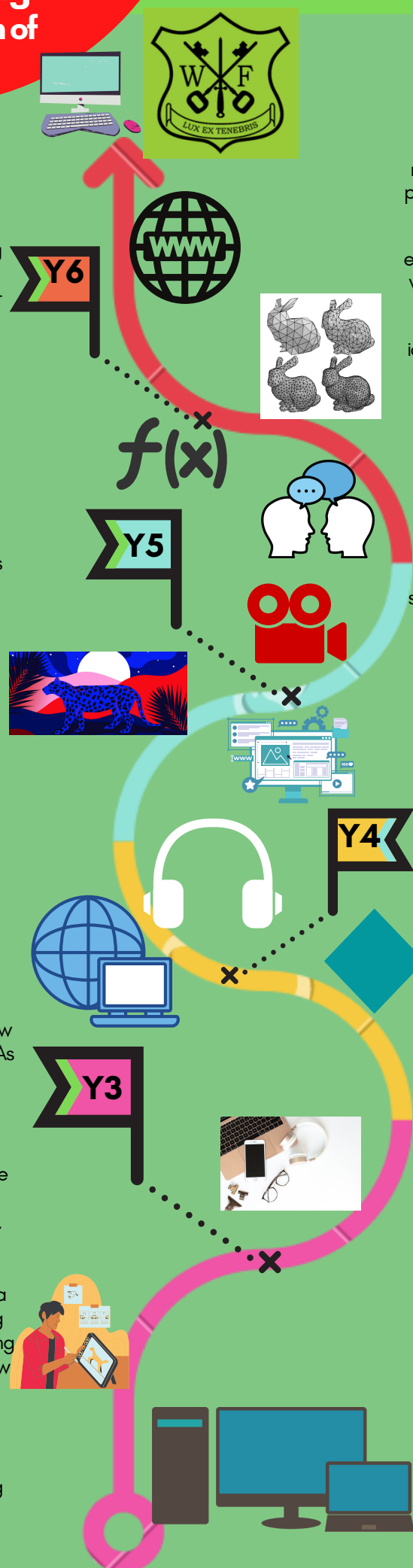


# Computing Curriculum Path of Progression

In Y5, pupils will build upon their knowledge of computer systems. Learners consider small-scale and large-scale systems. They explain the input, output, and process aspects of a variety of different real-world systems. Following this, pupils begin to create vector drawings. They learn how to use different drawing tools to help them create images. Learners recognise that images in vector drawings are created using shapes and lines, and each individual element in the drawing is called an object. Following this, pupils will use physical computing to explore the concept of selection in programming through the use of the Crumble programming environment. Following this, pupils will explore flat-file databases and how they can be used to organise data in records. Following this, pupils will learn how to create short videos developing the skills of capturing, editing, and manipulating video. Finally, pupils will develop their programming skills, by developing their knowledge of 'selection'.

In Y3, pupils will begin by learning about connecting computers, exploring how digital devices, function, connect and how they can change the way that we work. As well as this, pupils will learn about computer networking. Following this, pupils will explore aspects of animation, looking closely at the sequence of drawings and photographs, the sequence of images, as well as planning, reviewing and improving an animation of their own. Following this, pupils will study programming, identifying commands, as well as having the opportunity to create a project from a task description. Following this, pupils will develop their understanding of what a branching database is and how to create one. Learners will create physical and on-screen branching databases. Pupils then explore the links between events and actions, involving a sprite, concluding with learners designing and coding their own maze-tracing program.



In Y6, pupils will begin by exploring how data is transferred over the internet. Learners will look at how the internet facilitates online communication and collaboration; they complete shared projects online and evaluate different methods of communication. Following this, pupils will explore variables in programming. Pupils will follow the Use-Modify-Create model, experimenting with variables in an existing project, then modify them, then they will create their own project. Following this, pupils will be introduced to creating websites for a chosen purpose. Learners identify what makes a good web page and use this information to design and evaluate their own website using Google Sites. Throughout the process, learners pay specific attention to copyright and fair use of media, the aesthetics of the site, and navigation paths. Following this, pupils will then develop their knowledge and understanding of using a computer to produce 3D models, through Tinkercad. Finally, pupils will explore how to build spreadsheets, organising data into columns and rows to create their own data set.

