

A Study of Dermatoglyphics Variation of Kondha Tribals of Odisha

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Abstract: *The different configurations or pattern frequencies of epidermal ridges, palms and soles can be studied by Dermatoglyphics. The human dermatoglyphics traits represent the variations within and between populations. The aim of present study is to analyse the variation in the population of Kondha tribe of Orissa. The 83 sample of Kondha tribe were collected and compared with 83 controls. The prints of both hands were taken by rolling finger technique. In Tribal the percentage of loops were high in IIIrd and Vth digit with 59.03% and 65.06% respectively as compared with control. The whorl of only IVth digit of tribal was high with 70.48% where as the frequency of other digits was comparatively less. The arches of I, II, III and Vth digit of patients was low where as the IVth and Vth digit shows no significant change. The mean and S.D. of loop of right hand was higher with 15.96 and 19.83 respectively. In left hand the whorl shows highest mean with 14.14 where as the loop shows highest S.D. with 119.63. The mean of arch of both hands was same. The Dermatoglyphics represent as an appropriate tool for study the variations in fingerprints of population of Kondha tribe.*

Keywords: Dermatoglyphics, Ridges, Kondha tribe, Standard deviation.

1. Introduction

The tribal population is found in all most all parts of India. As per 2001 census, the scheduled tribes of Orissa have the population of 8,145,081 [11]. The government of India has stated 62 endogenous tribal group of Orissa as Scheduled Tribes. These tribes mainly inhabit the Eastern Ghats hill range, which runs in the north-south direction. Out of sixty two, the Kondha is the largest tribe of the state in terms of population. They have a population of about 1,395,643 constituting 17.1 percent of the total ST population [12]. They are based mainly in the kandhamal and adjoining districts namely Rayagade, Koraput, Balangir and Boudh. The origins of Kondhas are believed to be from the Proto-Australoid ethnic group. The native language of Kondha tribe is Kui which is a Dravidian language and script is known as the Oriya script. The economic life of tribal group is depended on a subsistence agriculture i.e. shifting cultivation. They collect their basic amenities from the forest and thus their economic life revolves round the forest eco-system. The female family members are the assests of family due to their wok participation inside and outside the household works. As the females range of work is greater than males so it affects their literacy rate. The religious belief of Kondha

tribes combines animism. Their deity is always attributed to various natural phenomena such as objects, trees, animals, etc. They give highest importance to the *Dharani penu* (the Earth god) and *Niyam penu* (associated with Niyamgiri Hill), who is held to be the creator and sustainer of the tribal group. The Hinduism is the dominant religion. The social life of Kondha is lead by a tradition of hereditary religious leader such as *Jani* (religious head), *Mondal* (secular head), *Bejuni* (sorcerer), *Barik* (messenger) [11 & 12]. These leaders organize a meeting and take the decision for giving award or punishment. However, due to modernization the Kondha group is struggling for their land. The bauxite rich Niyamgiri Hill has become a threatening for the life of tribes in near future. Their traditional life styles, customary traits of economy, norms and values have been drastically changed over a long period.

2. Dermatoglyphics

Dermatoglyphics is the study of epidermal ridges of the skin which covers the digits, palms of the hand and soles of the feet. The term dermatoglyphics is a greek word coined by Cummins and Sir Francis Galton is known as Father of dermatoglyphics[1]. The Fingerprints are the

unique characteristic features which differ amongst in parents and their children, siblings and even in the identical twins. The dermatoglyphics patterns of dermal ridges are developed approximately from 4th to 10th week of gestation [10]. In 1892 Galton divided the ridges pattern on the distal phalanges of the fingertip into three groups: arches, loops and whorls. The size, position and shape of the volar pad are largely responsible for the development of ridge patterns. [3&4] Generally small pads produce arches and larger pads produce loops or whorls. There are as many as 150 individual ridge characteristics on the average fingerprint [8]. The finger ridges configuration are not changed by age, development and environmental factors in the post-natal life. This property makes fingerprints as a biometric identifier. The dermatoglyphics have been extensively used to study the variations in dermatoglyphics patterns with in different human populations. Moreover it is used as easily accessible tool for understanding the genetics of many diseases such as Down's syndrome, Kilmfelter's syndrome, Diabetes Mellitus, Lung Tuberculosis etc. [2 &6]. Therefore the human dermatoglyphics traits represent the variations within and between populations.

