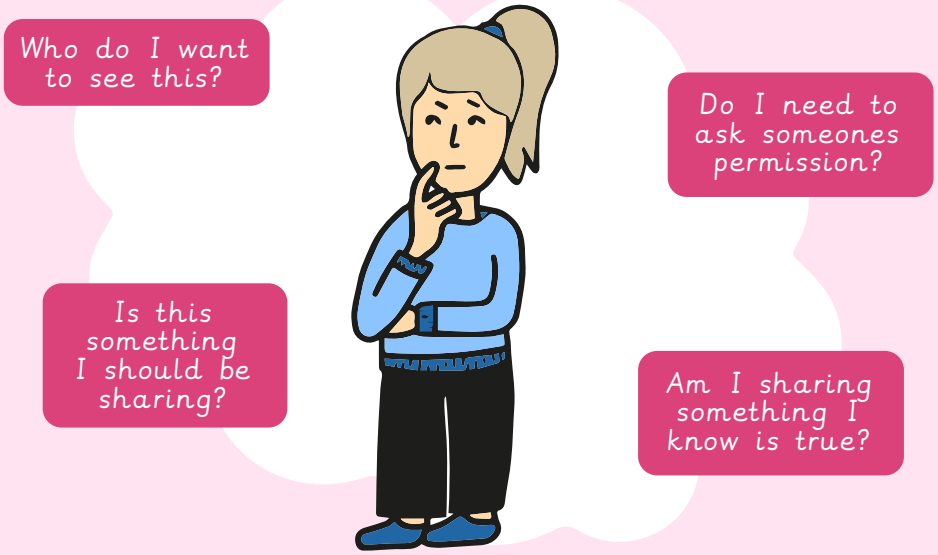
Year 6 - Online safety

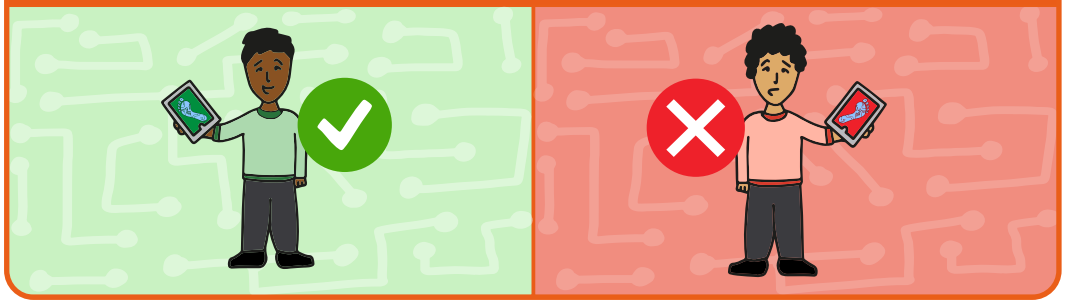
Digital footprint	The content someone shares about themselves online.
Digital personality	The person that companies, organisations and other people see based on their digital footprint.
Online reputation	The judgement of a person from information shared by themselves and others online.
Personality	The qualities and characteristics that make you who you are.
Selfie	A self-portrait that a person takes of themselves using a camera on a digital device or smartphone.
Sharing online	The way people communicate (share and receive information) with each other over a computer network, such as the internet.

Before you share online think:

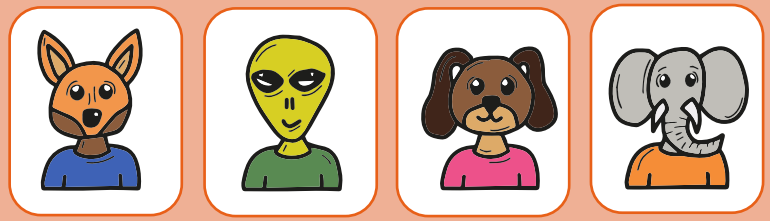


Key facts

Our digital footprint can affect our online reputation in a positive or negative way.



Using avatars, usernames and not sharing personal information are good ways to reduce both your digital footprint and digital personality.



Sometimes things online can make us feel sad, worried, uncomfortable or frightened.

Telling a trusted adult, using privacy settings and blocking/reporting/screengrabbing are some of the ways to get help and make sure any problems online are dealt with in a proper and safe manner.

