

Spring Term, Year 5, Computing, Data Handling and Mars Rover

Subject specific Vocabulary		Images/Diagrams/Maps	Important Knowledge
Binary code	A code used in computers, based around the binary 0 and 1		To know that Mars Rover is a motor vehicle that collects data from space by taking photos and examining samples of rock.
Data transmission	The movement of information from one or more points another		To know what numbers using binary code look like and be able to identify how messages can be sent in this format.
Discovery	When something is intentionally or unintentionally found		To understand that RAM is Random Access Memory and acts as the computer's working memory.
Mars Rover	A robotic vehicle, that explores, investigates and returns data about the terrain on Mars		To know what simple operations can be used to calculate bit patterns.
Numerical data	Information that is based on numbers and digits		
Output	Information or data that is sent by the computer to an output device such as a printer or speakers	Writing opportunities/ Enrichment opportunities	
Sequence	A set order or pattern for something to follow	Science: Link data to Mars terrain, rocks, and planetary science. Math: Practice interpreting and creating bar charts, line graphs, pie charts, and tables. English: Write mission logs or reports as a rover scientist. Computing: Explore spreadsheets or simple databases to record and manipulate data.	
signal	A voltage, current or electromagnetic wave that is either sent or obtained		
Computer simulation	Computer generated imitation of something such as a program test or product prototype		

Presentation	Assessment		
1	To identify how and why data is collected from space.	Identifying some of the types of data which the Mars Rover could collect (e.g., photos). Explaining how the Mars Rover transmits the data back to Earth (radio waves) and the challenge involved in this (the great distance). Researching a comparative fact about the distance to Mars.	Identifying types of data that the Mars Rover could collect. Explaining some of the purposes of data collection going beyond obvious data. Researching comparative facts about the distance between Earth and Mars and the time it takes to send a signal to Mars.
2	To read and calculate numbers using binary code.	Reading any number in binary, up to eight bits. Identifying binary as the most basic way computers communicate. Understanding each one or zero is referred to as a bit	Independently identifying that the limitations of binary mean that it can only send numerical data, i.e.: that binary can only send 'numbers' and it cannot be used to communicate any other message without a secondary computer code. Calculating binary numbers, knowing each digit is worth double the one that precedes it
3	To identify the computer architecture of the Mars Rovers.	Identifying input, processing and output on the Mars Rovers. Explaining how the size of RAM affects the processing of data.	The ability to generalise input, processing and output to include other types of computing devices
4	To use simple operations to calculate bit patterns.	Reading binary numbers and grasping the concept of binary addition.	Extending themselves to calculate the addition of more than three bits, and into subtraction. Recalling how binary can be used to represent numbers up to 255
5	To represent binary as text.	Reading binary numbers to four bits. Relating binary signals (Boolean) to a simple character based language, ASCII	Grasping how hexadecimal would be a more efficient method of data transfer. Using binary to create a written message