In Y4, pupils will begin by learning about the internet, as a network of networks which need to be kept secure. They will learn that the World Wide Web is part of the internet, and will be given opportunities to explore the web for themselves in order to learn about who owns content and what they can access, add, and create. Following this, pupils will create programs by planning, modifying, and testing commands to create shapes and patterns. They will use Logo, a text-based programming language. Following this, pupils will consider how and why data is collected over time, considering the senses that humans use to experience the environment and how computers can use special input devices called sensors to monitor the environment. Following this, pupils will begin to work with sound digitally. In order to record audio themselves, learners will use Audacity to produce a podcast. Pupils will develop the use of count-controlled loops, infinite loops, as well as developing a design that includes multiple loops and a project based around repetition. Finally, pupils will develop their understanding of how digital images can be edited, considering the impact that editing images can have, and evaluate the effectiveness of their choices.



## Autumn Term 1 – Connecting Computers

### National Curriculum Coverage

- Pupils should be taught to understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions

### Coverage

- **To explain how digital devices function**
- **To identify input and output devices**
- **To recognise how digital devices can change the way that we work**
- **To explain how a computer network can be used to share information**
- **To explore how digital devices can be connected**
- **To recognise the physical components of a network**

Pupils will begin by learning about connecting computers, exploring how digital devices, function, connect and how they can change the way that we work. As well as this, pupils will learn about computer networking and the physical components of a network.

### Progression pathway

This unit builds upon prior knowledge gained in Year 2 in which pupils used computing to aid research and word processing.

They build upon those skills this half term by exploring how digital devices, function, connect and how they can change the way that we work. As well as this, pupils will learn about computer networking and the physical components of a network.

This will lead on to exploring programming and data logging in Year 4.

## Autumn Term 2 – Animation

### National Curriculum Coverage

- select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information

### Coverage

- **To explain that animation is a sequence of drawings or photographs**
- **To relate animated movement with a sequence of images**
- **To plan an animation**
- **To identify the need to work consistently and carefully**
- **To review and improve an animation**
- **To evaluate the impact of adding other media to an animation**

Throughout this unit, pupils will explore aspects of animation, looking closely at the sequence of drawings and photographs, the sequence of images, as well as planning, reviewing and improving an animation of their own.

### Progression pathway

This unit builds upon prior knowledge gained in Year 2 in which pupils used computing to aid research and word processing.

They build upon those skills this half term by exploring animation, looking closely at the sequence of drawings and photographs, the sequence of images, as well as planning, reviewing and improving an animation of their own.

This will lead on to a deeper understanding in Y4, as pupils dive deeper into audio and video editing.



## Spring Term 1 – Programming A – Sequencing sounds

### National Curriculum Coverage

- use sequence, selection, and repetition in programs; work with variables and various forms of input and output

### Coverage

- **To explore a new programming environment**
- **To identify that commands have an outcome**
- **To explain that a program has a start**
- **To recognise that a sequence of commands can have an order**
- **To change the appearance of my project**
- **To create a project from a task description**

During this unit, pupils will begin to learn about programming, identifying commands, looking at the different stages of programming, the sequence of commands, as well as having the opportunity to create a project from a task description.

### Progression pathway

This unit builds upon prior knowledge gained in Year 2 in which pupils used computing to aid research and word processing.

They build upon those skills this half term by exploring programming, identifying commands, looking at the different stages of programming, the sequence of commands, as well as having the opportunity to create a project from a task description.

This will lead on to extending knowledge of repetition in programming, in year 6.

## Spring Term 2 – Branching Databases

### National Curriculum Coverage

- understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration

### Coverage

- **To create questions with yes/no answers**
- **To identify the attributes needed to collect data about an object**
- **To create a branching database**
- **To explain why it is helpful for a database to be well structured**
- **To plan the structure of a branching database**
- **To independently create an identification tool**

Throughout this unit, pupils will develop their understanding of what a branching database is and how to create one. Learners will create physical and on-screen branching databases. To conclude the unit, they will create an identification tool using a branching database.

### Progression pathway

This unit builds upon prior knowledge gained in Year 2 in which pupils used computing to aid research and word processing.

