



Computing 25/26 - Key Knowledge Fact

Team	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
3	<p>Online Safety We should always think carefully about what we see and do online. Personal information should be kept private online. Strong passwords help keep accounts safe. Things we post online can be copied, shared and stay there for a long time. We should only post things we would be happy for others to see. Not everyone online is who they say they are, so we should never meet someone we only know online. Being online can affect our feelings and emotions. Online comments, messages or images can make us feel happy, worried, upset or left out. If something online makes us feel uncomfortable, we should stop, block and tell a trusted adult. Technology should be used in balance with other activities. Time away from screens helps keep our bodies, minds and friendships healthy</p>	<p>Word processing A keyboard is used to type letters, numbers and symbols on a computer. A word processing program lets us type, edit and improve our writing. We can add, change or fix words without starting again. Touch typing means typing without looking at the keyboard. Fingers rest on the home keys and each finger has a special job. Practising typing helps us become faster and more accurate. Making mistakes is part of learning and helps us improve. We can create our own digital piece of writing using a word processor.</p>	<p>Programming using Scratch Code is a set of instructions that tells a computer what to do. We use code to make characters move, talk and react. Scratch lets us create animations, stories and simple games. We use blocks instead of typing words to build our code. Each block in Scratch has a different job. Some blocks move sprites, some change how they look, and some control when things happen. We can program a story by making sprites move, speak and change scenes. Planning changes before remixing code helps programs work better. A remix means changing someone else's code to make it different. We might alter movements, timing, characters or sounds. Evaluating a program means checking what works well and what could be improved.</p>	<p>Data Handling – Comparison cards databases Data is information that can be collected and stored. A database is a place where data is stored in an organised way. Databases help us find information quickly and easily. Databases use special words called field, record and value. Information can be stored on paper or on a computer. Computerised databases can be searched, sorted and changed more easily than paper ones. We can sort data to put it in order. We can filter data to show only the information we want. Filtering helps us answer questions quickly. Data can be represented in different ways. Information can be shown using tables, charts, pictures or comparison cards. Not all information belongs on an online database; personal or private information should be kept safe.</p>	<p>Creating media – digital imagery A photo story uses a sequence of pictures to tell a story, pictures should be in the correct order to show what happens first, next and last. Planning helps us decide what photos we need before we take them. We can think about the setting, characters and what each picture will show. Digital cameras and tablets can be used to take photos. We should hold the device steady and check the photo before saving it. Photos can be edited to improve how they look, we can crop, rotate or change brightness to make images clearer. A search engine helps us find images online. We use keywords to search and choose images carefully. A photo collage is made by combining more than one image together. Collages help show ideas, themes or stories in one place.</p>	<p>Computing systems and networks A network is a group of computers and devices connected together. Networks allow devices to share information and resources. The internet is a very large network that connects computers all over the world. Information travels around a network using wires or wireless signals. This allows messages, pictures and videos to be sent quickly. A router connects devices to a network and helps information go to the right place. Websites are stored on special computers called servers. When we type a website address, the server sends the website to our device. Information sent over the internet is broken into small pieces called packets. Packet data can travel different routes across a network. Networks help people work, learn and share information easily. They are an important part of everyday life.</p>
