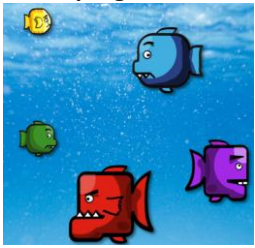


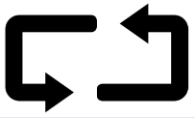


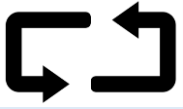
A high-quality computing education equips pupils to use computational thinking and creativity to understand and change the world. Computing has deep links with mathematics, science, and design and technology, and provides insights into both natural and artificial systems. The core of computing is computer science, in which pupils are taught the principles of information and computation, how digital systems work, and how to put this knowledge to use through programming. Building on this knowledge and understanding, pupils are equipped to use information technology to create programs, systems and a range of content. Computing also ensures that pupils become digitally literate – able to use, and express themselves and develop their ideas through, information and communication technology – at a level suitable for the future workplace and as active participants in a digital world.

The national curriculum for computing aims to ensure that all pupils:

- can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation
- can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems
- can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems
- are responsible, competent, confident and creative users of information and communication technology.

Key stage 1							
- understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions - create and debug simple programs - use logical reasoning to predict the behaviour of simple programs - use technology purposefully to create, organise, store, manipulate and retrieve digital content - recognise common uses of information technology beyond school - use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.							
Key stage 2							
- 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 - use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs - 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 - use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content - 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 - use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.							
	R	1	2	3	4	5	6
Coding and programming	Design, write and debug programs that accomplish specific goals. 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.						
		<u>On the move</u>	<u>Different sorts of inputs</u>	<u>Sequence and animation</u>	<u>Introduction to variables</u>	<u>Speed direction and coordinates</u>	<u>More complex variable</u>
Outcome		Use clear instructions to create programs 	use the keyboard to control objects on screen 	Create simple animations and simulations 	Create simple programs using variables 	Use numbers to represent actions 	Manipulate inputs to create useful outputs 
Debug		To use code to write a computer program where objects in a space scene move when they are clicked on.	To write code that makes an object move around the screen when keys are pressed. To write code that makes an	To write code that uses a timer to create a sequence of traffic lights turning on and off. .		To write code including if statements to make an object rotate, and combine this with conditional events to make a game.	To write code that prompts the user to input the value of a variable, and use this to create an interactive block chart. To write the code for a shopping

			object change direction when different keys on the keyboard are pressed.				till using variables to store and calculate values.
Sequence 		To combine start events and click events to make a simple game. To give instructions to make objects on the screen move when the program starts. To combine start events and click events in code to make a magic castle.	To write code where different inputs can be used to make objects move and disappear. To write code that makes an object change direction when the pointer is pressed and released.	To write a computer program where different pieces of code execute in a particular sequence. To create a program that uses sequences for two different objects moving on the screen. To write code that uses a timer to create a sequence of events	To use variables to keep track of the score in a game that uses conditional events. To use a variable to keep track of the score in a game where the score increases, decreases or resets when different conditions are met. To use a variable to keep track of the score in a game that uses conditional events. To learn how to use multiple different variables and to set the value of a variable.	To use object properties (speed, heading and angle) to create a driving simulation. To create a sailing game where a boat's position on the screen is controlled by making changes to its co-ordinates. To set friction to affect the speed and movement of a car in a driving simulation.	To create a stopwatch with stop, start, and reset buttons, and both digital and analogue displays.
Logical reasoning 			To make objects perform different actions when keys are pressed on the keyboard.		To understand how a variable can be used to keep track of the score in a game.	To understand that setting values in code to control the speed of an object.	To use my knowledge of variables to make a balloon pop game that gets harder as users score more points.
Coding and programming		<u>Simple inputs</u>	<u>Buttons and instructions</u>	<u>Conditional events</u>	<u>Repetition and loops</u>	<u>Random numbers and simulations</u>	<u>Object properties</u>
Outcome		Combine input events to create apps and programs 	Write codes to instruct objects 	Code with 'if statements' which select different pieces of code to execute depending on what happens to other objects 	When coding, use repetition and loops 	Create inputs to generate random numbers 	Use property values and parameters to store information about objects 
Debug 		To combine start events and click events to program cars and emergency vehicles in an animated traffic scene.	To write code where buttons can be used to make an object move around the screen.	To make a simple game that uses conditional hit events to check if one object has hit another. To use conditional hit events to control the movement of a car on the screen.	To write the code to program a rocket to orbit round the spinning Moon, using the concepts of loops, regular or infinite repetition, and 'if statement' blocks. To write code that uses nested loops to create a car-driving program.	To write code for a game that uses random numbers to move objects in different directions To write code that uses random numbers to move objects at random speeds and headings, and use this to create a game.	To write code that detects the properties of an object and passes the value of these properties (or a set of parameters) to other objects, and to use this to create a space game. To make a game that moves objects around by getting information from events and passing object properties.
Sequence		To use code to make objects move when they are clicked on. To combine start events and click events to make a simple game.	To write the code for a simple game where buttons are used to move an object around and cast magic 'disappearing spell'.	To use 'hit events' to program a space maze game in which an object reacts to particular conditions.	To use a loop to do something repeatedly in a program. Designs simple algorithms using loops and selection, i.e. if	To create a ping-pong game, using random headings in specific ranges. To be able to generate and display random numbers, and use these	To create a golf game by writing code that accesses and uses object properties, including passing the value of these properties to other objects (passing a set of

