Summer 1 OVERVIEW YEAR 3&4 – Computing

Summer 1 Book(s) – The Iron Man		
Topic(s) – Scratch (coding) Questions and Quizzes		
Assessment:	Ongoing formative assessment of key knowledge and skills for each year group. Using and applying unit in Term 6 Has progress been made on coding from Term 3 unit? End of topic assessment (Teacher-led questions) Low stakes discussion with children Recapping VIPs from previous lessons Scrutiny of work produced in books	**Very Important Points (VIPs):** • Coding is writing codes from one language to another. • Programming is to program a machine or activity with a given set of instructions. • A pro is an advantage of something. • A con is a disadvantage of something. • Open questions: More than one answer can be correct and the answers consist of more than one word. • Closed questions: The answers tend to be right or wrong. These questions can be answered quickly and usually require one word or number. • Debugging is the process of identifying and removing errors. • An algorithm is a list of rules to follow in order to solve a problem. • Sprites are the images on a Scratch computer program screen. Every Scratch program is made up of sprites and the scripts (instructions) that control them. • Scripts are programmed to make the sprites do things. • A variable is something that can be changed. • Coding is computing literacy that is important for the future. **Fat Question:** **What jobs and professions might use coding?** **What would happen to the world if there was no coding?**
Links to prior learning (sequencing) and canon book	Year 3 children completed coding work in KS1 giving instructions to the Gruffalo to move through the forest. Year 4 children learnt about coding during Year 3, and used Turtle Logo to practice this. They will be able to apply their knowledge and key terminology when creating a new form of animation. Spring 1 unit (term 3) saw children using Scratch in LKS2 to create shapes and patterns using algorithms and learn how to use the pen tool on Scratch to create procedures which draw colourful patterns. The Iron Man canon book is a Science Fiction based book where a giant robot appears out of nowhere. Coding is programming a robot/computer to carry out actions. There could be links made to old robots and modern-day robots and how technology has changed over time. Research could be completed on how robots are programmed to function using coding.	
Links to other learning (cross fertilisation)	**Maths-** directions, angles, co-ordinates, shape work, sequencing. **DT –** how technology has changed over time, materials used in robots, planning before creating, evaluating robots against criteria, market research. **History –** the changes to technology over time. Research on the first types of robots produced compared to modern day versions. **Science-** Materials, forces **Geography-** directions on a compass	
Links to future learning	Year 3 and Year 4 will encounter coding as they move through school and will look at it in more depth in UKS2. In Year 5 and 6, children will continue to use a variety of software and will be able to apply learning to new areas of Computing.	

Character/Wider Development ('50 things', cultural capital, skills)	**The World Beyond Us** Can learning about coding and programming give any insights into the future of technology? How can coding help astronauts? **Modern Britain** Where can we find evidence of coding and programming in the technology that we have today? What jobs might people do that involve coding? **Healthy Bodies & Healthy Minds** How can we use coding and programming to promote mental and physical wellness? How can coding help the NHS? **The World Around Us** Is coding a universal language? If not should it be? Why? What everyday objects use coding to function? **Culture** Are all cultures as aware of the developments in coding and programming across the world? Which countries may struggle to use coding due to their economic constraints? **Technology in Action** How is coding responsible for the technology that we rely on today? How has coding changed over time?	

