

# Learn Morse Code Activity Sheet

Name: \_\_\_\_\_

Date: \_\_\_\_\_

## Learn Morse Code

1. Gather your materials to learn Morse code and create a telephone!
  - a. Morse code alphabet guides (see attached page), flashlight, two types of string (for example: fishing line, embroidery string, twine, yarn, or hemp, etc.), two listening devices (for example: 2 tin cans, 2 paper cups, or 2 plastic jars), 2 paperclips, optional: hot glue or tape, dark piece of paper.
2. Before you begin, think about the ways you communicate with your friends who live far away:
  - a. What are three different methods of communication that you use?

b. How do these methods differ?

i. Are you able to communicate the same ideas or feelings in each method?

c. How did your grandparents, or great-grandparents, communicate before cell phones?

i. What about before computers? before dial-up phones? before mail service? before written language?

3. Read the background information on your sheet to familiarize yourself with the guidelines for Morse code.



# Morse Code Background Information

Morse code is a system of communication that uses dots and dashes to relay messages. A dot looks like a period, and a dash is a long horizontal line. A dot is called a dit, and a dash is called a dah.

Different combinations of dits and dahs represent each letter in the English language. They can be strung together to create words and sentences.

## Timing

The length of each symbol is related to the length of one dit:

- A dit is one unit of sound.
- When switching between dits and/or dahs in the same letter, you leave one unit of silence.
- A dah is the length of three units (three dits).
- To move to the next letter, you insert a pause of three units. To move to the next word, you insert a pause of seven units.



## Remember:

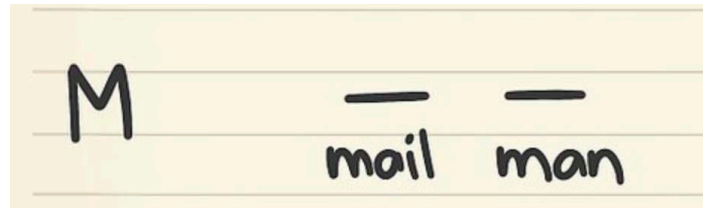
1. Dit (.) = 1 unit
2. Dah (—) = 3 units
3. Between dits and dahs within a letter = 1 unit of silence
4. Between letters in a word = 3 units of silence
5. Between two words = 7 units of silence

4. Now that you're familiar with how Morse code works, practice by making the sounds for the short dit (.) of 1 unit, and the longer, drawn out "dah (—) of 3 units.

*Note: You can tap your finger while you say each letter to help keep pace, or use a metronome (can be found online). Also, a dit is often pronounced as "di."*

5. Take a look at both of your alphabet guides. One shows you the dits and dahs for each letter. The other uses the shape of the letter to help you remember the sequence.

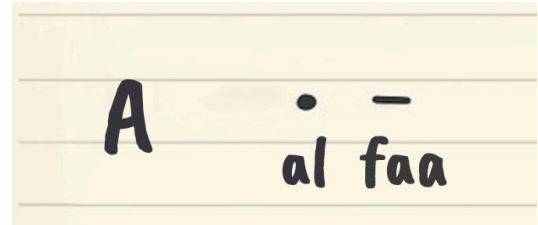
Memory devices, or word associations, can help you recall certain letters. For example, the word "mailman" starts with the letter "M." So, sounding out "mail - man" might help you remember that letter as "dah dah." If it's helpful, come up with your own creative ways to match the sounds from each letter.





6. Let's start out with the letter "A." This letter is simple, with just a dit and a dah. A helpful word association might be the word "alpha" or "al - faa." Say it out loud, then move on to #7 to spell "aloha."

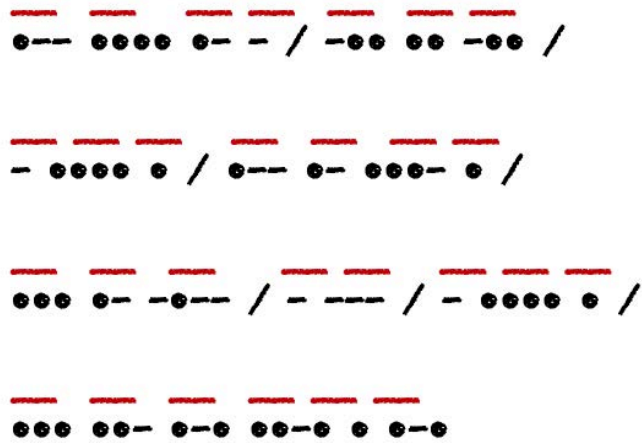
7. Continue in this way to spell out the word "ALOHA"