			To write the code for a simple game where buttons are used to move an object around		statements. (AL) To use loops, a variable and if statements to create an animated scene of hot air balloons performing a repeating pattern in the sky.	within the program for a car racing game.	parameters). To create a game where players stop objects moving by changing their properties. To make a football game that passes the speed and heading of the pointer's movement to a ball on the screen.
Logical reasoning 		To understand that when a computer does something it is following instructions called 'code'.		To program a simple game where conditional events are used to check whether objects have collided.		To understand how numbers in combination with variables and conditional hit events to create a realistic pinball game.	To learn how to pass properties from one object to a second in order to make the second object move relative to the first.
		Vocabulary Code, instructions, screen, direction, left/right/up/down, run, action, object, click/clicked, scene, program, instructions, algorithm, click, code icon, start, block, icon, start event, click event	Vocabulary Key pressed, event, object, action, program, characters, control, action, algorithm, run, execute, direction, code, event box, key press, button, click, fix, bug, debugging, instructions, icon, design, start, app, save, share, code	Vocabulary Algorithm, instructions, commands, forward (fd), left (lt), move, turn, clear screen (cs), variable, repeat, sprite, block, green flag, change colour, key press, code	Vocabulary Sprite, block, command, background, backdrop, algorithm, move, turn, green flag, key press, pen, repeat, code	Vocabulary Animate, animation, project, remix, repeat, iteration, debug, broadcast, receive, sequence, show, hide, visible, invisible, deconstruct, transition, audio, record, interactive, user	Vocabulary Algorithm, sprite, backdrop, background, script, block, events, sequence, gradient, fill, levels, repeat, commentary, consequence, action, penalty, debug, costume, code
Online Safety	Learn how to use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.						
	Dangers online and unkind behaviour.	Internet safety rules.	Communication online safely/ permission	Behaviour online knowing someone	Being respectful about content posted	Online communities / validity online	Online reputation
Outcome	Create an electronic device to communicate with others (junk modelling) 	Create a poster with online safety rules. 	Create a kahoot quiz – what and who to report to. 	Write a child friendly online policy. 	Create an online profile for a character or avatar. 	Create a fake news story linked to topic. 	Create some positive online social media posts to be shared on MME 
Online relationships 	Recognise some ways in which the internet can be used to communicate. Give examples of how I (might) use technology to communicate with people I know.	Give examples of when I should ask permission to do something online and explain why this is important. Use the internet with adult support to communicate with people I know (e.g. Video call apps or services). Can explain why it is important to be considerate and kind to people online and to respect their choices. Explain why things one person finds funny or sad online may not always be seen in the same way	Give examples of how someone might use technology to communicate with others they don't also know offline and explain why this might be risky. (e.g. Email, online gaming, a penpal in another school / country). Explain who I should ask before sharing things about myself or others online. Describe different ways to ask for, give, or deny my permission online and can identify who can help me if I am not sure. Explain why I have a right to say	Describe ways people who have similar likes and interests can get together online. Explain what it means to 'know someone' online and why this might be different from knowing someone offline. Explain what is meant by 'trusting someone online', why this is different from 'liking someone online', and why it is important to be careful about who to trust online including what information and content they are trusted with.	Describe strategies for safe and fun experiences in a range of online social environments (e.g. Livestreaming, gaming platforms) Give examples of how to be respectful to others online and describe how to recognise healthy and unhealthy online behaviours Explain how content shared online may feel unimportant to one person but may be important to other people's thoughts feelings and beliefs.	Give examples of technology specific forms of communication (e.g. Emojis, memes and gifs). Explain that there are some people i communicate with online who may want to do me or my friends harm. I can recognise that this is not my / our fault. Describe some of the ways people may be involved in online communities and describe how they might collaborate constructively with others and make positive contributions. (e.g. Gaming communities or social media groups).	Explain how sharing something online may have an impact either positively or negatively. Describe how to be kind and show respect for others online including the importance of respecting boundaries regarding what is shared about them online and how to support them if others do not. Describe how things shared privately online can have unintended consequences for others. E.g. Screen-grabs. Explain that taking or sharing inappropriate images of someone

