QUIPU AS68

Museum identification: No. 3882 (Museo Nacional, Lima, Peru)

Main cord: color MB:CB:YB:∅G:W

$ 3.0 cm: group of 7 pendant cords (1-7), then space of 0.5 cm.

5.0 cm: group of 5 pendant cords (8-12^1), then space of 0.5 cm.

7.0 cm: group of 6 pendant cords (13-18^2), then space of 0.5 cm.

9.0 cm: group of 7 pendant cords (19-25), then space of 0.5 cm.

11.0 cm: group of 7 pendant cords (26-32), then space of 0.5 cm.

13.0 cm: group of 7 pendant cords (33-39), then space of 2.0 cm.

16.0 cm: group of 7 pendant cords (40-46), then space of 0.5 cm.

18.0 cm: group of 7 pendant cords (47-53), then space of 0.5 cm.

20.0 cm: group of 7 pendant cords (54-60), then space of 0.5 cm.

22.0 cm: group of 7 pendant cords (61-67), then space of 0.5 cm.

24.0 cm: group of 7 pendant cords (68-74), then space of 0.5 cm.

26.0 cm: group of 7 pendant cords (75-81), then space of 0.5 cm.

28.0 cm: group of 7 pendant cords (82-88), then space of 0.5 cm.

30.0 cm: group of 7 pendant cords (89-95), then space of 0.5 cm.

32.0 cm: group of 7 pendant cords (96-102), then space of 0.5 cm.

34.0 cm: group of 7 pendant cords (103-109), then space of 1.5 cm.

37.0 cm: group of 6 pendant cords (110-115), then space of 0.5 cm.

39.0 cm: group of 6 pendant cords (116-121), then space of 1.0 cm.

41.5 cm: group of 7 pendant cords (122-128), then space of 0.5 cm.

43.5 cm: group of 6 pendant cords (129-134), then space of 1.5 cm.

46.0 cm: group of 6 pendant cords (135-140), then space of 1.0 cm.

48.5 cm: group of 6 pendant cords (141-146), then space of 11.5 cm.

61.5 cm: group of 7 pendant cords (147-153), then space of 0.5 cm.

63.0 cm: group of 7 pendant cords (154-160), then space of 0.5 cm.

65.0 cm: group of 7 pendant cords (161-167), then space of 0.5 cm.

67.0 cm: group of 7 pendant cores (168-174), then space of 0.5 cm.

69.0 cm: group of 7 pendant cords (175-181), then space of 0.5 cm.

71.0 cm: group of 7 pendant cords (182-188), then space of 0.5 cm.

73.0 cm: group of 7 pendant cords (189-195), then space of 0.5 cm.

75.0 cm: group of 6 pendant cords (196-201[3]), then space of 0.5 cm.

77.0 cm: group of 7 pendant cords (202-208), then space of 0.5 cm.

79.0 cm: group of 7 pendant cords (209-215), then space of 0.5 cm.

81.0 cm: end ¢

Cord	Knots (no., type, position)	Length	Color	Value	Subsidiaries (no., position)
1	5s(8.0); 9s(18.0); 2s(27.0); 8L(34.5)	41.5¢	W	5928	
2	1s(7.0); 1s(17.0); 2s(26.0)	56.0¢	MB	1120	
3	2s(7.5); 2L(25.5)	57.5¢	CB:YB	2002(?)	
4	9s(20.0); 4s(31.0)	36.0b	CB:YB	94?	
5	1s(7.0); 9s(15.5); 4s(24.5); 8L(30.5)	45.5¢	YB	1948	
6	--	24.0b	CB	?	
7	--	65.0¢	YB	0	
8	1s(6.0); 5s(14.0); 4s(23.0); 7L(31.5)	45.5¢	W	1547	
9	3s(14.5); 5s(23.5); 6L(32.5)	50.5¢	MB	356	
10	4s(15.0); 2s(24.0); 9L(33.5)	33.5	CB:YB	429	

