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DATA AND INFORMATION – KS1			
Concept	EYFS	YEAR ONE	YEAR TWO
<b>Content (NC with local adaptations)</b>	<p><b>Uses of information technology</b> Recognise that a range of technology is used in places such as homes and schools. Use technology for a specific purpose.</p>	<p><b>Grouping Data</b> Exploring object labels, then using them to sort and group objects by properties.</p>	<p><b>Pictograms</b> Collecting data in tally charts and using attributes to organise and present data on a computer.</p>
<b>Why here?/ Why now?</b>	Links to previous learning in term 1 and 2.	To build on knowledge learned in EYFS to understand what data is and how it can be represented in many forms.	To begin to understand how we collect and analyse data. Linking to their previous maths activities such as voting for books and the daily register.
<p><b>Declarative (factual) Knowledge</b></p> <p><b>Children will know that...</b></p>	<ul style="list-style-type: none"> <li>-devices need to be told what to do.</li> <li>-computer screens can represent real or imaginary situations.</li> <li>-the mouse and keyboard can be used to control a program.</li> <li>- devices can be used to record videos and take photos.</li> <li>-sound can be recorded on a device.</li> <li>- sounds and videos can be played back.</li> <li>- text and images on a computer can be printed out.</li> <li>- text comes in different sizes and colours.</li> <li>- The shift key or Caps lock turns a letter into a capital.</li> </ul>	<ul style="list-style-type: none"> <li>-data can be numbers, words or figures.</li> <li>-information is what we can understand from looking at data.</li> <li>-labels are all around us. They are names that we give to things so we can identify them.</li> <li>-objects can be labelled using either a name or describing their properties.</li> <li>-properties can include size, shape, colour, heavy, long, thin, round.</li> <li>-labels can be used to place objects into groups so that we can count and compare data easily by looking at similarities and differences.</li> <li>- a computer can be programmed to group and count objects.</li> <li>-when the teacher takes the register, the computer program in the school office counts how many marks there are to tell the leaders how many children are in school that day.</li> </ul>	<ul style="list-style-type: none"> <li>-data can be numbers, words or figures.</li> <li>-information is what we can understand from looking at data.</li> <li>-like in maths, data about different groups can be recorded and presented by using tally charts, pictograms (a chart that uses pictures to display data) and block charts (each object is presented as a block).</li> <li>-data can be grouped in different ways.</li> <li>-computers can be programmed to count the amount in each group, like when the teacher takes the register.</li> <li>-tallying helps to record as we count. We chunk into groups of 5 (4 sticks and the 5<sup>th</sup> makes the 'gate').</li> <li>-tally charts are used to collect data about the number in each group quickly.</li> </ul>



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			<ul style="list-style-type: none"> <li>-there should be a reason to collect and use the data (e.g., the school cook needing to know which fruit to order for school).</li> <li>-pictograms help to order, answer and solve problems, such as which colour is the most/least popular?</li> </ul>
<p><b>Procedural Knowledge to perform tasks.</b></p> <p><b>Children will know how to....</b></p>	<ul style="list-style-type: none"> <li>- interact with the touch screen with their finger.</li> <li>- selected technology for a purpose, e.g., use of an iPad to take photos or videos; mobile phones to speak to someone far.</li> <li>- use a keyboard to type letters, their name or a caption.</li> <li>-use the caps lock or shift key for a capital letter.</li> </ul>	<ul style="list-style-type: none"> <li>-compare and group objects by their properties.</li> <li>-compare results when voting for books and other activities.</li> </ul>	<ul style="list-style-type: none"> <li>-group data according to their attributes.</li> <li>-organise data in a tally chart/ pictogram /block graph.</li> <li>-input data into a device and save it carefully.</li> <li>-interpret the data to answer questions and solve problems.</li> </ul>