OVERVIEW OF TEACHING SEQUENCE

Key Facts/Learning	Learning Focus or Key Question	Learning Outcomes (NC)	Key Words/ Vocabulary	Greater Depth/SEND	Misconceptions	Activities and Resources
Lesson 1	LO: To compare quizzes and decompose a problem into smaller parts.	NC: • are responsible, competent, confident and creative users of information and communication technology • select, use and combine a variety of software on a range of digital devices • 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	Scratch Command Pen up Pen down Quiz Debug Compare Decompose	GD: Will give more thorough and considered answers to questions. Will sequence the steps needed to create a quiz in chronological order. Will think of more than 2 pros and cons for online quizzes and paper-based quizzes. SEND: Are supported by a structured worksheet and need to fill in the tables rather than draw them in their book. VIPS are scribed for them.	Children may have limited experience of paper-based and online quizzes. This may hinder their ability to create one with limited experience. Children may miss out steps in the programming so the program will not function. Children may have struggled to use Scratch confidently in Term 3 and not be ready for the next steps to create quizzes. Coding is writing codes from one language to another whereas programming is to program a machine or activity with a	Children will re-cap their learning on Scratch from Spring 1 (term 3). Children will re-cap their knowledge on coding by watching a video. https://www.bbc.co.uk/bitesize/clips/ztqxhyc Children will understand the VIPs. Discussion of quiz shows children have watched on TV. Children will identify the pros and cons of different types of quizzes writing down what they think in their book- pros and cons of both paper based and online quizzes. Open Scratch and discuss the visual programming blocks. Children to identify which blocks could be used to create a quiz. Children will decompose a problem into smaller parts- discussion of the step by steps needed to create a quiz on Scratch. Children to try to write them down in a chronological order. Discussion of the differences between open and closed questions. Children to write down examples of closed questions in their book. Children to re-arrange the blocks to write an algorithm that they think would work on Scratch to create a quiz- activity sheet. Plenary-follow the flowchart to check your partner's program works. Can the children debug the program if they notice an issue? **Notebook slides for LO, re-cap slides, VIPs and deepen the moment.**

		algorithms work and to detect and correct errors in algorithms and programs			given set of instructions.	**Powerpoint slides for the other resources.** **Year 4 children will write down more examples of closed questions** **Activity sheet** **1 star Year 3 and 3 star Year 4** **SEND separate worksheet and complete 1 star sheet with LSA or peer support. SEND could cut out the blocks and stick them on.** **Deepen the moment** What different themes could you create a quiz on that would help your peers to learn?
Lesson 2	LO: To create a short quiz and change the sprite on Scratch.	NC: • are responsible, competent, confident and creative users of information and communication technology • select, use and combine a variety of software on a range of digital devices • use sequence, selection, and repetition in programs; work with variables and various forms	Scratch Command Pen up Pen down Quiz Debug Compare Decompose Programme Errors Sprite Sequence Duplicate Repetition Variable Algorithm	GD: Will give more thorough and considered answers to questions. Will be able to recall more VIPs from the half term across all the subjects. Will be able to alter their sprite confidently and quickly following all the instructions on the worksheets. SEND: Are supported by a structured worksheet. VIPS are scribed for them.	Children may have limited experience of paper-based and online quizzes. This may hinder their ability to create one with limited experience. Children may miss out steps in the programming so the program will not function. Children may have struggled to use Scratch confidently in Term 3 and not be ready for the next steps to create quizzes. Coding is writing codes from one language to another	Children will re-cap their learning on quizzes and decomposing a problem into smaller parts from last lesson. Children will understand the VIPs. Children will watch a video explaining algorithms. What is an algorithm? - BBC Bitesize Discussion of what debugging means. Children will identify errors and debug a program using Scratch- Activity Sheet debugging questions. Children open and run the debugging question files. Following the program of steps given to them on the worksheet- does it work? If not write down what needs to be done to make it work. Children to then go back to their work from lesson 1 and debug their program based on the feedback they got in the plenary. Teacher to model how to use Scratch to program questions and how to duplicate the sequence of blocks to avoid creating each question block by block. Children will write their own quiz using the visual programming blocks after watching the teacher modelling. Children will use the duplicate function. Children to open their partner's quiz file and test and debug that making suggestions.