Cord	Knots (no., type, position)	Length	Color	Value	Subsidiaries (no., position)
11	5s(13.5); 6s(22.5); 4L(30.5)	41.5¢	YB	564	
12	1s(13.5); 1s(21.5); 5L(30.5)	50.5¢	YB	115	
13	1s(6.5); 2s(13.5); 2s(22.5); 2L(29.0)	56.0¢	W	1222	
14	1s(12.0); 7s(19.0); 3L(30.0)	55.0¢	MB	173	
15	2s(13.0); 1s(20.0); 2L(28.0)	57.0	CB:YB	212	
16	3s(11.0); 7s(19.5); 9L(28.0)	39.0¢	YB	379	
17	3s(12.5); 5s(20.5); 6L(27.5)	47.5¢	CB	356	
18	5s(21.0); 3L(28.0)	56.0¢	YB	53	
19	1s(5.5); 4s(20.5); 3L(29.5)	51.5¢	W	1043	
20	1s(11.0); 8s(19.5); 9L(28.5)	48.5¢	MB	189	
21	2s(11.0); 2s(20.0) .	57.0¢	CB:YB	220	
22	2s(11.0); 3s(20.0); 8L(28.5)	58.5¢	CB	238	
23	4s(11.5); 1s(19.5); 7L(27.5)	40.5¢	YB	417	
24	7s(12.0); 1s(20.0); 8L(29.0)	37.5¢	ØG	718	
25	6s(19.5); 7L(28.0)	56.0¢	YB	67	
26	1s(5.0); 3s(12.0); 3s(22.5); 4L(31.5)	52.5¢	W	1334	
27	1s(11.5); 9s(21.5); 6L(29.5)	46.5¢	MB	196	
28	1s(12.0); 7s(24.0); 3L(33.5)	54.5¢	CB:YB	173	
29	2s(13.0)	59.0¢	CB:YB	200	
30	3s(12.0); 9L(29.0)	48.5¢	YB	309	
31	3s(11.5); 6s(22.0); 1E(30.0)	48.0	ØG	361	
32	8s(21.5); 1E(28.0)	58.0¢	YB	81	

Cord	Knots (no., type, position)	Length	Color	Value	Subsidiaries (no., position)
33	7s(13.0); 8s(23.5); 2L(33.5)	44.5¢	W	782	
34	2s(13.0); 6L(32.0)	53.0¢	MB	206	
35	1s(14.0); 4s(27.0); 3L(38.0)	59.0¢	CB:YB	143	
36	1s(14.5); 2s(26.5); 7L(37.0)	55.0¢	CB:YB	127	
37	2s(12.0); 3s(21.5); 5L(30.0)	51.0¢	YB	235	
38	2s(13.0); 2s(22.0); 7L(30.5)	49.5¢	ØG	227	
39	6s(23.0); 8L(31.0)	38.5¢	YB	68	
40	1s(5.0); 1s(10.5); 6L(22.0)	40.0¢	W	116	
41	3s(10.0); 4L(19.5)	41.5¢	MB	34	
42	3s(11.5); 5L(22.5)	32.5¢	CB:YB	35	
43	2s(10.0); 4L(20.0)	42.0¢	CB:YB	24	
44	4s(10.0)	46.0¢	YB	40	
45	3s(10.0); 9L(18.5)	39.5¢	ØG	39	
46	3L(21.0)	42.0¢	YB	3	
47	1s(6.0); 1s(16.0); 7L(23.5)	41.5¢	W	1017	
48	3s(10.5)	49.5¢	MB	300	
49	2s(14.0)	14.0b	CB:YB	(2+)?	
50	3s(13.0); 2L(22.0)	52.0¢	CB:YB	32	
51	3s(13.0); 3L(22.0)	41.5¢	YB	33	
52	2s(13.0); 3L(21.0)	48.0¢	ØG	23	
53	1s(9.0); 2L(17.5)	47.5	YB	12	
54	6s(9.5); 6L(17.5)	39.5¢	W	66	
55	2s(8.0); 5L(15.5)	42.5¢	MB	25	