8. Now that you've practiced writing and sounding out "ALOHA," conduct your trials:

**Trial #1: Decipher the Code**

- a. Work with a partner to decipher the Morse code below to reveal a secret message.  
*Note: Each red line corresponds to a combination of dits and dahs that makes up a letter. Write your answer on the red lines.*



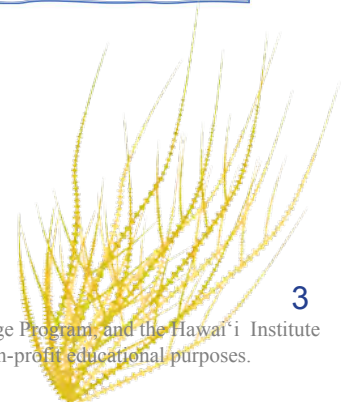
- b. Can you guess the answer to the riddle? Continue to trial #2 to find out

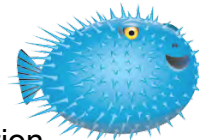
**Trial #2: Speaking in Morse Code**

- a. Read the morse code script below to your partner:
- b. **"di-di-di-dit di-dah di-di-di-dah di / di-dah / di-di-di di-dah-dah dit di-dah-di-di di-dah-di-di / dah di-dit dah-dah dit."**
- c. As your partner listens, have them write the dots and dashes, then work together to translate the message.

**Remember the timing:**

- Dit (·) = 1 unit
- Dah (—) = 3 unit
- Space between dits and dahs within a letter: 1 unit of silence
- The space between letters: 3 unit of silence
- The space between words: 7 unit of silence





### Trial #3: Morse Code in Lights

- a. Now that you're experienced with writing and listening, test your visual interpretation skills with lights!
- b. The pattern of turning lights on and off can work in the same way as dits and dahs.
- c. Practice by expressing the letter "a" in light by turning your flashlight on for 1 unit, off for 1 unit, on for 3 units, then off (dit-dah).  
*Note: Aim the light on the floor, on a peice of dark paper, or at the wall. Don't shine it in anyones eyes!*
- d. Now, write out your name in dits and dahs.

Your name in Morse: \_\_\_\_\_

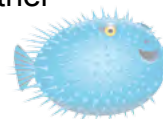
- e. Use your flashlight to spell out your Morse code name with lights. Show your partner!

9. Answer the questions below:

- a. Which method of communication did you find easiest?
- b. Which method of communication did you find hardest?
- c. What is an advantage of Morse Code?
- d. What is a disadvantage of Morse Code?

### Part B: Make Your Own Telephone!

1. Adult supervision required!: Poke or drill small holes in the bottom center of both listening devices.
2. Cut a piece of string about 15-20 feet. *Note: make sure you have enough space to stand with the full length of the string pulled tight.*
3. Thread one end of the string through the bottom of the listening device, from the outside in.
4. Pull the string through the hole and tie the end of the string to a paperclip to hold it in place it so the string can't pass back through the hole. *Note: you can also tie a knot if you do not have a paper clip.*
5. Repeat steps 3-5 with the other end of the string and listening device.
6. Hold one listening device and have your partner hold the other. Walk away from each other until the string is fully stretched and tight between the listening devices.
7. Hold the listening device up to your ear and have your partner speak into their listening device.
8. Talk back and forth with your partner!
9. Change out your string with the other type of string in your materials. Retest your phone by talking with your partner, and record your observations.



## Activity Questions



Name: \_\_\_\_\_



1. Look at your Morse Code Guide for numbers 0-9. What do you notice about the patterns?
2. Use the guide to write your birthday in Morse Code:
  - a. month number (with 1 for January through 12 for December)
  - b. day
  - c. year
3. Describe three different methods you used to communicate in this activity.
4. Describe two different ways that animals use patterns to communicate (Hint: think about coloration, body motion, and sound.)
5. Which string material worked the best for your telephone design? Why might one type of string might work better than another?
6. What material was your listening device made out of? Do you think that another type material might have worked better? Why?
7. Describe a design change that you think would make your telephone better.
8. How is your experience making the telephone similar and different to an engineer developing a new type of phone?

