

# MORSE CODE WORKSHEET

## Morse Code History:

Morse Code is a type of character encoding that transmits telegraphic information using rhythm. Morse Code uses a standardized sequence of short and long elements to represent the letters, numerals, punctuation and special characters of a given message. The short and long elements can be formed by sounds, marks, or pulses, in on off keying and are commonly known as "dots" and "dashes" or "dits" and "dahs". The speed of Morse Code is measured in words per minute (WPM) or characters per minute, while fixed-length data forms of telecommunication transmission are usually measured in baud or bps.

Originally created for Samuel F. B. Morse's electric telegraph in the early 1840s, Morse Code was also extensively used for early radio communication beginning in the 1890s. For the first half of the twentieth century, the majority of high-speed international communication was

### Dùng Morse trong sinh hoạt Phong Trào

- Truyền tin là một trong các môn thích thú nhất trong sinh hoạt đoàn.
- Trong sinh hoạt mật mã Morse được dùng liên lạc khi ở xa tầm tiếng nói, hay mắt nhìn; chẳng hạn khi tập hợp Đoàn Sinh và đặc biệt trong các Hành Trình Đức Tin trại.
- Mặt khác, các mật thư được dùng trong Phong Trào, phần lớn đều quy thuận vào mật mã Morse.
- Đặc điểm của mật mã Morse là để luyện tinh thần đồng đội; cùng học, cùng chơi, cùng truyền tin.
- Morse cũng dạy tính cần cù nhẫn nại mà các thiếu sinh cần tập luyện.

conducted in Morse Code, using telegraph lines, undersea cables, and radio circuits. However, the variable length of the Morse characters made it hard to adapt to automated circuits, so for most electronic communication it has been replaced by machine readable formats, such as Baudot code and ASCII.

The most popular current use of Morse Code is by amateur radio operators, although it is no longer a requirement for amateur licensing in many countries. In the professional field, pilots and air traffic controllers are usually familiar with Morse Code and require a basic understanding. Navigational aids in the field of aviation, such as VORs and NDBs, constantly transmit their identity in Morse Code. Morse Code is designed to be read by humans without a decoding device, making it useful for sending automated digital data in voice channels. For emergency signaling, Morse Code can be sent by way of improvised sources that can be easily "keyed" on and off, making Morse Code one of the most versatile methods of telecommunication in existence.

## Morse Code Communications and Characters

MORSE CODE ALPHABET	
A: • —	N: — •
B: — •••	O: — — —
C: — • — •	P: • — — •
CH: — — — —	Q: — — • —
D: — ••	R: • — •
E: •	S: •••
F: •• — •	T: —
G: — — •	U: •• —
H: ••••	V: ••• —
I: ••	W: • — —
J: • — — —	X: — •• —
K: — • —	Y: — • — —
L: • — ••	Z: — — ••
M: — —	

MORSE CODE ALPHABET OPPOSITES	
E: •	T: —
I: ••	M: — —
S: •••	O: — — —
H: ••••	CH: — — — —
A: • —	N: — •
W: • — —	D: — ••
J: • — — —	B: — •••
R: • — •	K: — • —
P: • — — •	X: — •• —
L: • — ••	Y: — • — —
F: •• — •	Q: — — • —
U: •• —	G: — — •
V: ••• —	
	Z: — — ••
	C: — • — •

NGƯỜI ĐÁNH TIN	CODE
Mời Nhận Bản Tin; (AAAA):	• — / • — / • — / • —
Truyền Lầm; (HH):	•••• / ••••
Hết Bản Tin; (AR):	• — / • — •
Cấp Cứu; (SOS):	•••• / — — — / ••••

NGƯỜI NHẬN TIN	CODE
Sẵn Sàng Nhận Tin; (K):	— • —
Xin Truyền Lại; (IMI):	• — / • — / • — / • —
Xin Đánh Chậm Lại; (VL):	•••• — / • — •••
Xin Chờ Đợi; (AS):	• — / ••••
Thối Lại Chữ Trước; (C):	— • — •
Hiểu Rồi; (R):	• — •

