W E L C O M E

To

KL7BB's "Original Digital"™
Writing Test For Morse Code.

Take the writing test.   Write as many lines A-Z 0-9 as you can in one minute.

ABCDEFGHIJKLMNOPQRSTUVWXYZ 0123456789

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ABCDEFGHIJKLMNOPQRSTUVWXYZ 0123456789

1

2

3

4

5

1 full line   *2 full lines*   *3 full lines* *4 full lines*

25÷5=5   36÷5=7.2   50÷5=10   65÷5=13   72÷5=14.4   100÷5=20   108÷5=21.6   144÷5=28.8

Total Letters + Numbers = _____ ÷ 5 = _____ WPM

KL7BB's "Original Digital"™ Writing Test For Morse Code.

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Take the writing test.   Write as many lines A-Z 0-9 as you can in one minute.

ABCDEFGHIJKLMNOPQRSTUVWXYZ 01234·····9

1

2

3

4

5

...full line				*2 full lines*		*3 full lines*	*4 full lines*
25÷5=5	36÷5=7.2	50÷5=10	65÷5=13	72÷5=14.4	100÷5=20	108÷5=21.6	144÷5=28.8

Total Letters + Numbers = _____ ÷ 5 = _____ WPM

How Fast Do You Write?

Writing Test. How fast do you Write?

- **Take this writing test to learn your writing speed.**
  (13 WPM = 65 Letters/Numbers)

- **Set a one minute timer for a beep tone. (Alarm)**

- **Write as many full lines a thru z & 0-9 as you can.**

- **abcdefghijklmnopqrstuvwxyz 0123456789**
  (your completed lines will look something like this one)

- **Count the total characters written and divide by 5.**

- **This result is your current "fast writing" speed.**

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Take the writing test.   Write as many lines A-Z 0-9 as you can in one minute.

ABCDEFGHIJKLMNOPQRSTUVWXYZ 0123456789

1 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 0 1 2 3 4 5 6 7 8 9

2 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 0 1 2 3 4 5 6 7 8 9

3 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 0 1 2 3 4 . . . . .

4 -

5 -

Your Writing Test   Might Look Like This, , ?

	1 full line			**2 full lines**		**3 full lines**	**4 full lines**
25÷5=5	36÷5=7.2	50÷5=10	65÷5=13	72÷5=14.4	100÷5=20	108÷5=21.6	144÷5=28.8

Total Letters + Numbers = _____ ÷ 5 = _____ WPM

Hear it, Decode it, Buffer it, Print it.

Copy Now, Read it Later.

- Here is how to learn to copy the Morse Code. (CW)

- When you are done writing the very last character of the CW transmission, , , ,

- You will have to go back and
  ### read the message text, , , , ,

- In order to see what content was really sent.

KL7BB's "Original Digital"™ Writing Test For Morse Code.

Take the writing test.   Write as many lines A-Z 0-9 as you can in one minute.

ABCDEFGHIJKLMNOPQRSTUVWXYZ 0123456789

1 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 0 1 2 3 4 5 6 7 8 9

2 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 0 1 2 3 4 5 6 7 8 9

3 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 0 1 2 3 4 5 6 7 8 9

4 *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 0 1 2 3 4 5 6 7 8 9*

5 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 0 1 2 3 4 . . . .

If You Tried to Guess What CW Might Be Sent to You !

1 full line   2 full lines   3 full lines   4 full lines
25÷5=5   36÷5=7.2   50÷5=10   65÷5=13   72÷5=14.4   100÷5=20   108÷5=21.6   144÷5=28.8

Total Letters + Numbers = _____ ÷ 5 = _____ WPM

KL7BB's "Original Digital"™ Writing Test For Morse Code.

Take the writing test.   Write as many lines A-Z 0-9 as you can in one minute.

ABCDEFGHIJKLMNOPQRSTUVWXYZ 0123456789

1 RYRYRY THE QUICK BROWN FOX JUMPED OVER THE LAZY DOG

2 **RYRYRY THE QUICK BROWN DOG JUMPED OVER THE LAZY FOX**

3 **RYRYRY THE QUICK DOG JUMPED OVER THE LAZY BROWN FOX**

4 *RyRyRy The Dog Quickly Jumped Over The Lazy Brown Fox*

5 **RyRyRy The Big Brown Dog Jumped Quickly Over The Lazy Lazy Fox**

Now Read For The First Time, What CW Was Sent To You !

1 full line		2 full lines		3 full lines	4 full lines
25÷5=5 36÷5=7.2	50÷5=10	65÷5=13 72÷5=14.4	100÷5=20	108÷5=21.6	144÷5=28.8

Total Letters + Numbers = _____ ÷ 5 = _____ WPM

How to copy and read at the same time will be covered at the end.
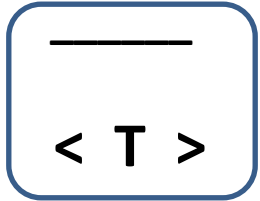
(hint, lots of practice).

- **To copy,** means that you do not know the content of the message being sent to you.

