Year group objectives for Computing – Year 6

See individual lesson plans (link) for knowledge, skills, assessment opportunities, activities and slides.

Year 6 – Autumn 1 (Communication)

Session no.	Objective	Assessment
1	To identify how to use a search engine	**Starter activity:** You can assess learners' awareness of a range of search engines. **Activity 1:** You can assess how well learners can write an accurate set of instructions and provide peer-to-peer feedback. **Activity 2:** You can assess how well learners can refine a search using logic or prior knowledge. **Plenary:** Learners should be able to explain the different ways that we can search.
2	To describe how search engines select results	**Starter activity:** You can assess how well learners can relate the exponential growth of the World Wide Web to the need for search engines. **Activity 1:** You can assess learners' understanding of the benefits of indexing. **Activity 2:** Learners can apply their understanding of indexing to create their own index and relate this to the way that search engines use indexes.
3	To explain how search results are ranked	**Introduction:** You can assess how well learners can explain the role of web crawlers. **Activity 1:** You can assess how many features of a typical web page learners include in their own designs. **Activity 2:** You can assess what criteria learners use to decide which other web pages to link to. **Activity 3 and plenary:** You can assess how well learners can apply principles of search engine optimisation to improve their own web pages.
4	To recognise why the order of results is important, and to whom	**Introduction:** You can assess how well learners can recall the definition of 'selection' and 'page rank'.

		Activity 1: You can assess how well learners can explain searching from the three perspectives. The responses are summarised on slide 6. **Activity 2:** You can assess learners' logical thinking skills: if one search term is not effective, how effectively can they adapt it to something more useful? **Activity 3:** You can assess how well learners can differentiate between online and offline interactions. **Plenary:** You can assess how well learners can associate advertising that they see in the offline world with that which they see online, and you can assess their understanding of how that is a significant source of income for search engines.
5	To recognise how we communicate using technology	**Introduction and activity 1:** You can assess learners' knowledge of what communication is and the ways in which we can communicate. **Activity 2:** You can assess learners' knowledge of internet communication methods. **Activity 3:** You can assess learners' ability to justify their choices of communication methods.
6	To evaluate different methods of online communication	**Introduction:** You can assess learners' familiarity with a variety of different forms of communication. **Activity 1:** You can assess how well learners can categorise different forms of communication according to the criteria given, and through application of prior knowledge. **Activity 2:** You can assess how well learners can apply knowledge of methods of communication to choose the most appropriate method and justify their choices. **Plenary:** You can assess how well learners can explain what they should consider before choosing how to communicate.

Session no.	Objective	Assessment
1	To review an existing website and consider its structure	**Activity 1:** Assesses the learners' ability to explore a website. **Activity 2:** Allows learners to demonstrate their understanding of the media and navigation features used on websites. **Activity 3:** Assesses the learners' ability to look at the code of websites. **Plenary:** Assesses the learners' understanding of HTML and what it is used for.
2	To plan the features of a web page	**Introduction:** Gather learner's understanding of the terms 'audience' and 'purpose'. **Activity 1:** Assess whether learners can name the audience and purpose for their own web page. **Activity 2:** To assess learners' understanding of the different features of a web page. **Activity 3:** To assess the learners' ability to design their own web page (on paper) using common web page (Google Sites) features. **Plenary:** To assess whether learners can name common web page features.
3	To consider the ownership and use of images (copyright)	**Introduction:** To assess where the learners currently gain access to pictures online. **Activity 1:** To assess what the learners know about fair use and copyright. **Activity 2:** To assess whether learners can find copyright-free images from selected sources and save them to use in their web pages. **Activity 3:** To assess whether learners have an understanding of what is acceptable and unacceptable when using pictures they find online. **Plenary:** Assess whether learners know good places to find/generate content.
4	To recognise the need to preview pages	**Introduction:** To assess where the learners currently gain access to pictures online. **Activity 1:** To assess what the learners know about fair use and copyright.

