# Computing Curriculum Map

Key Vocabulary

Computer, screen, keyboard, mouse, tablet, iPad, internet. Website, photo, drag, drop, click, type, letter, word, search, whiteboard, magnifier, information, technology.

Finding Out Information/ Using Technology

We will use technology where available and appropriate to find out further information e.g. magnifiers/ microscopes, iPad and computers.
We will also understand that information can be found on the internet.

We will begin to use the interactive whiteboard more independently, and learn how to drag and drop items on the screen.

EYFS

Autumn Term

Spring Term

Summer Term
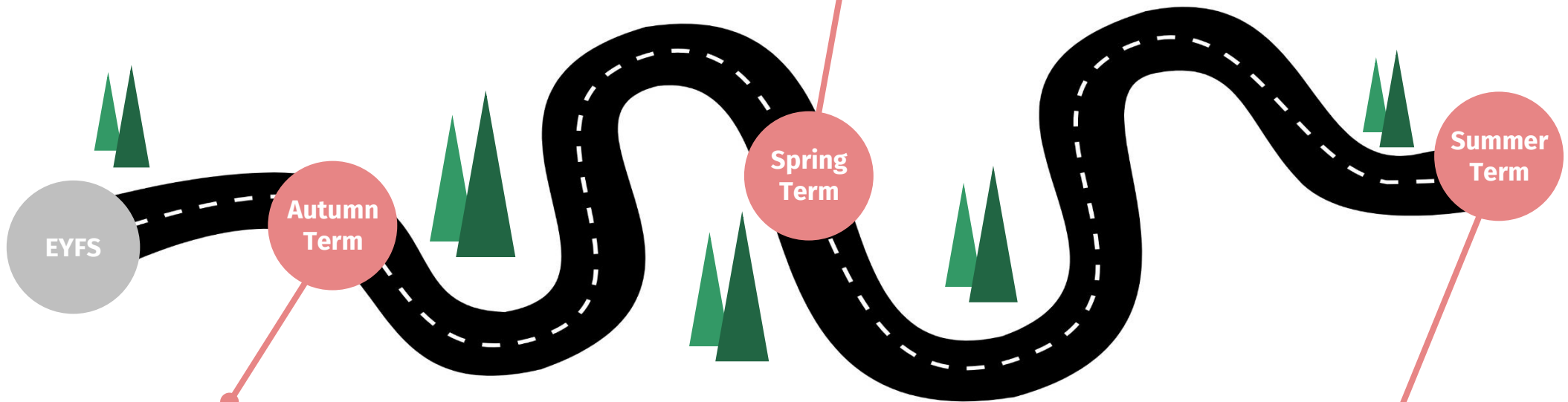
Becoming Familiar with Simple Technology

We will begin to explore various technology often found at home – computers, keyboards, mobile phones – while experiencing the 'Home Corner'.

We will learn what the interactive whiteboard is and how to use it will be modelled for us.

Using Technology/ Simple Typing

We will find out about information for our topics but using the internet. We will work in small groups to look at photographs and search for simple information on appropriate websites.

We will also use a simple keyboard on the interactive whiteboard to type some familiar words.

Computing Curriculum Map

Key Vocabulary

Technology, computer, device, keyboard, mouse, screen, monitor, typing, text, image, draw, paint, click, drag, open, save, print, undo, delete, program, command, instruction, algorithm. Sequence, code, debug, robot, forward, backward, turn, animation, sprite, data, sort, group, label, information, digital, icon, button.

Programming A – Moving a Robot

We will be introduced to early programming concepts. We will explore using individual commands, both with other learners and as part of a computer program. We will identify what each floor robot command does and use that knowledge to start predicting the outcome of programs. We will spend time on all aspects of programming and build knowledge in a structured manner. We will also be introduced to the early stages of program design through the introduction of algorithms.

Data and Information – Grouping Data

We will be introduced to data and information. We will begin by using labels to put objects into groups, and labelling these groups. We will demonstrate that we can count a small number of objects, before and after the objects have been grouped. We will then begin to demonstrate our ability to sort objects into different groups, based on the properties we choose. Finally, we will use our ability to sort objects into different groups to answer simple questions about data.

