Computing – Data Handling
Mars Rover I

What I should already know: I can enter simple data into a spreadsheet. I understand what steps I need to take to create an algorithm. I know what data to use to answer certain questions. I know that computers can be used to monitor supplies. I know that a database is a collection of data stored in a logical, structured and orderly manner. I know that computer databases can be useful for sorting and filtering data. I know that different visual representations of data can be made on a computer.

Enquiry Questions
- How and why is data collected from space?
- Can we read and calculate numbers using binary code?
- Can we identify the computer architecture of the Mars Rovers?
- Can we use simple operations to calculate bit patterns?
- Can we represent binary as text?

Key Vocabulary
Binary code – A code used in computers, based around the binary values of 0 and 1.
Data – Information used for a specific purpose or investigation.
Data transmission – The movement of information from one or more points to another.
Discovery – When something is intentionally or unintentionally found.
Distance – The amount of space between two places or objects.
Input – Information sent to a computer by an input device such as a keyboard or mouse for processing.
Mars Rover – A robotic vehicle that explores, investigates and returns data about the terrain on Mars.
Moon – Orbits round planet Earth and is Earth's only natural satellite.
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.
Planet – A large natural object that orbits around a star.
Radio signal – A radio wave that is sent or received somewhere.
Scientist – A person who studies within the fields of Science, such as Physics, Biology and Chemistry.
Sequence – A set order or pattern for something to follow.
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.
Space (astronomy) - A vast area around and beyond planet Earth, which is not inhabited.

Computing Skills
Pupils will:
Data Handling
- Know that Mars Rover is a motor vehicle that collects data from space by taking photos and examining samples of rock.
- Know what numbers using binary code look like and be able to identify how messages can be sent in this format.
- Understand that RAM is Random Access Memory and acts as the computer's working memory.
- Know what simple operations can be used to calculate bit patterns.

Useful Images

The Mars Rover had to travel 350 million miles (approx) to get to Mars, it took eight and a half months.

It is approximately 9 billion double-decker buses in distance!

Binary:

When a robot thinks independently, it needs to be able to calculate a range of data. All decisions carried out by a robot, or any computer, are done in binary – including the Mars Rover.

Binary value				Decimal value	
0	0	0	0	0	zero
0	0	0	1	1	one
0	0	1	0	2	two
0	0	1	1	3	three
0	1	0	0	4	four
0	1	0	1	5	five
0	1	1	0	6	six
0	1	1	1	7	seven
1	0	0	0	8	eight
1	0	0	1	9	nine
1	0	1	0	10	ten
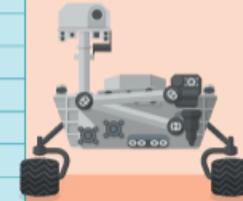
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