Knowledge Mat – Networks

Subject Specific Vocabulary				key Knowledge
Internet	A global computer network providing a variety of information and communication facilities consisting of interconnected networks using standardized communication protocols.	**World Wide Web**	An information system on the Internet which allows documents to be connected to other documents by hypertext links, enabling the user to search for information by moving from one document to another.	To learn about what the Internet consists of.
Network	Several interconnected computers, machines, or operations.	**Local area network LAN**	A computer network that links devices within a building or group of adjacent buildings, especially one with a radius of less than 1km.	To find out what LAN and WAN are. To find out how the Internet is accessed at school.
Wide area network WAN	A computer network in which the computer networks connected may be far apart, generally having a radius of more than 1km	**Router**	A device which forwards data packets to the appropriate parts of a computer network.	To research and find out about the age of the Internet.
Network cables	Used to connect and transfer data and information between computers and routers.	**Wireless**	The ability to transmit data form one device to another without using wires.	To think about what the future might hold.

Key Questions
What is the difference between the Internet and the World Wide Web ? The Internet is a global network of networks while the Web, also referred formally as the World Wide Web (www) is collection of information which is accessed via the Internet.
What is the difference between LAN and WAN ? Both are networks that connect computers together. LAN (Local Area Network) is normally for computers connected less than 1km distance, whilst the WAN (Wide Area Network) extends over a large geographical area.
Who is Tim Berners-Lee ? Tim Berners-Lee is the Inventor of the World Wide Web. The WWW is the system the delivers webpages over the internet.

Knowledge Mat – Quizzing

Subject Specific Vocabulary		Sticky Knowledge
Audience	The people giving attention to something.	To create a picture-based quiz for young children.
Quiz	A test of knowledge, especially as a competition between individuals or teams as a form of entertainment.	To learn how to use the question types within 2Quiz.
Collaboration	The action of working with someone to produce something	To explore the grammar quizzes.
Concept map	A tool organising and representing knowledge. They form a web of ideas which are all interconnected.	To make a quiz that requires the player to search a database.
Database	A structured set of data held in a computer, especially one that is accessible in various ways.	To make a quiz to test your teachers or parents.

Key questions
What factors do you need to consider when creating a quiz ? The intended audience; age and reading ability and interests. The aim of the quiz; is it fun like a game, or to make sure that the user has learnt something?
Name three question types in 2Quiz ? Sequencing, Grouping and Sorting, Text based, Multiple-choice, Labelling.
Apart form the Questions, what else does a quiz need to contain? A title screen and instructions for the user. Feedback for the user (some quizzes). Time limits (some quizzes). Images for interest as well as part of the questions.

Knowledge Mat – Binary

Subject Specific Vocabulary				Sticky Knowledge
Base 10	The number system commonly used in day-to-day life. Using the digits 0,1,2.3.4.5.6.7.8.9 to make. Also known as decimal or denary.	**Base 2**	A number system based only on the numerals 0 and 1. Also known as binary. The digits 1 and 0 used in binary reflect the on and off states of transistors.	To examine how whole numbers are used as the basis for representing all types of data in digital systems.
Binary	See Base 2	**Bit**	A single 0 or 1 in the binary systems	To recognise that digital systems represent all types of data using numbers that ultimately are patterns 1s and 0s (called binary digits, which is why they are called digital systems).
Byte	8 bits	**Decimal**	See Base 10	
Denary	See base 10	**Digit**	A single integer used to show a number.	
Gigabyte (GB)	1024 MB	**Kilobyte (KB)**	1024 bytes.	To understand that binary represents numbers using 1s and 0s and these represent the on and off of electrical states respectively in hardware and robotics.
Megabyte (MB)	1024 KB	**Terabyte (TB)**	1024 GB	
Integer	Any whole number. This includes negative and positive numbers but not fractions or decimals.	**Machine code**	The code that signals to a computer which transistors should be on or off. Machine code is written in binary.	
Switch	A component that can be one of two states at any time; on or off.	**Nibble**	4 bits	
Transistor	A tiny switch that is activated by the electronic signals it receives.	**Variable**	A variable used in programming to keep track of things that can change while a program is running. A variable must have a name. The value of the variable is the information to store.	

