



Coded messages

Annotation

Annika's response shows that she understands the concept of using binary digits to represent types of information. She shows that she can work systematically to convert the numbers 1-26 to binary numbers (base 2) and use these binary numbers to represent text.

Background

The class has been exploring how the binary number system works using just two digits, 1 and 0. Ms Richards has explained that computers store data using binary digits (bits), and that this is why computers are called digital devices.

Task

The students are given a table to help them to convert letters to numbers and these numbers to binary. Ms Richards explains that each of their binary numbers should contain five bits.

Each student writes their name in binary and then writes a message in binary for another student to read.

Ms Richards links this task to the students' mathematical understanding of how the base 2 number system works.

Student response

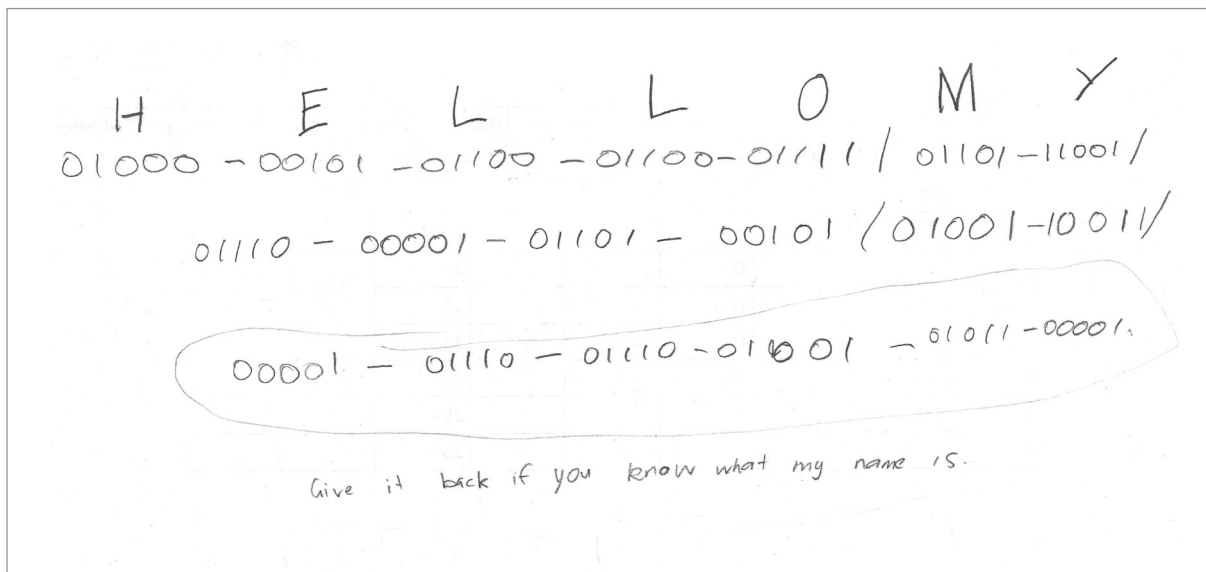
Annika completes the table, then writes her name using binary number representation.

Base 10	Binary	Alphabet	Base 10	Binary	Alphabet	Base 10	Binary	Alphabet
0	00000		9	01001	I	18	10010	R
1	00001	A	10	01010	J	19	10011	S
2	00010	B	11	01011	K	20	10010	T
3	00011	C	12	01100	L	21	10011	U
4	00100	D	13	01101	M	22	10100	V
5	00101	E	14	01110	N	23	10111	W
6	00110	F	15	01111	O	24	11000	X
7	00111	G	16	10000	P	25	11001	Y
8	01000	H	17	10001	Q	26	11010	Z

A N N I K A
 1 14 14 9 11 1

00001 - 01110 - 01110 - 01001 - 01011 - 00001

Annika then writes a message which reads "HELLO MY NAME IS ANNIKA" and gives it to another student, who figures out what it says.



Ms Richards decides to explore Annika's understanding of bits.

Ms Richards: *We're using five bits to make our numbers, so how many numbers can we make?*

Annika: *If we kept going in the table, we could get to 32.*

Ms Richards: *How could we go further and make more numbers?*

Annika: *We would need to use more bits for our binary numbers.*