Year 1 & 2

Autumn Term

Spring Term

Summer Term
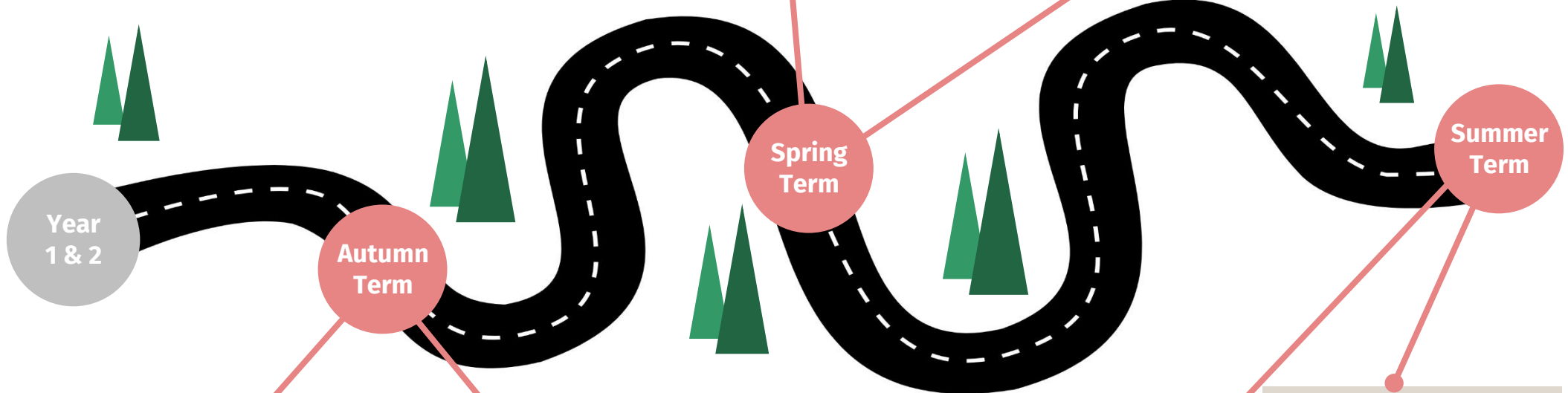
Computing Systems and Networks – Technology Around Us

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We will develop our understanding of technology and how it can help us. We will become more familiar with the different parts of a computer by developing our keyboard and mouse skills, and also start to consider how to use technology responsibly.

Creating Media – Digital Painting

We will explore the world of digital art and its exciting range of creative tools. We will be empowered to create our own paintings, while getting inspiration from a range of other artists. We will consider our preferences when painting with, and without, the use of digital devices.

Creating Media – Digital Writing

We will develop our understanding of various aspects of using a computer to create and change text. We will familiarise ourselves with typing on a keyboard and begin using tools to change the look of our writing, and then we will consider the differences between using a computer and writing on paper to create text.

Programming B – Programming Animations

We will be introduced to on-screen programming through ScratchJr. We will explore the way a project looks by investigating sprites and backgrounds. We will use programming blocks to use, modify, and create programs. We will also be introduced to the early stages of program design through the introduction of algorithms.

Computing Curriculum Map

Key Vocabulary

Computer, device, input, output, digital, connection, network, network switch, server, information, communication, email, animation, frame, sequence, stop-frame, timeline, image, text box, layout, template, desktop publishing, database, question, object, attribute, branching, decision, yes/no question, program, command, algorithm, sequence, loop, bug, debug, code, sprite, repetition, output (in programming).

Sequencing Sounds

We will explore the concept of sequencing in programming through Scratch (a child-friendly coding program), beginning with an introduction to the programming environment. We will be introduced to a selection of motion, sound, and event blocks which we will use to create our own programs, featuring sequences. For our final project, we will make a representation of a piano.

Branching Databases

We will develop our understanding of what a branching database is and how to create one. We will use yes/no questions to gain an understanding of what attributes are and how to use them to sort groups of objects. We will create physical and on-screen branching databases. To conclude the unit, we will create an identification tool using a branching database, which we will test by using it. We will also consider real-world applications for branching databases.

Year 3

Autumn Term

Spring Term

Summer Term

Connecting Computers

We will develop our understanding of digital devices, with an initial focus on inputs, processes, and outputs. We will also compare digital and non-digital devices. Next, we will be introduced to computer networks, including devices that make up a network's infrastructure, such as wireless access points and switches. Finally, we will discover the benefits of connecting devices in a network.

Stop-Frame Animation

We will use a range of techniques to create a stop-frame animation. Next, we will apply those skills to create a story-based animation. This unit will conclude with adding other types of media to our animation, such as music and text.

Desktop Publishing

We will become familiar with the terms 'text', 'images' and 'emojis', and understand that they can be used to communicate messages offline and online. We will use desktop publishing software to edit and improve premade documents, and consider carefully choices of font size, colour and type. We will be introduced to the terms 'templates', 'orientation' and 'placeholders', and begin to understand how these can support us in making our own template for a magazine front cover. We will look at a range of page layouts thinking carefully about the purpose of these and evaluate how and why desktop publishing is used in the real world.