		Activity 2: To assess whether learners can find copyright-free images from selected sources and save them to use in their web pages. **Activity 3:** To assess whether learners have an understanding of what is acceptable and unacceptable when using pictures they find online. **Plenary:** Assess whether learners know good places to find/generate content.
5	To outline the need for a navigation path	**Introduction:** To assess what learners already know about navigation paths. **Activity 1:** To assess the learners' understanding of the need for breadcrumb trails in computing. **Activity 2:** To assess the learners' ability to record their navigation paths. **Activity 3:** To assess the learners' ability to create an organised website design. **Activity 4:** To assess the learners' ability to create subpages and working hyperlinks.
6	To recognise the implications of linking to content owned by other people	**Introduction:** To assess whether learners are aware that links can be made to external websites. **Activity 2:** To assess the learners' ability to add external links to their web page. **Activity 3/4:** To assess the learners' ability to evaluate the user experience of their own and another learner's website. **Plenary:** To understand the learners' awareness of the implications of linking to external websites.

Year 6 – Spring 1 (Variables)

Session no.	Objective	Assessment
1	To define a 'variable' as something that is changeable	**Activity 1:** You can assess whether learners can relate real-world experiences of variables to a simple project in Scratch, identifying what is changing and how it changes.

		Activity 2 and 3: Learners can demonstrate that they can design and code a simple project that includes a variable for 'score'. **Plenary:** You can assess whether learners can identify that variables can hold letters or numbers.
2	To explain why a variable is used in a program	**Activity 1:** You can assess whether learners can identify the name and value of a variable, and whether they can identify that variables can only hold one value at a time. **Activity 2:** You can assess whether learners can choose suitable names for variables. **Activity 3:** You can assess whether learners can create and change variables in a Scratch project. Through the explorer activity, learners can apply their previous experience of Scratch to display variables in a different way.
3	To choose how to improve a game by using variables	**Introduction:** You can assess whether learners can identify potential variables that could be added to improve a game. **Activity 1:** You can assess whether learners can read code to make predictions and then test their predictions by running the code. **Activity 2:** Learners can demonstrate that they can choose and compare values to set and change variables. You can also assess whether learners can predict what will happen when a variable is updated more than once. **Activity 3:** Learners can demonstrate that they can use the value of a variable elsewhere in a program.
4	To design a project that builds on a given example	**Activity 1:** Assess whether learners can choose appropriate artwork for their project. **Activity 2:** Assess whether learners can make good design choices and adapt an existing example of an algorithm to represent those design choices. **Activity 3:** Assess whether learners can understand the concept of program flow and apply it to their own algorithms.

5	To use my design to create a project	**Activity 1:** You can assess whether learners can add artwork to their project based on their designs. **Activity 2:** You can assess whether learners can choose appropriate names for variables and implement code based on their algorithms. **Activity 3:** You can assess whether learners can test and debug their project.
6	To evaluate my project	**Activity 1:** You can assess whether the learners can identify how their own projects can be improved. **Activity 2:** You can assess whether the learners can use a new variable to extend their games. **Activity 3:** You can assess whether the learners can share a project in Scratch and constructively evaluate another project.

Year 6 – Spring 2 (Spreadsheets)

Session no.	Objective	Assessment
1	To create a data set in a spreadsheet	**Activity 1:** Assess learners' ability to record data, without guidance. **Activity 2:** Assess how effectively learners can organise their data into a given structure. **Activity 3:** Assess how effectively learners can enter data into a spreadsheet.
2	To build a data set in a spreadsheet	**Activity 1:** Assess learners' ability to recognise data items and that there are different types of data items. **Activity 2:** Assess learners' ability to recognise different data formats. **Activity 3:** Assess learners' ability to create and apply formatting to a data set.
3	To explain that formulas can be used to produce calculated data	**Activity 1:** Assess the learners' current understanding of which data items can be used within a calculation in a spreadsheet. **Activity 2:** Assess the learners' ability to construct and use formulas successfully.

		Activity 3: Assess the learners' understanding that when they use formulas with cell references, the outputs are reliant on the data that has been input.
4	To apply formulas to data	**Activity 1:** Assess the learners' ability to complete calculations using addition, subtraction, multiplication, and division in formulas. **Activity 2:** Assess the learners' ability to apply formulas to a range of cells and use the duplicate function to apply a formula to multiple cells. **Activity 3:** Assess the learners' ability to apply appropriate formulas to a large data set.
5	To create a spreadsheet to plan an event	**Activity 1:** Assess the learners' ability to make sensible choices about their event and explain why data should be organised. **Activity 2:** Assess the learners' ability to create an organised spreadsheet to plan their event and use formulas to calculate totals. **Activity 3:** Assess the learners' ability to summarise data collected to determine if they have answered the given question.
6	To choose suitable ways to present data	**Activity 1:** Assess the learners' ability to create a chart. **Activity 2:** Assess the learners' ability to use a chart to show the answer to questions. **Activity 3:** Assess the learners' understanding of when to use a table or chart.