They build upon those skills this half term by developing their understanding of what a branching database is and how to create one. Learners will create physical and on-screen branching databases.

This will lead on to a deeper understanding of databases when pupils explore data logging in year 4.



## Summer Term 1 – Programming B – Events and Actions

### National Curriculum Coverage

- use sequence, selection, and repetition in programs; work with variables and various forms of input and output

### Coverage

- **To explain how a sprite moves in an existing project**
- **To create a program to move a sprite in four directions**
- **To adapt a program to a new context**
- **To develop my program by adding features**
- **To identify and fix bugs in a program**
- **To design and create a maze-based challenge**

During this unit, pupils will explore the links between events and actions. Learners begin by moving a sprite in four directions (up, down, left, and right). This unit also introduces programming extensions, through the use of Pen blocks, concluding with learners designing and coding their own maze-tracing program.

### Progression pathway

This unit builds upon prior knowledge gained in Year 2 in which pupils used computing to aid research and word processing.

They build upon those skills this half term by exploring the links between events and actions, introducing programming extensions, through the use of Pen blocks, concluding with learners designing and coding their own maze-tracing program.

This will lead on to a greater understanding of programming, as pupils study repetition in programming in year 6.

## Summer Term 2 – Desktop Publishing

### National Curriculum Coverage

- select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information

### Coverage

- **To recognise how text and images convey information**
- **To recognise that text and layout can be edited**
- **To choose appropriate page settings**
- **To add content to a desktop publishing publication**
- **To consider how different layouts can suit different purposes**
- **To consider the benefits of desktop publishing**

Throughout this unit, pupils will begin to use desktop publishing software and consider careful choices of font size, colour and type to edit and improve premade documents. Learners will be making their own template for a magazine front cover, adding text and images to create their own pieces of work using desktop publishing software.

### Progression pathway

This unit builds upon prior knowledge gained in Year 2 in which pupils used computing to aid research and word processing.

They build upon those skills this half term by using desktop publishing software and considering careful choices of font size, colour and type to edit and improve premade documents. Learners will be creating their own pieces of work using desktop publishing software.

This will lead on to a deeper understanding in Y4, of publishing and editing.



## Autumn Term 1 – The Internet

### National Curriculum Coverage

- understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration

### Coverage

- **To describe how networks physically connect to other networks**
- **To recognise how networked devices make up the internet**
- **To outline how websites can be shared via the World Wide Web (WWW)**
- **To describe how content can be added and accessed on the World Wide Web (WWW)**
- **To recognise how the content of the WWW is created by people**
- **To evaluate the consequences of unreliable content**

During this unit, pupils will learn about the internet, as a network of networks which need to be kept secure. They will learn that the World Wide Web is part of the internet, and will be given opportunities to explore the web for themselves in order to learn about who owns content and what they can access, add, and create.

### Progression pathway

This unit builds upon prior knowledge gained in Year 3 in which pupils learnt about connecting computers and how they work.

They build upon those skills this half term by exploring the web for themselves in order to learn about who owns content and what they can access, add, and create.

This will lead on to learning about and how to share information on the World Wide Web, in Year 5.

## Autumn Term 2 – Programming A – Repetition in Shape

### National Curriculum Coverage

- use sequence, selection, and repetition in programs; work with variables and various forms of input and output

### Coverage

- **To identify that accuracy in programming is important**
- **To create a program in a text-based language**
- **To explain what 'repeat' means**
- **To modify a count-controlled loop to produce a given outcome**
- **To decompose a task into small steps**
- **To create a program that uses count-controlled loops to produce a given outcome**

Throughout this unit, pupils will create programs by planning, modifying, and testing commands to create shapes and patterns. They will use Logo, a text-based programming language. This unit is the first of the two programming units in Year 4, and looks at repetition and loops within programming

### Progression pathway

This unit builds upon prior knowledge gained in Year 3 in which pupils began to learn about programming – sequencing sounds and events and actions.

They build upon those skills this half term by creating programs by planning, modifying, and testing commands to create shapes and patterns. They will use Logo, a text-based programming language.

This will lead on to a deeper understanding of programming in Y5, as pupils learn about selection in physical code.





