EYFS

EYFS					
TERM 1	**TERM 2**	**TERM 3**	**TERM 4**	**TERM 5**	**TERM 6**
Journeys **Computing Systems and Networks - Using a Computer (all 5 lessons)**	Toys **Programming (all 5 lessons) Explorer Time**	Superheroes **Computing Systems and Networks – Exploring hardware (lessons 1-4) Data Handling – Lessons 1-2**	**Land and Sea**	Growing **Data Handling – Lessons 3-4** **Online Safety**	Animals
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Personal Social and Emotional Development		
Learning Experiences: Regular story time and book corner themed around bear hunt, journeys and space.	**Pupils learn:** To listen to others in a small group. To know our rules for learning. To follow simple instructions, related to their new routine.	**Substantive Threads:** Living in the Wider World (PSHE)
Understanding the World		
Learning Experiences: Kapow Lessons: **Computing Systems and Networks** Lesson 1 – Keyboards Lesson 2 – Logging in and out Lesson 3 – Mouse Control Lesson 4 – Mouse Control – clicking Lesson 5 – Mouse control – clicking and dragging	**Pupils learn:** **Computing Systems and Networks - Using a Computer (all 5 lessons)** To recognise and identify familiar letters and numbers on a keyboard. Basic mouse skills such as moving and clicking To use a simple paint tool to create digital art. To log in and out with adult support. To identify a computer keyboard.	**Substantive Threads:** Living in the Wider World (PSHE)

PREREQUISITES **Birth to Three Development Matters**
• Following simple one step and two step instructions. • Express preferences and decisions. They also try new things and start establishing their autonomy. • Repeat actions that have an effect. • Start to develop pretend play, pretending that one object represents another. For example, a child holds a wooden block to her ear and pretends it's a phone. • To identify some types of transport, for example- cars, bikes, buses. • Thrive as they develop self-assurance

Key Stage 1 – Year 1

YEAR 1					
TERM 1	**TERM 2**	**TERM 3**	**TERM 4**	**TERM 5**	**TERM 6**
Computing systems and networks Improving Mouse Skills Lessons 1-3 **Programming 1** Algorithms and Debugging Lessons 1, 2, 4, 5		**Creating Media** Digital Imagery Lessons 1-3 **Programming 2** Option 3- Bee Bots' Lessons 1, 3 and 4		**Online Safety** Lessons 1- 4	
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Necessary context for learning:	**…pupils learn:**
Kapow Lessons: **Computing systems and networks** Improving Mouse Skills Lesson 1 – Logging in Lesson 2 – Click and Drag Skills Lesson 3 – Drawing Skills **Programming 1** Algorithms and Debugging Lesson 1 – What is an algorithm? Lesson 2 – Algorithm Pictures Lesson 4 – Step by step Lesson 5 – Debugging Pictures	**Computing systems and networks** Improving Mouse Skills • To log in and log out means to begin and end a connection with a computer • A computer and mouse can be used to click, drag, fill, select, add backgrounds, text, layers, shapes and clipart. • Passwords are important for security and to keep us safe. **Programming 1** Algorithms and Debugging • Algorithms are instructions in the correct order. • Decomposition means breaking a problem into manageable chunks. • Errors in an algorithm (instructions)are called bugs; fixing these is debugging. • To follow instructions precisely to carry out an action • What decomposition is and can explain it • To debug an algorithm

PREREQUISITES

- Following and giving simple instructions is important in computing.
- Can log in and out of a laptop.
- Instructions should be followed in the correct order.
- To program a Bee-Bot with simple commands and to fix simple programming errors.
- An algorithm is a set of clear and precise instructions.

SUBSTANTIVE AND DISCIPLINARY LANGUAGE STEMS

- Passwords are important because:
- Clicking a mouse can…
- An algorithm is…
- To debug an algorithm…

Year 2

YEAR 2					
TERM 1	**TERM 2**	TERM 3	**TERM 4**	**TERM 5**	**TERM 6**
Computing systems and networks What is a computer? Lessons 1, 2 and 5 **Programming 1** Algorithms and debugging Lessons 1, 2, 4, 5		**Data Handling** International Space Station Lessons 1, 3 and 5 **Programming 2** Scratch Junior Lessons 1,2 4/5 (choose between 4 and 5)		**Online Safety** Lessons 1-5	
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Necessary context for learning:	...pupils learn:
Kapow Lessons: **Computing systems and networks** What is a computer? Lesson 1 – Computer Parts Lesson 2 – Inputs Lesson 5 – Real World Role Play **Programming 1** Algorithms and debugging Lessons 1 – Dinosaur algorithm Lesson 2 – Machine Learning Lesson 4 – Making Maps Lesson 5 – Unplugged Debugging	**Computing systems and networks** What is a computer? • To identify parts of a computer: **buttons, computer, desktop, keyboard, laptop, mouse, screen (monitor).** • People control technology and give it instructions. • Where computers are used and for what purpose. • That computers work together. • Computers have inputs and what these do. • Computers have outputs and what these do. **Programming 1** Algorithms and debugging • To decompose a game and the algorithms used. • To explain what an algorithm is • That computers use algorithms to make predictions • To write a clear and concise algorithm • That abstraction is unnecessary information, giving an example (leaving something off a map) • To debug a programme

PREREQUISITES
- Log in and log out means to begin and end a connection with a computer.
- A computer mouse can be used to click, drag, fill and select.
- Passwords are important for security.
- Adding backgrounds, text, layers, shapes and clipart in a digital art program.
- Algorithms are instructions in the correct order.
- Decomposition means breaking a problem into manageable chunks.
- Errors in an algorithm (instructions)are called bugs; fixing these is debugging.