3. Materials and Methods

The study was conducted on 83 cases and they were compared with 83 controls. The prints were imprinted on bond paper with the help of kajal, magnifying glass, pencil, scale and tissue paper. The subjects were instructed to clean their hands with soap and dried before printing. The prints were taken on 100 GSM bond sheet by rolling finger technique with the application of kajal. Each digit were coated with kajal and then rolled one by one on a glossy paper. The resultant patterns were analysed by magnifying hand lens in both right and left palm separately. The data were tabulated and comparison was done with control to evaluate the dermatoglyphics pattern.

4. Results and Discussion

In Tribal the percentage of loops were high in IIIrd and Vth digit with 59.03% and 65.06% respectively as compared with control (Figure 3, 5). The whorl of only IVth digit of tribal was high with 70.48% where as the frequency of other digits was comparatively less. The arches of I, II, III and Vth digit of patients was low where as the IVth and Vth digit shows no significant change (Table 3). The mean and S.D. of loop of right hand was higher with 15.96 and 19.83 respectively. In left hand the whorl shows highest mean with 14.14 where as the loop shows highest S.D. with 119.63. The mean of arch of both hands was same with 1.6 (Table 4).

5. Conclusion

It could be inferred from the present study that dermatoglyphics represent as an anatomical, non-invasive and inexpensive tool which plays an important role in the study of several dermatoglyphics patterns in Kondha tribe of Orissa which shows variation to some extent as compared with control.

Digit	Control			TRIBALS			
	Total (Rt83+Lt83)= 166			Total (Rt83+Lt83)= 166			
	Loop	Whorl	Arch	Loop	Whorl	Arch	
I	Rt.	29	53	1	35	46	2
	Lt.	26	55	1	43	39	1
	Total	55	108	2	78	85	3
II	Rt.	28	50	5	25	48	7
	Lt.	20	62	1	28	49	6
	Total	48	112	6	53	97	13
III	Rt.	26	57	0	53	28	2
	Lt.	21	62	0	45	34	4
	Total	47	119	0	98	62	6
IV	Rt.	34	49	0	25	58	0
	Lt.	29	54	0	23	59	1
	Total	63	103	0	48	117	1
V	Rt.	23	60	0	58	25	0
	Lt.	24	59	0	50	33	0
	Total	47	119	0	108	58	0