- **All of your time and energy went into deciphering the code bits and getting them written down on paper or entered into a computer or tablet.**

- (Just like a real Contest / FCC / VE test).

Your "One on One" Speed

- Your one on one speed is the CW rate where you presently copy perfect code at **100% accuracy.**

- If your 100% copy speed is 8 words per minute, then your one on one speed is 8 words per minute. Same applies to 25+WPM.

- This "one on one" is the speed where you hear the Morse code, Decode the dits and dahs, Then write down the results just as **fast** as you can, without any delays or any attempts at buffering.
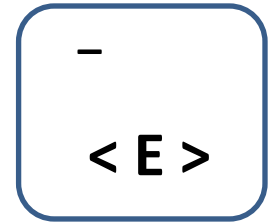
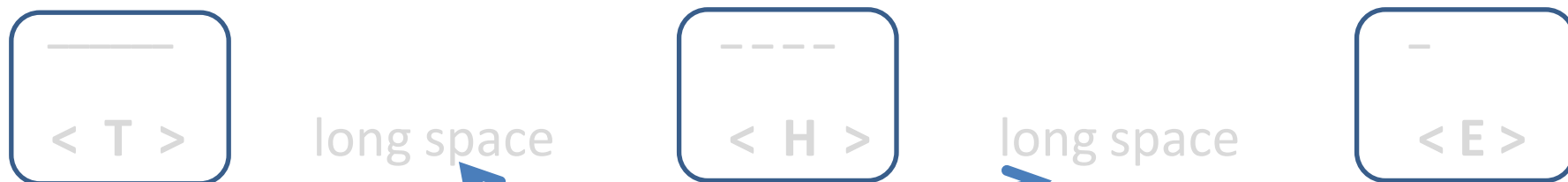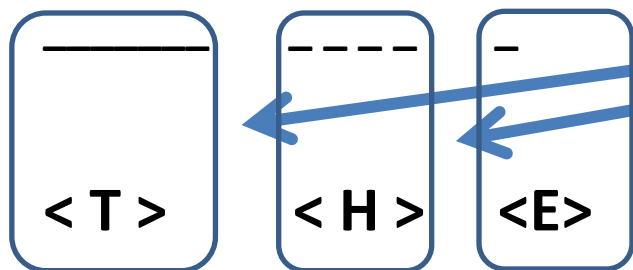- The following is an example of the word "**THE**"   at **5** WPM.
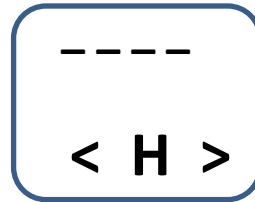
————		– – – –		–
< T >	long space	< H >	long space	< E >

- The following is an example of the word " **THE** " at **5** WPM.

———	– – – –	–
< T >	< H >	< E >

long space   long space

- At **15** WPM the <mark>*long spaces*</mark> between letters, becomes <mark>*shorter*.</mark>

———	– – – –	–
< T >	< H >	<E>

- The following is an example of the word " **THE** " at **5** WPM.

‾‾‾‾‾		‾ ‾ ‾ ‾		‾
< T >	long space	**< H >**	long space	**< E >**
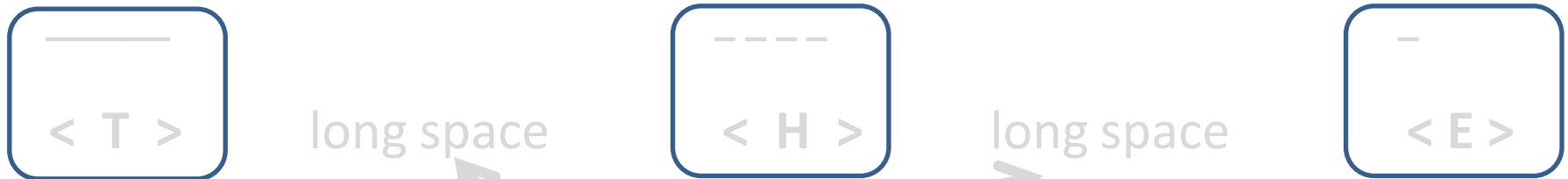
- At **15** WPM the **long spaces** between letters, becomes **shorter.**
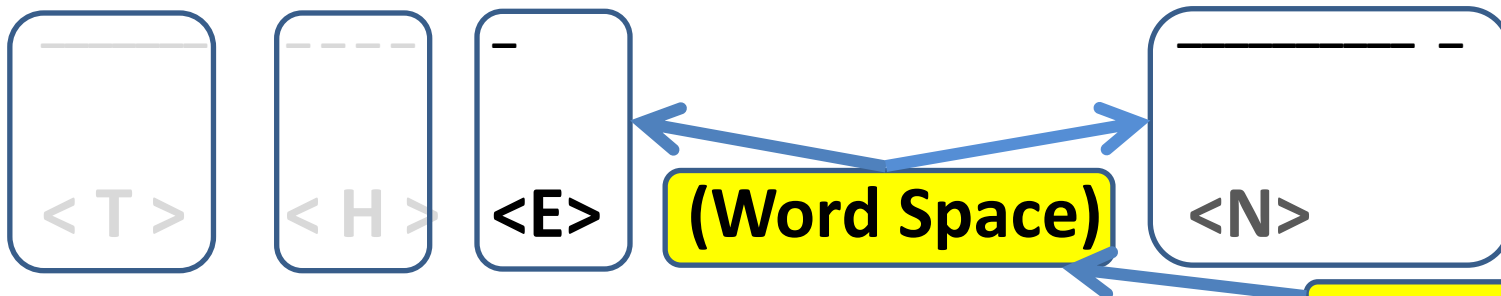
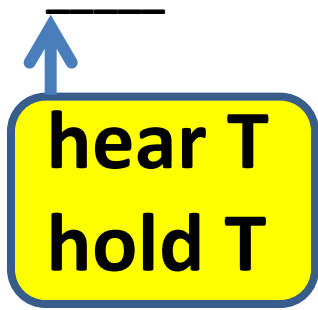| ‾‾‾‾‾	‾ ‾ ‾ ‾	‾	**(Word Space)**	‾‾‾‾‾‾‾ ‾
< T >	**< H >**	**<E>**		**<N>**

