2. Year 10 Curriculum Plan - TEMPLATE

YEAR 10	HALF TERM 2	SUBJECT Computer Science	LEARNING

TOPIC	LEARNING OBJECTIVES	KEY VOCABULARY	LEARNING SEQUENCE	LINKED LEARNING	HOME LEARNING
.			In pupil friendly language. Headings in pupils' books should match text here.	Links to: • Year 6 work (for Year 7 plans) • Other topics. • Other subjects. (concise and most important links only).	
SLR 1.2, part 1 – End of topic test					
SLR 1.2, part 1 – Action					
SLR 1.2 – Lesson 6, Units	• Understand what is meant by the terms bit, nibble, byte, kilobyte, megabyte, gigabyte, terabyte and petabyte. • Know how to represent the capacity of data storage using these units, and be able to convert between them. • Understand that data needs to be converted into a binary format to be processed by a computer. KEY QUESTION: Why is data stored in binary?	**Slides 30-60** Bit, Nibble, Byte, Kilobyte, Megabyte, Gigabyte, Terabyte, Petabyte, Denary numbers, Binary numbers, Binary arithmetic, Overflow, Hexadecimal, Binary shifts, Character set, ASCII, Unicode, Pixels, Metadata, Colour depth, Resolution, Image quality, Image file size, Sample rate, Sample duration, Sample bit depth, Playback quality, Sound file size, Compression, Lossy		SLR 1.2 Workbook (part 2) Complete slides 2-6 Programming	1.2 Data capacity and calculation of data capacity requirements

		compression, Lossless compression			
SLR 1.2 – Lesson 7, Data capacity and calculation of requirements	• Know what data capacity means. • Understand how to calculate data capacity requirements. • Understand how to program. KEY QUESTION: How do you calculate data capacity?			SLR 1.2 Workbook (part 2) Complete slide 7 Programming	1.2 Converting between denary and 8 bit binary 1.2 Adding two 8 bit binary integers
SLR 1.2 – Lesson 8, Binary conversion and addition	• Know how to convert positive denary whole numbers (0–255) into 8 bit binary numbers and vice versa. • Know how to add two 8 bit binary integers. • Understand how overflow errors occur. KEY QUESTION: What can happen to the most significant bit when you add two binary numbers together?			SLR 1.2 Workbook (part 2) Complete slides 8 & 9 Programming	1.2 Binary shifts 1.2 Converting between denary and 2 digit hexadecimal
SLR 1.2 – Lesson 9, Binary shift and hexadecimal	• Know how to perform a left and right binary shift. • Understand what binary shift achieves. • Know how to convert positive denary whole numbers (0–255) into 2 digit hexadecimal numbers and vice versa. • Know how to convert from binary to hexadecimal equivalents and vice versa. KEY QUESTION: What actions can an ALU perform? What is the relationship between denary, binary and hexadecimal?			SLR 1.2 Workbook (part 2) Complete slides 10-13 Programming	None for this lesson
SLR 1.2 – Lesson 10, Catch-up lesson	• Complete any outstanding work to this point. KEY QUESTION: How do computers store and use numbers?			SLR 1.2 Workbook (part 2) Finish slides 10-13 Programming	1.2 Representing characters and character sets

SLR 1.2 – Lesson 11, Character sets	• Understand that all data must be represented in binary numbers, including text. • Know what is meant by the term "character set". • Understand the relationship between the number of bits in the character set and the number of characters that can be represented. • Know two common character sets: ASCII and Unicode. KEY QUESTION: How does a computer store characters and what are the implications for the number of bits used?			SLR 1.2 Workbook (part 2) Complete slides 14-16 Programming	1.2 Representing images
SLR 1.2 – Lesson 12, Bitmaps	• Understand how an image is represented as a series of pixels represented in binary. • Know what is meant by the term 'metadata' and be able to give examples. • Understand the effect of colour depth and resolution on the size of an image file. KEY QUESTION: How does a computer store graphics and what are the implications for image size and resolution?			SLR 1.2 Workbook (part 2) Complete slides 17-19 Programming	1.2 Representing sound
SLR 1.2 – Lesson 13, Sound	• Understand how sound can be sampled and stored in digital form. • Understand how sampling rates, duration and bit depth affect the size of a sound file and the quality of its playback. KEY QUESTION: How do computers store sound and what are the implications for sample rate, duration and bit depth?			SLR 1.2 Workbook (part 2) Complete slides 20-22 Programming	1.2 Compression

SLR 1.2 – Lesson 14, Compression	• Know why data is often compressed for transfer and storage. • Understand the difference between lossy and lossless compression. • Know why some types of data are only suitable for one type of compression. KEY QUESTION: Where is compression used and why?			SLR 1.2 Workbook (part 2) Complete slides 23-25 Programming	None for this lesson
SLR 1.2 – Lesson 15, Compression	• Know why data is often compressed for transfer and storage. • Understand the difference between lossy and lossless compression. • Know why some types of data are only suitable for one type of compression. KEY QUESTION: What are the effects on a file for each type of compression?			SLR 1.2 Workbook (part 2) Complete slides 26 & 27 Programming	Review / Revise what you have learned in this unit
Dedicated independent programming	Gain experience in practical programming by using our wide variety of programming resources (Programming theory support PowerPoint, Learning tasks objectives 01-11, Problems to support the learning tasks, Programming progress checklist)			Progress with individual programming challenges	None for this lesson
Dedicated independent programming	Gain experience in practical programming by using our wide variety of programming resources (Programming theory support PowerPoint, Learning tasks objectives 01-11, Problems to support the learning tasks, Programming progress checklist)			Progress with individual programming challenges	None for this lesson
Dedicated independent programming	Gain experience in practical programming by using our wide variety of programming resources			Progress with individual programming challenges	None for this lesson

	(Programming theory support PowerPoint, Learning tasks objectives 01-11, Problems to support the learning tasks, Programming progress checklist)				
SLR 1.2, part 2 – End of topic test	End of topic test			Test - SLR 1.2, part 2	None for this lesson
SLR 1.2, part 2 – Action	Action / Response lessons			Chance for students to respond to feedback, improve workbooks, correct misunderstandings	None for this lesson
Dedicated independent programming	Gain experience in practical programming by using our wide variety of programming resources (Programming theory support PowerPoint, Learning tasks objectives 01-11, Problems to support the learning tasks, Programming progress checklist)			Progress with individual programming challenges	None for this lesson
Dedicated independent programming	Gain experience in practical programming by using our wide variety of programming resources (Programming theory support PowerPoint, Learning tasks objectives 01-11, Problems to support the learning tasks, Programming progress checklist)			Progress with individual programming challenges	None for this lesson
Dedicated independent programming	Gain experience in practical programming by using our wide variety of programming resources (Programming theory support PowerPoint, Learning tasks objectives 01-11, Problems to support the learning tasks, Programming progress checklist)			Progress with individual programming challenges	1.3 Types of networks