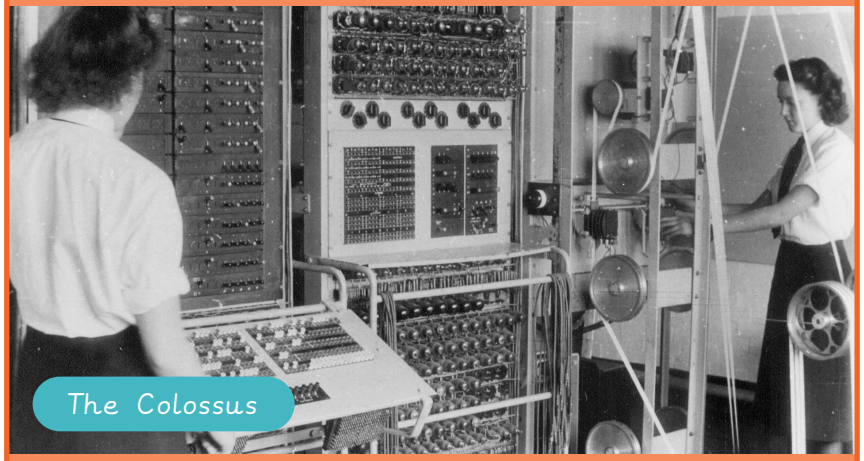
Bletchley Park

Acrostic code	A type of code where the first letter of each word, line, or paragraph when put together spells a message.
Brute force hacking	When someone, known as a hacker, uses different types of methods, such as trial and error, to crack entry into secured information.
Caesar cipher	A way in which every letter is replaced with another letter in a fixed number of places down the alphabet.
Chip and pin system	A payment system to buy something securely where a plastic bank card, such as a debit or credit card, has a chip in it, which the card owner can access by entering a Personal Identification Number (PIN).
Cipher	Information that is written in a secret way, also known as a code.
Date shift cipher	A code derived from the date that tells you how many spaces to move each of the letters in the coded message. For example, the date 1 January 1984 written in date format becomes '01011984'. This tells you to move the first letter of your coded word 0 spaces, the second letter by 1 space etc.
Encrypt	Converting information/data into a secret code or message, to avoid unauthorised access.
Invention	A new device or process that solves a problem.
Nth letter cipher	A type of code where you choose the Nth letter of the text /code again and again until the text ends. Say N=10, then you find every 10th letter in the text/code till you reach the end of it, to reveal a secret message.
Password	A unique combination of letters, numbers or symbols that protects personal information online.
Pigpen cipher	A substitution code, where letters are exchanged for symbols, which are parts of a specific grid.
Technological advancement	When scientific discoveries are made that can lead to the development of new or existing technologies to improve on current processes in life.
Trial and error	To test a method of resolving something, and if it fails, to try another method and continue this process until success has been achieved.

Key facts

Over 10,000 people worked for Bletchley Park. Over 75% of the workers were women.

In 1943, the Colossus computer was constructed by codebreakers during World War II. This enormous machine was the world's first electronic programmable computer. It took hours rather than days and weeks to crack encrypted messages to help win the war.



The Colossus

Enemy messages, which were encrypted, had to be written down on paper. Then they were sent over to Bletchley Park, often by motorbike.

Example:
Date shift cipher:

Visual representation:

Date used to encrypt the message: 1st January 1984

In number format this would read: 01 01 1984

Original message:	h	e	l	l	o
Each letter shifted:	0	1	0	1	1
Encrypted message:	h	f	l	m	p

a b c d e f g h i j k l m n o p q r s t u v w x y z

Big Data 1

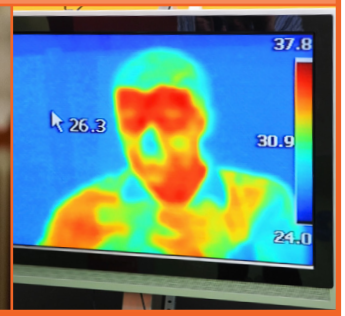
Barcode	A machine-readable code of lines and numbers, printed on an item and scanned to identify the item and information about it.
Boolean	A form of data, which consists of (true) 1s and (false) 0s values.
Brand	The mark or logo that identifies the object as belonging to a particular establishment or person.
Commuter	Someone who travels between places on a frequent basis, for example between work and home.
Contactless	Devices or codes that can be read wirelessly or without the need to touch surface-to-surface, object-to-object.
Data	Information used for a specific purpose or investigation.
Data privacy	The right to keep information private and away from those you do not wish to have access.
Encrypt	To secure information by converting it into a code made up of letters, numbers and symbols which cannot be understood by those that do not have access.
Infrared waves	The red section of the electromagnetic spectrum, which is invisible to the eye but can transmit small amounts of data.
NFC	Near Field Communication. Enables data transmission between 2 devices up to 4cm away. NFC is often used for contactless payments from devices such as smart watches.
QR code	Quick Response code. Is presented in a similar way to a bar code and when scanned, can take you to a specific website or provide information.
Radio waves	Invisible electromagnetic waves that can transmit information via an antenna, which converts the electrical signal it receives into another format, for example, a sound wave.
RFID	Radio Frequency Identification is a device that uses radio signals to check where something or someone is.
Signal	A voltage, current or electromagnetic wave that is either sent or obtained.
Systems or data analyst	A person who manages, sorts, analyses and models data to identify key trends and solve problems within a system.
Transmission	When something is passed or sent to another place.