Key questions

How does binary relate to the programs that use or create ?

In a computer, everything is translated into binary stored by on and off switches that pass electronic signals that the computer interprets. It can then pass the correct signals to the components of the computer such as the sound card to make a requested sound. Or graphics card to make images appear on the screen.

How does binary relate to computer memory ?

A single 0 or 1 is called a bit. The word comes form Binary Digit. The bigger the program. The more bits are used so more memory space is taken up. EG, 1 byte is 8 bits, 1 megabyte (MB) or 8,388,608 bits, 1 gigabyte (GB) is 8,589,934,592 bits.

How would you write the numbers 0 to 10 in binary ? 0, 1, 10, 11, 100, 101, 110, 111, 1000, 1001, 1010.

SCHOOL READY, WORK READY, LIFE READY

Knowledge Mat – Spreadsheets

Subject Specific Vocabulary				Sticky Knowledge
Advanced mode	A mode in 2claulcte in which the cells have references and can include formulae.	**Move cell tool**	This tool makes a cell's contents moveable by drag-and-drop methods.	To use a spreadsheet to investigate the probability of the results of throwing many dice.
Random tool	Click to give a random value between 0 and 9 to the cell.	**Rows**	Vertical reference points for the cells in a spreadsheet.	To use a spreadsheet to calculate the discount and final prices in a sale.
Average	Symbols used to represent comparing two values.	**Timer**	When placed in the spreadsheet, click the timer to adds 1 to the value of the cell to its right every second until it is clicked again.	To use a spreadsheet to plan how to spend pocket money and the effect of saving money.
Columns	Vertical reference points for the cells in a spreadsheet.	**Spin tool**	Clicking on this in a cell will increase or decrease the value in the cell by the right by 1.	To use a spreadsheet to plan a school charity day to maximise the money donated to charity.
Cells	An individual section of a spreadsheet grid. It contains data or calculations.	**Equals tool**	Tests whether the entered calculation in the cells to the left of the tool has the correct answer in the cell to the right of the tool.	
Charts	Vertical reference points for the cells in a spreadsheet.	**Count (how many) tool**	Counts the number of whatever value object is in the cell to its immediate left and puts the answer in the cell to its immediate right.	
Spreadsheet	A computer program that represents information in a grid or rows and columns.	**Formula**	Use the formula wizard or type into the formula bar to create a formula in a cell, this will calculate the value for the cells based upon the value of other cells in the spreadsheet.	
Copy and Paste	A way to copy information from the screen into the computer's memory and paste it elsewhere without re-typing.	**Formula Wizard**	The wizard guides you in creating a variety of formula for a cell such as calculations, totals, averages, minimum and maximum for the selected cells.	
		Dice	When clicked, this will simulate a dice roll by switching to one of the faces of a dice.	

Key questions

How would you add a formula so that the cell shows the total of a column of cells?

Use the formula wizard advanced total tool or type a formula into the cell by using the '=' symbol, mathematical operators and cell references.

What is a computational model and what it can be used for?

Modelling in Computing means creating or using a simulation (a model) of a real-life situation, on a computer. It represents the data of a situation. For example, budgeting for a party; working out how big a field needs to be for a certain number of animals, working out the best price for an item or using the existing data to predict what time your shadow will be a certain length.

If you were going to use a spreadsheet to plan your dream holiday. What data would you collect to cost the trip ?Ideas could include: travel; comparing the cost of different methods, airport, airlines, different companies and discounts such as rail cards. Cost of accommodation of different types, trips out, food, passports, immunisations.

SCHOOL READY, WORK READY, LIFE READY