



Morse Code Usage

Lesson Plan: Class 06 / IPP / 02



Overall goal of the lesson	Learn to translate back and forth from Morse Code.
Prior knowledge required	The students should have IPP-01: The basics of morse code.

MODULE 1: **Module time:** 10 minutes

Goal:	Getting familiar with decoding from and encoding to Morse Code.
Description:	By the end of this short lecture students should be able to communicate in Morse Code.
Material required:	Physical: For the activities have some torches would be good. Electronic:
Procedure Details:	<ul style="list-style-type: none"> • This will be a pretty short lecture. • The first 2 slides are just revisions from the previous lecture. <ul style="list-style-type: none"> a. Slide 2 revises the morse code for all the English letters and numbers. b. Slide 3 revises the flow chart to remember the Morse codes. <ul style="list-style-type: none"> ■ Each time you go down left subtree you add a dit (dot). ■ Each time you go down right subtree you add a dah (dash). • Slide 4 is the most important slide of the deck. It introduces how much time should be spent at different times to understand words, phrases, sentences, etc. For example let's assume we are using torch light to pass messages. <ul style="list-style-type: none"> a. Dit (dot) is our shortest time intervals. A dit is one unit of time. For simplicity let's assume one unit is equal to 1 second (But do clarify to students 1 unit can be of any length). With these 2 assumption whenever a dit needs to be shown one will turn the torch on for 1 second. b. Dah (dash) is 3 units of time. So, whenever a dah needs to be shown one will turn the torch on for 3 seconds. c. Space between 2 parts of same letter is 1 unit of time. So, the torch will remain off for 1 second before turning on again for another part of same letter. <ul style="list-style-type: none"> ■ For example, let's take letter R. The Morse code for R is '. - .' ■ To present R one will turn torch light on for 1 second (first dit) then keep it off for 1 second (space between dit and dah) then turn on for 3 seconds (dah), then off for 1 second (space) and finally on for 1 second (last dit). d. Space between 2 letter of same word is 3 units of time. So, after the end of a letter the torch will remain off for 3 seconds before turning on again for another letter. e. Finally, Space between 2 words is 7 units of time. So, after the end of a word the torch will remain off for 7 seconds before turning on again for another word. • Slide 5 introduces Morse Code for SOS: international signal for distress. Should be used for any sort of emergency when one is not able to communicate easily. One must remember encoding for SOS. • Slide 6 is just some examples. Ask the students to use their torches play the encodings given. • Slide 7 gives some morse codes. Ask the students to decode them. Answers are: <ul style="list-style-type: none"> a. School b. Lets talk in secret language c. We are having fun

- Take rest of the time in the class to divide students in groups where 2 or more students communicate using their torches and rest can watch, help, correct them. Rotate.

Encourage students to use the mapping as reference for the worksheet.

Answers of the worksheet questions:

1. Encode given phrases:

a. $\frac{1}{2} - \frac{1}{3} = \frac{3}{6} - \frac{2}{6} = \frac{1}{6}$ $\frac{1}{2} + \frac{1}{3} = \frac{3}{6} + \frac{2}{6} = \frac{5}{6}$ $\frac{1}{2} - \frac{1}{4} = \frac{2}{4} - \frac{1}{4} = \frac{1}{4}$ $\frac{1}{2} + \frac{1}{4} = \frac{2}{4} + \frac{1}{4} = \frac{3}{4}$ $\frac{1}{3} - \frac{1}{6} = \frac{2}{6} - \frac{1}{6} = \frac{1}{6}$ $\frac{1}{3} + \frac{1}{6} = \frac{2}{6} + \frac{1}{6} = \frac{3}{6} = \frac{1}{2}$ $\frac{1}{4} - \frac{1}{8} = \frac{2}{8} - \frac{1}{8} = \frac{1}{8}$ $\frac{1}{4} + \frac{1}{8} = \frac{2}{8} + \frac{1}{8} = \frac{3}{8}$ $\frac{1}{6} - \frac{1}{12} = \frac{2}{12} - \frac{1}{12} = \frac{1}{12}$ $\frac{1}{6} + \frac{1}{12} = \frac{2}{12} + \frac{1}{12} = \frac{3}{12} = \frac{1}{4}$

b. $\frac{1}{2} \times \frac{1}{3} = \frac{1}{6}$ $\frac{1}{3} \times \frac{1}{2} = \frac{1}{6}$ $\frac{1}{2} \times \frac{2}{3} = \frac{1}{3}$ $\frac{2}{3} \times \frac{1}{2} = \frac{1}{3}$ $\frac{1}{2} \times \frac{3}{4} = \frac{3}{8}$ $\frac{3}{4} \times \frac{1}{2} = \frac{3}{8}$
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C. $\frac{1}{2} \times \frac{1}{3} = \frac{1}{6}$ $\frac{1}{3} \times \frac{1}{2} = \frac{1}{6}$ $\frac{1}{2} \times \frac{1}{4} = \frac{1}{8}$ $\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$ $\frac{1}{3} \times \frac{1}{4} = \frac{1}{12}$ $\frac{1}{4} \times \frac{1}{3} = \frac{1}{12}$ $\frac{1}{2} \times \frac{1}{5} = \frac{1}{10}$ $\frac{1}{5} \times \frac{1}{2} = \frac{1}{10}$

[illegible]

e. $\begin{pmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{pmatrix}$

f.

... ..

g. $\frac{1}{2} \times \frac{1}{3} = \frac{1}{6}$ $\frac{1}{3} \times \frac{1}{2} = \frac{1}{6}$ $\frac{1}{2} \times \frac{1}{4} = \frac{1}{8}$ $\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$ $\frac{1}{3} \times \frac{1}{4} = \frac{1}{12}$ $\frac{1}{4} \times \frac{1}{3} = \frac{1}{12}$ $\frac{1}{2} \times \frac{1}{6} = \frac{1}{12}$ $\frac{1}{6} \times \frac{1}{2} = \frac{1}{12}$

[illegible]

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2. Decode the phrases (ignore if students add some punctuations):

- a. The worst thing about making a mistake is being afraid of one
- b. All our dreams can come true if we have courage to pursue them
- c. The best thermometer to the progress of a nation is the treatment of its women
- d. Tolerance and celebration of individual differences is the fire that fuels lasting love
- e. Treat others the way you would like to be treated