Table 3: Distribution of Fingertip patterns in Tribals and Control

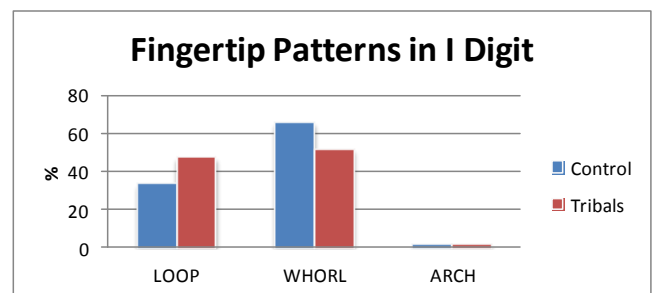


Figure 1: Distribution of Fingertip patterns in I digit

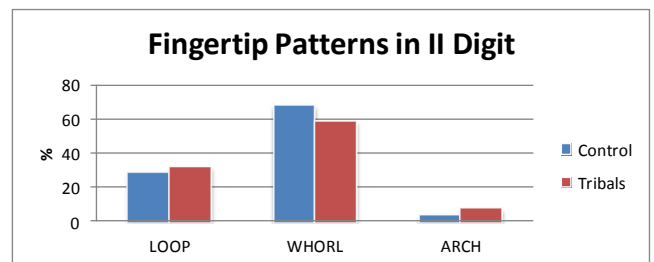


Figure 2: Distribution of Fingertip patterns in II digit

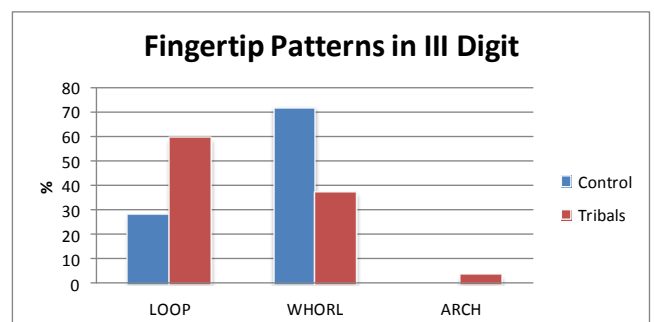


Figure 3: Distribution of Fingertip patterns in III digit

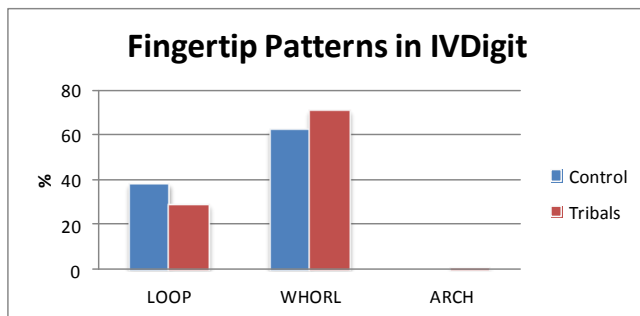


Figure 4: Distribution of Fingertip patterns in IV digit

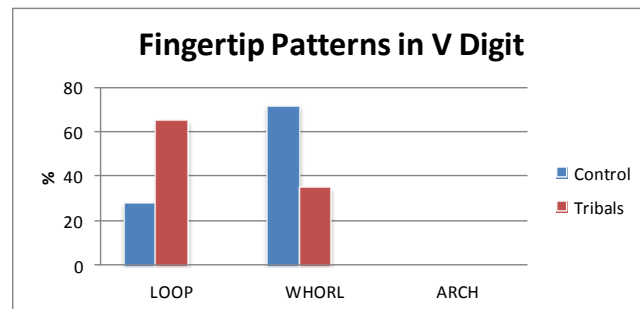


Figure 5: Distribution of Fingertip patterns in V digit

	RIGHT HAND				LEFT HAND			
	Control (n= 83)		Tribal(n= 83)		Control (n= 83)		Tribal(n= 83)	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Loop	10.33	12.96	15.96	19.83	9.33	82.27	13.33	119.63
Whorl	17.71	8.57	13.78	9.49	19	5.4	14.14	8.37
Arch	1.3	1.49	1.6	2.11	1	1.41	1.6	8.53

Table 4: Comparison of Mean and Standard deviation in both Right and Left hand

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Table 1: Right hand observation for Tribals and Control's Ridge Counts