The most important element of the Morse Code is the **Longer word space** between words. While learning to recognize the "word space", we can use the space as a tempo drumbeat or clock to tell ourselves that a new word is just about to start. The space between words starts just after the first word has been sent. **Listen** for the word **space.**

The idea is to make a game of speeding up the mind to enhance the entire copying process. The results can be improved by purposely causing the mind to do something else extra,..Like; delaying the writing (outputting) of the just-processed letter, until the ear hears the starting edge of the next letter,...then let the motor control part of the mind tell the hand to write the letter down on paper (delayed by 1, 2 or 3 letters).
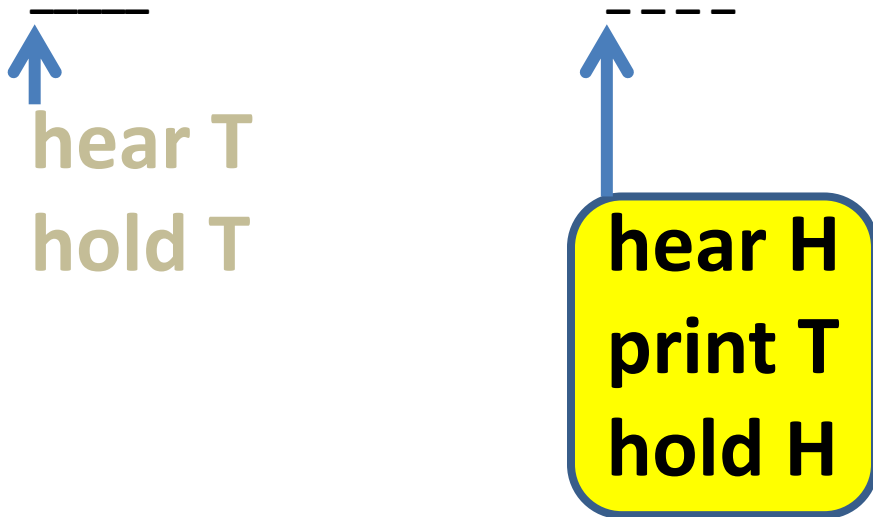
Now at the same time, the EAR has to refocus to the new incoming CW data, recognize it and get it ready to print.   The delayed data is printed when the ear hears yet another code letter (or a long space between words). Following example is the word T H E.

_____   – – – –

hear T
hold T

This Is What To Do.

      The idea is to make a game of speeding up the mind to enhance the entire copying process. The results can be improved by purposely causing the mind to do something else extra,..Like; delaying the writing (outputting) of the just-processed letter, until the ear hears the starting edge of the next letter,...then let the motor control part of the mind tell the hand to write the letter down on paper (delayed by 1, 2 or 3 letters).

      Now at the same time, the EAR has to refocus to the new incoming CW data, recognize it and get it ready to print.   The delayed data is printed when the ear hears yet another code letter (or a long space between words). Following example is the word T H E.

_____   - - - -   -

hear T
hold T

hear H
print T
hold H

This Is What To Do.

The idea is to make a game of speeding up the mind to enhance the entire copying process. The results can be improved by purposely causing the mind to do something else extra,..Like; delaying the writing (outputting) of the just-processed letter, until the ear hears the starting edge of the next letter,...then let the motor control part of the mind tell the hand to write the letter down on paper (delayed by 1, 2 or 3 letters).