Cord	Knots (no., type, position)	Length	Color	Value	Subsidiaries (no., position)
56	1s(9.0)	19.0b	CB:YB	1?	
57	1s(8.0); 2L(17.0)	50.0¢	CB:YB	12	
58	3s(8.0)	47.0¢	YB	30	
59	2s(8.0); 3L(18.0)	46.0¢	∅G	23	
60	--	57.0¢	YB	0	
61	1s(4.5); 2s(13.0); 6L(22.0)	40.5¢	W	126	
62	3s(12.0); 3L(23.0)	41.0¢	MB	33	
63	2s(12.5)	21.5b	CB:YB	2?	
64	1s(11.5); 2L(11.0)	34.0	CB:YB	12	
65	3s(10.5); 5L(19.5)	33.5¢	YB	35	
66	4s(11.0); 5L(18.5)	39.5¢	∅G	45	
67	--	47.0¢	YB	0	
68	1s(4.0); 5L(20.5)	41.5¢	W	105	
69	3s(9.5); 2L(20.5)	44.5	MB	32	
70	3s(13.5); 8L(22.5)	41.0¢	CB:YB	38	
71	4s(10.0); 1E(21.0)	41.0¢	CB:YB	41	
72	2s(9.5); 6L(17.5)	39.5¢	YB	26	
73	5s(10.0)	47.0¢	∅G	50	
74	1s(9.0); 5L(17.5)	36.5¢	YB	15	
75	1s(4.0); 2s(14.0); 2L(23.0)	43.0¢	W	122	
76	3s(7.5); 1E(16.5)	46.5¢	MB	31	
77	3s(9.0); 8L(17.0)	38.0¢	CB:YB	38	
78	2s(8.5); 5L(17.5)	45.5¢	CB:YB	25	

Cord	Knots (no., type, position)	Length	Color	Value	Subsidiaries (no., position)
79	1s(7.5); 4L(16.0)	45.0¢	YB	14	
80	4s(8.5); 9L(17.5)	36.5¢	ØG	49	
81	2s(9.0); 2L(18.0)	39.0¢	YB	22	
82	1s(5.0); 1s(10.5); 3L(15.0)	44.0¢	W	113	
83	2s(9.0); 9L(18.5)	38.5¢	MB	29	
84	1s(9.0); 1E(19.0)	53.0¢	CB:YB	11	
85	3s(9.0); 2L(18.0)	32.0	CB:YB	32	
86	1s(8.5); 4L(17.0)	41.0¢	YB	14	
87	3s(8.5); 2L(16.5)	46.5¢	ØG	32	
88	6L(16.5)	36.5¢	YB	6	
89	7s(9.0); 3L(19.0)	46.0¢	W	73	
90	1s(8.5); 3L(15.0)	45.0¢	MB	13	
91	1s(8.0); 5L(19.5)	46.5¢	CB:YB	15	
92	1s(8.0); 7L(17.5)	37.5¢	CB:YB	17	
93	1s(7.5); 4L(16.0)	42.0¢	YB	14	
94	1s(7.5); 4L(16.5)	46.5¢	ØG	14	
95	2L(19.0)	41.0¢	YB	2	
96	7s(10.0); 4L(18.0)	37.0¢	W	74	
97	9L(17.0)	42.0¢	MB	9	
98	1s(10.5); 2L(22.0)	29.0¢	CB:YB	12	
99	1s(8.5); 4L(18.5)	34.5¢	CB:YB	14	
100	1s(8.0); 4L(17.0)	39.0¢	YB	14	

Cord	Knots (no., type, position)	Length	Color	Value	Subsidiaries (no., position)
101	2s(9.0); 4L(18.0)	46.0¢	ØG	24	
102	2s(18.0)	53.0¢	YB	20	
103	1s(4.0); 1s(9.0); 5L(17.0)	42.0¢	W	115	
104	1s(9.0); 4L(21.5)	43.5¢	MB	14	
105	2s(10.0); 3L(19.5)	25.5	CB:YB	23	
106	1s(8.0); 4L(16.0)	36.0¢	CB:YB	14	
107	2s(7.5); 4L(17.5)	41.5¢	YB	24	
108	5s(9.5); 7L(19.0)	42.0¢	ØG	57	
109	7L(19.0)	33.0¢	YB	7	
110	5s(7.0); 5s(16.0); 1s(24.0); 3L(34.0)	49.0¢	W	5513	
111	9s(15.5); 3s(24.5); 4L(33.5)	46.5¢	MB	934	
112	2s(8.0)	14.0b	CB:YB	2???	
113	1s(7.0); 2s(15.0); 8s(23.5); 3L(33.0)	53.0¢	LA	1283	
114	1s(7.5); 2s(15.0); 8s(25.5); 7L(34.0)	40.0¢	YB	1287	
115	6s(15.5); 8s(25.0); 6L(33.0)	39.0¢	YB	686	
116	9s(14.0); 5L(32.5)	47.0¢	W	95	
117	3s(13.5); 4s(22.0)	49.0¢	MB	340	
118	1s(7.0); 8L(33.0)	50.0¢	CB:YB	1008	
119	3s(13.0); 5L(30.0)	45.0¢	LA	305	
120	3s(13.0); 3s(21.5); 2L(31.0)	49.0¢	YB	332	