Events and Actions in Programs

We will explore the links between events and actions, whilst consolidating prior learning related to sequencing. We will begin by moving a sprite in four directions (up, down, left and right). We will explore movement within the context of a maze, using design to choose an appropriately sized sprite. We are also introduced to programming extensions, through the use of pen blocks. We will explore drawing lines with sprites and changing the size and colour of lines. We will conclude with designing and coding our own maze program.

Computing Curriculum Map

Key Vocabulary

Internet, network, website, web page, hyperlink, browser, search engine, keyword, copyright, permission, audio, recording, microphone, waveform, volume, fade in, fade out, background noise, editing, repetition, loop, command, algorithm, program, pattern, variable, sprite, block, sequence, debug, data, data logger, sensor, table, chart, image, crop, filter, pixel, edit.

Programming A – Repetition in Shapes

In this first of two programming units, we will look at repetition and loops within programming. We will create programs by planning, modifying, and testing commands to create shapes and patterns. We will use Logo, a text-based programming language.

Data and Information – Data Logging

We will consider how and why data is collected over time. We will discuss the senses that humans use to experience the environment and how computers can use special input devices called sensors to monitor the environment. We will collect data as well as access data captured over long periods of time. We will look at data points, data sets, and logging intervals. We will spend time using a computer to review and analyse data. At the end of the unit, we will pose questions and then use data loggers to automatically collect the data needed to answer those questions.
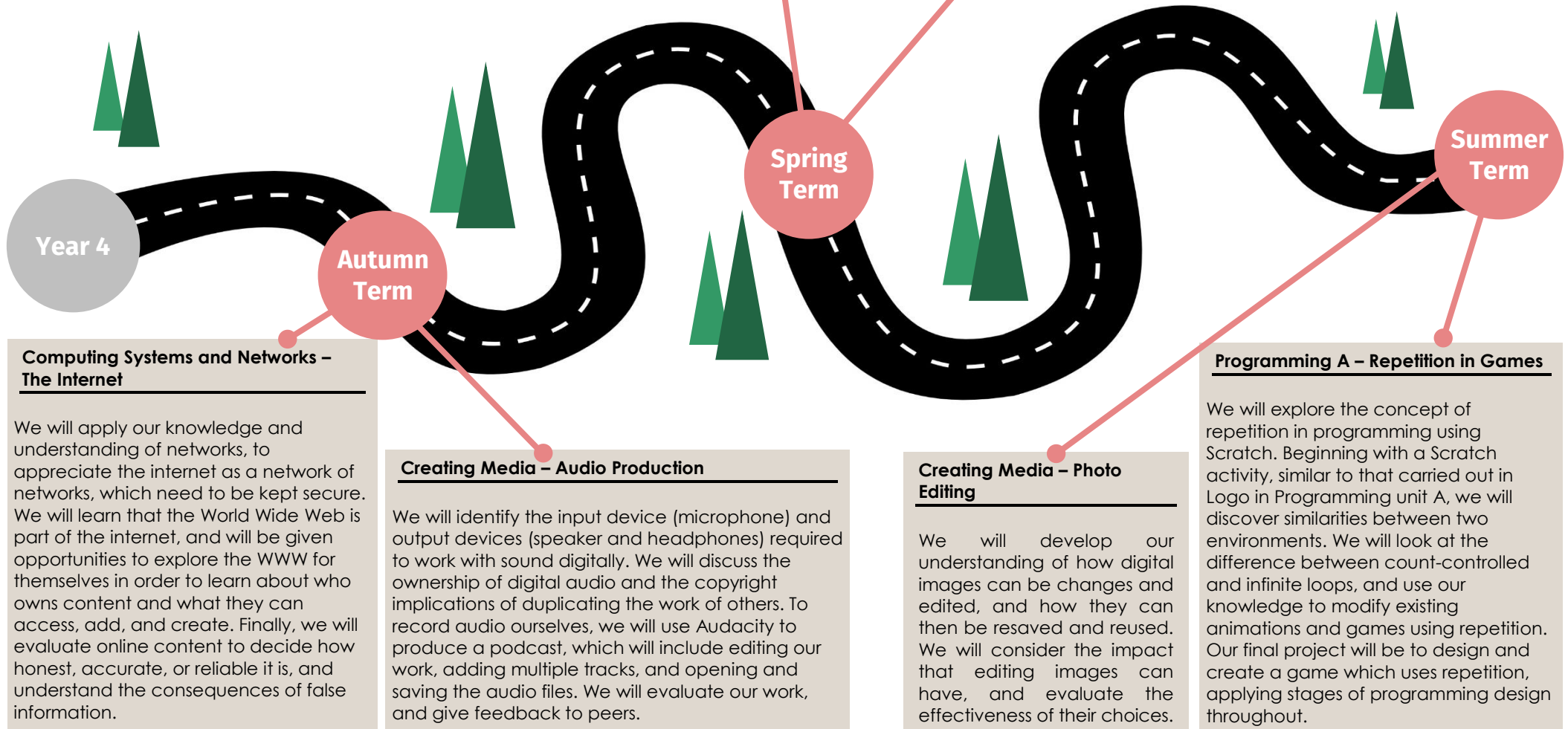
Year 4