Now at the same time, the EAR has to refocus to the new incoming CW data, recognize it and get it ready to print. The delayed data is printed when the ear hears yet another code letter (or a long space between words). Following example is the word T H E.

hear T
hold T

hear H

print T
hold H

hear E

print H

hold E

T Hear the T Write the T   H   E _ _ _ _ _ _ _ _ _ Q   U   I   C

Hear the CW Sound

Decode the T

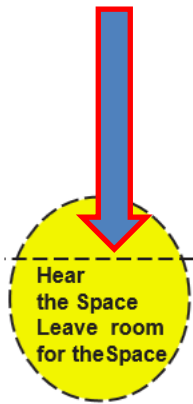**Write the T**

H
Hear
the H
Write
the H

Hear the CW Sound
Decode the H
Write the H

Hear the CW Sound
Decode the E
Write the E

**Hear the CW Sound
Decode the Space
Write the Space**

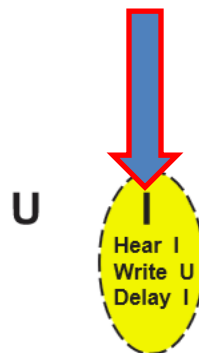**By Leaving room
For the Space**

Hear the CW Sound
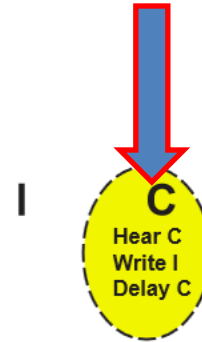# Decode the Q
Write the Q

U

Hear the U,
Delay
Writing
the U

Hear the CW Sound
Decode the U
Delay Writing the U

U

Hear I
Write U
Delay I

Hear the CW Sound

Decode the I

Write the U

Delay Writing the I

You Have Just Created

a CW Print Delay.

I   C
Hear C
Write I
Delay C

Hear the CW Sound

Decode the C

Write the I

Delay Writing the C

You Have Just Created

a CW Print Delay.

Very Fast Code, What Can You Hear?

- Start at 100 Words Per Minute.
  (use a computer or tablet to send CW to you).

- Use code groups or words that are 5 characters long.

- Listen for the **space between the groups/words**

- Move the rate down to 75WPM.   Try again

- Move the rate down to 50WPM.   Try again

- Move the rate down to 25WPM.

- Everyone should be able to hear the space between
  the words, at this now very slow 25WPM speed.

Can You Hear the Short & Long Sounds?

- Listen to Morse Code on a computer/FLDIGI that will send code starting at 50 WPM. (Coded Tapes OK)

- Have your code program send code groups that are the **same** or **different.**

- Start by sending two long characters that are the same. J and J.
  Next send two that are different. 7 and W.

- Continue with a random pattern of "two same and two different." J J,   A W,   W W,
  J 7,   7 W,   A A,   B B,   A R,   D E,   P K ,,,,

- Listen Now,   and Run The Speed up Faster.

Assessment of Your Copy Skills

- **You can hear the Morse Code characters.**

- **You can tell if they are the**
  Same   or   Different ! , ,?

- **Your writing speed, will it let you put them down on paper/computer/tablet (fast enough to pass a "Contest" / FCC / VE code test)**

- **All you need to do, is to properly *decode* them, and *build* a buffer.**

The Code,   the Ear,   the Mind,   the Eye Lookup Chart,   the Hand & the Test.

- The code is always being received in the future,   listen ahead for it.
- The Ear is your input device. exercise it daily by listening to code. (faster code)
- The mind is your **Code Processing Unit (CPU).** Here is where you build a buffer.
- With this method you can loose your eye lookup chart. The decoded info will go directly to your hand for printing.
- The Test. Practice testmanship. This method does not teach you how to get rid of test jitters.
  If you get nervous,,, practice taking tests, , ,   Lots of Tests, , , ,
  just for the exposure of becoming less nervous   (when you take a real test or contest on the air).

The Details: Code Elements

- Good code copying communication comes from the Ear into the Mind and not from the Eye.
  (or from an additional round trip to the eye for extra look-up processing).
- The best type of Morse Code for CW practice has a fast letter rate (over 15wpm) with long spacing in between
  each letter, resulting in a end rate of   5WPM   to start.
  (start with 5WPM even if you are going to study for a 25WPM Contest or Extra)
- Start with a slow speed to learn the patterns of the letters and numbers.
- The most important code element is the "longer space" between words.

The Details: Code Elements

- At slower speeds the "Dit" might seem like the easiest element to hear and recognize.
- Over 70 WPM a "Dit" can be difficult to hear. Somewhere over 90 WPM a "Dit" sound can take on a perception
  that it is just there,,,,,,,or was it ?
- In the beginning, "6" could sound like the word "THE", at 100 WPM. (missing e)
- With really fast CW code, longer letters and numbers can be easier to learn.
   They take longer to send and you get more time to copy them.

The Details: The Eye

- This receiving device inputs and converts light waves into our minds (CPU).
- Did you first learn the Morse Code by reading it? I call this "Eye Input" into your mind.
- If you presently hear Morse code in long and short sounds, & then have to stop
  and make a lookup comparison to a "code picture chart" in your mind,   you are using a visual lookup chart.
  A Eye lookup chart is one element of the copying process that is not needed.

The Details: The Trained Mind

- What follows are the details on how to copy the code by changing the copy process to have your hand **respond directly** to the code sounds at our ears and thereby eliminating the eye lookup chart.

- With all the extra time available
  (using no eye look-up chart)
  you can copy at faster speeds.

The Details: The Trained Mind

- What follows are the details on how to copy the code by changing the copy process to have your hand respond directly to the code sounds at our ears and thereby eliminating the eye lookup chart.