Cord	Knots (no., type, position)	Length	Color	Value	Subsidiaries (no., position)
121	1s(12.5); 4s(21.5); 7L(30.0)	48.0¢	YB	147	
122	9s(13.5); 3s(23.0); 9L(31.0)	44.0¢	W	939	
123	1s(14.0); 5s(24.0); 2L(31.5)	55.5¢	MB	152	
124	4s(14.0); 4s(24.0); 3L(33.0)	52.0¢	CB:YB	443	
125	2s(13.0); 5s(23.5); 8L(32.0)	36.0¢	LA	258	
126	2s(12.5); 9s(22.5); 5L(30.0)	44.5¢	YB	295	
127	3s(7.0)	12.0b	CB	3???	
128	3s(13.0); 3s(22.5)	47.5¢	YB	330	
129	8s(7.5); 2s(16.5); 3L(24.5)	45.5¢	W	823	
130	1s(8.0); 8s(20.0); 1E(30.5)	60.5¢	MB	181	
131	5s(8.5)	17.5b	CB:YB	5??	
132	2s(7.0); 5s(16.5); 6L(26.5)	45.0¢	YB	256	
133	2s(7.5); 2s(16.0)	22.0b	CB	22?	
134	5s(17.0); 3L(24.0)	52.0¢	YB	53	
135	1s(5.0); 7s(23.0); 7L (31.5)	49.5¢	W	1077	
136	1s(14.0); 3s(24.5)	54.5¢	MB	130	
137	5s(15.0); 2s(27.0)	53.0¢	CB:YB	520	
138	2s(13.0); 7s(23.0)	42.0¢	LA	270	

Cord	Knots (no., type, position)	Length	Color	Value	Subsidiaries (no., position)
139	1s(13.0); 7s(23.5); 5L(31.5)	51.5¢	YB	175	
140	8s(24.5); 6L(33.5)	41.5¢	YB	86	
141	7s(13.5); 6s(23.5) 7L(31.5)	45.5¢	W	767	
142	1s(14.0); 3s(24.5); 1E(34.5)	52.5	MB	131	
143	3s(15.5)	33.5b	CB:YB	30?	
144	2s(13.5); 1s(23.0); 4L(32.0)	44.0¢	LA	214	
145	2s(13.0); 5s(22.5); 9L(31.0)	44.0¢	YB	259	
146	6s(23.5); 9L(32.5)	42.5¢	YB	69	
147	9s(9.5); 8L(20.0)	29.0¢	W	98	
148	3s(8.0); 3L(17.0)	44.0¢	MB	33	
149	7s(10.0); 5L(19.0)	19.0b	CB:YB	75	
150	2s(8.5); 2L(17.5)	39.5¢	LA	22	
151	1s(8.0); 8L(16.5)	33.5¢	YB	18	
152	--	0.5b	CB	?	
153	3L(16.0)	50.0¢	YB	3	
154	1s(5.0)	44.0¢	W	100	
155	2s(7.5); 4L(15.0)	42.0¢	MB	24	
156	4s(8.0)	11.0b	CB:YB	4?	
157	1s(7.0); 9L(19.5)	25.5¢	LA	19	
158	1s(7.0); 5L(16.5)	33.5¢	YB	15	

