



Autumn 1

Autumn 1		
UKS2	Computer Systems and Networks	
	Year 5	Year 6
	<p>L1: How can computers be connected together?                      L2: What is the role of computers in our lives?                      L3: What is a search engine and how do we use it?                      L4: How do search engines select what to show us?                      L5: What is the ranking of results?                      L6: Why is the ranking of results important, and how does it affect different people?</p>	<p>L1: How can computers be connected, and what are the benefits and challenges of different connection methods?                      L2: What is the role of computers in our lives, and how has this role evolved over time?                      L3: What is a search engine, how do we use it effectively, and what are some advanced search techniques?                      L4: How do search engines select what to show us, and what algorithms influence these selections?                      L5: What is the ranking of results, and what factors contribute to the ranking?                      L6: Why is the ranking of results important, how does it affect different people, and what are the implications of biased or manipulated rankings?</p>
Key Concepts to assess	<p>L1: Children will know that systems are built using a number of parts that communicate with each other.                      L2: Children will know the tasks managed by computer systems and how to keep personal information safe online.                      L3: Children will know how to use web searches to find specific information.                      L4: Children will know how to recognise the role of web crawlers in creating an index.                      L5: Children will explain that a search engine follows rules to rank results.                      L6: Children will describe some of the ways that search results can be influenced</p>	<p>L1: Children will understand how systems are built using multiple parts that communicate with each other, including the benefits and challenges of different connection methods.                      L2: Children will understand the tasks managed by computer systems, how to keep personal information safe online, and the evolving role of computers in our lives.                      L3: Children will demonstrate how to use web searches to find specific information and employ advanced search techniques.                      L4: Children will explain the role of web crawlers in creating an index and how algorithms influence search results.                      L5: Children will understand that a search engine follows rules to rank results and identify the factors that contribute to this ranking.                      L6: Children will describe ways search results can be influenced and understand the implications of biased or manipulated rankings on different people.</p>



## Cherry Tree Academy Medium Term Computing

Vocabulary	Searchers, search term, links , location, Search engines, crawlers Webpage creators, terms, text, images	Searchers, search term, links , location, Search engines, crawlers Webpage creators, terms, text, images, https, reliable, source, algorithm. System, perform, components, input, output
Experiences	Plan safer internet day assembly	
SMSC	Social- have computers and access to a wealth of information had any negative consequences?	
British Values	Rule of Law- how are we protected online?	
School Values	Considerate- when posting on line be considerate of others feelings.	



Autumn 2		
UKS2	Programming: Selection in physical computing	
	Year 5	Year 6
	<p>L1: Children will understand how to control a simple circuit connected to a computer.</p> <p>L2: Children will learn about count-controlled loops and their application in programming.</p> <p>L3: Children will explore how to control a loop based on specific conditions being met.</p> <p>L4: Children will investigate the concept of continuously checking whether a condition has been met using loops.</p> <p>L5: Children will learn about selection and how it can be practically implemented in programming.</p> <p>L6: Children will explore how to control a physical computing project through programming.</p>	<p>L1: Children will understand advanced methods to control circuits connected to computers, considering various connection methods.</p> <p>L2: Children will explore count-controlled loops and their practical applications in programming, including iterative processes.</p> <p>L3: Children will master conditional loops and understand how to manipulate loops based on specific conditions.</p> <p>L4: Children will investigate continuous checking of conditions in loops, understanding efficiency and practical implications.</p> <p>L5: Children will delve into the concept of selection and its implementation in programming, including conditional statements.</p> <p>L6: Children will demonstrate proficiency in programming for physical computing projects, applying learned skills to control devices effectively.</p>
<p>Key Concepts to assess</p> <p>L1: Children will create a simple circuit and connect it to a microcontroller.</p> <p>L2: Children will use a count-controlled loop to regulate outputs.</p> <p>L3: Children will design and implement a true or false conditional loop.</p> <p>L4: Children will explain how a condition being met triggers an action.</p> <p>L5: Children will identify a real-world scenario where a condition triggers an action and describe the function of their project.</p> <p>L6: Children will develop an algorithm detailing the operation of their model.</p>	<p>L1: Children will create a simple circuit, connect it to a microcontroller, and explain what an infinite loop does.</p> <p>L2: Children will use a count-controlled loop to control outputs and design sequences that utilize count-controlled loops.</p> <p>L3: Children will design a true or false conditional loop and program a microcontroller to respond to an input.</p> <p>L4: Children will be able to explain that a condition being met can initiate an action and use selection (an 'if...then...' statement) to direct the flow of a program.</p> <p>L5: Children will identify a real-world example of a condition initiating an action, describe what their project will do, and create a detailed drawing of their project.</p> <p>L6: Children will write an algorithm that describes what their model will do and can test and debug their project.</p>	