Year 6 – Summer 1 (3d modelling)

Session no.	Objective	Assessment
1	To use a computer to create and manipulate three-dimensional (3D) digital objects	**Introduction:** You will have an opportunity to examine learners' prior knowledge and their current understanding of the properties of 2D and 3D shapes **Activity 1:** Learners will demonstrate their ability to create, select, and move 3D objects in a 3D space, including viewing the 3D objects from different angles

		Activity 2: Learners will demonstrate their ability to create, select, and move 3D objects in a 3D space, including describing how they interact
2	To compare working digitally with 2D and 3D graphics	**Introduction:** You will have an opportunity to examine the learners' prior knowledge and their current understanding of working digitally with 2D and 3D graphics **Activity 1:** Learners will use their knowledge of 3D modelling to produce a basic house containing multiple 3D objects **Activity 2**: Learners will evaluate the work of others, including identifying possible areas for improvement
3	To construct a digital 3D model of a physical object	**Activity 1:** Learners can demonstrate their understanding of how 3D shapes can be rotated, including how they relate to other 3D shapes within a 3D space **Activity 2**: Learners can show their knowledge of 3D modelling tools by producing a 3D model for a key ring
4	To identify that physical objects can be broken down into a collection of 3D shapes	**Activity 1:** Provides an opportunity for learners to demonstrate their ability to resize shapes to specific dimensions **Activity 2**: Provides an opportunity for learners to show their ability to produce a 3D model based on a physical object
5	To design a digital model by combining 3D objects	**Activity 1:** Enables learners to demonstrate their ability to group and modify 3D objects **Activity 2**: Allows learners to plan a 3D model to a given specification
6	To develop and improve a digital 3D model	**Activity 1:** Enables learners to demonstrate their ability to produce a 3D model based on their planning document **Activity 2**: Allows learners to evaluate their 3D model based on specific criteria

Year 6 – Summer 2 (Sensing)

Session no.	Objective	Assessment

1	To create a program to run on a controllable device	**Activity 1:** Assess whether learners can identify similarities and differences between the MakeCode environment and others they have experienced. **Activity 2:** Assess whether learners can test their program on an emulator. **Activity 3:** Assess whether learners can use external hardware by transferring their program onto a micro:bit.
2	To explain that selection can control the flow of a program	**Activity 1:** Assess whether learners can relate conditions to real-world situations. **Activity 2:** Assess whether learners can use variables to select the flow of a program. **Activity 3:** Assess whether learners can demonstrate the flow of a program.
3	To update a variable with a user input	**Activity 1:** Assess whether learners can apply their knowledge and understanding of selection to create a program, featuring selection, which updates a variable. **Activity 2:** Assess whether learners can experiment with different inputs. **Activity 3:** Assess whether learners can display a variable in a program and explain that, when used, the value of a variable remains the same.
4	To use an conditional statement to compare a variable to a value	**Activity 1:** Assess whether learners can explain the importance of order in `else, if` statements. **Activity 2:** Assess whether learners can use a comparison operator in an `if, then` statement. **Activity 3:** Assess whether learners can modify a program to achieve a different outcome.
5	To design a project that uses inputs and outputs on a controllable device	**Activity 1:** Assess whether learners can identify what variable/s they will need for their program. **Activity 2:** Assess whether learners can create their algorithm to match a given task. **Activity 3:** Assess whether learners can design their own program flow.

6	To develop a program to use inputs and outputs on a controllable device	**Activity 1:** Assess whether learners can implement their algorithms as code independently. **Activity 2:** Assess whether learners can use a range of approaches to test and debug their code. **Activity 3:** Assess whether learners can improve the function of a step counter. **Plenary:** Assess whether learners are able to reflect on how well they have met the given task.