	TH	PF	MF	RF	LF		TH	PF	MF	RF	LF
1	10	18+16=34	8	4	9	1	12	12	7	13	8
2	3+12=15	18+16=34	15+14=29	12+17=29	12+14=26	2	7+11=18	5+12=17	13	12	9+11=20
3	17+18=35	17+13=30	18+17=35	21+18=39	16+16=32	3	5+15=20	7+8=15	10	9	12+8=20
4	14	0	0	4	2	4	21	7+11=18	17	2	12+6=18
5	28+15=43	17+23=40	10+19=29	14+11=25	12	5	12+6=18	10	11	10	8+16=24
6	20	15+14=29	13	16+7=23	16+6=22	6	8+7=15	11	2	5+17=22	12+12=24
7	12	13	8	10	9	7	6+9=15	12	8	12+8=20	12+17=29
8	17	5	14	18+6=24	14	8	13	18+15=33	14	13+10=23	15+18=33
9	29+30=59	20+21=41	22+21=43	23+24=47	19+17=36	9	0	18+16=34	12	8	8+4=12
10	25	7+17=24	14	12	8	10	8	9	12+6=18	12+8=20	9+10=19
11	19+8=27	14+13=27	18+17=35	12+10=22	9+8=17	11	7	7+12=19	12+8=20	10+14=24	9+17=26
12	14	9+9=18	11	13+16=29	21	12	12	15+10=25	10+8=18	18	17
13	19+18=37	14+13=27	10+11=21	13+14=27	9+11=20	13	12+8=20	0	12+8=20	14+16=30	16+12=28
14	21+19=40	13+17=30	10+10=20	12+15=27	13+11=24	14	8	5+6=11	7+11=18	5	8+12=20
15	16+17=33	8+9=17	16	9+11=20	9+10=19	15	9+12=21	14+16=30	12+8=20	11+11=22	11+5=16
16	19+16=35	15+17=32	13+16=29	17+18=35	15+10=25	16	8	7+12=19	11+16=27	17	18+6=24
17	10	9	14	15	11	17	11+13=24	12+14=26	12+16=28	19+16=35	15+14=29
18	16	16	15	15	13	18	9+12=21	8+13=21	12+7=19	8	16+14=30
19	16+11=27	12+14=26	16	19+18=37	24	19	8	0	12	18+15=33	16+12=28
20	18+11=29	13	14	15+10=25	13	20	9+17=26	18+16=34	17	15	12+18=30
21	15	0	7	15+8=23	12	21	8+11=19	11+18=29	15+16=31	12+13=25	19+18=37
22	18	14	10	16+10=26	12+7=19	22	7	0	15+12=27	19	17
23	23+11=34	5+8=13	12	18+12=30	12	23	12	18	16	12+6=18	12
24	9+11=20	9+4=13	8	15+3=18	16+11=27	24	17+16=33	15	16+17=33	12	15+6=21
25	19+16=35	12+4=16	8	8+14=22	10	25	17+12=29	11	9+17=26	6+8=14	17+12=29
26	14+3=17	12	7	17+3=20	12+2=14	26	18	15	16+17=33	16	19+8=27
27	19	10	12	13	15	27	17+12=29	15	12+8=20	11+11=22	12+9=21
28	7	0	4	11+6=17	12+2=14	28	17+18=35	11	9+8=17	6+13=19	19+17=36
29	21+27=48	18+18=36	18+10=28	20+18=38	16+14=30	29	18	17+6=23	16+15=31	17	19+18=37
30	9	8+10=18	9	8+7=15	5	30	17+16=33	16+17=33	18+7=25	12	17+12=29
31	11	8+9=17	14	10+8=18	9	31	11+6=17	10+12=22	18	12+14=26	13+16=29
32	8+12=20	12+9=21	0	9+1=10	11	32	17	17+16=33	15+12=27	8+19=27	9+8=17
33	26	21	17	10	16	33	17+18=35	10	12+16=28	17	18
34	19+15=34	5+18=23	12+14=26	24+16=40	14	34	12	11	12+12=24	11	8+10=18
35	20+15=35	12+17=29	12+14=26	12+15=27	11+15=26	35	12+6=18	18	12+12=24	12	11
36	16+17=33	11+15=26	14+13=27	16+12=28	18+12=30	36	9	12+16=28	14+17=31	17+6=23	17+12=29
