Year 5 – Computing

Mars Rover 1

National curriculum Pupils should be taught to: Understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration. Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.
LO: To identify how and why data is collected from space.
Vocabulary: **binary code, data, data transmission, distance, Mars Rover, planet, scientist, signal, transmit**

Recap and recall:

Before starting this unit, you might want to check the children can recall:

- What a branching database is.
- That filtering data shows only selected data.
- Logging information means recording data.

(Pupil voice)

‘ a database holds different information’

‘ you can use it to find different information like a key in science when you want to find out which animal is in which’

Main Learning

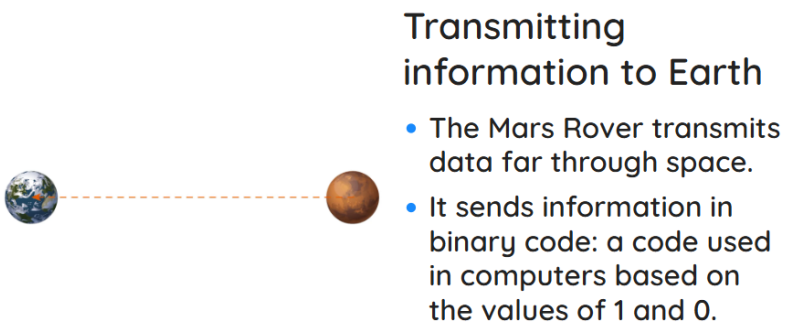
Friday 7/11/25 : Children used prior knowledge and identified that the Mars Rover was sent to collect evidence such as bacteria examples and rocks – learned from Explorer Dome in Science.

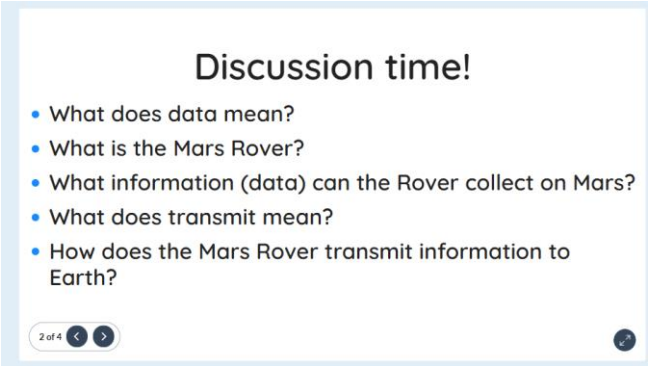
We looked at various different ways of sending messages and discussed the following questions:

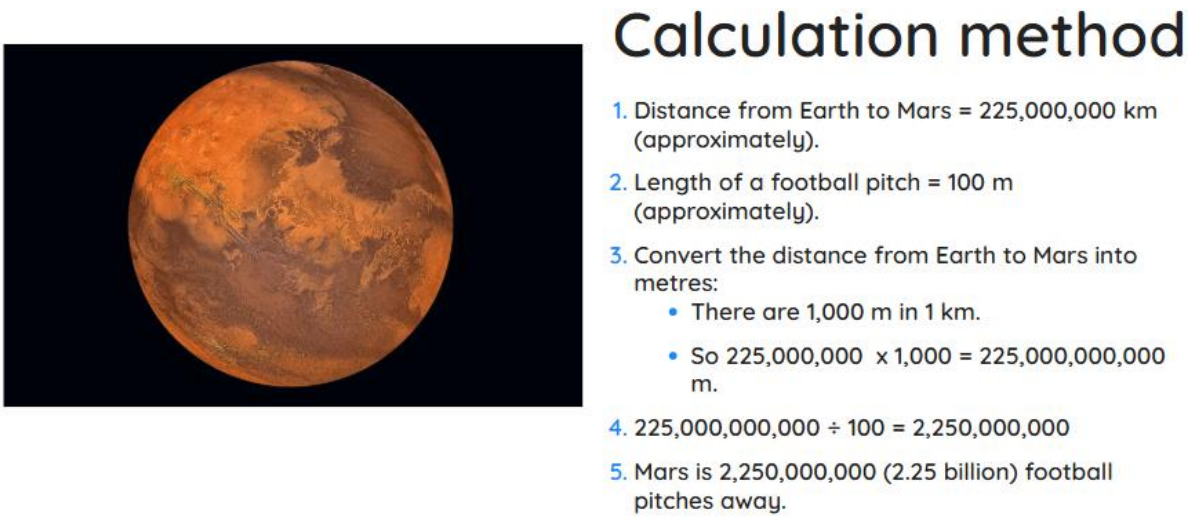
What might be a benefit of this method of sending messages?