SUBSTANTIVE AND DISCIPLINARY LANGUAGE STEMS
- An algorithm is…
- To debug an algorithm…
- Decomposition means to
- Computers, in everyday life, are used to…

Key Stage 2 – Year 3

YEAR 3					
TERM 1	TERM 2	TERM 3	TERM 4	TERM 5	TERM 6
Computing systems and networks Networks Lessons 1, 3 and 5 Journey inside a computer Lessons 1, 2 and 5		**Online Safety** Lessons 1-5		**New Scratch** Lessons 1-5	

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Necessary context for learning:

Kapow Lessons:

Computing systems and networks
Networks
Lesson 1 – What is a network?
Lesson 3 – How a website works?
Lesson 5 – What is packet data?

Journey inside a computer

Lesson 1 – Inputs and Outputs
Lesson 2 – Building a paper laptop
Lesson 5 – Dismantling a tablet

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...pupils learn:

Computing systems and networks
Networks
- that a network joins devices together so they can communicate.
- that the server is a central computer or program that manages access to a central resource.
- that the internet is a global computer network providing information and communication facilities.
- that a router forwards data packages between computer networks.
- that a packet is a small piece of data is transferred over the internet.
- engineers identify a connection error and suggest how to rectify the issue
- To understand different computing software are used for different creative purposes.
- To internet image searches to present information about networks and the internet.
- That users access the internet for a range of purposes, specifically data retrieval.

Journey inside a computer
- to identify different inputs and outputs of a computer
- a laptop has different components including hard drive, GPU, RAM, CPU and ROM
- the features of a tablet are: a camera, microphone, speaker, touchscreen and battery.
- That a laptop and tablet have different components.

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PREREQUISITES

- People control technology.
- Buttons are a form of input that gives a computer instructions about what to do (output).
- Computers often work together.

- Something created on a computer can be more easily saved and shared than a paper version.
- Keyboard shortcuts can be used to perform tasks when typing.
- The space bar on a keyboard inserts room between letters and words.

SUBSTANTIVE AND DISCIPLINARY LANGUAGE STEMS

- Computer scienctist know/often use...
- Data analysts know/often use…
- Digital users know/often use…
- A network is used to _____
- Devices access a network by _____

Year 4

TERM 1	TERM 2	TERM 3	TERM 4	TERM 5	TERM 6
Computing Systems and Networks **Option 1 Google** Lessons 1, 3, 4 and 5 **Programming – Option 1** **New Scratch** Lessons 1, 3, 4		**Online Safety** Lessons 1-5		**Data Handling** Investigating Weather Lessons 1, 3 and 4 **Programming 2** Computational Thinking Lessons 1-4	

Necessary context for learning:

Kapow Lessons:

Computing Systems and Networks
Option 1 Google
Lesson 1 - Teamwork
Lesson 3 - Slide Presentations
Lesson 4 – Google Forms
Lesson 5 – Shared spreadsheets

Programming – Option 1
New Scratch

Lesson 1 – Exploring Variables and Conditions

Lesson 3 – Planning a game

Lesson 4 – Programming a game

...pupils learn:

Computing Systems and Networks
Option 1 Google

- That technology means you can work with a partner using team work and not need to be in the same room.
- Appropriate behaviour when collaborating online
- To use presentation software, including images and texts and use transitions and slides to make it more engaging.
- To create a google form and share it with the class
- To export data to a spreadsheet, to highlight data using conditional formatting and to calculate sums and averages of numbers (within the spreadsheet)

Programming – Option 1
New Scratch

- A variable in Scratch is a named container that stores a value or a piece of information that can be used throughout a program.
- To identify an 'if statement' in a code
- Conditions can be true and how to explain this.
- To create a variable to store a word or numbers and use this to build a game to keep track of a score.
- To build a working game which uses variables to respond to the user's input.

PREREQUISITES

- Touch typing is the fastest way to type.
- Computers often work together.
- **Log in** and **log out** mean beginning and ending a connection with a computer.
- Creating something on a computer can be more easily saved and shared than a paper version.
- Scratch is a block programming language.
- A loop is a coding tool used to repeat an instruction in a program.
- An algorithm is a series of instructions put in an exact order/Decomposition means breaking a problem into manageable chunks.

