

Cryptanalytical Working Aid for Japanese Cipher  
(Language Statistics — Japanese Abbreviated Text)

Source: NARA, College Park, Md., Record Group 457, National Security Agency,  
Historic Cryptographic Collection, Box 774, NR 2047

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Web Site: [www.cryptocellar.org](http://www.cryptocellar.org)

DECLASSIFIED  
Authority NND 963016

NARA # 2047

## SINGLE LETTER FREQUENCIES

## Japanese Abbreviated Text

## Alphabetically

## By Frequency

A	721	I	828	
B	144	N	793	
C	593	K	785	
D	176	O	765	
E	455	A	721	On basis of 26 letters:
F	239	S	652	Kappa - .0554 (or 1/18 approx.)
G	194	U	594	Kappa random - .0385 (or 1/26)
H	310	C	593	Ratio: - 1.45
I	828	T	581	
J	155	R	471	On basis of 20 letters, with the
K	785	E	455	vowels removed:
L	175	Y	353	Kappa - .0776 (or 1/13 approx.)
M	260	H	310	Kappa random - .05 (or 1/20)
N	793	M	260	Ratio: - 1.55
O	765	W	250	
P	111	F	239	On basis of 20 letters, with the
Q	45	G	194	six highest frequency removed:
R	471	D	176	Kappa - .0697 (or 7/10 approx.)
S	652	L	175	Kappa Random - .05 (or 1/20)
T	581	J	155	Ratio: - 1.39
U	594	B	144	
V	108	Z	135	
W	250	P	111	VOWELS are 37.2% of the text.
X	107	V	108	SIX HIGHEST LETTERS (I,N,K,O,A,S) are
Y	353	X	107	45.5% of the text.
Z	135	Q	45	
10,000	Total	10,000		

# FREQUENCIES OF 1.3 DIGRAPHS

Japanese Abbreviated Text

Third Letter

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

First Letter

	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
A	101	8	19	19	66	10	3	13	11	4	26	12	7	17	46	10	3	11	19	12	16	5	6	1	20	6
B	4	3	9	3	5	5	4	12	13	3	13	4	-	15	2	2	1	14	8	11	1	2	6	1	2	1
C	56	7	77	7	25	52	3	25	70	6	9	14	9	13	81	1	3	7	11	11	33	23	5	8	31	6
D	-	1	8	2	3	11	8	8	7	7	13	2	9	34	4	4	-	7	15	11	1	1	3	1	13	3
E	56	9	8	5	15	10	3	9	67	9	33	5	8	31	30	10	6	9	31	23	45	5	10	3	8	5
F	12	6	54	7	8	4	-	5	11	1	20	34	4	8	7	-	1	3	7	8	1	12	3	17	3	3
G	5	1	12	-	1	2	4	3	5	12	17	1	6	31	10	2	-	8	18	19	3	-	25	2	3	4
H	1	2	9	9	-	9	7	6	2	6	64	-	9	47	9	5	2	24	42	27	1	-	13	1	12	3
I	116	14	59	4	77	6	10	32	109	7	22	16	6	24	99	8	2	22	25	32	66	5	18	12	30	5
J	1	5	3	7	1	2	4	7	-	6	20	-	13	17	7	4	-	9	11	10	-	-	7	2	12	7
K	31	9	41	23	12	18	22	20	19	12	79	1	13	142	35	11	1	48	87	79	11	12	23	2	21	13
L	24	-	17	2	17	3	-	8	29	-	2	3	-	6	32	-	-	3	4	2	7	5	1	2	8	-
M	6	8	6	8	5	5	12	5	3	10	32	1	9	55	4	2	-	17	21	33	1	-	6	2	3	5
N	44	7	34	11	34	10	16	41	79	11	69	24	21	42	69	4	3	38	62	58	37	10	16	8	41	3
O	92	1	41	13	77	3	9	27	109	10	20	19	3	17	111	5	5	8	15	18	94	5	2	18	26	5
P	7	-	3	-	1	-	-	-	2	1	26	-	1	13	2	-	-	14	23	8	2	-	5	-	2	1
Q	-	-	2	2	1	1	1	-	7	1	-	-	-	2	2	-	10	4	1	2	2	-	4	-	1	2
R	18	14	36	6	8	21	24	16	14	7	48	2	22	43	25	8	-	25	40	29	5	3	25	2	12	17
S	34	11	52	10	10	17	20	8	17	10	76	4	27	78	30	9	5	64	42	53	20	13	16	1	9	15
T	11	7	11	17	11	8	10	16	28	11	72	3	40	74	10	5	1	55	74	55	7	-	28	7	14	5
U	59	3	48	5	59	7	8	16	71	5	14	17	20	13	106	7	-	6	7	17	74	-	3	2	25	1
V	7	-	12	1	4	1	-	8	21	1	4	10	-	-	17	-	1	1	2	2	4	-	1	3	6	2
W	9	17	2	7	4	8	13	12	7	2	24	-	11	15	4	3	-	16	24	30	4	2	6	2	11	6
X	21	2	11	-	11	-	-	1	13	1	1	2	2	-	9	-	-	1	-	5	8	5	2	5	6	-
Y	2	5	7	7	1	10	8	8	9	7	67	1	18	33	10	5	1	30	58	18	4	-	11	-	21	12
Z	4	4	9	2	-	2	2	4	4	5	13	-	1	23	4	6	-	26	5	7	1	-	4	1	2	5