## Cherry Tree Academy Medium Term Computing

Vocabulary	Repetition, shapes, loops, code, snippet, count controlled loop, patterns, predict, simple circuit microcontroller, infinite loop, LED, switch, Crumble motor, components, connect, output, input conditional loop, Crumble controller,	Repetition, shapes, loops, accuracy, logo text-based, code, snippet, count controlled loop, patterns, predict, simple circuit microcontroller, infinite loop, LED, switch, Crumble motor, components, connect, output, input conditional loop, Crumble controller, debugging, Circuit, infinite, repetition, conditions, represent
Experiences	Share programmed projects with KS1	
SMSC	Cultural- how much do computers influence our everyday lives?	
British Values	Democracy- could we create a program for voting or would this lead to inaccurate outcomes	
School Values	Healthy- how can we maintain our health by limiting access to computers?	



Spring 1		
UKS2	Creating Media	
	Year 5	Year 6
	<p>L1: How can we use different drawing tools to achieve various outcomes?                      L2: What's a vector drawing and how do I create one?                      L3: How can I achieve my desired artistic effects?                      L4: Can drawings include layers for added complexity?                      L5: How does grouping elements make the design process more manageable?                      L6: What are the differences between vector and traditional (raster) drawing techniques?</p>	<p>L1: How can we use advanced drawing tools to achieve specific artistic outcomes?                      L2: What's a vector drawing, and how does it differ from raster-based drawing methods?                      L3: How can I manipulate vectors to achieve intricate artistic effects?                      L4: Can complex drawings benefit from layering techniques, and how do they enhance the final product?                      L5: How does strategic grouping of elements streamline the design workflow in digital art?                      L6: What are the unique advantages and limitations of vector graphics compared to traditional drawing methods?</p>
Key Concepts to assess	<p>L1: Children will learn that vector drawings are created using shapes and will experiment with the shape and line tools.                      L2: Children will explain that each element added to a vector drawing is an object.                      L3: Children will use the zoom tool to help them add detail to drawings and explain how alignment grids and resize handles can improve consistency.                      L4: Children will identify that each added object creates a new layer in the drawing.                      L5: Children will recognise when they need to group and ungroup objects.                      L6: Children will create a vector drawing for a specific purpose.                      3.5</p>	<p>L1: Children will know that vector drawings are made using shapes, will experiment with the shape and line tools, and explain how these differ from traditional drawings.                      L2: Children will explain that each element added to a vector drawing is an object and will be able to move, resize, and rotate objects.                      L3: Children will use the zoom tool to help them add detail to drawings and explain how alignment grids and resize handles can be used to improve consistency.                      L4: Children will know how to identify that each added object creates a new layer in the drawing and change the order of layers in a vector drawing.                      L5: Children will recognise when they need to group and ungroup objects and will reuse a group of objects to further develop their vector drawing.                      L6: Children will create a vector drawing for a specific purpose and reflect on the skills used and why they used them.</p>
Vocabulary	<p>Examine, variety, manipulate. Dimensions, ungrouping composition digital image rotate crop colour effects cloning select and copy tools combine, vector</p>	<p>Examine, variety, manipulate. Dimensions, ungrouping composition digital image rotate crop colour effects cloning select and copy tools combine drawing tools vectordrawings move resize rotate duplicate zoom tool alignment grids modify layer grouping ungrouping</p>



## Cherry Tree Academy Medium Term Computing

Experiences	Produce a vector drawing to create a poster to advertise Sports tournament for PE.
SMSC	Cultural- will digital art replace painted art?
British Values	Individual liberty- can we express ourselves with digital art in the same way as painted art?.
School Values	Resilience- to persevere when faced with challenges.



