Computing Milestones

(E-Safety Milestones in Separate document)

Milestone 1 (Years 1 & 2)

Algorithms

1A

I can explain what a given command will do

I can act out a given word

I can combine forwards and backwards commands to make a sequence

I can combine four direction commands to make sequences

I can find more than one solution to a problem

1B

I can describe a series of instructions as a sequence

I can explain what happens when we change the order of instructions

I can use logical reasoning to predict the outcome of a program (series of commands)

I can explain that programming projects can have code and artwork

I can design an algorithm

I can create and debug a program that I have written

I can predict the outcomes of a set of instructions

I can predict what the outcome of a simple program will be

Creating programs: animation

1A

I can choose a command for a given purpose

I can show that a series of commands can be joined together I can identify the effect of changing a value

I can explain that each sprite has its own instructions

I can design the parts of a project

I can use my own algorithm to create a program.

1B

I can explain that a sequence of commands has a start

I can explain that a sequence of commands has an outcome

I can create a program using a given design

I can change a given design

I can create a program using my own design

I can decide how my project can be improved

Digital painting / photography

1A

I can describe what different freehand tools do

I can use the shape tool and the line tools

I can make careful choices when painting a digital picture

I can explain why I chose the tools I used

I can use a computer on my own to paint a picture

I can compare painting a picture on a computer and on paper

1B

I know what devices can be used to take photographs

I can use a digital device to take a photograph

I can describe what makes a good photograph

I can decide how photographs can be improved

I can use tools to change an image

I can recognise that images can be changed

Making music

Digital writing

1A

I can use a computer to write

I can add and remove text on a computer

I can identify that the look of text can be changed on a computer I can make careful choices when changing text

I can explain why I used the tools that I chose

I can compare writing on a computer with writing on paper

1B (**Pictograms)**

I can recognise that we can count and compare objects using tally charts I can recognise that objects can be represented as pictures

I can create a pictogram

I can select objects by attribute and make comparisons

I can recognise that people can be described by attributes

I can explain that we can present information using a computer

Grouping data

1A

I can label objects

I can identify that objects can be counted

I can describe objects in different ways

I can count objects with the same properties

I can compare groups of objects

I can answer questions about groups of objects

Technology around us

I can identify technology

I can identify a computer and its main parts

I can use a mouse in different ways

I can use a keyboard to type

I can use the keyboard to edit text

I can create rules for using technology responsibly

Technology around us

1B

I can recognise the uses and features of information technology

I can identify information technology in the home

I can identify information technology beyond school

I can explain how information technology benefits us

I can show how to use information technology safely

I can recognise that choices are made when using information technology

Computer science

1A

Instruction, organise, sequence, store program, algorithm, create

1B

algorithm, blocks, command, debug, execute, manipulate, organise, scripted, sequence, software, sprite, store, predict, program, retrieve, reverse, engineer

Information technology

1A

digital content , digital devices, network

1B

Data, digital content, digital devices, network

Digital literacy

1A

Personal, information, World Wide Web

1B

Password, personal,

Milestone 2 (Year 3 & 4)

Create programs /Desktop publishing

2A

I can recognise how text and images convey information\

I can recognise that text and layout can be edited

I can choose appropriate page settings

I can add content to a desktop publishing publication

I can consider how different layouts can suit different purposes

I can consider the benefits of desktop publishing

Develop programs

2B

Stop-frame animation

I can explain that animation is a sequence of drawings or photographs

I can relate animated movement with a sequence of images I can plan an animation

I can identify the need to work consistently and carefully

I can review and improve an animation

I can evaluate the impact of adding other media to an animation

Sequence music

2A

I can explore a new programming environment

I can identify that each sprite is controlled by the commands I choose

I can explain that a program has a start

I can recognize that a sequence of commands can have an order

I can change the appearance of my project

I can create a project from a task description

I can discern when it is best to use technology and where it adds little or no value