## Spring Term 1 – Data logging

### National Curriculum Coverage

- use sequence, selection, and repetition in programs; work with variables and various forms of input and output
- use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs

### Coverage

- **To explain that data gathered over time can be used to answer questions**
- **To use a digital device to collect data automatically**
- **To explain that a data logger collects 'data points' from sensors over time**
- **To recognise how a computer can help us analyse data**
- **To identify the data needed to answer questions**
- **To use data from sensors to answer questions**

During this unit, pupils will consider how and why data is collected over time, considering the senses that humans use to experience the environment and how computers can use special input devices called sensors to monitor the environment. Learners will collect data as well as access data captured over long periods of time. They will look at data points, data sets, and logging intervals.

### Progression pathway

This unit builds upon prior knowledge gained in Year 3 in which pupils learnt about branching databases.

They build upon those skills this half term by exploring data logging, considering the senses that humans use to experience the environment and how computers can use special input devices called sensors to monitor the environment.

This will lead on to exploring flat-file databases in Year 5.

## Spring Term 2 – Audio editing

### National Curriculum Coverage

- select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information

### Coverage

- **To identify that sound can be recorded**
- **To explain that audio recordings can be edited**
- **To recognise the different parts of creating a podcast project**
- **To apply audio editing skills independently**
- **To combine audio to enhance my podcast project**
- **To evaluate the effective use of audio**

Throughout this unit, pupils will identify the input device (microphone) and output devices (speaker or headphones) required to work with sound digitally. Learners will discuss the ownership of digital audio and the copyright implications of duplicating the work of others. In order to record audio themselves, learners will use Audacity to produce a podcast, which will include editing their work, adding multiple tracks, and opening and saving the audio files.

### Progression pathway

This unit builds upon prior knowledge gained in Year 3 in which pupils explored animation tools.

They build upon those skills this half term by learning about sound, digitally. In order to record audio themselves, learners will use Audacity to produce a podcast, which will include editing their work, adding multiple tracks, and opening and saving the audio files.

This will lead on to a deeper understanding in Year 5, when pupils explore and experiment with video editing.



## Summer Term 1 – Programming B – Repetition in games

### National Curriculum Coverage

- use sequence, selection, and repetition in programs; work with variables and various forms of input and output

### Coverage

- **To develop the use of count-controlled loops in a different programming environment**
- **To explain that in programming there are infinite loops and count-controlled loops**
- **To develop a design that includes two or more loops which run at the same time**
- **To modify an infinite loop in a given program**
- **To design a project that includes repetition**
- **To create a project that includes repetition.**

During this unit, pupils will be learning about programming, with a specific focus on repetition in games. Pupils will develop the use of count-controlled loops, infinite loops, as well as developing a design that includes multiple loops and a project based around repetition.

### Progression pathway

This unit builds upon prior knowledge gained in Year 3 in which pupils began to learn about programming – sequencing sounds and events and actions.

They build upon those skills this half term by focusing on repetition in games. Pupils will develop the use of count-controlled loops, infinite loops, as well as developing a design that includes multiple loops and a project based around repetition.

This will lead on to a greater understanding of programming as pupils study physical code in Year 5.

## Summer Term 2 – Photo editing

### National Curriculum Coverage

- select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information

### Coverage

- **To explain that the composition of digital images can be changed**
- **To explain that colours can be changed in digital images**
- **To explain how cloning can be used in photo editing**
- **To explain that images can be combined**
- **To combine images for a purpose**
- **To evaluate how changes can improve an image.**

Throughout this unit, pupils will develop their understanding of how digital images can be changed and edited, and how they can then be resaved and reused. They will consider the impact that editing images can have, and evaluate the effectiveness of their choices.

### Progression pathway

This unit builds upon prior knowledge gained in Year 3 in which pupils explored animation and desktop publishing.

They build upon those skills this half term by develop their understanding of how digital images can be changed and edited. They will consider the impact that editing images can have, and evaluate the effectiveness of their choices.

This will lead on to a deeper understanding in Y5, as the pupils investigate video editing.



## Autumn Term 1 – Sharing information

### National Curriculum Coverage

- use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.