- With all the extra time available
    (using no eye look-up chart)
        you can copy at faster speeds.

- Imagine being able to copy CW and also "sip some coffee, answer the phone, pet the dog, while reading the paper, do some texting, and shoot a quick Selfie".
    ## NOT !

This is What To Do.

- Cause your mind to do something **extra.** (yes this is like work, only fun work).

- **Delay** the writing of the just processed letter, until your ear hears the starting edge of the next letter.

- When the next starting sound occurs, let the motor part of your mind tell your hand to **write** the previously copied letter down on paper.

- (adding extra delays will build a buffer,,,
  1 letter delay = 1 letter buffer,,,
  2 letter delay = 2 letter buffer).

- At the same time you will also need to continue to **listen ahead** to *hear* and *decode* the new incoming CW code information. (Dits & Dahs and Spaces)

Key Benefits of Practice.

- Practice every day. Start slow and increase your speed.

- When you reach your "one on one" speed,
  keep increasing it up to a higher CW rate.

- Just look at the number of characters copied correctly.
  25% right is a very positive view of your good progress.

- Increase the speed up until you are at **two times faster**
  than your one on one speed. This will limber up your
  listening ability so that you can hear faster CW code.

- The payoff comes the very next time that you start
  your next CW practice session. **(Tomorrow)**

- You will also hear faster and this will give you more
  time to get all of the decoding and buffering tasks
  also working faster.

Next Steps

- **Practice.**

- **Practice** on Saturday, & Sunday,   Take Monday off.

- **Practice** on Tuesday, Wednesday, Thursday,   Take Friday off.   (Repeat practice schedule)

- Arrange to take a real test and Go **Live on the Air!**

  73 de Bill **KL7BB@Yahoo.com**

Send a Dit and Work the World

Practice Examples

This part is going to show a sample practice of the sentence
"THE QUICK BROWN FOX JUMPED OVER THE LAZY DOGS BACK".

This will Start with 5WPM code sent at a 15wpm letter rate. At the start it will be one on one copy and move up to delayed copy,,, Then to 1 delayed and finally 2 delayed.

T H E _____ Q U I C

Hear the T Write the T

K _____ B R O W N

_____ F O

V E

T H E _____ L

A Z Y _____ D O G S

B A C K.

Brain Locks up and refuses to function,
This is time to stop and pause and relax....... ALL Relaxed ?,,,OK Start Again.

So Lets Start The Practice

T

Hear
the T
Write
the T

H

Hear
the H
Write
the H

Listen for the next Letter.

It is about to be sent
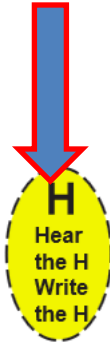
Hear the CW Sound
Decode the H
Write the H

Hear the CW Sound

Decode the E
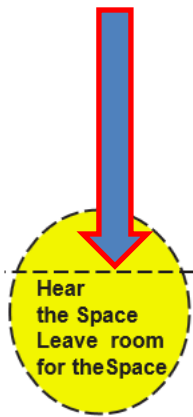
Write the E

Hear the Space Sound

Decode the Space

Leave Room For Space

Q

Hear
the Q
Write
the Q

Hear the CW Sound
Decode the Q
Write the Q

U

Hear the U,
Delay
Writing
the U

Hear the CW Sound
Decode the U
Delay Writing the U

U

Hear I
Write U
Delay I

Hear the CW Sound
Decode the I
Write the U
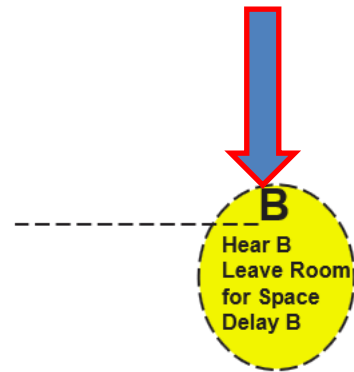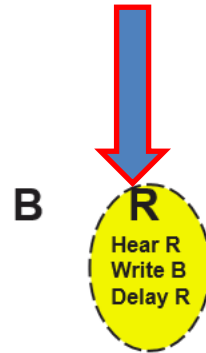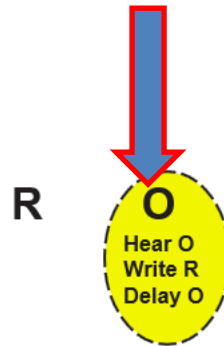Delay Writing the I
You Have Just Created
a CW Print Delay.

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I
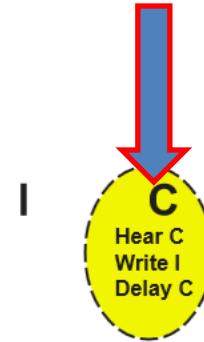
Hear the CW Sound

Decode the C

Write the I

Delay Writing the C

You Have Just Created a CW Print Delay.

C

K
Hear K
Write C
Delay K

Hear the CW Sound

Decode the K

Write the C

Delay Writing the K

You Have Just Created

a CW Print Delay.