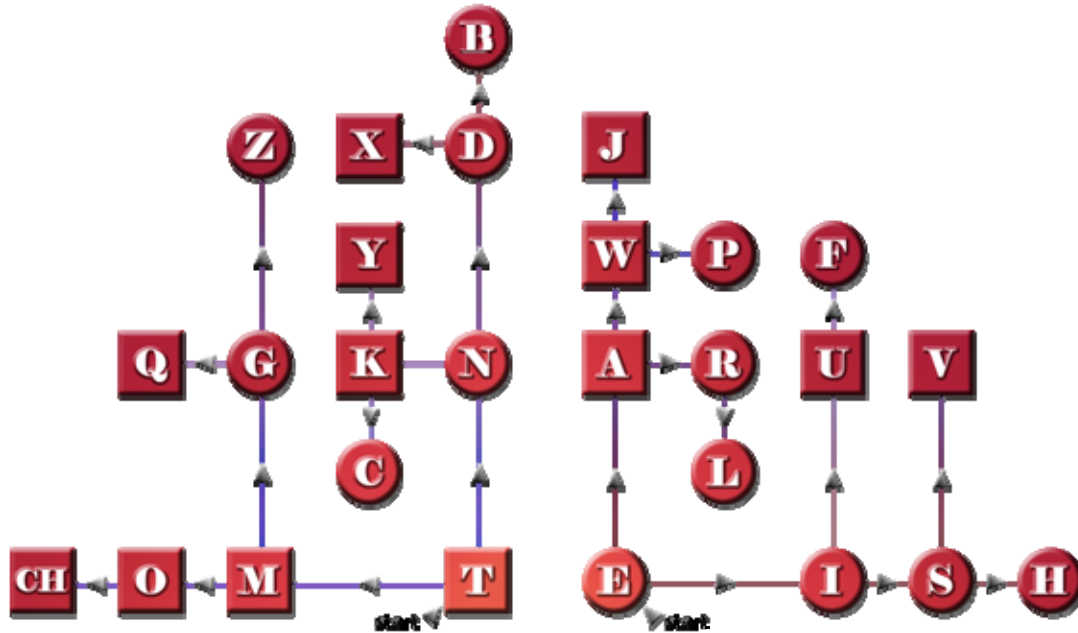
SENDER	CODE
Attention Prepare to receive; (AAAA):	• — / • — / • — / • —
Error in message; (HH):	•••• / ••••
End of message; (AR):	• — / • — •
Emergency; (SOS):	•••• / — — — / ••••

RECEIVER	CODE
Ready to receive; (K):	— • —
Please transmit again; (IMI):	•• / — — / ••
Please transmit slower; (VL):	•••• — / • — •••
Please wait; (AS):	• — / ••••
Trasmit previous letter; (C):	— • — •
Understood; (R):	• — •

Morse Code Numbers	
1: • — — — —	6: — •••••
2: •• — — —	7: — — ••••
3: ••• — — —	8: — — — •••
4: •••• —	9: — — — — •
5: •••••	0: — — — — —

Accent Marks	Letter Accents
Dấu Sắc: (S)	Chữ Â: (AA)
Dấu Huyền: (Q)	Chữ Ă: (AW)
Dấu Hỏi: (Z)	Chữ Đ: (DD)
Dấu Ngã: (X)	Chữ Ê: (EE)
Dấu nặng: (J)	Chữ Ô: (OO)
	Chữ Ơ: (OW)
	Chữ Ư: (UW)
	Chữ ƯƠ: (OUW)

## Morse Code Tower



## Representation and Timing

### International Morse code is composed of five elements:

- short mark, dot or 'dit' (•); measures one unit long
- longer mark, dash or 'dah' (—); measures three units long (three times longer than the dot)
- intra-character gap (between the dots and dashes within a character); measures one unit long
- short gap (between letters); measures three units long
- medium gap (between words); measures seven units long

Morse code can be transmitted in a number of ways: originally as electrical pulses along a telegraph wire, but also as an audio tone, a radio signal with short and long tones, or as a mechanical or visual signal (e.g. a flashing light) using devices like an Aldis lamp or a heliograph.

Morse messages are generally transmitted by a hand-operated device such as a telegraph key, so there are variations introduced by the skill of the sender and receiver - more experienced operators can send and receive at faster speeds. In addition, individual operators differ slightly, for example using slightly longer or shorter dashes or gaps, perhaps only for particular characters. This is called their "fist", and receivers can recognize specific individuals by it alone.

The speed of Morse code is measured in wpm or cpm, according to the Paris standard which defines the speed of Morse transmission as the timing needed to send the word "Paris" a given number of times per minute. The word Paris is used because it is representative for a typical text in the English language, and the choice was influenced by the fact that the decision was taken at the International Telegraph Conference in Paris 1865.

## Techniques on How to Learn Morse Code

People learning Morse code using the Farnsworth method, named for Donald R. "Russ" Farnsworth, also known by his call sign, W6TTB, are taught to send and receive letters and other symbols at their full target speed, that is with normal relative timing of the dots, dashes and spaces within each symbol for that speed. However, initially exaggerated spaces between symbols and words are used, to give "thinking time" to make the sound "shape" of the letters and symbols easier to learn. The spacing can then be reduced with practice and familiarity.

Another popular teaching method is the Koch method, named after German psychologist Ludwig Koch, which uses the full target speed from the outset, but begins with just two characters. Once strings containing those two characters can be copied with 90% accuracy, an additional character is added, and so on until the full character set is mastered.

One last method that usually works is PRACTICE, PRACTICE, PRACTICE.