Break the Code!
ASCII Binary Language

Simple Supplies:

- ASCII Character Code Key Printable Worksheet (Included)
- Coding Message Cracker Printable Worksheet (Included, Optional)
- Pencil
- White Paper
- White Crayon (Optional)
- Water Color Paint & Brush (Optional)

*Tip – In order to allow the children to better understand the code breaking technique, create an example or two so they can practice with you. Once they have an understanding, let them loose to write their own codes for their siblings or even you to break.

Set Up:

- Must have at least two participants for the project to work (adult/child, child/child).
- Print out the necessary number of forms for the project.

- Write the coded answer in the Coding Message Cracker's answer box using the white crayon. (You may leave it blank if you are not planning on using the paint option.)
- Hand each child an ASCII Character Code Key.
- After they child understands the objective, give them each a Coding Messenger Cracker worksheet.

Pre-Activity Time Questions:

- Ask the children what language do they think computers speak?
- How does a computer in the United States talk to and understand a computer in France?
- What is a code?
- What is a code breaker?

Activity Time:

- Review the provided ASCII Character Code Key worksheet and explain that what they are looking at is the language used by all computers around the world.

- Reinforcement questions
    - What is ASCII? *ASCII stand for American Standard Code for Information Interchange and it is the backbone of how computers and their programs operate.*
    - What Language do computers speak? *Computers speak in Binary. A language created and programed that uses a sequence of 1's and 0's to speak. It's like an on/off sequence that controls the computer processes and data storage.*
    - How do computers in the United States talk to and understand computers in France? *By using Binary, the language allows an American computer to speak with a French computer and still speak the same language.*
    - What is a code? *A code is a series of letters, numbers or even words and symbols that may look like mixed up alphabet soup, but when translated correctly, becomes a clear message or instruction. For example, during the Second World War, the United States used Native American languages as codes to send important military battlefield information from one military unit to another.*
    - What is a code breaker? *A code breaker is a person, a program, or even another computer that translates the mixed-up alphabet soup or phrase into a clear message. For the example given above, the United States knew that it would be very hard for Germany or Japan to break the code of Native American languages.*

- Code Breaking Time!
    - Select a person to be the transmitter (The same person who wrote the white word on the Coding Messenger Cracker worksheet).
    - The transmitter will then slowly call out the series of numbers, representing each coded letter, to the code breakers.
    - Use the ASCII Character Code Key to break the code, writing their answer in the Code Breaking Attempt selection.
    - When the Code Breaker has the correct answer, have them paint the Code Confirmation section to reveal the matching answer.

Post Activity Questions:

- Do you think there are other ways to make a code to share, not with computers but with friends? *Mixed letters with a pattern, languages that are not commonly used, or more numbers like T = 20 for the 20th letter of the alphabet.*
- What was the name of the language which is considered the backbone of communication for computers? *Binary*
- What secret code did the United States use against Germany and Japan during World War II? *Native American languages*
- What does ASCII stand for? *American Standard Code for Information Interchange*

Fun Things to Try:

- Using the activity, try scrabbling the letters to add an additional challenge.
- Expand the activity to include phrases or sentences.
- Challenge them to create their own working code and have them teach it to you.