



| Sequenced | 8.1 Data Representation | 8.2 Memory vs Storage | 8.3 Programming with python | 8.4 Creating animations |
|-------------------------|---|--|---|---|
| Key Knowledge | <p>To know:</p> <ul style="list-style-type: none"> How computers store and represent information The length of a representation as the number of symbols What binary digits (bits) are, in terms of familiar symbols such as digits or letters How to measure the size or length of a sequence of bits as the number of binary digits that it contains How computers represent numbers using binary That both decimal and binary can be useful The relevance of key file sizes | <p>To know:</p> <ul style="list-style-type: none"> What computer memory is What computer storage is What hardware is What software relates to What the two main parts of memory are What the features of RAM are What the features of ROM are The different storage technologies of optical, magnetic and solid state What the main units of data for computing are How logic gates affect the flow of data How different gates operate Why truth tables are used with logic gates | <p>To know:</p> <ul style="list-style-type: none"> What algorithms and programs are That a program written in a programming language needs to be translated Common syntax errors Simple programming arithmetic expressions How to receive input from the keyboard and convert it to a numerical value What selection (if, else statements) is How to generate and use random integers How to use multi-branch selection (if, elif, else statements) How iteration (while statements) controls the flow of program execution How to use variables as counters | <p>To know:</p> <ul style="list-style-type: none"> How to add, delete, and move objects, scale and rotate How to use a material to add colour to objects How to add, move, and delete keyframes to make basic animations How to play, pause, and move through the animation How to join multiple objects together using parenting How to use edit mode and extrude How to use loop cut and face editing How to apply different colours to different parts How to use the knife tool How to use subdivision How to add and edit set lighting How to set up the camera How to compare different render modes |
| Key Skills | <p>To be able to:</p> <ul style="list-style-type: none"> Provide examples of how different representations are appropriate for different tasks Provide examples of how symbols are carried on physical media Describe how natural numbers are represented as sequences of binary digits Convert a decimal number to binary and vice versa Convert between key file sizes | <p>To be able to:</p> <ul style="list-style-type: none"> Describe computer memory Describe computer storage Describe hardware Describe software List the two main parts of memory Evaluate the features of RAM Evaluate the features of ROM List the main units of data for computing Describe how logic gates affect the flow of data Describe how a NOT gate operates Describe how an OR gate operates Describe how an AND gate operates Explain why truth tables are used with logic gates | <p>To be able to:</p> <ul style="list-style-type: none"> Describe what algorithms and programs are Write simple Python programs that display messages, assign values to variables, and receive keyboard input Locate and correct common syntax errors Use simple arithmetic expressions in assignment statements to calculate values Use binary selection (if, else statements) Generate and use random integers Use multi-branch selection (if, elif, else statements) to control the flow of program execution Use iteration (while loops) Use variables as counters in iterative programs | <p>To be able to:</p> <ul style="list-style-type: none"> Add, delete, move objects, scale and rotate objects Add, move, and delete keyframes Play, pause, and move through the animation using the timeline Create useful names for objects Join multiple objects together using parenting Use edit mode and extrude Use loop cut and face editing Apply different colours to different parts of the same model Use proportional editing Use the knife tool Use subdivision Add and edit set lighting Set up the camera Compare different render modes |
| | Tier 3 key vocabulary | Tier 3 key vocabulary | Tier 3 key vocabulary | Tier 3 key vocabulary |
| Subject specific | Binary, bit, nibble, byte, megabyte, gigabyte, terabyte, representations, symbols, storage, communication, processing, decimal, file size | Hardware, software, computer system, memory storage, RAM, ROM, optical, magnetic, solid state, bit, nibble, byte, kilobyte, megabyte, gigabyte, terabyte, petabyte | Syntax, variable, data type, integers, string, Boolean (true/false), list, algorithm, program, programming language, input, output, variables, assignment, selection, conditions | Object, sphere, cone, add, move, rotate, scale, colour (material) keyframe, stop motion, animation, location, rotate, timeline, parenting, edit mode, scale, extrude, loop cut, face, edge, vertex, proportional editing, knife tool, organic, subdivision, render, lights, camera, focus, ray tracing |