What might be a challenge of this method of sending messages?

We learnt about how the Mars Rover can send messages back to Earth from Mars using special codes.



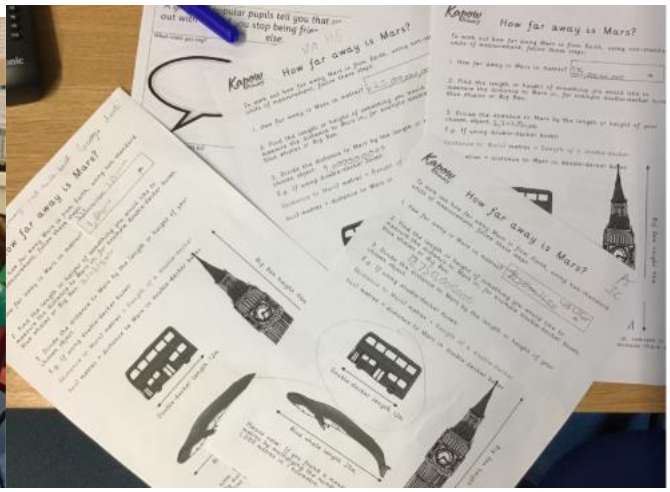




Activity

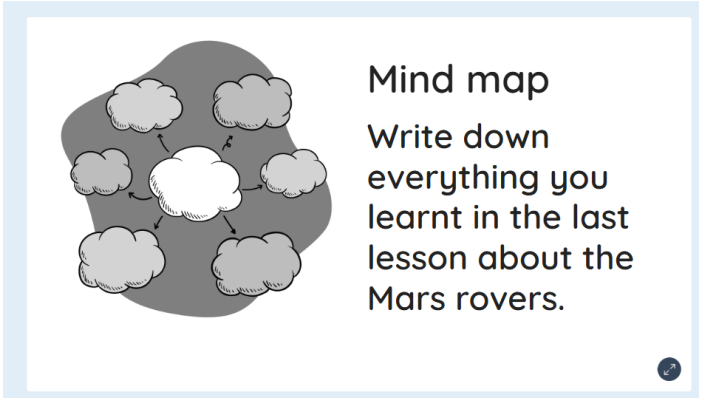
In groups we used the information from the input to work out the answers to the questions

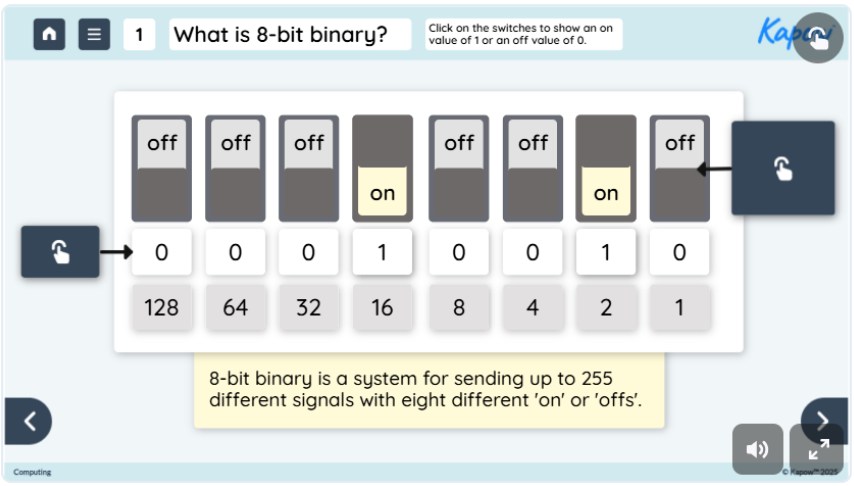
Whiteboard hdmi cable stopped working but children discussed the solar system, how the planets are aligned and recalled their mnemonics to remember the order of the planets and explored how far away Mars is from Earth. They were keen to find out about the distance and the maths to calculate the distance in different values was surprising and amusing. The football pitch sparked a discussion on the different sizes of pitches. Calculators were used to work it out and it was delightful to see children supporting each other to work out the values.