<p><b>Vocabulary</b></p>	<p>Touch screen, app, keyboard, mouse, record, button, video, photograph, moving, still, print, text, shift key, Caps lock.</p>	<p>Object, label, group, search, image, property, colour, size, shape, data set, value, more, less, most, fewest, the same.</p>	<p>More than, less than, most, least, organise, data, object, tally chart, votes, total, pictogram, enter, data, compare, count, most common, least common, attribute, group, same, different, most popular, least popular, conclusion.</p>
<p><b>Digital Safety Links and knowledge</b></p> <p><b>Children will know how to...</b></p>	<ul style="list-style-type: none"> <li>- be careful with technology and handle it safely because it is easily breakable.</li> <li>- say 'no' to things that make them sad, upset or embarrassed and tell a trusted adult.</li> <li>-recognise that people can be unkind online and this is not ok.</li> </ul>		<ul style="list-style-type: none"> <li>-log onto a device with their own username and password.</li> <li>-log off a device to keep their personal information safe.</li> </ul>



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DATA AND INFORMATION – KS2				
Concept	YEAR THREE	YEAR FOUR	YEAR FIVE	YEAR SIX
<b>Content (NC with local adaptations)</b>	<b>Branching databases</b> Building and using branching databases to group objects using yes/no questions.	<b>Data logging</b> Recognising how and why data is collected over time, before using data loggers to carry out an investigation.	<b>Flat file databases</b> Using a database to order data and create charts to answer questions.	<b>Introduction to Spreadsheets</b> Using Spreadsheets to organise data.
<b>Why here?/ Why now?</b>	It allows pupils to develop their understanding of what a branching database is and create one. They will use yes/no questions to gain an understanding of attributes databases.	To grow on pupils understanding of data and extend this to consider how and why data is collected over time. To collect data using input devices called sensors.	Progression from earlier year group content using different types of data and learning more about fields.	Progresses on pupils' knowledge and understanding of data from Yr4 and 5 and teaches them how to organise and modify data within spreadsheets. Introduces spreadsheets in readiness for KS3 curriculum.
<b>Declarative (factual) Knowledge</b>  <b>Children will know that...</b>	-an attribute is something a group of objects has in common, e.g., they are all pink or all have fins. -a branching database is a way to classify (separate) objects with a common attribute using a yes or no question. This is often done in science to identify the species of an animal. -the questions need to be carefully ordered for the database to work.	-data is raw numbers and figures. -information is what we can understand from analysing data. -data loggers and logging software captures data for us. -data gathered over time can be used to answer important questions, e.g., the class register can be used to answer questions about how good the attendance is in this class. -our senses (sight, hearing, smell, taste, touch) detect things in our environment. Computers have input device sensors which help	-a database is a structured collection of data that is stored electronically. -databases can store many types of data, e.g., numbers, words, images, videos and files. -a field in a database is a single piece of data or information that is stored in a row or record. This helps to organise and retrieve information quickly.	-there are different ways that we can collect, log and interpret data, including the use of spreadsheets. -a spreadsheet is a computer application that allows users to organise, analyse and store data. -spreadsheets are commonly used by individuals and businesses across the world, most often for organising and presenting budget forecasts and finance reports. Schools use spreadsheets to capture pupil progress and also attendance.



