Binary basics
Binary initials bracelet

What is binary?

- Binary is the base 2 number system; it's often called the language of computers.
- In the digital world, the binary code that is made up of ones and zeroes (1's and 0's) is used to communicate as the lowest level computing language.
- Those who wrote computer programs in the early ages of computers wrote their programs using only 1's and 0's.
- Binary numbers are suited to be represented by electrical and magnetic systems that can provide two distinct conditions, such as a switch that is either on or off.

Who uses binary?

- Computer scientists
- Computer engineers
- Electrical engineers
- Data scientists
- Anyone who uses computers or electronics to do their jobs

How does Micron use binary?

- Micron makes memory
- chips. All electronic devices use some form of memory to function.
- All the data in memory is stored in arrays of 1's and 0's.
- The language of binary is what fills a Micron memory chip with information.

Exploring binary and ASCII in digital communication?

- Letters and other characters are represented in the digital world of binary using ASCII (American Standard Code for Information Interchange).
- Letters and characters are represented by unique 8-bit strings of 1's and 0's.
- A "bit" is a "binary digit," and 8 bits make up a byte.
- Each character is represented by a byte of binary digits.

Make a binary initials bracelet

Decoding your initials

STEP 1 – Write your initials in the spaces provided.

STEP 2 – Write the ASCII binary representations in the boxes beside each initial.

Initials

First name initial: _____ = | | | | | | | | | |

Middle name initial: _____ = | | | | | | | | | |

Last name initial: _____ = | | | | | | | | | |

ASCII binary representation

Building your binary initials bracelet

Bead color key	
White bead = '0'	**Black bead = separator**
Blue bead = '1'	**Yellow bead = starter**

STEP 1 – Take a black bead and tie the cord to the bead with a good knot. Leave a 2- to 3-finger space as a tail.

STEP 2 – String on a yellow bead. This is your starting point.

STEP 3 – String white and blue beads representing your first name initial, according to your worksheet.

STEP 4 – String on a black separator bead.

STEP 5 – Repeat for the middle and last name initials, separating each with a black separator bead.

ASCII binary decoder key

A	0100 0001
B	0100 0010
C	0100 0011
D	0100 0100
E	0100 0101
F	0100 0110
G	0100 0111
H	0100 1000
I	0100 1001
J	0100 1010
K	0100 1011
L	0100 1100
M	0100 1101
N	0100 1110
O	0100 1111
P	0101 0000
Q	0101 0001
R	0101 0010
S	0101 0011
T	0101 0100
U	0101 0101
V	0101 0110
W	0101 0111
X	0101 1000
Y	0101 1001
Z	0101 1010