Lesson 2- To read and calculate numbers using binary code.

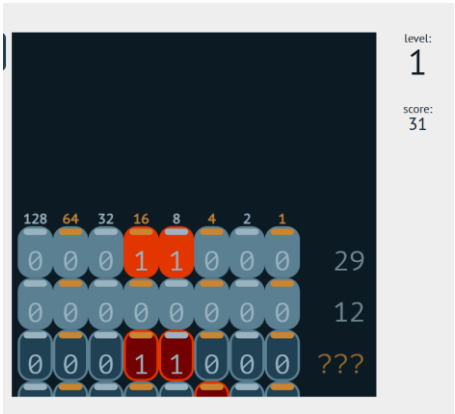
Recap and recall



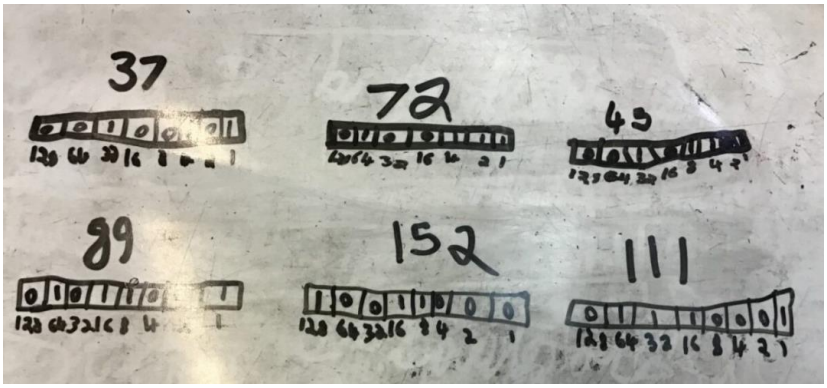


We introduced the word Binary and discussed what binary is and how it is used. We were able to use the interactive screen to see how different numbers are created.

We played the [Cisco's Binary Number Game [Binary Blitz]. Penjee's adaptation.] Game to practise making different numbers using binary code.