I can justify when I am going to use technology to help me with a task

2B

Audio editing

I can identify that sound can be digitally recorded

I can use a digital device to record sound

I can explain that a digital recording is stored as a file

I can explain that audio can be changed through editing

I can show that different types of audio can be combined and played together

I can evaluate editing choices made

2A

Branching databases

I can create questions with yes/no answers

I can identify the object attributes needed to collect relevant data

I can create a branching database

I can identify objects using a branching database

I can compare the information shown in a pictogram with a branching database

2A

Events and actions

I can explain how a sprite moves in an existing project

I can create a program to move a sprite in four directions I can adapt a program to a new context

I can develop my program by adding features

I can identify and fix bugs in a program

I can design and create a maze-based challenge

2A

Search engines

I can search for information on the web in different ways

I can find relevant information by browsing a menu

I can search for an image, then copy and paste it into a document

I can use ‘save picture as’ to save an image

I can copy and paste text into a document

I can begin to use note making skills to decide what text to copy

2B

I can use a search engine to find a specific website

I can use tabbed browsing to open two or more web pages at the same time

I can open a link in a new window

I can open a document / PDF and view it

Networks

2A

I can explain how digital devices function

I can identify input and output devices

I can recognise how digital devices can change the way we work

I can explain how a computer network can be used to share information

I can explore how digital devices can be connected

I can recognise the physical components of a network

2B **Networks**

I can describe how networks physically connect to other networks

I can recognise how networked devices make up the internet

I can outline how websites can be shared via the World Wide Web

I can describe how content can be added and accessed on the World Wide Web

I recognise how the content of the WWW is created by people

I can evaluate the consequences of unreliable content

2B

Photo editing

I can explain that digital images can be changed

I can change the composition of an image

I can describe how images can be changed for different uses

I can make good choices when selecting different tools

I can use animation in a presentation

I can recognise that not all images are real

I can evaluate how changes can improve an image

2B

Data logging

I can explain that data gathered over time can be used to answer questions I can use a digital device to collect data automatically

I can explain that a data logger collects 'data points' from sensors over time I can use data collected over a long duration to find information CHALLENGE: I can discuss the information gathered and its reliability

I can identify the data needed to answer questions I can use collected data to answer questions

Computer science

2A

Algorithm, command debug, input / output, loops, organise, program, repetition, scripted, sequence, simulation, sprite, software, store, program, physical, system, repetition, retrieve, reverse

2B

Algorithm, block, language, command, debug, encrypted, execute, HTTP, input, output, loops, manipulate, organise, program, repetition, packets of data, program, physical system, repetition, retrieve, reverse, engineer, URL

Information technology

2A

data, digital content, digital devices, network, safe search, mode, search, technologies, software

2B

Cached, collecting data, digital content, digital devices, network, safe search, mode, search, technologies, server, software

Digital literacy

2A

Command, evaluating, digital content, password personal, information, private, world wide web

2B

acceptable/ unacceptable behaviours, command, ,digital content, password, personal information, private, world wide web

Milestone 3 (Years 5 & 6)

3A

Create programs /Selection in physical computing

I can control a simple circuit connected to a computer

I can write a program that includes count-controlled loops

I can explain that a loop can stop when a condition is met, e.g. number of times

I can conclude that a loop can be used to repeatedly check whether a condition has been met

I can design a physical project that includes selection

I can create a controllable system that includes selection

3B

I can define a ‘variable’ as something that is changeable I can explain why a variable is used in a program

I can choose how to improve a game by using variables

I can design a project that builds on a given example

I can use my design to create a project

I can evaluate my project

Develop games /Sensing

I can create a program to run on a controllable device I can explain that selection can control the flow of a program