Autumn Term

Spring Term

Summer Term

Computing Systems and Networks – The Internet

We will apply our knowledge and understanding of networks, to appreciate the internet as a network of networks, which need to be kept secure. We will learn that the World Wide Web is part of the internet, and will be given opportunities to explore the WWW for themselves in order to learn about who owns content and what they can access, add, and create. Finally, we will evaluate online content to decide how honest, accurate, or reliable it is, and understand the consequences of false information.

Creating Media – Audio Production

We will identify the input device (microphone) and output devices (speaker and headphones) required to work with sound digitally. We will discuss the ownership of digital audio and the copyright implications of duplicating the work of others. To record audio ourselves, we will use Audacity to produce a podcast, which will include editing our work, adding multiple tracks, and opening and saving the audio files. We will evaluate our work, and give feedback to peers.

Creating Media – Photo Editing

We will develop our understanding of how digital images can be changes and edited, and how they can then be resaved and reused. We will consider the impact that editing images can have, and evaluate the effectiveness of their choices.

Programming A – Repetition in Games

We will explore the concept of repetition in programming using Scratch. Beginning with a Scratch activity, similar to that carried out in Logo in Programming unit A, we will discover similarities between two environments. We will look at the difference between count-controlled and infinite loops, and use our knowledge to modify existing animations and games using repetition. Our final project will be to design and create a game which uses repetition, applying stages of programming design throughout.

Computing Curriculum Map

Key Vocabulary

System, network, collaboration, internet, web page, hyperlink, search engine, vector, object, layer, resize, group (objects), align, copy, paste, frame, timeline, transition, trim, split, soundtrack, microcontroller, Crumble, component, output device, input device, selection, condition, 'If… Then… Else', repetition, algorithm, debug, flat-file database, record, field, data, filter, sort, quiz, program.

Programming A – Selection in Physical Computing

We will learn how to use a small device called a 'Crumble controller' to control lights and motors through computer programming. We will build on what we already know about coding by connecting real components and writing simple programs to control them. We will explore how computers make decisions using conditions (e.g. "if this happens, then do that") and will practise using repetition and selection to control how a program runs.

Data and Information – Flat-file Databases

We will learn how to organise information using a type of database called a flat-file *database*. We will practise sorting and searching through data to find answers to questions. We will also create graphs and charts to help is understand the information more clearly. Finally, we will use a real-life example to investigate a question and present what we have found to others.

Year 5

Autumn Term

Spring Term

Summer Term
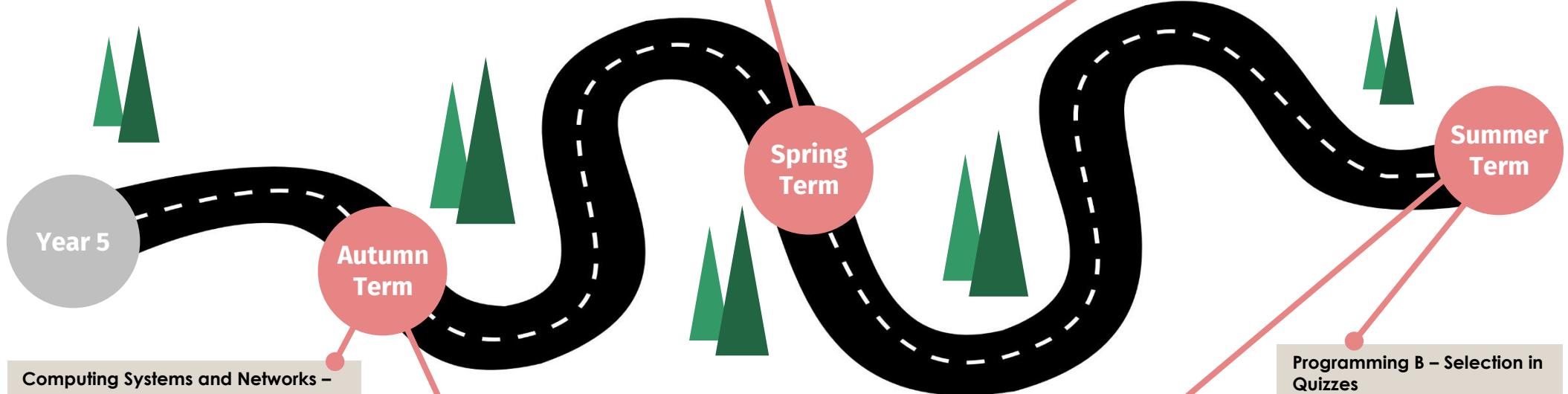
Computing Systems and Networks – Systems and Searching