After learning how binary is created



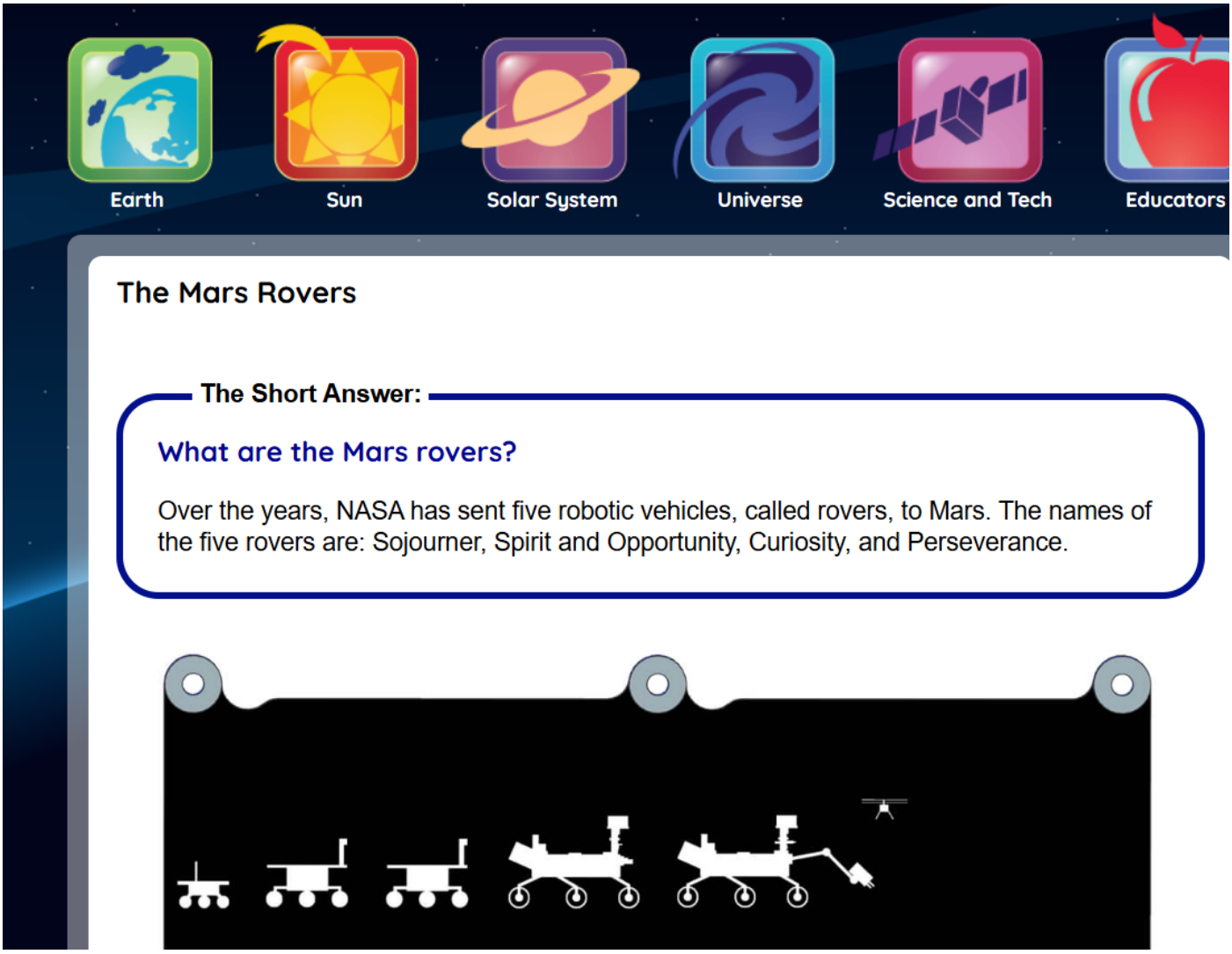
Lesson 3- To identify the computer architecture of the Mars Rovers.

Key vocabulary: **byte CPU input output processing RAM UHF**

Recap and recall-

We practised our binary code by showing the number given on a white board.

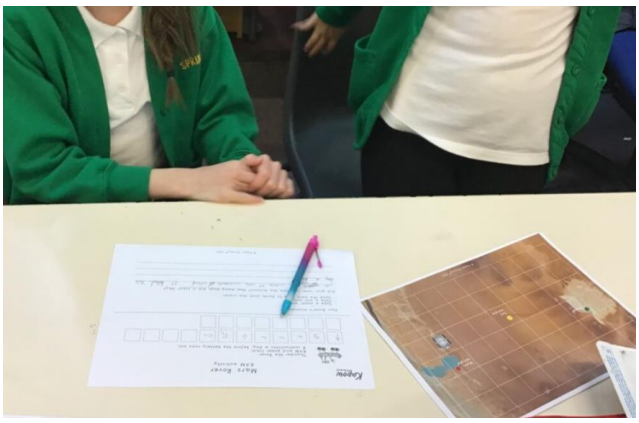
We looked at different types of Mars Rovers in Space and how they had changed over time.



Scientists have been able to improve upon three areas:

- Input.
- Processing.
- Output.