		of input and output • design, write and debug programs that accomplish specific goals; solve problems by decomposing them into smaller parts		Teacher note: choose the VIPs from each subject you think are the most relevant for your class.	whereas programming is to program a machine or activity with a given set of instructions. Children may not be secure in their knowledge of VIPs from other subjects this half term.	Discussion of what a sprite is in a game. Show images of sprites on the powerpoint. How can a sprite be changed? Colour, size, costumes etc. Teacher to model how to change the colour, size and costume of a sprite on Scratch. Children to then create a sprite and change the colour, size and costume of theirs- use activity sheet 2 to provide algorithms for the children to follow. Teacher to model how to make their sprite move in different ways- use activity sheet 3 for this with algorithms on for children to follow after modelling. **Notebook slides for LO, re-cap slides, VIPs and deepen the moment.** **Powerpoint slides for the other resources.** **Activity sheet 1 debugging** **Activity sheet 2 changing the sprite cards** **Activity sheet 3 Sprite movement cards** **SEND separate worksheet** **Differentiation by outcome for year 3 and year 4 Year 4 chn will create a longer sequence of instructions for their quiz (more questions) and add more features to their sprite. Year 4 children should be able to debug their partner's quiz with more confidence than the year 3 children.** **Deepen the moment** What do you need to do in order to debug a program?
Lesson 3	LO: To create my own VIP quiz on Scratch.	NC: • are responsible, competent, confident and creative users of information and	Scratch Command Quiz Debug Compare Decompose Programme Errors	GD: Will give more thorough and considered answers to questions. Will be able to recall more VIPs	Children may have limited experience of paper-based and online quizzes. This may hinder their ability to create one with limited experience.	Children will re-cap their learning on changing the sprite from last lesson. What could they do to change their sprite in terms of appearance and movement? Children will understand the VIPs. Re-cap open ended and closed ending questions. Discussion of the problem of asking open ended questions in a quiz.

		communication technology • select, use and combine a variety of software on a range of digital devices • design, write and debug programs that accomplish specific goals; solve problems by decomposing them into smaller parts • use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs	Sprite Sequence Duplicate Repetition Variable Algorithm Variable	from the half term across all the subjects. Will create more detailed and effective quizzes on Scratch. SEND: Are supported by a structured worksheet. VIPS are scribed for them. Teacher note: choose the VIPs from each subject you think are the most relevant for your class.	Children may miss out steps in the programming so the program will not function. Children may have struggled to use Scratch confidently in Term 3 and not be ready for the next steps to create quizzes. Coding is writing codes from one language to another whereas programming is to program a machine or activity with a given set of instructions. Children may not be secure in their knowledge of VIPs from other subjects this half term.	Re-cap the chosen VIPs from last lesson across all subjects. Why were these VIPs chosen? Children to think of closed ended questions to include in their quiz that link to the chosen VIPs. Children will design, write and debug their own program by selecting appropriate visual block commands to create a sequence- follow the step by step instructions sheet to create a quiz on Scratch. Children to test their quiz and debug the program to ensure that it works if they face problems. Children will test a partner's quiz and give constructive feedback using the worksheet that suggests positives, problems and how to overcome the problems. Watch a video on how to become a coder as a job. https://www.bbc.co.uk/bitesize/articles/zmq3jhv **Notebook slides for LO, re-cap slides, VIPs and deepen the moment.** **Powerpoint slides for the other resources.** **Peer assess activity sheets.** **SEND separate worksheet** **Differentiation by outcome for year 3 and year 4** **Year 4 chn will add more visual block commands to their sequence making it longer.** **Year 4 chn should be able to give more detailed constructive feedback to their partner when testing their quiz.** **Deepen the moment** If you were describing the programme of Scratch to someone who had never used it before what pros and cons would you suggest to them?

