Computing

Year 8

	E – Safety	
Autumn 1	• Know that sexting is sending sexually suggestive or explicit images, videos or text • Know that storing or sending sexually explicit images of children is a criminal offence • Know that children cannot consent to sexually explicit images being taken, stored or shared • Know the potential dangers of sending sexts • Know the impact of sharing inappropriate content • Know that grooming is where a child is manipulated into a sexual relationship by an adult • Know the key signs of grooming • Know that hacking is any unauthorised access to a computer or online account • Know a range of reasons that people hack (greed, curiosity, infamy, revenge, politics) • Know that biometric authentication uses unique biological characteristics to verify a user's identity • Know that multifactor authentication uses additional processes to prove a user is who they claim to be • Know that CAPTCHAs are used to establish that a user is a human • Know that social engineering is when criminals use a range of techniques to persuade or trick victims into disclosing sensitive information providing money • Know that phishing is when criminals use messages or emails to persuade victims to provide sensitive information or money • Know that shouldering is when criminals watch as victims enter sensitive information into a computing device • Know that blagging is when criminals invent stories or scenarios to convince victims to provide sensitive information or money	**Key Vocabulary** Sext Grooming Hacking Biometric Multifactor authentication CAPTCHA Social Engineering Phishing Shouldering Blagging

Programming using Python Turtle

Autumn 1	• Know that programs are written in the editing window and executed in the shell • Know that methods are commands in Python • Know the function of basic turtle methods (Turtle, forward, right, left) • Know that a parameter is a value that determines how a method executes • Know that syntax is the structure, spelling or grammar in a line of code • Know the function of intermediate turtle methods (penup, pendown, colour, fillcolour) • Know the function of advanced turtle methods (speed, begin fill, circle)	**Key Vocabulary** Editing window Shell Method Parameter Syntax

Programming using Python Turtle

Autumn 2	• Know that variables can store values • Know that lists can store multiple values • Know that lists are iterable • Know that a subroutine is block of code that can be called throughout a program	**Key Vocabulary** For Iteration Variable List Subroutine

Digital Graphic Editing using Photoshop

Spring 1

- Know that bitmap images are made of tiny squares called pixels
- Know that pixels can only contain one colour
- Know that the higher the number of pixels, the more detailed an image can be
- Know that elements are stored on layers that can be moved forward and backward
- Know that properties are the qualities or characteristics of a tool or element (e.g. colour, transparency)
- Know basic graphic design principles (white space, use of colour, balance, alignment and contrast)

Key Vocabulary

Brand
Pixel
Bitmap
Resolution
Layers
Properties
Import
Filters

Data Representation

Spring 2

- Know that bits are represented by 0 and 1
- Know that binary numbers are ordered lists of bits
- Know that denary numbers can be represented using binary
- Know that an overflow can occur when adding binary numbers together
- Know that text can be represented using binary
- Know that there are 2 common character sets - ASCII and Unicode
- Know the features of ASCII and Unicode (number of characters, types of characters, bit size of characters)
- Know that graphics (bitmaps) can be represented using binary
- Know that colour depth is the number of bits used to represent each pixel
- Know that sound can be represented using binary
- Know that an analogue sound can be represented by a sound wave graph

Key Vocabulary

Digital
Binary
Bits
Denary (Decimal)
Character sets
ASCII
Unicode
Characters Emojis
Bitmaps
Pixel
Colour Depth
Analogue

Networks

Summer 1

- Know that a network is 2 or more computing devices connected together to share data.
- Know that a hub connects individual devices together in a network
- Know that a router connects an individual network to the internet
- Know that the devices connected to a network are nodes or clients
- Know that a server stores all the files on the network and that these can be accessed by any node
- Know the advantages of using a network
- Know the disadvantages of using a network
- Know that devices can be connected together using ethernet and fibre optic cables
- Know the advantages of using a wired network
- Know that devices can be connected together wirelessly using Wi-Fi, Bluetooth and Mobile networks (4g, 5g)
- Know the advantages of using a wireless network
- Know that a topology is the layout of connections on a network
- Know the features of a bus topology
- Know the advantages and disadvantages of a bus topology
- Know the features of a star topology
- Know the advantages and disadvantages of a star topology
- Know what the Internet is
- Know that the difference between the Internet and the World Wide Web
- Know how data is sent across networks in packets

Key Vocabulary

Network
Hub
Router
Node
Server
Hacking
Malware
Ethernet
Fibre optic
Transmit
WIFI
Bluetooth
Topology
Internet
Website
Data packet
IP address
ISP
DNS

Logic Gates

Summer 2	• Know that hardware is built using increasingly complex logic circuits • Know the three basic logical gates (AND, OR, NOT) • Know the logic gates/ circuits have real life applications • Know that truth tables record all possible combinations of inputs and outputs for a circuit	**Key Vocabulary** Circuits Logic Gates Truth Table

Algorithms using flowcharts

Summer 2	• Know that flow charts can represent algorithms • Know the symbols that are used to draw flow charts (inputs, outputs, processes, selection, subroutine) • Know that alternative algorithms can be used to solve the same problem • Know the mechanics of the linear search algorithm • Know the mechanics of the binary search algorithm	**Key Vocabulary** Flowcharts Mimic