

## Computing, Year 9, Long Term Plan

Week/ Lesson	Term	Topic	Knowledge	Complex activity: Writing genre:
1	Autumn T1	<b>Importance of data in business success</b>	<ul style="list-style-type: none"> <li>Identify all the key components of a cash flow and where the data comes from</li> <li>Discuss the important of a cash flow to a business and why a business may rely on a cash flow</li> </ul>	
2			<ul style="list-style-type: none"> <li>Understand importance of cash to a business:</li> <li>To pay suppliers, overheads and employees.</li> <li>To prevent business failure (insolvency).</li> <li>Understand the difference between cash and profit.</li> </ul>	
3			<ul style="list-style-type: none"> <li>Be able to Calculate and interpret cash-flow forecasts:</li> <li>Cash inflows / Cash outflows/ Net cash-flow</li> </ul>	
4			<ul style="list-style-type: none"> <li>Understand opening and closing balances</li> </ul>	
5			<ul style="list-style-type: none"> <li>Be able to create a working cash flow document</li> </ul> <p style="color: blue;"><b>*Model Informative text (forecast report)</b></p>	<b>Writing genre: Informative</b>

			<b>Reteach Week</b>	
6			<b>Monthly review</b>  <b>RETRIEVAL ACTIVITY</b> Vocabulary and definitions of business cash flow. Identify issues and effects of cash flow within different business scenarios. Complete a blank cash flow for a given business and assess their current situation.  <b>RECALL ACTIVITY</b> Low stake test on business cash-flow theory.	<b>Complex activity (Homework):</b> Create a report that assesses the situation of a given business(case study provided) and shows a forecast of the business cash-flow.
7			<ul style="list-style-type: none"> <li>Evaluate changes in circumstances that affect cash-flow.</li> </ul>	
8			<b>SUMMATIVE FORMAL ASSESSMENT</b>	
9	Autumn T2	<b>Computer Networks</b>	<ul style="list-style-type: none"> <li>Understand what a network is</li> <li>Understand what advantages and disadvantages networking brings</li> <li>Understand the devices needed to produce a computer network</li> </ul>	
10			<ul style="list-style-type: none"> <li>Understand the difference between a Local Area Network and a Wide Area Network</li> <li>Understand the advantages and disadvantages of LANs and WANs</li> <li>Understand the need for routers and switches and how they work</li> </ul>	
11			<ul style="list-style-type: none"> <li>Understand what the internet actually is</li> </ul>	

			<ul style="list-style-type: none"> <li>Understand how data travels around the internet</li> </ul>	
12			<ul style="list-style-type: none"> <li>Recognise the differences in the different network topologies: Mesh Vs Star</li> <li>Compare Client-server vs peer-to-peer networks</li> </ul> <p><b>*Model persuasive text (presentation)</b></p>	<b>Writing genre: Persuasive</b>
13			<p><b>Monthly review</b></p> <p><b>RETRIEVAL ACTIVITY</b> Recognise and label different types of networks. Fill in a table with advantages/disadvantages of the various types of networks. Link scenarios to best network types, providing reasons. <b>Data in business:</b> How can networks help improve the data flow in a business? Why is this important? What will the effects be?</p> <p><b>RECALL ACTIVITY</b> Low stake test on theory so far in year 9</p>	<b>Complex activity (Homework)::</b>  Create a presentation to a board of directors to convince them to move from a LAN to a WAN network.
14			<p><b>Reteach Week</b></p> <ul style="list-style-type: none"> <li>Understand the need and advantages of network protocols</li> <li>Understand how the various network protocols work</li> </ul>	
15			SUMMATIVE FORMAL ASSESSMENT	
16	Spring T1	<b>Creating &amp; manipulating images for an advert using</b>	<ul style="list-style-type: none"> <li>Demonstrate a thorough understanding of the audience and purpose of digital graphics.</li> </ul>	

		<b>Photoshop (iMedia)</b>	<ul style="list-style-type: none"> <li>Be able to identify good points, bad points and improvements of digital graphics.</li> </ul>	
17			<ul style="list-style-type: none"> <li>Produce clear and detailed visualisation diagrams for the intended final product.</li> </ul>	
18			<ul style="list-style-type: none"> <li>Be able to record and source consistently appropriate sounds from a wide range of sources to create assets for the digital graphics.</li> </ul> <p><b>Model informative text (presentation)</b></p>	
19			<p><b>Monthly review</b></p> <p><b>RETRIEVAL ACTIVITY</b> Vocabulary and definitions related to photo editing software and tools. Decide the best type of planning/design techniques. Identify appropriateness of audience, purpose, layouts and design considerations.</p> <p><b>Computer Networks:</b> Design and create a graphical knowledge organiser on Different types of networks with advantages and disadvantages, using the photo editing techniques learned and acquired in the current unit.</p> <p><b>RECALL ACTIVITY</b> Low stake test on theory so far in year 9</p>	<b>Writing genre: Informative</b>
20			<ul style="list-style-type: none"> <li>Be able to use a variety of tools within Photoshop to create a digital graphic for a purpose.</li> </ul>	<b>Complex activity (Homework):</b> Look at 3 different games posters that already exist. Decide which one you like the best and

