

620 7x7 SQUARES WITH GEOGRAPHICAL PALINDROMES

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It is not easy to make a 7x7 palindromic square with common words as nouns, adjectives, verbs, etc. In Serbia, puzzlers have made 10-15 such squares, all with some unusual terms like the title of a book, or the name of a person or geographical place. With the help of atlases and the Internet, we can make even some thematic palindrome squares. Most of these interesting places I found on the Dan Tilque site: www.nwlink.com/~dtilque. To his words I added PLANALP, a mountain village in Switzerland, and ASAKASA, a part of Tokyo. On the right side of squares there are listed alternatives which give us a total of 620 7x7 squares with geographical palindromes.

A	K	A	T	A	K	A	
K	A	N	A	N	A	K	
A	N	A	R	A	N	A	
T	A	R	H	R	A	T	
A	N	A	R	A	N	A	
K	A	N	A	N	A	K	
A	K	A	T	A	K	A	unique

A	R	A	P	A	R	A	
R	A	L	A	L	A	R	
A	L	A	P	A	L	A	
P	A	P	I	P	A	P	
A	L	A	P	A	L	A	
R	A	L	A	L	A	R	
A	R	A	P	A	R	A	unique

C	A	M	P	M	A	C	
A		A	L	A		A	Acalaca, Agalaga, Analana, Atalata, Awalawa
M	A		A		A	M	Mananam, Malalam, Mararam
P	L	A	N	A	L	P	
M	A		A		A	M	
A		A	L	A		A	
C	A	M	P	M	A	C	5x3=15

K	A	N	A	N	A	K	
A		A	C	A		A	Anacana, Añacaña
N	A		A		A	N	Nam Aman, Nasāsan
A	C	A		A	C	A	Acaiaca, Acalaca
N	A		A		A	N	
A		A	C	A		A	
K	A	N	A	N	A	K	2x2x2=8

K A N A N A K
 A L A G A L A
 N A A A N
 A G A A G A
 N A A A N
 A L A G A L A
 K A N A N A K

Nam Aman, Nasāsan
 Agalaga, Agaraga

$2 \times 2 = 4$

K A N A N A K
 A A K A A
 N A A A N
 A K A A K A
 N A A A N
 A A A A
 K A N A N A K

Asakasa, Awakawa
 Nam Aman, Nasāsan
 Akasaka, Akataka, Akazaka

$2 \times 2 \times 3 = 12$

K A N A N A K
 A A L A A
 N A A A N
 A L A A L A
 N A A A N
 A A L A A
 K A N A N A K

Acalaca, Agalaga, Analana, Atalata, Awalawa
 Nam Aman, Nasāsan
 Alabala, Alagala, Alamala, Alapala, Al Asala,
 Alatala, Alawala

$5 \times 2 \times 7 = 70$

K A N A N A K
 A A M A A
 N A A A N
 A M A Y A M A
 N A A A N
 A A M A A
 K A N A N A K

Alamara, Aramara, Ayamaya
 Nam Aman, Nasāsan

$3 \times 2 = 6$

K A N A N A K
 A A R A A
 N A A A N
 A R A A R A
 N A A A N
 A A R A A
 K A N A N A K

Agaraga, Anarana
 Nam Aman, Nasāsan
 Arajara, Aramara, Arapara, Arasara, Arawara

$2 \times 2 \times 5 = 20$

K A N A N A K
 A A S A A
 N A A A N
 A S A K A S A
 N A A A N
 A A S A A
 K A N A N A K

Akasaka, Al Asala, Anasana, Arasara
 Nam Aman, Nasāsan

$4 \times 2 = 8$

K	A	N	A	N	A	K	
A		A	T	A		A	Akataka, Alatala
N	A		A		A	N	Nam Aman, Nasāsan
A	T	A		A	T	A	Atalata, Atapata
N	A		A		A	N	
A		A	T	A		A	
K	A	N	A	N	A	K	2x2x2=8

K	A	N	A	N	A	K	
A		A	W	A		A	Alawala, Anawana, Arawara
N	A		A		A	N	Nam Aman, Nasāsan
A	W	A		A	W	A	Awa Kawa, Awalawa
N	A		A		A	N	
A		A	W	A		A	
K	A	N	A	N	A	K	3x2x2=12

With KANANAK on first place we have 148 magic squares. Instead of KANANAK we can put MANANAM, so the total with this similar structure is $2 \times 148 = 296$.