We will develop our understanding of computer systems and how information is transferred between systems and devices. We will consider small-scale systems as well as large-scale systems. We will explain the input, output, and process aspects of variety of different real-world systems. We will discover how information is found on the World Wide Web, through learning how search engines work and what influences searching, and through comparing different search engines.

Creating Media – Video Production

We will learn how to create short videos in groups. We will also be exposed to topic-based language and develop the skills of capturing, editing, and manipulating video. We will investigate the use of devices and software. We will work step-by-step to take ideas from conception to completion. If possible, we will incorporate the use of green screen.

Creating Media – Introduction to Vector Graphics

We will start to create vector drawings. We will learn how to use different drawing tools to help us create images. We will recognise that images in vector drawings are created using shapes and lines, and each individual element in the drawing is called an 'object'. We will layer our objects and begin grouping and duplicating them to support the creation of more complex pieces of work..

Programming B – Selection in Quizzes

We will build on our understanding of how computers make decisions in programs. We will learn how to use 'if… then… else' statements to make a program choose different outcomes depending on whether something is true or false. Using Scratch, we will plan and write our own interactive quiz. This helps us practise using selection to control what happens in a program.

Computing Curriculum Map

Key Vocabulary

Spreadsheet, cell, formula, chart, data, average, sum, column, row, web page, website, hyperlink, HTML, preview, layout, structure, variable, value, condition, selection, algorithm, loop, input, output, simulation, sensor, micro:bit, code, program, debug, repetition, 3D model, viewpoint, rotate, resize, net, design, evaluate, structure, transition.

Programming A – Variables in Games

We will learn about variables in programming by creating games using Scratch. We will start by exploring what variables are and how they can be used to store changing information, like a score in a game. We will practise using and changing variables in ready-made projects, then move on to designing and creating our own. We will also learn how to improve our games by applying what we've learned about variables and game design.

Data and Information – Introduction to Spreadsheets

We will be introduced to spreadsheets in this unit. We will be organising data into columns and rows to create our own data set. We will be taught the importance of formatting data to support calculations, while also being introduced to formulas. We will begin to understand how formulas can be used to produce calculated data. We will be taught how to apply formulas to multiple cells by duplicating them. We will use spreadsheets to plan an event and answer questions. Finally, we will create charts and evaluate our results.

Year 6

Autumn Term

Spring Term

Summer Term

Computing Systems and Networks – Communication and Collaboration

We will learn how data travels across the internet and how devices know where to send it. We will find out how information is broken into small pieces, called *data packets*, and how these help computers communicate. We will work together on shared online projects and explore different ways we communicate online. Finally, we will learn how to stay safe and act responsibly by thinking carefully about what should or shouldn't be shared on the internet.

Creating Media – Web Page Creation

We will look at the creation of websites for a chosen purpose. We will identify what makes a good web page and use this information to design and evaluate our own website using Google Sites. Throughout the process, we will pay specific attention to copyright and fair use of media, the aesthetics of the site, and navigation paths.

Creating Media – 3D Modelling

We will develop our knowledge and understanding of using a computing to produce 3D models. We will familiarise ourselves with working in a 3D space, moving, resizing, and duplicating objects. We will then create hollow objects using placeholders and combine multiple objects to create a model of a desk tidy. We will then plan, develop, and evaluate our own 3D model of

Programming B – Sensing Movement

In this unit, we bring together everything we've learned about coding in primary school. We will use a small device called a micro:bit to create and test programs. Starting with a simple task, we will build up our skills through a series of projects that involve using sequences, loops, decisions, and variables to control the device and respond to input.