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# DIGRAPHIC FREQUENCIES

Japanese Abbreviated Text

Second Letter

First Letter

Ends Message

	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	Ends Message
A	7	11	4	14	7	24	24	13	7	18	106	-	27	127	11	7	1	122	50	76	3	-	36	1	7	17	1
B	13	29	8	5	16	2	2	9	9	-	5	-	-	2	6	1	1	2	7	2	17	-	1	1	5	1	-
C	6	15	51	9	3	80	15	55	6	13	70	-	16	43	15	15	1	21	67	42	5	-	20	1	16	8	-
D	12	-	29	19	20	2	1	5	-	2	1	30	3	15	14	-	1	-	6	2	4	-	3	1	1	5	-
E	3	7	8	4	5	5	8	6	16	4	61	33	8	129	6	1	-	40	32	41	2	-	13	-	2	19	2
F	5	4	27	4	45	9	1	1	43	4	3	1	3	5	16	-	-	-	6	3	33	-	-	1	26	1	-
G	43	1	6	-	20	-	5	-	15	2	5	12	1	5	18	5	-	1	1	6	16	1	16	-	15	-	-
H	62	1	73	3	6	-	-	3	41	2	1	1	1	8	30	1	10	1	1	2	20	30	-	8	5	-	-
I	14	11	63	15	9	22	20	23	20	13	106	1	47	110	37	5	-	26	100	40	4	-	26	10	28	8	1
J	4	3	39	3	1	-	3	-	48	2	2	-	3	1	2	-	1	5	4	-	7	22	1	-	1	3	-
K	115	1	61	1	45	4	5	-	125	-	41	32	8	18	63	3	1	6	19	8	140	2	4	7	60	16	-
L	-	2	4	12	-	5	8	6	5	9	13	-	13	20	5	4	-	6	29	11	3	-	8	1	9	2	-
M	26	1	6	1	33	-	-	1	23	1	7	-	1	10	74	-	2	2	23	12	21	-	6	6	3	1	-
N	55	13	9	22	10	14	14	8	128	19	56	8	13	51	157	23	7	19	60	34	3	-	18	4	35	13	-
O	13	6	11	18	5	16	29	37	6	21	139	-	47	96	8	2	-	75	73	77	13	11	28	1	22	4	7
P	17	-	-	-	1	1	4	1	1	1	16	-	-	-	3	7	-	6	1	25	7	-	2	-	17	1	-
Q	-	-	2	-	-	-	6	-	-	1	2	-	3	5	-	-	-	4	7	11	-	-	1	1	-	2	-
R	48	2	6	-	47	1	1	4	109	2	20	10	3	9	14	11	-	4	3	4	125	-	3	5	32	7	1
S	27	4	28	3	94	2	2	112	159	3	5	12	2	7	53	2	1	8	25	10	47	3	-	22	19	2	-
T	86	2	45	7	62	4	4	2	43	1	23	24	11	5	90	-	10	1	24	14	86	6	11	18	1	-	1
U	6	14	11	13	6	23	25	17	8	19	51	-	22	85	8	17	-	64	69	70	2	1	35	2	20	5	1
V	1	-	3	5	-	1	5	1	3	3	11	-	6	12	5	-	-	17	15	4	-	-	7	-	6	3	-
W	104	-	3	8	1	-	2	3	1	5	4	-	15	2	62	-	5	3	4	2	1	-	1	-	14	5	5
X	-	2	3	2	-	12	3	1	3	3	17	1	-	6	3	4	2	3	22	8	-	-	6	-	4	2	-
Y	32	13	86	7	1	-	3	-	9	2	14	-	5	24	61	1	1	13	4	6	17	32	3	12	2	5	-
Z	21	2	6	2	18	2	1	2	2	5	6	10	1	-	4	1	-	22	1	1	18	-	1	1	3	5	-