### Coverage

- **To explain that computers can be connected together to form systems**
- **To recognise the role of computer systems in our lives**
- **To identify how to use a search engine**
- **To describe how search engines select results**
- **To explain how search results are ranked**
- **To recognise why the order of results is important, and to whom**

During this unit, pupils consolidate their learning of computer systems. Learners consider small-scale and large-scale systems. They explain the input, output, and process aspects of a variety of different real-world systems. Learners discover how information is found on the World Wide Web, through learning how search engines work.

### Progression pathway

This unit builds upon prior knowledge gained in Year 5, in which pupils explored the fundamentals of the internet.

They build upon those skills this half term by consolidating their learning of computer systems. Learners consider small-scale and large-scale systems. They explain the input, output, and process aspects of a variety of different real-world systems.

This will lead on to further developing their understanding, in Year 6, when pupils will look more closely at communication.

## Autumn Term 2 – Vector drawing

### National Curriculum Coverage

- select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information

### Coverage

- **To identify that drawing tools can be used to produce different outcomes**
- **To create a vector drawing by combining shapes**
- **To use tools to achieve a desired effect**
- **To recognise that vector drawings consist of layers**
- **To group objects to make them easier to work with**
- **To apply what I have learned about vector drawings**

Throughout this unit, pupils begin to create vector drawings. They learn how to use different drawing tools to help them create images. Learners recognise that images in vector drawings are created using shapes and lines, and each individual element in the drawing is called an object.

### Progression pathway

This unit builds upon prior knowledge gained in Year 4 in which pupils explored photo editing.

They build upon those skills this half term by learning about vector drawings. They learn how to use different drawing tools to help them create images. Learners recognise that images in vector drawings are created using shapes and lines, and each individual element in the drawing is called an object.

This will lead on to a study of 3D modelling, in Year 6.





## Spring Term 1 – Programming A – Selection in physical code

### National Curriculum Coverage

- use sequence, selection, and repetition in programs; work with variables and various forms of input and output

### Coverage

- **To control a simple circuit connected to a computer**
- **To write a program that includes count-controlled loops**
- **To explain that a loop can stop when a condition is met**
- **To explain that a loop can be used to repeatedly check whether a condition has been met**
- **To design a physical project that includes selection**
- **To create a program that controls a physical computing project**

During this unit, pupils will use physical computing to explore the concept of selection in programming through the use of the Crumble programming environment. Learners will be introduced to a microcontroller and learn how to connect and program it to control components. Learners will be introduced to conditions as a means of controlling the flow of actions in a program.

### Progression pathway

This unit builds upon prior knowledge gained in Year 4 in which pupils explored programming, using repetition in games and sequences.

Pupils will extend their learning by using physical computing to explore the concept of selection in programming through the use of the Crumble programming environment. Learners will be introduced to a microcontroller

This will lead on to a deeper understanding of programming in Year 6, when pupils extend their learning by looking at variables in games.

## Spring Term 2 – Flat-file databases

### National Curriculum Coverage

- use sequence, selection, and repetition in programs; work with variables and various forms of input and output
- use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs

### Coverage

- **To use a form to record information**
- **To compare paper and computer-based databases**
- **To outline how you can answer questions by grouping and then sorting data**
- **To explain that tools can be used to select specific data**
- **To explain that computer programs can be used to compare data visually**
- **To use a real-world database to answer questions**

Throughout this unit, pupils will explore the flat-file databases and how they can be used to organise data in records. Learners will use tools within a database to order and answer questions about data. They will create graphs and charts from their data to help solve problems.

### Progression pathway

This unit builds upon prior knowledge gained in Year 4 in which pupils explored data logging.

They build upon those skills this half term by exploring flat-file databases and how they can be used to organise data in records. Learners will use tools within a database to order and answer questions about data. They will create graphs and charts from their data to help solve problems.

This will lead on to a deeper understanding in Year 6, when pupils explore web page creation, as well as spreadsheets.



## Summer Term 1 – Video editing

### National Curriculum Coverage

- select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information

### Coverage

- **To explain what makes a video effective**
- **To use a digital device to record video**
- **To capture video using a range of techniques**
- **To create a storyboard**
- **To identify that video can be improved through reshooting and editing**
- **To consider the impact of the choices made when making and sharing a video.**

Throughout this unit, pupils will learn how to create short videos by working in pairs or groups. As they progress through this unit, they will be exposed to topic-based language and develop the skills of capturing, editing, and manipulating video.