M	A	R	A	R	A	M	
A		A		A		A	
R	A	L	A	L	A	R	
A		A		A		A	
R	A	L	A	L	A	R	
A		A		A		A	
M	A	R	A	R	A	M	

The second and fourth positions duplicate the KANANAK squares. Since in the third position we have 1 term (in KANANAK there are 2), the total number of MARARAM squares is $148/2 = 74$.

N	A	M	A	M	A	N	
A		A		A		A	
M	A		A		A	M	Malalam, Mananam, Mararam
A		A		A		A	
M	A		A		A	M	
A		A		A		A	
N	A	M	A	M	A	N	

The second and fourth positions duplicate the KANANAK squares. Since in the third position we have 3 terms (in KANANAK there are 2), the total number of NAM AMAN squares is $148 \times 1.5 = 222$.

N A S A S A N
A C E C E C A
S E K A K E S
A C A A C A Acaiaca, Acalaca
S E K A K E S
A C E C E C A
N A S A S A N 1x2=2

N A S A S A N
A T E L E T A
S E K A K E S
A L A A L A Alabala, Alagala, Alamala, Alapala, Al Asala,
S E K A K E S Alatala, Alawala
A T E L E T A
N A S A S A N 1x7=7

O K A R A K O
K A N A N A K
A N A L A N A
R A L A L A R
A N A L A N A
K A N A N A K
O K A R A K O unique

O K O M O K O
K A N A N A K
O N I L I N O
M A L A L A M
O N I L I N O
K A N A N A K
O K O M O K O unique

The 63 palindromes in these squares are from 32 countries. MANANAM (Malaysia) and NAM AMAN (Vietnam) are anagrams of each other. Nigeria has the most different places (6). The place with the largest number of different locations (6) is AKASAKA in Japan. Here is the complete list of geographical terms used in the palindromic squares.

No. Name		Country	Feature Type	Lat	Long	More info
1	Acaiaca	Brazil	populated place	S 20 21 00	W 43 09 00	State Minas Gerais
2	Acalaca	Bolivia	populated place	S 14 47 00	W 68 26 00	Department La Paz
3	Acececa	Mexico	populated place	N 21 18 00	W 98 18 00	State Veracruz-Llave
4	Agalaga	Nigeria	populated place	N 6 22 00	E 8 03 00	

