KS3 Computing Curriculum Coverage: 2023 – 2024

Year 9

Sequenced	9.1 Data representation with images and sound	9.2 Further programming with python	9.3 Creating animations	9.4 Data science
Key Knowledge	To know: • How images are composed of individual elements • That the colour of each picture element is represented using a sequence of binary digits • Key terms 'pixels', 'resolution', and 'colour depth' • An image can be represented as a sequence of bits • Colour can be represented as a mixture of RGB • The representation size of a digital image • The trade-off between representation size and perceived quality for digital images • How the manipulation of digital images amounts to arithmetic operations on their digital representation • The function of microphones and speakers • Key terms such as 'sample', 'sampling frequency/rate', 'sample size' • How sounds are represented as sequences of bits	To know: • How to write programs that display messages, receive keyboard input, and use simple arithmetic expressions in assignment statements • How to use selection (if-elif-else statements) to control the flow of program execution • Common syntax errors • How to create lists and access individual list items • Common operations on lists or individual items • How iteration is used (while statements) to control the flow of program execution • How iteration (for loops) is used to iterate over lists and strings • How variables keep track of counts and sums	To know: • 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	To know: • What data science is • How visualising data can help us identify patterns and trends • Recognise examples of where large data sets are used in daily life • The terms 'correlation' and 'outliers' in relation to data trends • The steps of the investigative cycle • Describe the need for data cleansing
Key Skills	To be able to: • Describe how digital images are composed of individual elements • Recall that the colour of each picture element is represented using a sequence of binary digits • Define terms: 'pixels', 'resolution', 'colour depth' • Describe how an image can be represented as a sequence of bits • Describe how colour can be represented as RGB • Compute the representation size of an image • Describe the trade-off between representation size and perceived quality for digital images • Perform basic image editing tasks • Explain the function of microphones and speakers • Define key terms such as 'sample', 'sampling frequency/rate' and 'sample size'	To be able to: • Write programs that display messages, receive keyboard input, and use simple arithmetic expressions in assignment statements • Use selection (if-elif-else statements) to control the flow of program execution • Locate and correct common syntax errors • Create lists and access individual list items • Perform common operations on lists or individual items • Use iteration (while statements) to control the flow of program execution • Use iteration (for loops) to iterate over lists and strings • Use variables to keep track of counts and sums	To be able to: • 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	To be able to: • Use software to visualise data sets and look for patterns or trends • Select criteria and use data sets to investigate predictions • Solve a problem by implementing steps of the investigative cycle on a data set • Evaluate findings to support arguments for or against a prediction • Identify data needed to answer a question • Apply data cleansing techniques to a data set • Analyse visualisation to identify patterns, trends and outliers • Draw conclusions and report findings
	Tier 3 key vocabulary	**Tier 3 key vocabulary**	**Tier 3 key vocabulary**	**Tier 3 key vocabulary**
Subject specific	Digital image, binary image representation, picture elements, pixels, resolution, colour depth, bitmap, RGB colour, representation size, compression, Sound, waves, microphone, speaker, analogue, digital, sampling rate, sample size	Input, output, variables, assignment, expressions, selection, Boolean/logical expression (condition), list, index, list item, Iteration, while, for, indentation	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	Data science, visualisation, insight, infographic, Data, prediction, criteria, outliers, correlation, PPDAC, investigative cycle, data capture, data source, data cleansing, conclusion