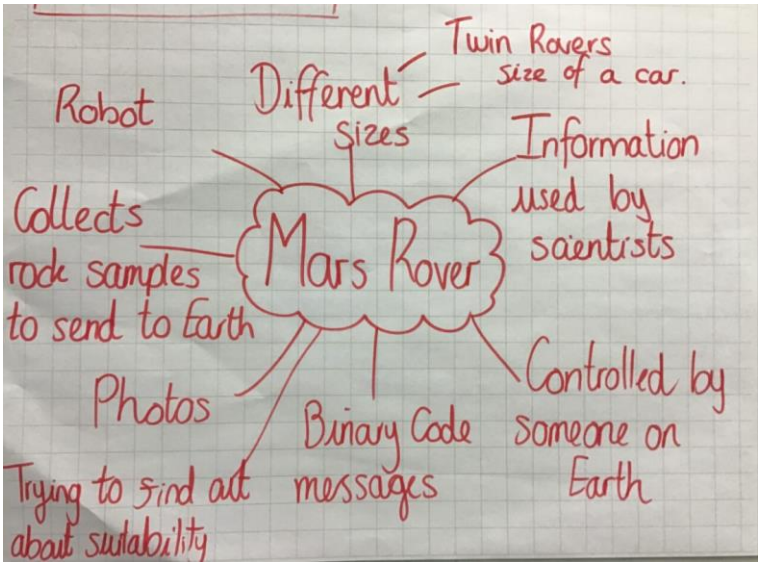
We were then given our own Mars Rover to navigate around the map using the given instructions. Some of our Rovers were only allowed to move 4 spaces at a time before the battery ran out where as others had 12. We had to think of a carefully which route to take.



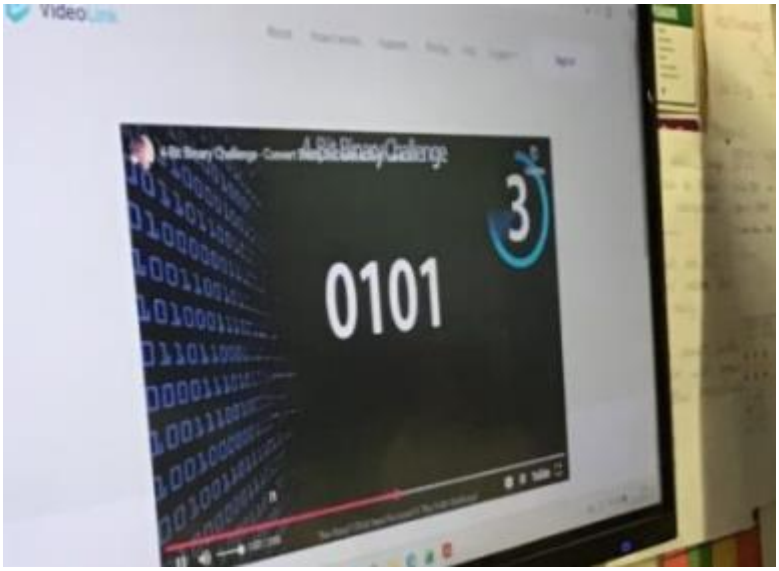
Lesson 4: To use simple operations to calculate bit patterns.

Vocabulary: **binary numbers** **decimal system**

Recap and recall



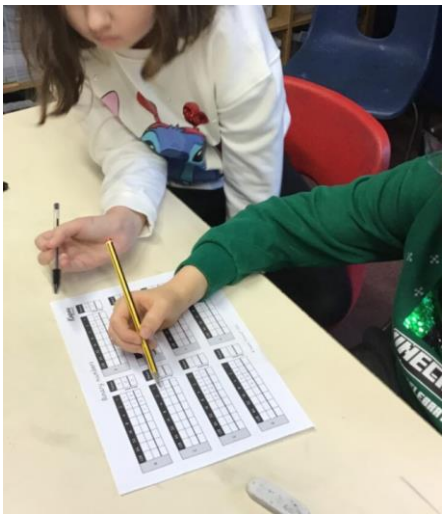
We looked at the presentation about how that binary numbers can be added in the same way as the decimal number system. We need to ensure that the digits line up like we would in column addition or subtraction. We needed to understand that the decimal system uses numbers from zero to ten whereas the binary system uses the numbers zero and one only.