K_____

Hear Space
Write K
Delay Space
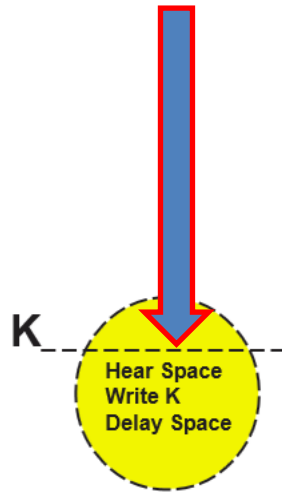
Hear the Space

Decode the Space

Write the K

Leave Room for Space

You Have Just Created

a CW Print Delay.

B

Hear B
Leave Room
for Space
Delay B

Hear the CW Sound

Decode the B

Leave Room For Space

Delay Writing the B

You Have Just Created

a CW Print Delay.

B R
Hear R
Write B
Delay R

Hear the CW Sound

Decode the R

Write the B

Delay Writing the R

You Have Just Created

a CW Print Delay.

R **O**
Hear O
Write R
Delay O

Hear the CW Sound

Decode the O

Write the R

Delay Writing the O

You Have Just Created
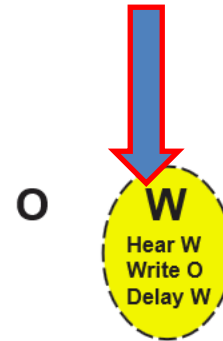
a CW Print Delay.

Hear the CW Sound

Decode the W

Write the O

Delay Writing the W

You Have Just Created a CW Print Delay.

W   N

Hear N
Write W
Delay N

Hear the CW Sound

Decode the N

Write the W

Delay Writing the N

You Have Just Created

a CW Print Delay.

N

Hear Space
Write N
Delay Space
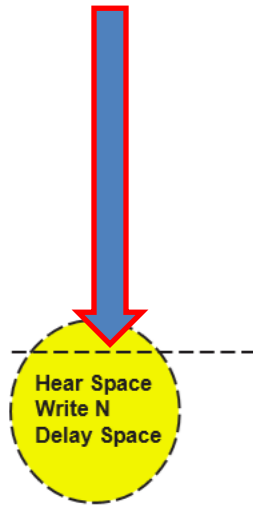
Hear the Space
Decode the Space
Write the N
Delay Writing Space

F

Hear F
Leave Room
for Space
Delay F
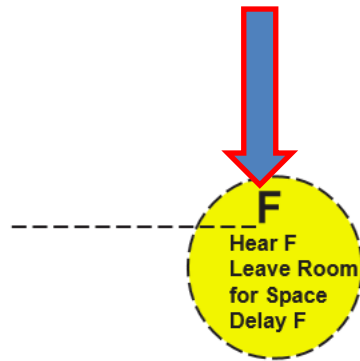
Hear the CW Sound
Decode the F
Write the Space
Delay Writing the F

F O

Hear O
Buffer F
Delay O
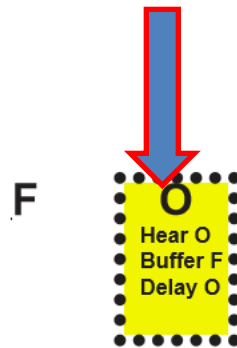
Hear the CW Sound

Decode the O

Buffer the F

Delay Writing the O

F   O   X

Hear X
Write F
Buffer O
Delay X
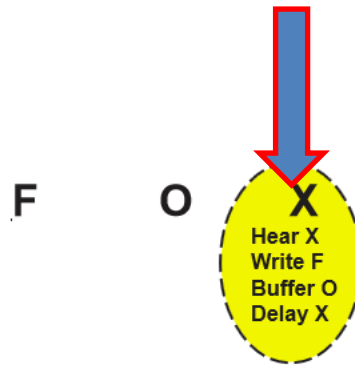
Hear the CW Sound
Decode the X
Write the F
Buffer the O & X

O   X_ _ _ _ _ _ _ _ _ _ _ _

Hear Space
Write O
Buffer X
Delay Space
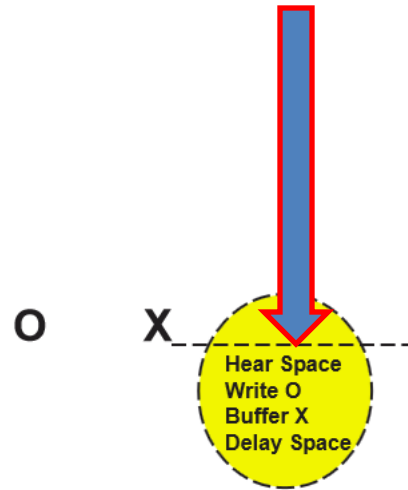
Hear the Space Sound
Decode the Space
Write the O
Buffer the X & Space