Spring 2		
UKS2	Programming: Sensing	
	Year 5	Year 6
	L1: How can we create a program to run on a controllable device? L2: What is a selection and how can it control the flow of a program? L3: How can a user update a variable with input? L4: Can a conditional statement compare a variable to a value? L5: Can we use inputs and outputs within a controllable device? L6: How can I develop my program?	L1: How can we design and implement a program to operate on a controllable device effectively? L2: What is a selection and how can it be utilized to control and optimize the flow of a program? L3: How can a user efficiently update a variable using input and ensure its accuracy within the program? L4: Can a conditional statement effectively compare a variable to a specified value and execute the appropriate action? L5: How can inputs and outputs be effectively integrated and managed within a controllable device to achieve desired outcomes? L6: How can I systematically develop, refine, and optimize my program to enhance functionality and user experience?
Key Concepts to assess	L1: Children will be able to test their program on an emulator. L2: Children will know how to use a variable in an if-then-else statement to control the flow of a program. L3: Children will use a condition to modify a variable. L4: Children will know how to use an operator (e.g., <, >, =) in an if-then statement. L5: Children will design the algorithm for their project. L6: Children will test their program against the original design.	L1: Children will be able to test their program on an emulator and transfer the program to a controllable device. L2: Children will know how to use a variable in an if-then-else statement to control the flow of a program and determine the flow of a program using selection. L3: Children will use a condition to modify a variable and experiment with different physical inputs. L4: Children will know how to use an operator (e.g., <, >, =) in an if-then statement and explain the importance of the order of conditions in else-if statements. L5: Children will design the algorithm for their project and decide which variables to include in a project. L6: Children will test their program against the original design and use a range of approaches to identify and fix bugs.
Vocabulary	Process, device, micro: bit emulator variable selection condition operand	Process, device, explore, features, flow, micro: bit input process output controllable device emulator variable selection condition operand



## Cherry Tree Academy Medium Term Computing

Experiences	Design a program to share with parents in an open evening
SMSC	Social- present their project to a group of other children.
British Values	Mutual respect- listen and offer constructive feedback to peers on their program.
School Values	Resilience- work methodically to debug a program.