Cord	Knots (no., type, position)	Length	Color	Value	Subsidiaries (no., position)
159	5s(7.5); 7L(16.5)	19.5b	CB	57	
160	5L(17.0)	35.0¢	YB	5	
161	5s(9.5); 6L(18.5)	38.5¢	W	56	
162	1s(8.0); 7L(16.0)	37.0¢	MB	17	
163	6s(11.5); 8L(22.5)	41.5¢	CB:YB	68	
164	3s(9.0); 8L(19.0)	25.0¢	LA	38	
165	3s(8.5); 3L(17.0)	33.0¢	YB	33	
166	6L(19.0)	19.0b	CB	6	
167	3L(19.5)	36.5¢	YB	3	
168	9s(8.0); 2L(17.0)	38.0¢	W	92	
169	1s(7.0); 6L(17.0)	39.0¢	MB	16	
170	4s(8.0); 4L(17.0)	32.0¢	CB:YB	44	
171	4s(7.5); 1E(17.5)	33.5¢	LA	41	
172	1s(7.5); 9L(17.0)	28.0¢	YB	19	
173	--	0.5b	CB	?	
174	5L(17.0)	31.0¢	YB	5	
175	8s(8.5); 7L(18.5)	32.5¢	W	87	
176	1s(7.0); 9L(16.5)	39.5¢	MB	19	
177	5s(9.0); 3L(19.5)	39.5¢	CB:YB	53	
178	4s(7.5); 8L(15.0)	29.0¢	LA	48	
179	1s(7.5); 7L(17.0)	33.0¢	YB	17	
180	4s(8.5)	13.5b	CB	4?	
181	5L(16.5)	36.5¢	YB	5	
182	9s(10.0); 7L(20.5)	28.5¢	W	97	
183	1s(7.5); 5L(17.0)	44.0¢	MB	15	

Cord	Knots (no., type, position)	Length	Color	Value	Subsidiaries (no., position)
184	7s(10.5); 3L(21.0)	32.0¢	CB:YB	73	
185	2s(8.0)	41.0¢	LA	20	
186	3s(8.5); 9L(16.5)	26.5¢	YB	39	
187	--	1.0b	CB	?	
188	1s(8.0)	36.0¢	YB	10	
189	9s(9.5); 8L(20.0)	24.0¢	W	98	
190	1s(8.5); 6L(17.5)	42.5¢	MB	16	
191	7s(8.0); 4L(20.0)	31.5¢	CB:YB	74	
192	1s(8.0)	40.0¢	LA	10	
193	3s(8.0); 7L(15.5)	30.0¢	YB	37	
194	--	0.5b	CB	?	
195	6L(18.5)	31.5¢	YB	6	
196	4s(9.0); 4L(18.0)	42.0¢	W	44	1:16.0
196sl	3L(2.0)	4.5¢	W	3	
197	1s(8.0)	51.0¢	MB	10	
198	3s(8.0); 3L(15.5)	38.5¢	LA	33	
199	8L(15.0)	34.0¢	YB	8	
200	--	0.5	CB	?	
201	3L(16.0)	40.5¢	YB	3	
202	4s(8.0); 6L(17.5)	37.0¢	W	46	
203	7L(17.0)	44.0¢	MB	7	
204	3s(8.0); 4L(18.0)	38.0¢	CB:YB	34	
205	1s(6.0); 1E(14.5)	36.5¢	LA	11	

Cord	Knots (no., type, position)	Length	Color	Value	Subsidiaries (no., position)
206	2s(6.5); 1E(14.0)	37.0	YB	21	
207	3s(8.0); 8L(19.5)	19.5b	CB	38	
208	1s(7.0)	39.0¢	YB	10	
209	9s(10.5); 7L(22.0)	38.0¢	W	97	
210	1s(9.0)	9.0	MB		
211	6s(10.5); 7L(20.0)	28.5¢	CB:YB	67	
212	5s(9.0); 3L(17.5)	30.5¢	LA	53	
213	5s(9.0); 3s(17.0)	29.5¢	YB	53	
214	--	0.5b	CB	?	
215	6L(19.5)	31.0¢	YB	6	

Observations

1. Spaces appear between pendants 10 and 11 and between pendants 11 and 12. Therefore, the group of the 5 pendants numbered 8 through 12 probably originally had 7 pendants.