4	<p>Online Safety When we search online, a search engine finds information from many websites. The results are not always the best or safest ones. Not everything we see online is true or suitable. We should always check information and ask an adult if we are unsure. Companies use adverts and special offers to encourage people to buy things online. Adverts are made to persuade us, not always to help us. A fact is something that can be proven, an opinion is what someone thinks, and a belief is something a person feels is true. Knowing the difference helps us decide what to trust.</p>	<p>Data handling – Weather Weather describes what the air is like outside. This includes sunshine, rain, wind, clouds and temperature. Weather can change from day to day and place to place. We collect weather data to help us understand these changes. Weather stations collect information about the weather. They use tools to measure temperature, rainfall, wind and air pressure. Weather data is sent digitally to computers. Computers store and compare the data to spot patterns. Extreme weather is weather that is very strong or dangerous. This includes storms, heatwaves,</p>	<p>Computing Systems and Networks – Collaborative learning Collaborating online means working together using computers and the internet. People can work on the same document at the same time. Good online behaviour is being kind, respectful and helpful. We should use polite language and listen to other people's ideas. Word processing software lets us comment on someone else's work. Comments are used to give suggestions or helpful feedback. Comments should be clear, friendly and about the work. This helps others improve without feeling upset.</p>	<p>Skills Showcase: HTML HTML is a special language used to make web pages. It tells a computer what text and images should appear on a page. Code can be turned into images and text on a screen. When HTML runs, the code changes into a web page we can see. Digital art can be created using images and text together. Remixing HTML means changing existing code to make something new, we can change words, colours or images to improve a page. Small changes to code can make big changes to a web page. Editing HTML lets us see results straight</p>	<p>Programming: Further coding with Scratch. Scratch is a tool that lets us create games and animations using blocks of code, we can explore different blocks to see what they do. A variable is a value that can change while the game is running. We can combine variables and conditions to make games interactive and fun. We can create a variable to keep score in a game. The score changes as the player succeeds or fails. Testing and evaluating a game helps us improve it. We check if the game works as we want and think about what could be better. We can make changes</p>	<p>Computing systems and networks 2: Emailing We can communicate using technology in many ways. Email lets us send messages to people quickly using the internet. Messages arrive almost instantly, even to people far away. To send an email, we write the person's address, add a subject, write our message, and click send. It's important to check the spelling and details before sending. We can attach files to an email, attachments can be pictures, documents, or other files. Being kind and polite online is important, emails should always use friendly language and respect</p>

	<p>A bot is a computer program that acts like a real person online. Some messages and accounts online may not belong to real people.</p> <p>A tech timetable helps us use technology in a healthy way. It makes sure we balance screen time with rest, play and learning.</p>	<p>floods or heavy snow.</p> <p>Weather forecasts show what the weather might be like in the future. Forecasts can be presented using symbols, charts, maps or videos.</p>	<p>Some software allows many people to work on one file together online.</p> <p>Google Slides is used to create digital presentations, we can add text, images and layouts to share ideas clearly.</p> <p>We can fix mistakes, improve design and then share our work with others. Shared spreadsheets help us explore and compare data together, everyone can add information and spot patterns.</p>	<p>away.</p> <p>Images on a web page are controlled by HTML; we can change an image by editing the code that links to it.</p>	<p>to a game based on our evaluation.</p> <p>This could include adding new challenges, changing rules, or fixing mistakes.</p>	<p>other people.</p> <p>Some emails are not genuine and may be trying to trick us, these are called spam or phishing emails. Signs of a suspicious email include strange addresses, spelling mistakes, or asking for personal information. We should never click links or open attachments from unknown people. If we are unsure about an email, we should ask a trusted adult before responding. It's always safe to check first.</p>