Summer 1		
UKS2	3D modelling	
	Year 5	Year 6
	<p>L1: How can we work in three dimensions on a computer?                      L2: Can 3D objects be manipulated on screen, and how?                      L3: What happens when we combine 3D objects on screen?                      L4: How can I use software to create a 3D model for a purpose?                      L5: Can I use software to plan a 3D model?                      L6: How can we turn our design into reality?</p>	<p>L1: How can we work in three dimensions on a computer, and what are the advanced tools available for this?                      L2: Can 3D objects be manipulated on screen, and how can we utilize advanced techniques to refine their appearance?                      L3: What are the implications when combining complex 3D objects on screen, and how does this impact design outcomes?                      L4: How can I use sophisticated software features to create intricate 3D models tailored for specific purposes, and what are the considerations for precision?                      L5: Can I use advanced software tools to meticulously plan and visualize complex 3D models, and what strategies ensure efficient planning?                      L6: How can we effectively translate our intricate designs into physical reality using advanced manufacturing techniques and materials?</p>
Key Concepts to assess	<p>L1: Children will understand how to view 3D shapes from different perspectives.                      L2: Children will be able to resize an object in three dimensions and lift/lower 3D objects.                      L3: Children will rotate objects in three dimensions and duplicate them when needed.                      L4: Children will accurately size 3D objects and demonstrate how placeholders can create holes in 3D objects.                      L5: Children will analyse a 3D model and select objects to incorporate into a 3D model.                      L6: Children will construct a 3D model based on a design and evaluate how it could be improved.</p>	<p>L1: Children will understand how to view 3D shapes from different perspectives and move 3D shapes relative to each other.                      L2: Children will be able to resize an object in three dimensions, lift/lower 3D objects, and recolour them.                      L3: Children will rotate objects in three dimensions, duplicate them when needed, and group them.                      L4: Children will accurately size 3D objects, demonstrate that placeholders can create holes in 3D objects, and combine several 3D objects.                      L5: Children will be able to analyse a 3D model, choose objects to use in a 3D model, and combine objects within a design.                      L6: Children will construct a 3D model based on a design, evaluate how it could be improved, and make these modifications.</p>
Vocabulary	Tinkercad 3D modelling 3 dimensions perspectives resize rotate duplicate place holders construct design model	Tinkercad 3D modelling 3 dimensions perspectives resize rotate duplicate place holders construct design model resize rotate duplicate zoom tool alignment grids modify layer grouping ungrouping



## Cherry Tree Academy Medium Term Computing

Experiences	Present finished to model in parents open evening.
SMSC	Social: work collaboratively to evaluate constructively.
British Values	Individual liberty- respect the different choices each person makes when designing their model.
School Values	Resilience- overcome challenges and aspects of the model that do not go to plan..



Summer 2		
Introduction to Spreadsheets		
UKS2	Year 5	Year 6
	L1: What is a data set and how can we make one? L2: What is formatting and why do we use it? L3: What are formulas and how can they help us? L4: Can we alter a formula's output? L5: Can we use a spreadsheet to help plan an event? L6: How can we present our data to answer a question?	L1: What is a data set, and how can we create and manage one effectively? L2: What is formatting in spreadsheets, and why is it essential for presenting data effectively? L3: How do formulas work in spreadsheets, and how can they be used to perform complex calculations? L4: Can we modify a formula to produce different outcomes based on varying conditions? L5: How can we utilise a spreadsheet to meticulously organise and coordinate tasks for planning an event? L6: What strategies can we use to present data from a spreadsheet to effectively address specific questions or problems?
Key Concepts to assess	L1: Children will be able to collect data and enter it into a spreadsheet. L2: Children will be able to explain what a data item is and choose an appropriate format for cells. L3: Children will explain which data types can be used in calculations and construct formulas within a spreadsheet. L4: Children will know how to calculate data using different operations across a range of cells. L5: Children will be able to use a spreadsheet to answer questions and explain the importance of organizing data. L6: Children will know how to create a chart to illustrate their findings.	L1: Children will be able to collect data, enter it into a spreadsheet, and suggest ways to structure it. L2: Children will be able to explain what a data item is, choose an appropriate format for a cell, and apply it correctly. L3: Children will explain which data types can be used in calculations, construct formulas within a spreadsheet, and identify how changing inputs affects outputs. L4: Children will know how to calculate data using different operations across a range of cells, including duplication over multiple cells. L5: Children will be able to use a spreadsheet to answer questions, explaining why data should be organised and how it can be used to answer questions. L6: Children will know how to produce a chart to answer a question and explain when a table may be more appropriate.
Vocabulary	order sort fields record flat file database grouping sorting values criteria chart formulas cells	order sort fields record flat file database grouping sorting values criteria chart formulas cells spreadsheet format inputs outputs calculations charts results present



## Cherry Tree Academy Medium Term Computing

Experiences	Planning and holding an event.
SMSC	Cultural- how has the use of data bases and spreadsheets influenced our lives?
British Values	Rule of law- discuss how our personal data is ours and the rights around others storing and using this information.
School Values	Inclusive- how can we make sure our event we plan includes everybody?