5	Agaraga	Nigeria	populated place	N 8 12 00	E 6 58 00	
6	Akasaka	Japan	populated place	N 34 51 00	E 137 18 00	Prefecture Aichi
7	Akasaka	Japan	populated place	N 34 43 00	E 134 57 00	Prefecture Hyogo
8	Akasaka	Japan	populated place	N 35 23 00	E 136 35 00	Prefecture Gifu
9	Akasaka	Japan	populated place	N 38 17 19	E 140 44 32	Prefecture Miyagi
10	Akasaka	Japan	populated place	N 38 50 17	E 140 19 31	Prefecture Yamagata
11	Akasaka	Japan	section of pop.pl.	N 35 40 00	E 139 43 00	Prefecture Tokyo
12	Akataka	Nigeria	populated place	N 6 28 00	E 8 21 00	
13	Akazaka	Japan	populated place	N 35 31 00	E 133 35 00	Prefecture Tottori
14	Al Asala	Yemen	populated place	N 13 12 48	E 45 28 08	
15	Ala Gala	Sri Lanka	rock	N 6 02 00	E 80 10 00	Southern Province
16	Alabala	Turkey	populated place	N 41 09 00	E 42 36 00	Turkey (general)
17	Alagala	Australia	populated place	S 32 24 00	E 147 42 00	State New South Wales
18	Alamala	Nigeria	populated place	N 7 11 00	E 3 14 00	
19	Alapala	Nigeria	populated place	N 7 21 00	E 4 29 00	
20	Alatala	Armenia	populated place	N 40 48 00	E 45 24 00	Province Tavush
21	Alawala	Sri Lanka	populated place	N 7 07 00	E 80 11 00	Western Province
22	Alawala	Sri Lanka	populated place	N 7 12 00	E 80 18 00	Province Sabaragamuwa
23	Alawala	Sri Lanka	populated place	N 7 28 00	E 80 27 00	North Western Province
24	Amayama	Russia	stream	N 58 06 00	E 158 22	Koryakskiy Okrug
25	Anacana	Cuba	locality	N 21 24 00	W 78 11 00	Province Camagüey
26	Añacaña	Peru	populated place	S 15 18 37	W 71 30 16	Province Arequipa
27	Añacaña	Peru	populated place	S 15 19 37	W 71 10 57	Province Arequipa
28	Analana	Madagascar	populated place	S 13 46 00	E 49 50 00	Province Antsiranana
29	Analana	Madagascar	populated place	S 24 41 00	E 46 32 00	Province Toliara
30	Anarana	Honduras	stream	N 14 03 00	W 85 28 00	Department Olancho
31	Anasana	Madagascar	populated place	S 20 37 00	E 47 19 00	Province Fianarantsoa
32	Anawana	Zambia	populated place	S 15 34 00	E 23 11 00	Western Province
33	Arajara	Brazil	populated place	S 7 21 00	W 39 24 00	State Ceará
34	Aramara	Australia	populated place	S 25 37 00	E 152 19 00	State Queensland
35	Arapara	Bangladesh	populated place	N 24 14 00	E 88 50 00	
36	Arasara	Georgia	populated place	N 43 05 31	E 41 14 53	
37	Arawara	Suriname	distributary	N 5 20 00	W 56 27 00	
38	Asakasa	Japan	populated place	??	??	Prefecture Tokyo
39	Atalata	Madagascar	populated place	S 20 51 00	E 46 58 00	Province Fianarantsoa
40	Atapata	Peru	populated place	S 13 07 00	W 71 43 00	Province Cusco
41	Ateleta	Italy	populated place	N 41 51 00	E 14 12 00	Region Molise
42	Awa Kawa	Japan	stream	N 31 55 00	E 130 28 00	Japan (general)
43	Awalawa	Central Afr. Republic	populated place	N 6 25 00	E 22 34 00	
44	Awalawa	Central Afr. Republic	stream	N 6 24 00	E 22 34 00	

45	Ayamaya	Bolivia	populated place	S 17 23 00	W 67 43 00	Department La Paz
46	Ayamaya	Bolivia	populated place	S 17 26 00	W 67 43 00	Department La Paz
47	Ayamaya	Bolivia	populated place	S 17 34 00	W 67 42 00	Department La Paz
48	Camp Mac	USA	locale			County Talladega, AL
49	Kananak	Russia	abandoned pop.pl.	N 60 02 41	E 82 54 19	Tomskaya Oblast
50	Malalam	Philippines	populated place	N 17 46 00	E 121 40 00	Province Cagayan
51	Malalam	Philippines	populated place	N 17 06 59	E 121 54 09	Province Isabela
52	Mananam	Malaysia	populated place	N 5 23 00	E 116 54 00	Malaysia (general)
53	Mararam	Senegal	populated place	N 13 08 00	W 16 04 00	Region Ziguinchor
54	Nam Aman	Vietnam	stream	N 17 52 00	E 105 45 00	
55	Nasāsan	Bangladesh	populated place	N 23 16 00	E 90 21 00	
56	Okarako	New Zealand	stream	??	??	Province Northland
57	Okomoko	Nigeria	populated place	N 5 00 00	E 7 04 00	
58	Okonoko	USA	populated place	??	??	County Hampshire, WV
59	Onilino	Belarus	populated place	N 53 22 00	E 30 35 00	
60	Papipap	Solomon Islands	populated place	S 9 32 00	E 160 22 00	
61	Planalp	Switzerland	populated place	??	??	
62	Ralalar	Papua New Guinea	populated place	S 4 20 00	E 152 10 00	Province East New Britain
63	Sekakes	Lesotho	populated place	S 30 00 00	E 28 21 00	