			<ul style="list-style-type: none"> <li>● Be able to create an evidence sheet to show the skills you have used in Photoshop.</li> <li>● Understand how to assess strengths, weaknesses and identify improvements of your digital graphic.</li> </ul> <p><b>Reteach Week</b></p>	give the reasons in a formal presentation to a client.
21	Spring T2	<b>Algorithm: flowcharts, pseudocode, sorting and searching</b>	<ul style="list-style-type: none"> <li>● Understand and apply computational thinking methods including abstraction, decomposition and algorithmic thinking</li> <li>● Explain what an algorithm is</li> <li>● Explain what is meant by top-down and bottom-up problem solving</li> </ul>	
22			<ul style="list-style-type: none"> <li>● Explain what is meant by decomposition and abstraction and use them to solve problems</li> </ul>	
23			<ul style="list-style-type: none"> <li>● Explain what an algorithm is</li> <li>● Produce algorithms using flow diagrams</li> <li>● Create algorithms to solve problems that you have analysed</li> </ul>	
24			<ul style="list-style-type: none"> <li>● Understand what pseudocode is and produce algorithms using pseudocode</li> <li>● Create algorithms to solve problems that you have analysed</li> </ul> <p><b>*Model Descriptive text (description of an algorithm, including efficiency)</b></p>	<b>Writing genre: Descriptive</b>
25			<b>Monthly review</b>	<b>Complex activity (Homework)::</b>

			<p><b>RETRIEVAL ACTIVITY</b> Flowchart/pseudocode reading, fixing, refining and writing (problem solving using computational thinking)</p> <p><b>Networks:</b> How the Page Rank algorithm works to support searching using search engines. Efficiency of networks.</p> <p><b>Image manipulation:</b> Create a poster with images for the 4 parts of computational thinking: decomposition, abstraction, pattern recognition and algorithms.</p> <p>- <b>RECALL ACTIVITY</b> Low stake test on theory so far in year 9</p>	Students to study a complex algorithm for a real life model and create an algorithm. They need to describe how it works and how it can be refined
26			<ul style="list-style-type: none"> <li>• Understand how sorting and searching algorithms work</li> </ul>	
27	Summer T1		SUMMATIVE FORMAL ASSESSMENT	
28		Text-based programming in Python (advanced)	<ul style="list-style-type: none"> <li>• Read and understand an existing Python program</li> <li>• Recall different data types</li> <li>• Use the int(), float() and str() functions to convert data types</li> <li>• Write an if-else statement</li> </ul>	
29			<ul style="list-style-type: none"> <li>• Use a <b>while</b> loop to repeat a section of code</li> <li>• Use a <b>for</b> loop to repeat a section of code</li> </ul>	
30			<ul style="list-style-type: none"> <li>• Make a choice about which loop to use, and why</li> </ul> <p><b>*Model Descriptive text (code comparison)</b></p>	Writing genre: Descriptive

31			<p><b>Monthly review</b></p> <p><b>RETRIEVAL ACTIVITY</b> Main terms/definitions in Python. WHILE and FOR loops problems. Choose the best loop (FOR/WHILE) to solve a problem and explain why.</p> <p><b>Algorithms:</b> Convert flowcharts and pseudocode into Python coding.</p> <p><b>Data in Businesses:</b> Create a program in Python that works out the average hours worked and the pay for 20 workers working in a company.</p> <p>- <b>RECALL ACTIVITY</b> Low stake test on theory so far in year 9</p>	<p><b>Complex activity (Homework)::</b></p> <p>Given 2 different programs in Python that solve the same problem, describe how each one works, which one is more efficient and why</p>
32			<ul style="list-style-type: none"> <li>• Be able to store and update values in a list</li> <li>• Be able to append data to a list</li> <li>• Be able to use a <b>for()</b> loop to step through a list</li> <li>• Understand why using a list can be more efficient than using single variables</li> </ul>	
33	Summer T2		<ul style="list-style-type: none"> <li>• Understand what a procedure is</li> <li>• Be able to define and call a procedure</li> </ul>	
34			<ul style="list-style-type: none"> <li>• Understand why procedures are more effective in programming</li> </ul>	
35			<ul style="list-style-type: none"> <li>• Be able to use parameters and arguments when creating and using procedures</li> </ul>	

36		<b>Systems security (Networks attacks and prevention)</b>	<ul style="list-style-type: none"> <li>Describe the different strategies criminals use to attack computer networks</li> </ul>	
37			<ul style="list-style-type: none"> <li>Students will learn how to identify vulnerabilities in a network</li> <li>Students will be able to make recommendations on how to tighten network security through an Acceptable Use Policy and other strategies</li> </ul> <p><b>*Model Informative text (Staff memo)</b></p>	<b>Writing genre: Informative</b>
38			<p><b>Reteach Week</b></p> <p><b>Monthly review</b></p> <p><b>RETRIEVAL ACTIVITY</b> Fill in table or match-up main network risks with their technical name. How can individuals do to prevent network attacks/risks?</p> <p><b>Python coding:</b> Create a log-in program in Python?</p> <p><b>Networks:</b> LAN vs WAN networks. Which one is more secure and why?</p> <p>- <b>RECALL ACTIVITY</b> Low stake test on theory so far in year 9</p>	<p><b>Complex activity (Homework)::</b></p> <p>Create a staff memo providing information about the various network security risks and how to prevent them</p>
39			<ul style="list-style-type: none"> <li>Reteaching of topics that were less effectively answered in the low stakes test</li> </ul>	
40			<b>SUMMATIVE FORMAL ASSESSMENT</b>	