### Progression pathway

This unit builds upon prior knowledge gained in Year 4 in which pupils explored the internet and video editing.

They build upon those skills this half term by exploring how to create short videos by working in pairs or groups. As they progress through this unit, they will be exposed to topic-based language and develop the skills of capturing, editing, and manipulating video.

This will lead on to a deeper understanding in Year 6, when pupils apply their prior knowledge of photo and video editing, to web page creation and 3D modelling.

## Summer Term 2 – Programming B – Selection in quizzes

### National Curriculum Coverage

- use sequence, selection, and repetition in programs; work with variables and various forms of input and output

### LIs

- **To explain how selection is used in computer programs**
- **To relate that a conditional statement connects a condition to an outcome**
- **To explain how selection directs the flow of a program**
- **To design a program that uses selection**
- **To create a program that uses selection**
- **To evaluate my program**

Throughout this unit, pupils will develop their knowledge of 'selection' by revisiting how 'conditions' can be used in programming. They learn how to write programs that ask questions and use selection to control the outcomes based on the answers given. They use this knowledge to design a quiz in response to a given task and implement it as a program.

### Progression pathway

This unit builds upon prior knowledge gained in Year 4 in which pupils explored programming and specifically repetition in shape and games.

They build upon those skills this half term by gaining a deeper understanding into programming, by developing their knowledge of 'selection'. They learn how to write programs that ask questions and use selection to control the outcomes based on the answers given.

This will lead on to a deeper understanding in Year 6, as the pupils consolidate their understanding of programming, by studying variables in games.



## Autumn Term 1 – Communication

### National Curriculum Coverage

- understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration

### Coverage

- **To explain the importance of internet addresses**
- **To recognise how data is transferred across the internet**
- **To explain how sharing information online can help people to work together**
- **To evaluate different ways of working together online**
- **To recognise how we communicate using technology**
- **To evaluate different methods of online communication**

Pupils will explore how data is transferred over the internet. Learners initially focus on addressing, before they move on to the makeup and structure of data packets. Learners then look at how the internet facilitates online communication and collaboration; they complete shared projects online and evaluate different methods of communication.

### Progression pathway

This unit builds upon prior knowledge gained in Year 5 in which pupils explored sharing information.

They build upon those skills this half term by exploring how data is transferred over the internet. Learners will look at how the internet facilitates online communication and collaboration; they complete shared projects online and evaluate different methods of communication.

This will lead on to critically analysing the impact of communication in KS3.

## Autumn Term 2 – Programming A – Variables in games

### National Curriculum Coverage

- use sequence, selection, and repetition in programs; work with variables and various forms of input and output

### Coverage

- **To define a 'variable' as something that is changeable**
- **To explain why a variable is used in a program**
- **To choose how to improve a game by using variables**
- **To design a project that builds on a given example**
- **To use my design to create a project**
- **To evaluate my project**

Throughout this unit, pupils will explore the concept of variables in programming through games in Scratch. Pupils will use variables to create a simulation of a scoreboard. Pupils will follow the Use-Modify-Create model, experimenting with variables in an existing project, then modify them, then they will create their own project.

### Progression pathway

This unit builds upon prior knowledge gained in Year 5 in which pupils explored programming, and specifically physical code and selection in quizzes.

They build upon those skills this half term by the exploring variables in programming. Pupils will follow the Use-Modify-Create model, experimenting with variables in an existing project, then modify them, then they will create their own project.

This will lead on to a greater understanding of programming, giving pupils a life skill, that is relevant to generational skills and knowledge.



## Spring Term 1 – Web page creation

### National Curriculum Coverage

- select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information

### Coverage

- **To review an existing website and consider its structure**
- **To plan the features of a web page**
- **To consider the ownership and use of images (copyright)**
- **To recognise the need to preview pages**
- **To outline the need for a navigation path**
- **To recognise the implications of linking to content owned by other people**

During this unit, pupils will be introduced to creating websites for a chosen purpose. Learners identify what makes a good web page and use this information to design and evaluate their own website using Google Sites. Throughout the process, learners pay specific attention to copyright and fair use of media, the aesthetics of the site, and navigation paths.