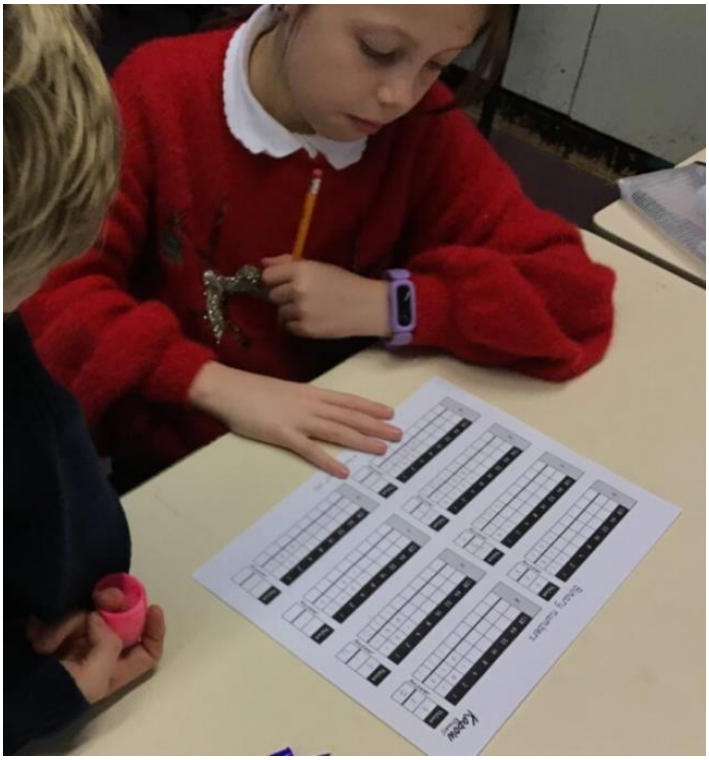


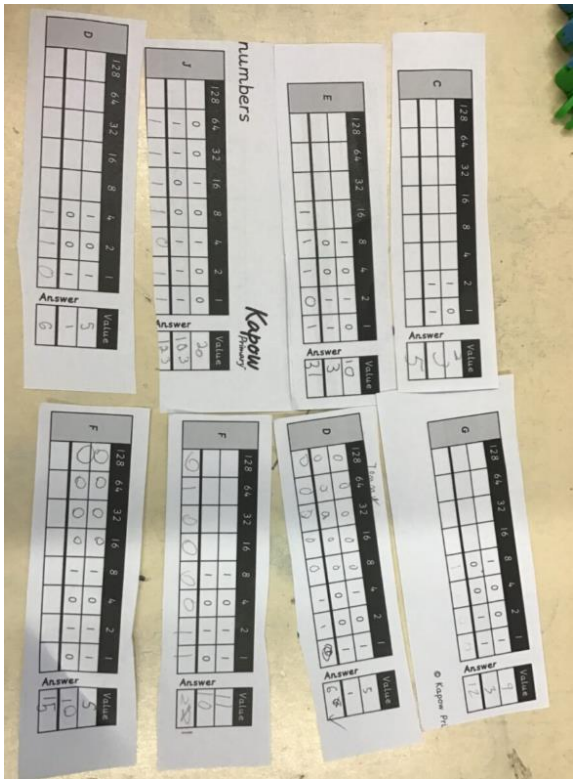
We watched a video to help up add up different binary numbers

We wrote our answers on a whiteboard.

