

In the previous Christmas contests the young Partisans (17yrs & younger) were asked to decode a One Time Pad (OTP) message and send it to John Jacob Schmidt.

This year, John Jacob Schmidt will give you a coded message on his show. You will need it to send him back a different coded message by email. Your correct return message will be your contest entry. There are previous posts on how to *receive* OTP messages but we thought that it might be useful to review how to *send* messages with an OTP.

Below is the conversion table. The table is only used to convert your message into numbers. This is only the first step in making a secret message. We always use the same conversion table.

CONVERSION TABLE NO.1 EN CODE-1			
A-1	B-70	P-80	FIG-90
E-2	C-71	Q-81	(.)-91
I-3	D-72	R-82	(:)-92
N-4	F-73	S-83	(')-93
O-5	G-74	U-84	()-94
T-6	H-75	V-85	(+)-95
	J-76	W-86	(-)-96
	K-77	X-87	(=)-97
	L-78	Y-88	REQ-98
	M-79	Z-89	SPC-99

The word DOG on the conversion table would be 72574. (D=72 O=5 G=74)

Once we have our message “DOG” converted into numbers, the next step is to scramble up those numbers so that only you and the people you want will know what it means. We do that with the One Time Pad.

In this example, we will use the One Time Pad from a previous contest labeled “NATIVITY.” We tell the other person which One Time Pad to use by the *key*, or the first group of five numbers on the pad. Nothing else happens with the first five numbers. It is just to make sure that the sender and receiver are using the correct pad. In the pad below, the key is 23242.

NATIVITY

23242	71308	27110	86262	55691
47405	25378	64899	46337	28583
55286	75176	42064	41400	16833
90535	42873	85858	10020	37532
01879	35396	08288	16170	65967
43132	38196	26447	61695	55950
99743	41805	89062	00407	92930
15361	21510	49945	91198	93998
12156	31124	21106	77717	07884
43941	82653	19633	08693	88398

Remember, we converted the word DOG in our conversion table to the numbers 72574. That number goes on top. Directly below we place the next group of 5 numbers, 71308, from the one time pad. We then subtract the bottom from the top numbers in each column.

KEY					D	O	G		<i>Message to send</i>	
					7	2	5	7	4	<i>Conversion Table Number</i>
2	3	2	4	2	7	1	3	0	8	<i>One Time Pad Number</i>
2	3	2	4	2	0	1	2	7	6	<i>Remainder</i>

Note: We had to add ten to the 4 to make it 14, so that we could subtract 8 from it. If you have to do this, use only the last digit.

The message DOG has now been encoded using One Time Pad *Nativity* as:
23242 01276

A good way to remember if you should subtract or add is to think about what you are doing. If you want to “take away” the meaning of your message then you subtract. If you want to “give” meaning to somebody else’s message then you add.

It is really important that you keep your work neat to avoid mistakes. You might want to use graph paper to keep your numbers lined up. Keep the numbers in groups of five.

There are some other rules for using the One Time Pad but the actual contest is designed to be challenging but not impossible for our younger partisans.

Check WWW.RADIOFREEREDOUBT.COM for further instructions after Thanksgiving. In the meantime practice with the One Time Pad. Tune into the John Jacob Schmidt Show to listen for your secret message. Good luck Young Partisans!

Practice:

<https://radiofreeredoubt.com/otp-christmas-practice-exercise/>

<https://radiofreeredoubt.com/2017/12/03/young-partisans-otp-practice-exercise/>