		by others.	‘no’ or ‘I will have to ask someone’. I can explain who can help me if I feel under pressure to agree to something I am unsure about or don’t want to do. Identify who can help me if something happens online without my consent. Identify who can help me if something happens online without my consent. Explain why I should always ask a trusted adult before clicking ‘yes’, ‘agree’ or ‘accept’ online.	Explain why someone may change their mind about trusting anyone with something if they feel nervous, uncomfortable or worried. Explain how someone’s feelings can be hurt by what is said or written online Explain the importance of giving and gaining permission before sharing things online; how the principles of sharing online is the same as sharing offline e.g. Sharing images and videos.		Explain how someone can get help if they are having problems and identify when to tell a trusted adult. Demonstrate how to support others (including those who are having difficulties) online.	(e.g. Embarrassing images), even if they say it is okay, may have an impact for the sharer and others; and who can help if someone is worried about this
Online reputation 	Identify ways that I can put information on the internet.	Recognise that information can stay online and could be copied. Describe what information I should not put online without asking a trusted adult first	Explain how information put online about someone can last for a long time Describe how anyone’s online information could be seen by others. Who to talk to if something has been put online without consent or if it is incorrect.	Explain how to search for information about others online Give examples of what anyone may or may not be willing to share about themselves online. I can explain the need to be careful before sharing anything personal. Explain who someone can ask if they are unsure about putting something online.	Describe how to find out information about others by searching online. Explain ways that some of the information about anyone online could have been created, copied or shared by others.	Search for information about an individual online and summarise the information found. Describe ways that information about anyone online can be used by others to make judgments about an individual and why these may be incorrect.	Explain the ways in which anyone can develop a positive online reputation. Explain strategies anyone can use to protect their ‘digital personality’ and online reputation, including degrees of anonymity.
Online bullying 	Describe ways that some people can be unkind online Offer examples of how this can make others feel.	Describe how to behave online in ways that do not upset others and can give examples	Explain what bullying is, how people may bully others and how bullying can make someone feel. Explain why anyone who experiences bullying is not to blame Talk about how anyone experiencing bullying can get help	Describe appropriate ways to behave towards other people online and why this is important. Give examples of how bullying behaviour could appear online and how someone can get support.	Recognise when someone is upset, hurt or angry online. Describe ways people can be bullied through a range of media (e.g. Image, video, text, chat) Explain why people need to think carefully about how content they post might affect others, their feelings and how it may affect how others feel about them (their reputation).	Recognise online bullying can be different to bullying in the physical world and can describe some of those differences. Describe how what one person perceives as playful joking and teasing (including ‘banter’) might be experienced by others as bullying. Explain how anyone can get help if they are being bullied online and identify when to tell a trusted adult. Identify a range of ways to report concerns and access support both in school and at home about online bullying Explain how to block abusive users. Describe the helpline services which can help people experiencing bullying, and how to access them (e.g. Childline or the mix).	Describe how to capture bullying content as evidence (e.g screen-grab, url, profile) to share with others who can help me. Explain how someone would report online bullying in different contexts.

Computing across the curriculum (working progress – how computing is used in other subjects)	iPad	Maths – numbots	Log in to Chromebooks	TT rocks	TT rocks	TT rocks	TT rocks
	IWB for phonics and maths games	Maths games on the IWB	IWB games	Splash learn	Kahoot	Kahoot	My maths
	UTW – research facts	Whole class internet searches		Kahoots	Publish English writing	Kindle	Publish work
		iPad games		Translator	Research different topics	Audible	Research topics
		log in to Chromebooks		Digital art		Digital art	Kahoot
						Topic research	Support with SEN/ OT
						Publish on google slides	Booster Kahoots
						Google classroom	Digital art