SUBSTANTIVE AND DISCIPLINARY LANGUAGE STEMS

- Programmers know/often use...
- Digital users know/often use…
- This programme is composed of _____
- The algorithm tells to computer to _____
- Abstraction is when programmers _____
- Programmers use loops to _____
- I will programme the _____ to _____
- I want _____ to go to _____ so I will _____
- To debug my programme I will change_____

YEAR 5					
TERM 1	**TERM 2**	**TERM 3**	**TERM 4**	**TERM 5**	**TERM 6**
Computing systems and networks Search Engines Lessons 1, 2, 3 and 4 **Online Safety** Lessons 1 and 2		**Creating Media** Stop Motion Animation – **Option 1** Lessons 1-4 **Online Safety** Lessons 3-4		**Programming** Micro:bits All Lessons	

Necessary contexts for learning:	...Pupils learn:
Computing systems and networks Search Engines Lesson 1- Searching Basics Lesson 2 – Inaccurate Information Lesson 3 – Web Quest Lesson 4 – Information Poster **Online Safety** Lesson 1 – Online Protection Lesson 2 – Online Communication	**Computing systems and networks** Search Engines - What a search engine is and that Google is a search engine. - That search engines help to navigate the web. - That key words help to search the web. - Not everything online is true - Anyone can create a web page and there are ways of fact checking such as checking the URL, checking the grammar and spelling and evaluating the website's appearance - That precise search skills can answer focused questions - That when searching, results are rated to decide rank - A page rank is a system that sorts web pages to show the most relevant results at the top of the list, with the first result being rank one.- - A **web crawler is a** program that searches the world wide web using keywords in a systematic way to find the most relevant results for the user. **Online Safety** - That passwords need to be strong and that apps require some form of password. - Apps can access personal information and how to alter the permissions - That there are different types of online communication including - emails, chat rooms, messenging, apps, video calling and gaming - That there are positive and negative ways of communicating online - Being unkind online is the same as face to face. - Cyberbullying is bullying online

PREREQUISITES

- Using search engines during research lessons
- To know that the internet is a global computer network providing information and communication facilities.
- To know that a router forwards data packages between computer networks.
- To know that a packet is a small piece of data that is transferred over the internet.
- Bullying can happen online and offline. Bullying online is cyberbullying
- A password needs to be strong and kept private.

SUBSTANTIVE AND DISCIPLINARY LANGUAGE STEMS

- Computer scientist know/often use...
- Software developers...
- A search engine can be used to...
- Data analysts know/often use...
- Digital users know/often use...
- Questions help sort data by...
- Data is recorded by...
- Computers use data to...
- To stay safe online I...

YEAR 6					
TERM 1	**TERM 2**	**TERM 3**	**TERM 4**	**TERM 5**	**TERM 6**
Data Handling Big Data 1 Lessons 1, 3, 4 and 5 **Online Safety Lessons** 1-3		**Online Safety** Lessons 4-5		**Computing Systems and networks** Exploring AI All Lessons	**Further MicroBits** Online Safety (follow up)

Necessary contexts for learning:	**...Pupils learn**
Data Handling Big Data 1 Lesson 1 – Barcodes Lesson 3 – RFID Lesson 4 – Using RFID Lesson 5 – Trasnport Data **Online Safety** Lesson 1- Life Online Lesson 2 – Sharing Online Lesson 3 – Creating a positive online reputation	**Data Handling** Big Data 1 • Why barcodes and qr were created and what they are used for • That RFID (Radio Frequency Identification) is used to transmit data safely. • To use simple formulas to add and subtract fields within a spreadsheet and sort data for a given purpose. • That data analysts use this to interpret data more efficiently • To analyse real-time data to generate a graph using excel software. • How corruption can happen within data during transfer (for example when downloading, installing, copying and updating files). • That working collaboratively on devices is only possible if the users know how to safely transfer data and how to prevent corruption. • That data corruption is less likely to happen it is sent in 'packets'. • That devices that are not updated are most vulnerable to hackers. **Online Safety** • That different scenarios can make someone feel sad, worried, uncomfortable or frightened. • There is help available online and offline and it is important to ask for it. • That kindness and respect can be shown online in a number of ways. • Sharing things online creates risk. Privately sharing online also brings risk. • A positive online reputations is supported by our school values.

PREREQUISITES
- To understand data can be sent in packets.
- Computerised databases are more efficient than paper based equivalents.
- To know what database, field, record and data mean.
- To input, sort and filter data using Google Sheets or Excel.
- To know what information is useful in an online database.
- To create a graph and chart in Google Sheets.
- Sharing online is a digital footprint.

SUBSTANTIVE AND DISCIPLINARY LANGUAGE STEMS
- To understand data can be sent in packets.
- Computerised databases are more efficient than paper based equivalents.
- To know what database, field, record and data mean.
- To input, sort and filter data using Google Sheets or Excel.
- To know what information is useful in an online database.
- To create a graph and chart in Google Sheets.

YEAR 6					
TERM 1	**TERM 2**	**TERM 3**	**TERM 4**	**TERM 5**	**TERM 6**