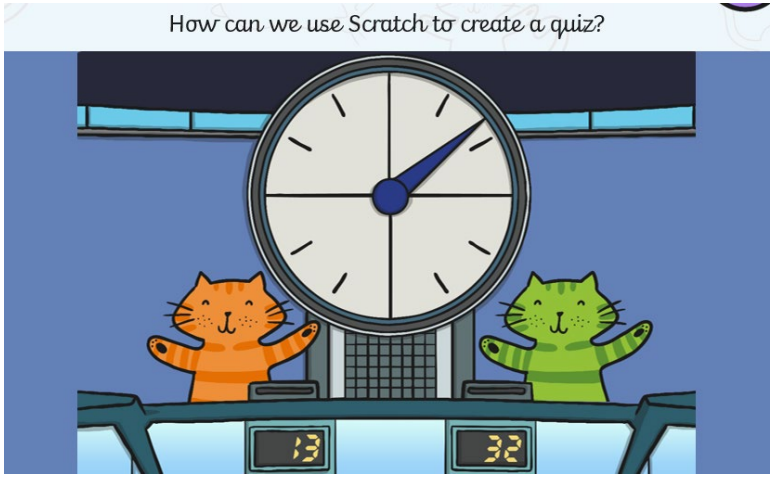
Context (big picture learning) Technology has such a wide-ranging application and we believe it is important for our children to encounter as many of them as possible. We want to ignite interest in the subject and inspire a curiosity to find out more. Children will also look into the how machines and technology that we rely on so much, works and the process behind each function.

Folder name (Trust shared > Primaries > KS2 > Year 3/4 Planning > Cycle B > Summer 1 – Ironman > Computing

Computing Knowledge Organiser

Curriculum Intent:

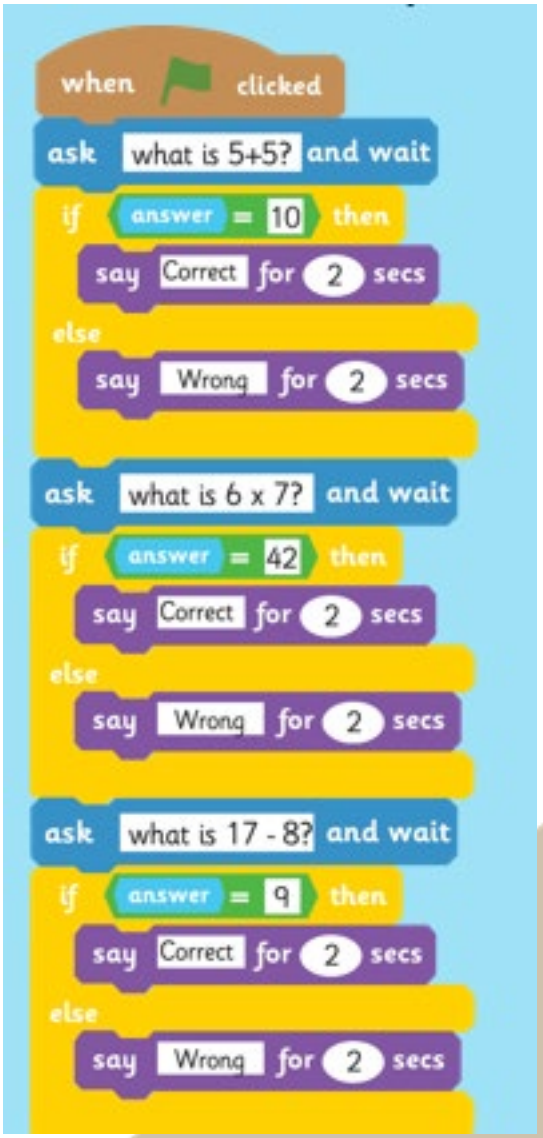
Our Computing lessons are to prepare you for your future by giving you the opportunities to gain knowledge and develop skills that will equip you for an ever-changing digital world.



Fat Question:

What jobs and professions might use coding?

What would happen to the world if there was no coding?



VIPs

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- Closed questions: The answers tend to be right or wrong. These questions can be answered quickly and usually require one word or number.
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- Scripts are programmed to make the sprites do things.
- A variable is something that can be changed.
- Coding is computing literacy that is important for the future.