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		<p>them to sense things (e.g., camera – light, microphones – sound, touchscreen – touch). -data loggers have sensors built into them and use these to detect and record data, e.g., heat sensor records temperature, light sensor records brightness, sound sensor records noise. Data loggers can be set to measure at different intervals (points in time), so that we don't have to sit waiting for a long period of time. -data logger software can be used to show different charts and graphs so save the user a lot of time. These helps scientists see trends over time.</p>		<p>-computer spreadsheets are particularly useful for powerful calculations, graphs and charts. -formulas can tell a computer which mathematical operation to use for a calculation: + = add      - = subtract * = multiply   / = divide. -an example formula for multiplication will look like this: for the answer to go in D3, you enter the formula =D1*D2. -a formula always starts with an = sign. -each 'box' is called a cell and is named by its letter of the column found at the top and its corresponding number at the side. -duplicating allows you to create copies of the same data without having to type it out many times. -a whole worksheet can be duplicated by clicking on the worksheet name and selecting 'move or copy'. -formatting makes a spreadsheet easier to read by changing the size, font, borders of each cell, row or column.</p>
<p><b>Procedural Knowledge to perform tasks.</b></p>	<p>-identify a common attribute for a group of objects.</p>	<p>- carefully consider what questions they would like to be answered <u>before</u> collecting data.</p>	<p>-create record cards, add data to them, sort the cards and use them to answer questions.</p>	<p>-use Microsoft Excel or Google Docs to make spreadsheets. -drag rows and columns to change the size.</p>



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<p><b>Children will know how to....</b></p>	<ul style="list-style-type: none"> <li>-select up to 6 objects to arrange in a branching database.</li> <li>-group objects using their own yes/no questions.</li> <li>-order questions carefully so that their branching database works.</li> <li>-test and prove their branching database works.</li> <li>-improve their branching databases.</li> </ul>	<ul style="list-style-type: none"> <li>-use data loggers and logging software to automatically capture data to help them draw conclusions in answer to a research question, like in science.</li> <li>-select an appropriate data logger to collect data needed to answer the chosen question.</li> <li>- use software to show the recorded data as a chart or graph and draw conclusions from the data.</li> </ul>	<ul style="list-style-type: none"> <li>-compare a paper-based database to a computer database.</li> <li>-use an online database to search and filter real data.</li> <li>-search and order a database to answer questions.</li> <li>-use search tools and include 'and'/'or' criteria to find results.</li> <li>-create charts using existing databases and compare different ways of viewing information.</li> <li>-present their findings and conclusions to the class.</li> </ul>	<ul style="list-style-type: none"> <li>-select a cell by clicking on it, and double clicking on it to enter data.</li> <li>-enter data either directly into the cell or into the formula bar.</li> <li>-right click on a cell to select 'format cells' for options such as font, borders, fill etc.</li> <li>-enter a formula.</li> <li>- copy and paste (Ctrl+C keys) to duplicate individual cells.</li> <li>-add many cells together, using the 'sigma' icon.</li> <li>- find the average, using the fx icon.</li> <li>-create charts and graphs by using the data in the spreadsheet. This is done by selecting the charts icon and which fields to display in the x and y axes.</li> </ul>
<p><b>Vocabulary</b></p>	<p>Attribute, value, data, table, objects, branching database, attribute, value, objects, equal, even, separate, compare, organise, order, selecting, pictogram, decision tree.</p>	<p>Data, table (layout), input device, sensor, data logger, logging, data point, interval, data set, import, export, analyse, logged, collection, review, conclusion.</p>	<p>Database, data, information, record, field, sort, order, group, search, value, criteria, graph, chart, axis, compare, filter, presentation.</p>	<p>Data, format, rows, column, formula, charts, evaluate, duplicate, cell, structure, spreadsheet, cell-reference, operation, multiple cells, calculate, tool, application, table.</p>
<p><b>Digital Safety Links and knowledge</b></p> <p><b>Children will know how to...</b></p>	<ul style="list-style-type: none"> <li>- search safely for images online.</li> <li>- go to a trusted adult if they see something online that worries, upsets or embarrasses them.</li> </ul>	<ul style="list-style-type: none"> <li>-stay safe when using multiple devices.</li> <li>- deal sensibly with a situation online that worries, upsets or embarrasses them, and to tell a trusted adult.</li> </ul>	<ul style="list-style-type: none"> <li>-stay safe when using multiple devices.</li> <li>- deal sensibly with an inappropriate situation they come across online that worries, upsets or embarrasses them, and to tell a trusted adult.</li> </ul>	<ul style="list-style-type: none"> <li>-ensure they do not share personal data online.</li> </ul>