5	<p>Online Safety</p> <p>We can protect ourselves online by keeping personal information private. This includes our full name, address, school, passwords.</p> <p>Strong passwords help keep our accounts safe, passwords should be hard to guess and never shared with others.</p> <p>Good online communication is polite and respectful, using kind words helps prevent misunderstandings and keeps everyone safe.</p> <p>A good online reputation means people see us positively online. What we post or share can stay online and affect how others see us.</p> <p>Online bullying is when someone is unkind on the internet, we can overcome it by stopping, blocking, and telling a trusted adult.</p> <p>Technology can affect our health and wellbeing, spending too much time on screens can make us tired, affect sleep, or stop us being active.</p> <p>Balance is important when using technology. We should mix screen time with rest, play, exercise, and real-life social time.</p>	<p>Data Handling: Mars Rover</p> <p>Data from space is collected to help us learn about planets. Spacecraft like the Mars Rover send information back to Earth. Data can be numbers, pictures, or measurements collected by sensors, this data helps scientists understand conditions on Mars. Binary is a code that uses only 0s and 1s to represent information. Computers, including the Mars Rover, use binary to store and process data.</p> <p>We can read and calculate numbers using binary by understanding how 0s and 1s work together. Each position in a binary number has a value that we can add together.</p> <p>The Mars Rover has a computer inside that controls its movements and collects data. Binary can be represented as text, pictures, or symbols. This allows humans to read or use the information collected.</p>	<p>Skills Showcase: Mars Rover 2 – CAD (Computer Aided Design)</p> <p>Images on a computer are made of tiny dots called pixels. Each pixel is represented by a bit pattern of 0s and 1s. Bit patterns control the colour and brightness of each pixel. Together, all the pixels make the full picture we see on a screen.</p> <p>Data for digital images can be compressed to make the file smaller. Compression keeps the important parts of the image while using less storage.</p> <p>The computer uses the fetch, decode, execute cycle to run programs. Fetch gets instructions, decode figures out what they mean, and execute carries them out.</p> <p>Tinkercad is a tool that helps us design 3D objects on a computer, tutorials show us step-by-step how to use the software.</p> <p>CAD helps us make accurate, detailed designs before building anything in real life. We can use Tinkercad to design parts for the Mars Rover, like a tyre. Designs can be changed, tested, and improved digitally.</p>	<p>Computing systems and Networks: Search Engines</p> <p>A search engine is a tool that helps us find information on the internet.</p> <p>Not everything online is true or reliable, we should check who wrote it, when it was written, and if other sources say the same thing.</p> <p>Effective searching uses clear keywords and phrases. Using specific words helps us find the information we need faster.</p> <p>Websites can have different types of content, like facts, opinions, or adverts. Knowing the difference helps us choose trustworthy sources.</p> <p>We can present the information we find in a poster or presentation, using headings, images, and simple explanations helps others understand our findings.</p> <p>Search engines use web crawlers to find and organise information from websites. Web crawlers scan pages and help search engines show the best results.</p>	<p>Creating Media: Stop motion animation</p> <p>Animation is when pictures or objects are shown quickly to make them look like they are moving. Stop motion animation is a type of animation made by taking many pictures of objects and moving them a little each time.</p> <p>Planning a stop motion video helps us know what story or idea we want to show, this includes deciding the characters, background, and actions.</p> <p>A storyboard can help plan the sequence of pictures in the animation, it shows what happens first, next, and last.</p> <p>We create a stop motion animation by taking many pictures and moving objects slightly between each shot. Editing lets us put the pictures together to make smooth movement. We can check our animation and make changes if it doesn't look right. Small adjustments make the animation smoother and clearer.</p>	<p>Creating Media: Website Design</p> <p>Google Sites is a tool that helps us make websites easily.</p> <p>We can add text, pictures, videos, and links.</p> <p>A collaborative webpage is a page that many people can help create. We can work together on a website using collaboration tools. Everyone can add content, give ideas, and make improvements.</p> <p>Planning a website first helps us decide what to include on each page, we can think about headings, images, and the order of information. When creating a website, it's important to make it easy to use and read. Clear headings, pictures, and simple words help visitors understand it.</p> <p>We can create our web page on Google Sites by adding text, images, and links.</p> <p>We can review and improve our website before sharing it with others. Checking spelling, layout, and images helps it look professional and clear.</p>
