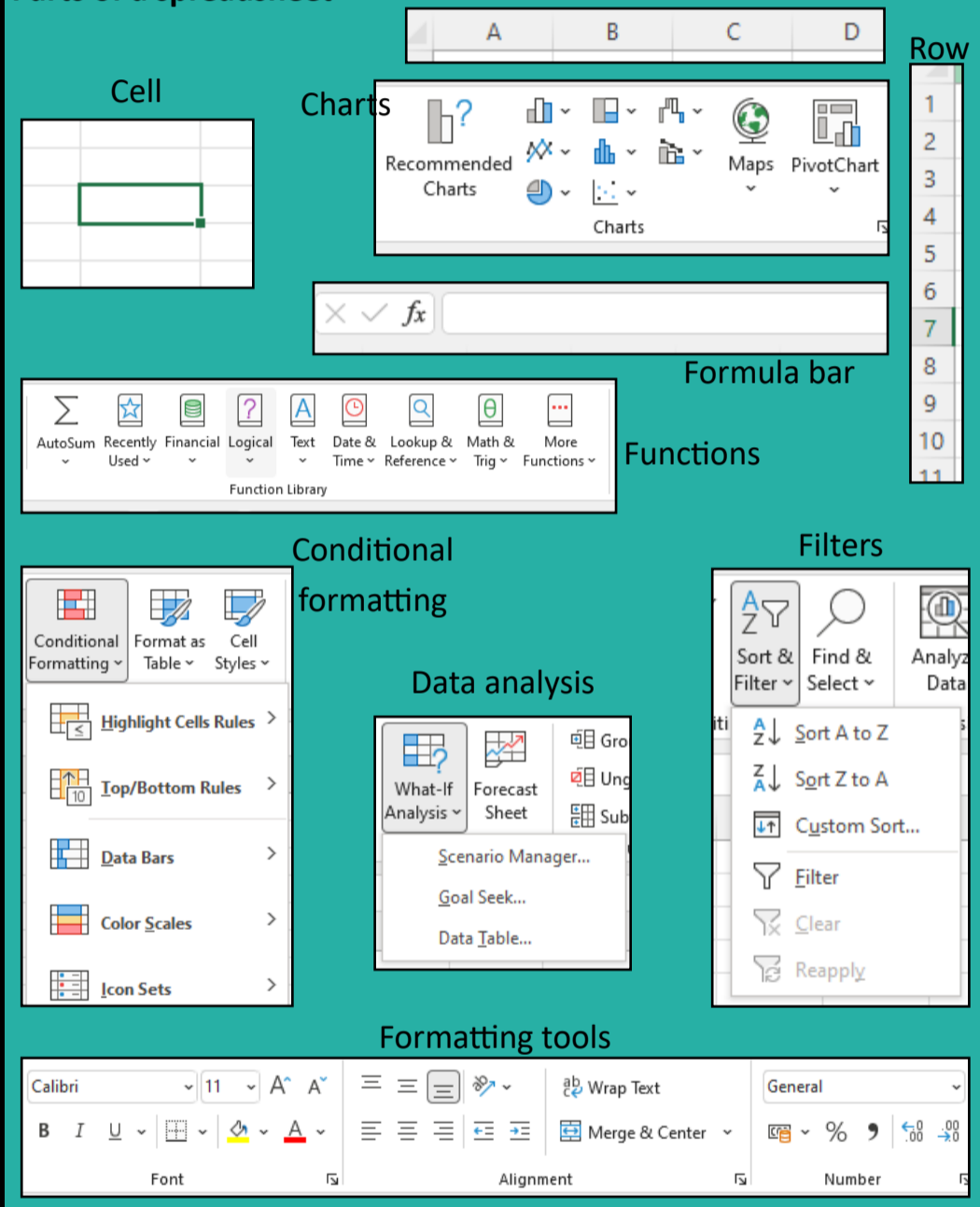domain name   IP address

Modelling data
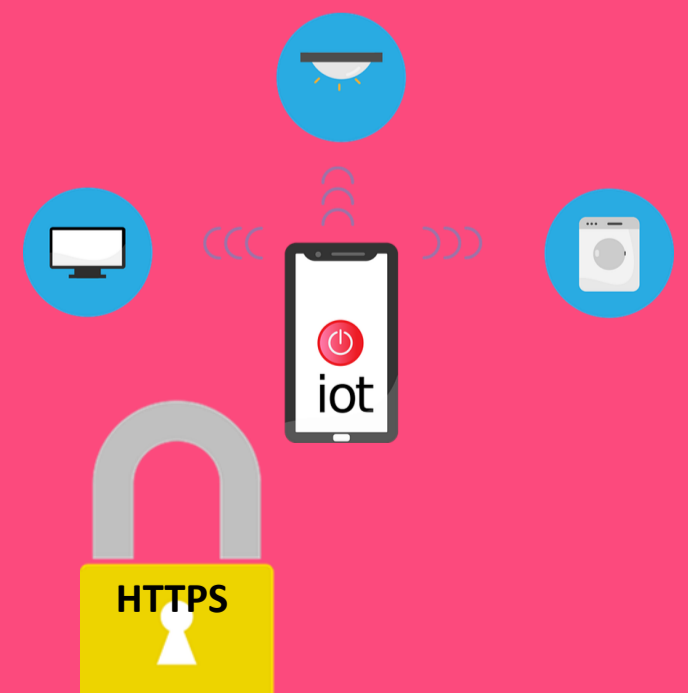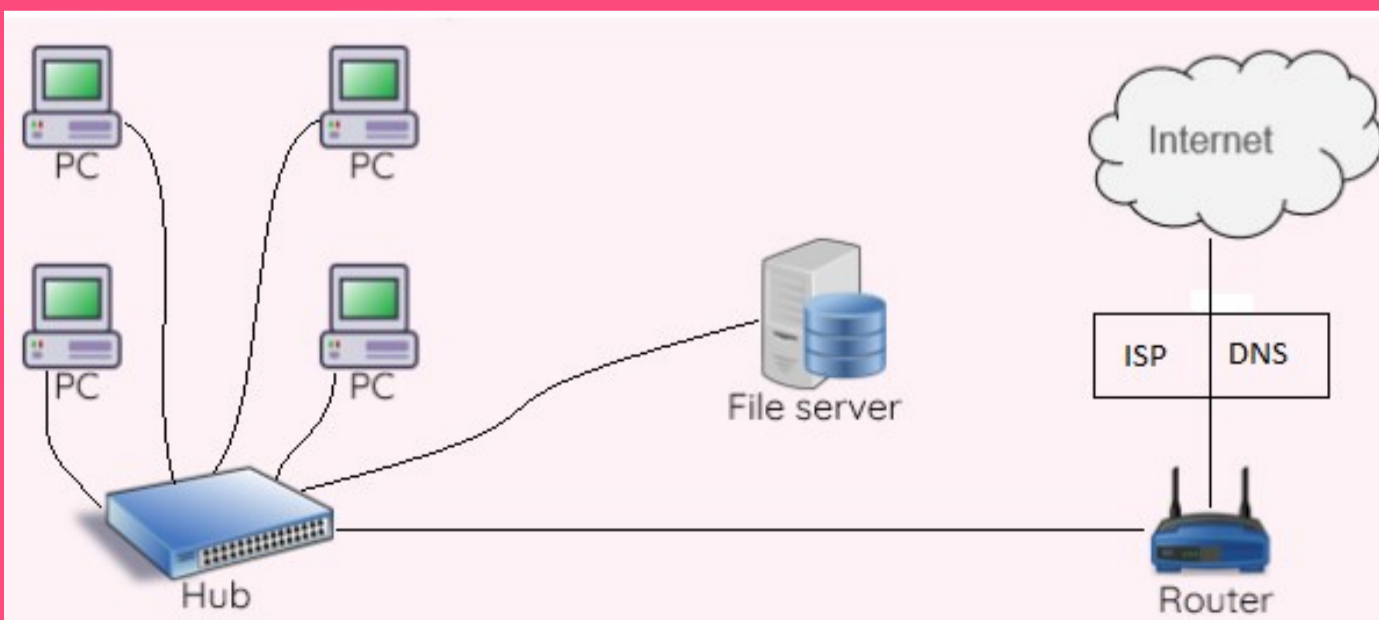
What do I need to know?

- What a spreadsheet is
- Different parts of a spreadsheets
- How to use formula and functions
- How to use charts
- The difference between data and information
- Use of formatting, including conditional formatting
- Business uses for spreadsheets, including what-if analysis

Parts of a spreadsheet

Column

Row

Cell

Charts

Formula bar

Functions

Conditional formatting

Filters

Data analysis

Formatting tools

Uses of spreadsheets

- **Visualise data**
  - Charts based on data
  - Conditional formatting to make data stand out
- **Analyse data**
  - Checking what might happen based on changes to data
  - Making decisions based on data– businesses and organisations
- **Carry out calculations**
  - Financial calculations
  - Planning calculations

Formula and functions

- **Formula**
  - Used to automate calculations
  - Always begin with =
  - Use mathematical operators: + - * /
  - Can be combined
  - Should use cell references

- **Functions**
  - Special type of formula
  - Used for analysis and more complex calculations
  - Common examples include:
    - IF() make a decision on what to display
    - SUM() adds up all of the values in the brackets
    - AVERAGE() calculates an average of all of the values in the brackets
    - MAX() calculates the highest value of all of the values in the brackets
    - MIN() calculates the highest value of all of the values in the brackets
    - COUNTA() counts all cells with a text value
    - COUNTIF() counts all cells that meet a condition

Vocabulary

Data	Facts about objects or people stored together
Information	Facts and figures which have been organised to provide meaning
Cell	An individual location of a piece of data
Cell reference	The coordinates used to identify a cell
Cell range	A selection of two or more cells
Formatting	Change the way something looks
Formula	A spreadsheet calculation for automatically working out the answer to problems
Function	A formula which uses a word as a shortcut to a calculation
Auto fill	A tool to copy formula into different cells
Spreadsheet	A tool for storing data
Primary source	Data you have collected yourself
Secondary source	Data you are using that others collected
Chart	A visualisation of data
Break even	Where costs are the same as income
Revenue	Amount of money received
Total costs	Sum of fixed and variable costs