I can update a variable with a user input

I can use a conditional statement to compare a variable to a value

I can design a project that uses inputs and outputs on a controllable device

I can develop a program to use inputs and outputs on a controllable device

I can detect errors in a program and correct them

I can check and refine a series of instructions

3A

Develop programs /Selection in quizzes

I can explain how selection is used in computer programs

I can relate that a conditional statement connects a condition to an outcome

I can create a program which uses selection

I can explain how selection directs the flow of a program

I can evaluate my program

I can analyse and evaluate information reaching a conclusion that helps with future developments

3A

Video editing

I can recognise video as moving pictures, which can include audio

I can save an image document as a gif or jpeg file format

I can identify digital devices that can record video

I can capture video using a digital device

I can recognise the features of an effective video

I can identify that video can be improved through reshooting and editing

I can consider the impact of the choices made when making and sharing a video

3A

Vector drawing

I can identify that drawing tools can be used to produce different outcomes

I can create a vector drawing by combining shapes

I can use tools to achieve a desired effect

I can recognise that vector drawings consist of layers

I can group objects to make them easier to work with I can evaluate my vector drawing

3A

Flat-file databases

I can use a form to record information

I can compare paper and computer-based databases

I can outline how grouping and then sorting data allows us to answer questions

I can explain that tools can be used to select specific data

I can explain that computer programs can be used to compare data visually

I can apply my knowledge of a database to ask and answer real-world questions

3A

Search engines

3A

I can use a search engine using keyword searches

I can compare the results of different searches

CHALLENGE: I can identify and justify why a result may not be as I have expected

I can download a document and save it to the computer

I can evaluate information

3B

I can identify how to use a search engine

I can describe how search engines select results

I can describe how search engines select results

I can explain how search results are ranked

I can recognise why the order of results is important, and to whom

Networks /Sharing information

3A

I can explain that computers can be connected together to form systems

I can recognise the role of computer systems in our lives

I can recognise how information is transferred over the internet

I can explain how sharing information online lets people in different places work together

I can contribute to a shared project online

I can evaluate different ways of working together online

3B

I can recognise how we communicate using technology

I can evaluate different methods of online communication

3B

Web page creation

I can review an existing website and consider its structure

I can plan the features of a web page

I can consider the ownership and use of images (copyright)

I can recognise the need to preview pages

I can outline the need for a navigation path

I can recognise the implications of linking to content owned by other people

3B

3D modelling

I can use a computer to create and manipulate three-dimensional (3D) digital objects

I can compare working digitally with 2D and 3D graphics

I can construct a digital 3D model of a physical object

I can identify that physical objects can be broken down into a collection of 3D shapes

I can design a digital model by combining 3D objects

I can develop and improve a digital 3D model

3B

Spreadsheets

I can identify questions which can be answered using data

I can explain that objects can be described using data

I can explain that formula can be used to produce calculated data

I can apply formulas to data, including duplicating

I can create a spreadsheet to plan an event

I can choose suitable ways to present data

Computer science

3A

Algorithm, block language, command, control, collaboration, debug, decomposition, encrypted, execute, HTTP, input, output, loops, manipulate, organise, program, repetition, scripted, selection, sequence, simulation, sprite, software, store, packets of data, program, physical system, repetition, retrieve, reverse, engineer, URL

3B

Algorithm, block language, command control, collaboration, debug, decomposition, encrypted, execute, hardware, HTTP, input, IP address, output, loops, manipulate, organise, program, repetition, scripted, selection, sequence, simulation, sprite, software, store, packets of data, program, physical system, repetition, retrieve, reverse, engineer, URL, variables

Information technology

3A

Cached, collecting data, digital content, digital devices, evaluating, network, safe search, mode, search, technologies, server, software

3B

Appropriate, data tool, digital content, digital devices, evaluate, generate, interpret, present, process, store

Digital literacy

3A

acceptable/ unacceptable behaviours, command, encryption, evaluating digital content, password, personal information, private, world wide web

3B

acceptable/ unacceptable behaviours, command, detect, encryption, evaluating digital content password personal information private responsibility