O   X_____ J

Hear J
Write X
Buffer
Space
Delay J
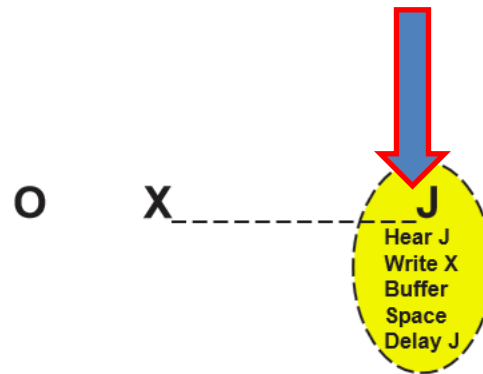
Hear the CW Sound

Decode the J

Write the X

Buffer the Space & J

_ _ _ _ _ _ _ _ _J

U

Hear U
Leave
Space
Buffer J
Delay U
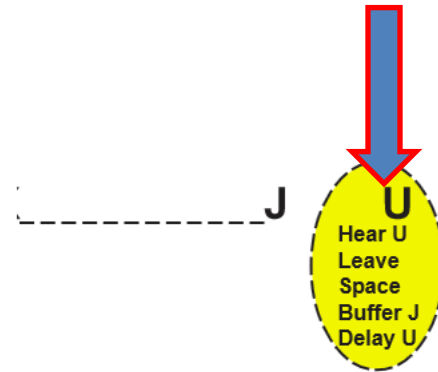
Hear the CW Sound
Decode the U
Write the Space
Buffer the J & U

Hear the CW Sound
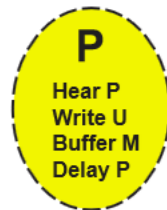# Decode the M
Write the J
Buffer the U & M

J   U

M
Hear M
Write J
Buffer U
Delay M

Hear the CW Sound
Decode the P
Write the U
Buffer the M & P

U

M   P

Hear P
Write U
Buffer M
Delay P

M   P   **E**

Hear E
Write M
Buffer P
Delay E

P E **D**

Hear D
Write P
Buffer E
Delay D

E   D _ _ _ _ _ _ _ _ _ _

Hear Space
Write E
Buffer D
Delay Space

D---------**O**

Hear O
Write D
Buffer
Space
Delay O

＿＿＿＿＿＿＿＿＿O **V**

**Hear V
Leave
Space
Buffer O
Delay V**
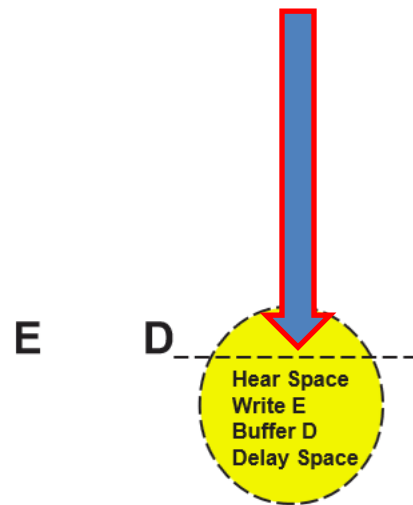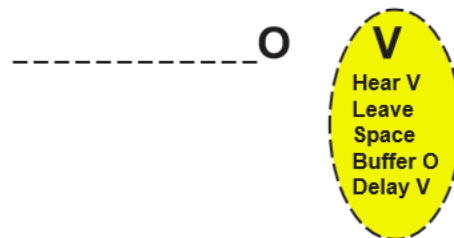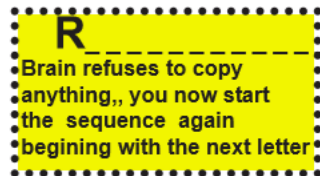
O V E

Hear E
Write O
Buffer V
Delay E

Brain Refuses to copy Anything,,
You now start the sequence again beginning with the next letter

R_____
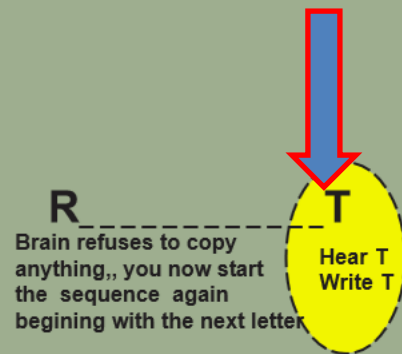Brain refuses to copy anything,, you now start the sequence again begining with the next letter

Hear the CW Sound
Decode the T
Write the T

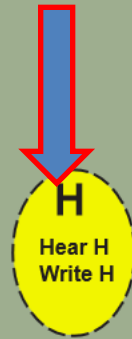R_____   T

Brain refuses to copy
anything,, you now start
the sequence again
begining with the next letter