Key facts

Kapow Primary

Infrared light can be used to:

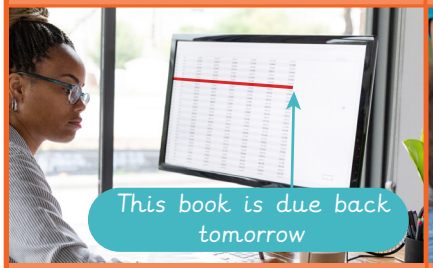
- Transmit small amounts of data, such as a remote control beaming the instruction to turn the TV on and off or change channel.
- Provide warmth from electrical heaters.
- Heat up and cook food.
- Detect heat through thermal imaging cameras.



How do barcodes help libraries track book borrowing?

1. Choose a book to borrow from the library and find the barcode.

2. Take it to the self-scan to check the book out of the library.



3. The system will warn the librarian that your book is almost due back.

4. Return and scan the book to check it back in to the library.

History of computers

Background noise	A (secondary) sound that is there but your focus is not fully on it as you are focussed on another (primary) sound.
Byte	A byte is made up of 8 bits. One bit contains a single binary value - 0 or 1.
Computer	Electronic machines that accept and process information to produce an output, and then store the results.
CPU	Central Processing Units are the brains of a computer and deal with all of the data it receives from input and output devices, as well as programs ran within the computer.
Memory storage	A portable, compact form of digital storage, used to transfer files from one device to another, or keep safe.
Mouse	A handheld hardware input device that can move and select text, icons, files, and folders on your computer.
Operating system OS	The base software needed on a computer for it to manage basic commands, hardware and software and provide a user-friendly interface.
Radio play	Scripts and written text for broadcasting on-air.
RAM	Random Access Memory. A piece of hardware that allows data to be recalled or stored within a computer.
ROM	Read Only Memory. Information stored within ROM can only be read and not edited.
Sound effects	Sounds to enhance an event or bring fantasy aspects to life in a film or other media, for example, the whoosh of a time machine.
Touch screen	Allows the user to use their finger or multiple-finger gestures to control the device via the screen.
Trackpad	An input device commonly found built into laptops. It is used to move the cursor with the touch of your finger, and some allow for multiple finger gestures.

Memory sizes:	Bytes:	Invented:	Abbreviation:
1 kilobyte	1,000	1950	(kb)
1 megabyte	1,000,000	1956	(mb)
1 gigabyte	1,000,000,000	1986	(gb)
1 terabyte	1,000,000,000,000	2007	(tb)

Key facts

Bletchley Park and Y Service locations in Britain:

Bletchley Park worked closely with the 'Y Service' of British wireless intercept stations. The operators here would tune-in to enemy radio messages, in an attempt to gain snippets of information, to send back to Bletchley Park for deciphering.

Bletchley Park would have to stitch together the snippets received from the 'Y Service' to decrypt the complete message.

Introduction to Python

Algorithm	A sequence of instructions which, when followed, solve a problem.
Code (computer)	A set of instructions written in programming language, to tell a computer what to do.
Computer command	To give an order or instruction to a computer, to complete a particular task.
Decompose	To break something down into smaller chunks.
Import (software)	To pull another file into software, to place, edit and manipulate.
Indentation (programming)	In programming (for example Python), indentation is used to define a block of code.
Loop	A repeated sequence of instructions.
Nested loop	A loop, within a loop.
Random numbers	An unpredictable sequence or reveal of numbers.
Remix	Something that has been reworked to produce a varying version of the original.
Script libraries	A series of pre-written, functional codes that can be accessed and imported into a program to save time.
Variable	This could be a number or text, that can change each time the program is run and often in combination with selection to change the end result of the program.

Did you know?

Python is used to teach computers how to think for themselves!

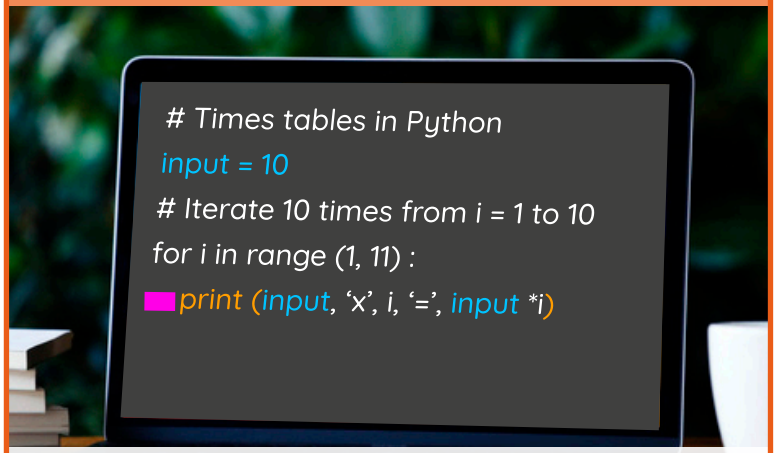
This is sometimes known as artificial intelligence (AI) or machine-learning.

They can learn skills such as speech recognition.

Key facts

Python program to display times tables:

Try this Python code out yourself, and change the variable (input = 'x') to display a different times table chart.



Algorithm to make a cup of tea:

The steps in the algorithm must be followed, if we ignored step one, we would have no hot water!