6	<p>Online Safety</p> <p>Some things we see or read online can make us feel worried, sad, or angry. It's important to recognise these feelings and talk to a trusted adult.</p> <p>Sharing things online can have consequences, once something is online, it can be seen or shared by many people.</p>	<p>Data handling: Big data – QR codes</p> <p>Barcodes and QR codes store information in a way that machines can read. Barcodes are lines, and QR codes are squares with patterns.</p> <p>Scanning a barcode or QR code lets a computer read the information instantly. Infrared</p>	<p>Computing systems and networks: Bletchley Park</p> <p>There are many different types of secret codes that can hide messages, some codes use symbols, numbers, or letters in special patterns.</p> <p>Brute force hacking is when someone tries lots of passwords to break into a system. Strong</p>	<p>Computing systems and Networks: Exploring AI</p> <p>AI (Artificial Intelligence) is when computers or machines can do tasks that usually need human thinking. This can include recognising pictures, answering questions, or making predictions.</p> <p>AI can help us work with text. It can suggest words, correct</p>	<p>Programming: Micro Bit</p> <p>The BBC Micro:bit is a small, programmable computer we can use to learn coding. It has buttons, lights, and sensors to create projects. We can program animations on the Micro:bit.</p> <p>Animations use the LED lights to show movement or patterns.</p> <p>A pedometer can be created on</p>	<p>Skills showcase: Inventing a product</p> <p>Tinkering with software means exploring it and trying out different tools to see what they do.</p> <p>For example, we can use Logo to draw shapes and patterns.</p> <p>An algorithm is a set of step-by-step instructions that tells a computer what to do.</p>

	<p>A positive online reputation is created by being kind, polite, and careful with what we post. Bullying online is never okay. We can capture bullying content as evidence by taking screenshots or saving messages safely. Strong, secret passwords keep our accounts safe. We should never share passwords with anyone except a trusted adult. There are strategies to help protect people online. This includes using privacy settings, not talking to strangers, and thinking before posting. If something online makes us uncomfortable, we should stop, block, and tell a trusted adult. We can ask for help or advice from adults if we are unsure about anything online.</p>	<p>waves can transmit data between devices without using wires. They send signals as light that humans cannot see. Encoding is a way to keep data safe and private. RFID cards and other devices use encoding to protect information. Data can be collected and analysed to help solve problems. For example, QR codes in shops or libraries help keep track of items. Digital tools help us read, share, and use data safely.</p>	<p>passwords help protect information from being hacked. Passwords should be secret, long, and hard to guess. They keep our accounts and information safe. Historical figures, like the codebreakers at Bletchley Park, helped develop early computers. Researching them shows how technology has changed over time. Planning a computer of the future helps us think about new ideas and inventions, we can decide what it will do and how it will look. Scripts help us plan audio adverts or messages for our future computers. Writing the words first makes it easier to record clearly. We can create audio adverts to explain or promote our ideas. Using sound, music, and speech makes our message engaging.</p>	<p>spelling, or even help write sentences. Machine learning is a type of AI where computers learn from lots of information. The more data they see, the better they get at making predictions or decisions. AI can help generate code, like HTML, to create websites or web pages. There are important ethical considerations when using AI. This includes thinking about privacy, fairness, and being careful not to misuse it. AI works best when humans guide it and check its results, we should always review what AI produces to make sure it is correct. Using AI responsibly means following rules and thinking about how it affects people. This helps keep everyone safe and ensures AI is used in a helpful way.</p>	<p>the Micro:bit to count steps. It uses the built-in motion sensors to detect movement. Tutorials help us learn how to use the Micro:bit and write code, they show step-by-step instructions for different projects. Creating a program means writing instructions for the Micro:bit to follow, programs can make it display patterns, react to buttons, or measure movement. We can test our program to see if it works correctly. We can combine different features, like buttons, sensors, and LEDs, to make more complex programs.</p>	<p>Loops are instructions that repeat actions to make programming faster and easier. Nested loops are loops inside other loops, they can create more complex patterns and effects in code. Basic Python commands let us give instructions to the computer. We can use them to draw, move shapes, or display text. We can combine loops and Python commands to program a project, like digital art. Writing an algorithm first helps us plan what our code will do before we start typing.</p>
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