Hear T
Write T

Just like the Beginning

T
Hear the T
Write the T

T
Hear T
Write T

Hear the CW Sound
Decode the H
Write the H

H
Hear H
Write H

Hear the CW Sound
Decode the E
Delay Writing the E

E

Hear E
Delay
writting
the E

Hear the Space Sound
Decode the Space
Write the E
Buffer the Space

E - - - - - - - - - - - - - - - -

Hear Space
Write E
Delay Space
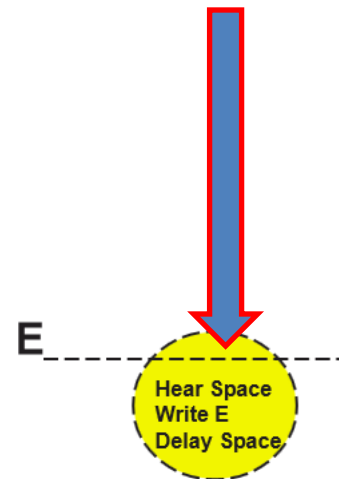
Hear the CW Sound
Decode the L
Write the Space
Buffer the L

_ _ _ _ _ _ _ _ _ _ _ _ **L**

**Hear L
Leave Space
Delay L**
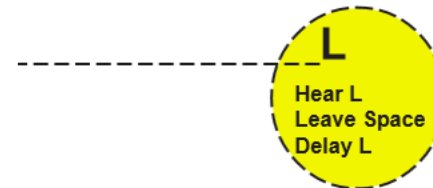
Hear the CW Sound
Decode the A
Write the L
Buffer the A

L

A

Hear A
Write L
Delay A

Hear the CW Sound
Decode the Z
Buffer the A & Z

A **Z**

Hear Z
Buffer A
Delay Z
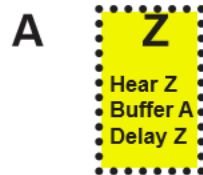
Hear the CW Sound
Decode the Y
Write the A
Buffer the Z & Y

A   Z   **Y**

Hear Y
Write A
Buffer Z
Delay Y

Z   Y

Hear Space
Write Z
Buffer Y
Delay Space

Y - - - - - - - - - - - D

Hear D
Write Y
Buffer Space
Delay D

- - - - - - - - - - - - **D** **O**

Hear O
Buffer Space
Buffer D
Delay O

_ _ _ _ _ _ _ _ _ _ _ D   O   **G**

Hear G
Write
Space
Buffer D
Buffer O
Delay G

D O G **S**

Hear S
Write D
Buffer O
Buffer G
Delay S

G   S

Hear D
Hear C Gate Y
Write C Write Y
Write D Space
Space Gate O
Buffer O Delay D
Buffer G Buffer G
Buffer G Buffer Space
Delay G Gate G
Delay C Delay D
Delay O

B   A   C   K.

Brain Locks up and refuses to function,
This is time to stop and pause and relax.......ALL Relaxed ?,,,OK Start Again

T
Hear the T
Write the T

H
Hear the H
Write the H

Listen for the next Letter,
it is about to be Sent

This part is going to show a sample practice of the sentence
"THE QUICK BROWN FOX JUMPED OVER THE LAZY DOGS BACK".

This will Start with 5WPM code sent at a 15wpm letter rate. At the start it will be one on one copy and move up to delayed copy,,, Then to 1 delayed and finally 2 delayed.

Listen for the next letter, It is about to be sent

Dah Dit

T — Hear the T, Write the T

H — Hear the H, Write the H

C — Hear C, Write I, Delay C

K — Hear K, Write C, Delay K

B — Hear B, Leave Room for Space, Delay B

R — Hear R, Write B, Delay R

O — Hear O, Write R, Delay O

Hear Space, Write N, Delay Space

J — Hear J, Write X, Buffer

U — Hear U, Leave Space, Buffer J, Delay U

M — Hear M, Write J, Buffer U, Delay M

E — Hear E, Write U, Buffer M, Delay E

D — Hear D, Write P, Buffer E, Delay D

Hear Space, Write E, Buffer D, Delay Space

O — Write O, Buffer V, Delay V

E — Hear E, Write O, Buffer V, Delay E

R — Brain refuses to copy anything,, you now start the sequence again begining with the next letter

Space, Write E, Delay Space

L — Hear L, Leave Space, Delay L

A — Hear A, Write L, Delay A

Z — Hear Z, Buffer A, Delay Z

Y — Hear Y, Write A, Buffer Z, Delay Y

Hear Space, Write Z, Buffer Y, Delay Space

D — Hear D, Write Y, Buffer Space, Delay D

O — Hear O, Buffer Space, Buffer D, Delay O

G — Hear G, Write Space, Buffer D, Buffer O, Delay G

S — Hear S, Write D, Buffer O, Buffer G, Delay S

B **A** **C** **K.**

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Brain Locks up and refuses to function,
This is time to stop and pause and relax....... ALL Relaxed ?,,,OK Start Again.

ORIGINAL DIGITAL

Dits, Dahs, Spaces and Your Brain

KL7BB's "Original Digital"™ Writing Test For Morse Code.

Take the writing test.   Write as many lines A-Z 0-9 as you can in one minute.

ABCDEFGHIJKLMNOPQRSTUVWXYZ 0123456789

1

2

3

4

5

1 full line				**2 full lines**		**3 full lines**	**4 full lines**
25÷5=5	36÷5=7.2	50÷5=10	65÷5=13	72÷5=14.4	100÷5=20	108÷5=21.6	144÷5=28.8

Total Letters + Numbers = _____ ÷ 5 = _____ WPM