Grades K–2
Journey to Invention
Solar Beads

Learn about patterns and Morse code by creating bracelets with colorful beads. You'll have the chance to create a “secret” code that will only reveal its color in the sun.

What Will You Learn?

- About Samuel Morse’s contributions to the invention of the telegraph and Morse code
- How Morse code is used to communicate
- How to create your own secret message

Materials:

- Pipe cleaners
- Different colored solar beads
- Pony beads
- Alphabet worksheet

Instructions:

1. Use the provided worksheet to create your secret code. Indicate the bead color and number of beads (A=1 red, S=2 blue, etc.) that you will use for each letter of the alphabet.
2. Decide on a code word, such as your name. Choose the beads you will be using to create your coded word.
3. Design your bracelet by threading each bead through one end of your pipe cleaner.
4. Once the pipe cleaner is full and your design is completed, tie the two ends of the pipe cleaner together to create a bracelet.
5. Bring your bracelet outside in the sun to reveal your “secret” word.

Reflection Questions:
● What word did you reveal with your beads?
● How did you decide on your word?
● What are some scenarios/situations where the use of code is necessary?
● Have you ever invented a secret language that only you and a few other people knew about?

Explanation:
● Morse code is used to communicate through radio, telegraph, satellite, or light. We used light from the sun to reveal our message using our solar beads.
● Morse code was originally based on the English alphabet, but that’s not used by all languages. So, in 1848 the system was refined and it’s now known as the International Morse code.
● Morse code is still widely used today by the military and naval and aviation systems.
● Older kids can have fun playing around with Morse code and writing down a secret message using the language.
Further Reading Recommendations:

Samuel Morse, That’s Who
Friendship Bracelets
King & Kayla and the Case of the Secret Code

Borrow these books and more: borrow.nypl.org
Directions: Decide the color and amount of beads to represent each letter. Make sure you have designated something to represent a space if you decide to create more than one word.

A
B
C
D
E
F
G
H
I

J
K
L
M
N
O
P
Q
R

S
T
U
V
W
X
Y
Z
SPACE