### Progression pathway

This unit builds upon prior knowledge gained in Year 5 in which pupils explored what kind of King Jesus is, looking at the Lord's prayer and parables that we can draw life lessons from, using wisdom from the parables.

They build upon those skills this half term by gaining a deeper understanding into creating websites for a chosen purpose. Learners identify what makes a good web page and use this information to design and evaluate their own website using Google Sites.

This will lead on to a deeper understanding and skill level of the tools that are needed to develop web pages.

## Spring Term 2 – 3D modelling

### National Curriculum Coverage

- select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information

### Coverage

- **To recognise that you can work in three dimensions on a computer**
- **To identify that digital 3D objects can be modified**
- **To recognise that objects can be combined in a 3D model**
- **To create a 3D model for a given purpose**
- **To plan my own 3D model**
- **To create my own digital 3D model**

Throughout this unit, pupils will develop their knowledge and understanding of using a computer to produce 3D models, through Tinkercad. Learners will initially familiarise themselves with working in a 3D space, moving, resizing, and duplicating objects. They will then create hollow objects using placeholders and combine multiple objects to create a model of a desk tidy.

### Progression pathway

This unit builds upon prior knowledge gained in Year 5 in which pupils explored vector drawing.

They build upon those skills this half term by developing their knowledge and understanding of using a computer to produce 3D models, through Tinkercad. Pupils will learn how to create hollow objects using placeholders and combine multiple objects to create a model of a desk tidy.

This will lead on to a deeper understanding of the concept of 3D modelling, as well as the beginnings of cad engineering and architecture.



### Summer Term 1 – Programming B – Sensing

#### National Curriculum Coverage

- use sequence, selection, and repetition in programs; work with variables and various forms of input and output

#### Coverage

- **To create a program to run on a controllable device**
- **To explain that selection can control the flow of a program**
- **To update a variable with a user input**
- **To use a conditional statement to compare a variable to a value**
- **To design a project that uses inputs and outputs on a controllable device**
- **To develop a program to use inputs and outputs on a controllable device**

During this unit, pupils will learn how to use a physical device – the micro:bit. The unit begins with a simple program for pupils to build in and test within the new programming environment, before transferring it to their micro:bit. Pupils then take on three new projects in Lessons 2, 3, and 4, with each lesson adding more depth.

#### Progression pathway

This unit brings together elements of all the four programming constructs: sequence from Year 3, repetition from Year 4, selection from Year 5, and variables (introduced in Year 6 – 'Programming A').

They build upon those skills in this unit by further exploring a physical device – the micro:bit. The unit begins with a simple program for pupils to build in and test within the new programming environment, before transferring it to their micro:bit. Pupils then take on three new projects in Lessons 2, 3, and 4, with each lesson adding more depth.

This will lead on to a greater understanding of programming, giving pupils a life skill, that is relevant to generational skills and knowledge.

### Summer Term 2 – Spreadsheets

#### National Curriculum Coverage

- design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts
- use sequence, selection, and repetition in programs; work with variables and various forms of input and output

#### Coverage

- **To create a data set in a spreadsheet**
- **To build a data set in a spreadsheet**
- **To explain that formulas can be used to produce calculated data**
- **To apply formulas to data**
- **To create a spreadsheet to plan an event**
- **To choose suitable ways to present data**

Throughout this unit, pupils will study spreadsheets, organising data into columns and rows to create their own data set. Learners will be taught the importance of formatting data to support calculations, while also being introduced to formulas and will begin to understand how they can be used to produce calculated data. Pupils will also be taught how to apply formulas that include a range of cells.

#### Progression pathway

This unit builds upon prior knowledge gained in previous year groups, in which pupils learnt about flat-file databases and data logging.

They build upon those skills this half term by exploring how to build spreadsheets, organising data into columns and rows to create their own data set. Pupils will also be taught how to apply formulas that include a range of cells.

This will lead on to a greater understanding and skill-set based around the use of spreadsheets, to analyse data.