# CODE CRACKERS #3: MORSE CODE

## BACKGROUND

Morse Code was developed in the 1830's by Samuel Morse. It was developed to enable communication over long distances via a telegraph. It can be transmitted via sound, like on a telegraph, or with light, such as using lanterns on ships.

## HOW IT WORKS

Morse Code itself is a simple substitution cipher. The code consists of two components: dots and dashes. Each letter of the alphabet and the numbers 0 through 9 have a unique combination of these dots and dashes. For example, A is one dot followed by one dash, which we would write as .-

Morse Code, however, is usually represented visually with lights (such as on ships) or audibly (with a telegraph or other device, such as a buzzer). Dots are represented by short bursts of light or sound and dashes are represented by long bursts of light/sound. When transmitting messages, you need to leave a short pause between letters and a longer pause between words.

Whomever is receiving the message will write down the dots and dashes as the transmitter sends them and leave small spaces between letters and slashes between words. Once the transmission is complete, the message can be deciphered with the help of a table, if necessary.

To encrypt a message, we simply find the correct combination of dots and dashes for each letter we want to encrypt.

*Plaintext:* Help Me

*Ciphertext:* .... . .-.. .--. / -- .

To decipher the message, we would then reverse the process, looking at or listening to the dots and dashes to determine each letter.

*Ciphertext:*... --- ...

*Original text:* SOS

## PRACTICE

First, practice deciphering the following message. It was the first message ever sent via telegram.

.-- .... .- - / .... .- - .... / --. --- -.. / .-- .-. --- ..- --. .... -

Now, try to decipher this message.

- .... .. ... / .. ... / . .- ... -.--

If you have successfully figured out the previous two messages, move on the Master Code Cracker section to learn a bit more about Morse Code!

## MASTER CODE CRACKER

Now that you've mastered Morse Code, see if you can decipher the following messages!

1. ... --- ... / -.. --- . ... -. - / .- -.-. - ..- .- .-.. .-.. -.-- / ... - .- -. -.. / ..-. --- .-. / .- -. -.-- - .... .. -. --.

2. -- --- .-. ... . / -.-. --- -.. . / .. ... / .- .-.. ... --- / -.-. .- .-.. .-.. . -.. / - .... . / ...- .. -.-. - --- .-. .. .- -. / .. -. - . .-. -. . -

3. - .... . .-. . / .. ... / .- -. / --- ..-. ..-. .. -.-. .. .- .-.. / -- --- .-. ... . / -.-. --- -.. . / . -..- .- -- / .-- . . --- .--. .-.. . / -.-. .- -. / - .- -.- .

4. -- --- .-. ... . / -.-. --- -.. . / .. ... / ... - .. .-.. .- .. / ..- ... . -.. / - --- -.. .- -.-- / -... -.-- / .-. .- -.. .. --- / .- -- .- - . ..- .-. ...

5. .--. .-. --- ..-. . ... ... .. --- -. .- .-.. / -- --- .-. ... . / -.-. --- -.. . .-. ... / -.-. --- -- -- ..- -. .. -.- . .- - . / ..-. .- ... - . .-. / - .... .- -. / - . -..- - .. -. --.

## ENCODE YOUR OWN MESSAGES

Use your Morse Code table to create secret messages for your friends. Then, if you're feeling adventurous, transmit the message to them across the room with flashlights!

# MORSE CODE TABLE AND RULES

1. The length of a dot is one unit
2. A dash is three units
3. The space between parts of the same letter is one unit
4. The space between letters is three units
5. The space between words is seven units

| **Letters** | |
|---|---|
| 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 | --.. |

| **Numbers** | |
|---|---|
| 0 | ----- |
| 1 | .---- |
| 2 | ..--- |
| 3 | ...-- |
| 4 | ....- |
| 5 | ..... |
| 6 | -.... |
| 7 | --... |
| 8 | ---.. |
| 9 | ----. |

# Code Cracker Key

## *PRACTICE*

What hath God wrought

This is easy

## MASTER CODE CRACKER

1. *SOS doesn't actually stand for anything.*

2. *Morse Code is also called the Victorian Internet.*

3. *There is an official Morse Code Exam people can take.*

4. *Morse Code is still used today by radio amateurs.*

5. *Professional Morse Coders communicate faster than texting.*