2. Space appears between pendants 15 and 16. This group probably had 7 pendants.

3. Space appears between pendants 197 and 198. This group probably had 7 pendants.

4. By spacing there are 32 groups. Larger spaces appear after the sixth, sixteenth, and twenty-second group. The spacing, color patterning and values are best described by considering the quipu

to be in two parts (Part I is the first 16 groups and Part II is the last 16 groups). Each part consists of 3 sections: section A is 1 group; section B is the next 5 groups; and section C is the last 10 groups. Hence,

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 1   2-6   7-16              17   18-22   23-32
 A    B     C                 A     B       C
      Part I                        Part II
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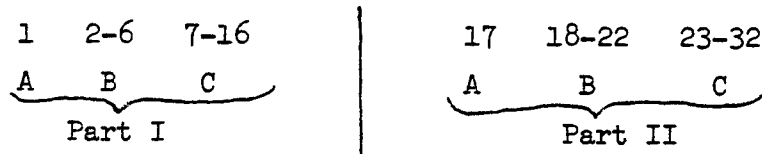
5. Basically each group contains 7 pendants. With the exception of positions 4 and 6, the color pattern is consistent from group to group. For positions 1, 2, 3, 5, 7, it is W, MB, CB:YB, YB, YB. Position 4, with one exception, is CB:YB in Part I and LA in Part II. In Part I, position 6 is CB in section A, CB or $\emptyset$G in section B, and $\emptyset$G in section C; in Part II, it is omitted in section A, CB or omitted in section B, and CB in section C.

6. There is only one subsidiary on one pendant on the entire quipu.

7. (a) The values in section A are, in general, position by position, the sum of the values in the five groups in section B or the order of magnitude of the sums. This is presented in Table 1 below.

TABLE 1

		1	2	3	4	5	6	7
Part I	A	5928	1120	2002	94?	1948	?	0
	Sum of groups in B	5928	1120	1177	?	1904	1662	384
Part II	A	5513	934	2000-2999	1283	1287	-	686
	Sum of groups in B	4521	934	2771-2879	1047	1317	?	685

(b) The values in section B are, position by position, the order of
magnitude of the sum of the 10 groups in section C. This is pre-
sented in Table 2 below.

TABLE 2

	1	2	3	4	5	6	7
Range of B values	1157±390	244±113	590±418	216±89	370±194	?	199±132
Sum of C groups, Part I	1027	250	222-319	223	244	356	. 87
Sum of C groups, Part II	815	167-176	528-537	295	260	?	56

(c) In only one case is a value in section B the exact sum of the
10 values in section C in the comparable position. This occurs in
Part I position 6. The value in position 6 in the second group of
section B is the sum of the 10 values in position 6 in section C.

(d) In Part I, for pendant positions 1, 2, 3, the following holds:
there is a consistent ratio of (the sum of the values in the 5
groups in section B) / (the sum of the values of the last 5 groups
in section C). The ratio is 11.83 ± 1.4%. Similarly in Part II,
position 1, the ratio is 11.84. (Positions 2 and 3 of Part II con-
tain breakage. From what remains, it can be seen that the ratio
does not hold for position 2, but might for position 3.)

8. The relative magnitude of values in comparable groups in Parts I
and II is consistent for positions 1, 2, and 3. For each of the
16 groups, the values in Part I are greater than the values in

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Part II in positions 1 and 3, and the values in Part II are greater in position 2.

9. There are some additional relationships between sums of 5 consecutive groups in section C of the quipu. If P_{ijk} represents the value of the pendant in the ith part ($i=1,2$), the jth group of section C ($j=1,2,\ldots,10$), and the kth position in the group ($k=1,2,\ldots,7$), the relationships can be represented as follows:

(a)
$$\sum_{j=1}^{5} P_{1j5} = \sum_{j=6}^{10} P_{2j4}$$

(b)
$$\sum_{j=5i-4}^{5i} (P_{1j1} - P_{2j1}) = P_{i,10,1} \qquad \text{for both } i=1 \text{ and } i=2.$$

10. AS68 and AS47 are associated. For a detailed discussion see AS47.