Once we were confident enough we worked with a partner to solve the addition problems using binary





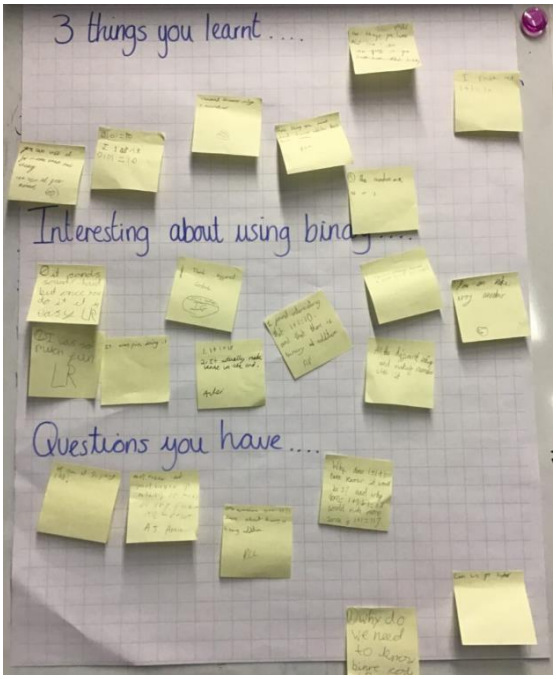


Lesson 5

To represent binary as text.

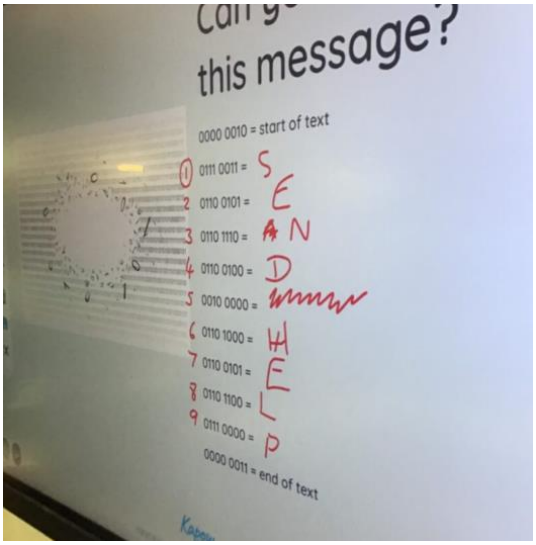
Vocabulary: **ASCII** **binary code** **Boolean** **data**

Recap and recall

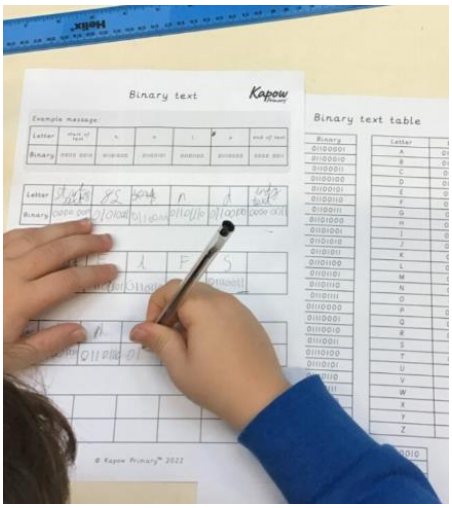


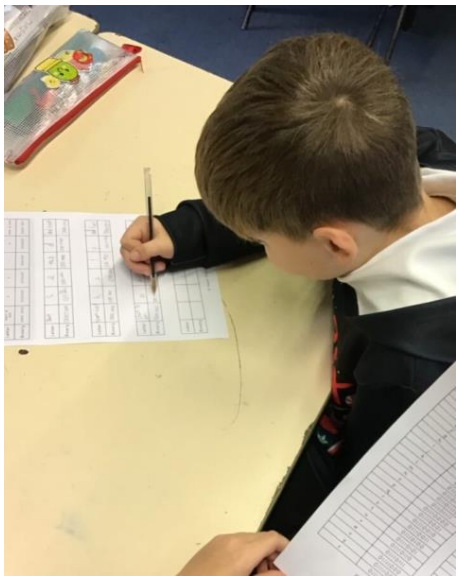
Main task

After learning about the use of binary as text we were set a challenge to try and decode the word written in binary



We then had a go at creating our own messages to





To finish the lesson we took it in turns to write binary code for the rest of the class to solve