37	18+17=35	12	11	15	9	37	17+16=33	12+18=30	10+15=25	17+4=21	8+12=20
38	20+9=29	9+11=20	11	15	13	38	18+12=30	16+8=24	12+8=20	11	11+10=21
39	10+11=21	11	9	14+13=27	14	39	12+12=24	11+14=25	10+13=23	8	8+11=19
40	24	2	11	9	14	40	11+13=24	12	8+11=19	8	17+6=23
41	13+15=28	9+13=22	1+10=11	23+18=41	10+12=22	41	17+19=36	12+16=28	11+17=28	12+16=28	11+14=25
42	16	12	11	12	13	42	17+8=25	11+16=27	11+10=21	7+18=25	8+17=25
43	20+20=40	12+13=25		16+14=30	17+13=30	43	20+16=28	12	11+14=25	17+16=33	17+15=32
44	15+20=35	11+15=26	11+8=19	10+12=22	14+6=20	44	16+14=30	11	14+17=31	17+11=28	11+11=22
45	16+18=34	11+17=28	9+18=27	13+17=30	11+8=19	45	18+6=24	13	12	12+10=22	11+13=24
46	13	11	10	13	12	46	6+9=15	12+14=26	9	17+12=29	14
47		13+16=29	19+22=41	23+21=44	13	47	11+16=27	12+19=31	13+11=24	14+11=25	12
48	14	9	14	12+11=23	11	48	12+11=23	12	11+11=22	10+6=16	9
49	17+18=35	4	0	8	7	49	8+12=20	19+12=31	8	6+12=18	12+12=24
50	12	8+5=13	8	7	10	50	13+12=25	28	14	12+17=29	16+18=34
51		14+15=29	11+15=26	18+15=33	16+5=21	51	15	12	13+9=22	9+17=26	11
52	24+17=41	8+14=22	17+14=31	17+14=31	10	52	9	13+16=29	11+8=19	17+14=31	18+12=30
53	12+16=28	13	14	15+13=28	10	53	12+12=24	9+11=20	13	8	9+13=22
54	19	12	13		9	54	14+17=31	8+13=21	18+10=28	10	11+13=24
55	18	12	15+9=24	10+8=18	14	55	14+12=26	9+11=20	13+15=28	14	15+14=29
56	11	11+1=12	12+3=15	16+11=27	14+12=26	56	11+13=24	14+16=30	6+16=22	17	21+32=53
57	14+7=21	11+9=20	12	12+12=24	12	57	13	15+20=35	19+16=35	11	11+15=26
58	18	14+8=22	16	16+11=27	13+6=19	58	12	9+14=23	13+15=28	17	14+18=32
59	0	2	5	9	6	59	11+15=26	12+9=21	15+12=27	14	10+21=31
60	15	4+5=9	6	8	6	60	8+16=24	12	6+12=18	12+13=25	9
61	16	7	9	11	5	61	12+15=27	12	13+11=24	10+12=22	10
62	20+12=32	16	0	18+17=35	12	62	17+14=31	17+16=33	12	6+10=16	11
63	12	0	4	5	11	63	16+18=34	15+15=30	9+13=22	17+18=35	11+15=26
64	18+17=35	9+20=29	13	16+2=18	14	64	9+17=26	15+14=29	16	14+11=25	8+17=25
65	0	0	10	18	5	65	12+19=31	11+13=24	10	10+12=22	13+15=28
66	16	12	11	12+7=19	11	66	9+13=22	18+15=33	15+17=32	14+13=27	4+11=15
67	8	12	17	13	6	67	8	12	11	12	11
68	17	0	7	5	4	68	11+8=19	17+13=30	5+15=17	8+16=24	9+17=26
69	16	9	8	14	16	69	15	6+13=19	13	20	12+12=24
70	17+14=31	14	9	20+13=33	15+11=26	70	15+14=29	7+18=25	14+8=22	8	9
71	12	9	13	14+8=22	14+6=20	71	12	16+4=20	9	5+9=14	12+6=18
72	6	8+12=20	7	9	11	72	18+15=33	13	7+21=28	6+10=16	17+15=32
73	18+12=30	11+10=21	14+9=23	16+11=27	9	73	13	5+9=14	10	14+18=32	8
74	13+9=22	11+15=26	13+10=23	12+9=21	17	74	19+13=32	17+15=32	12	12	16+13=29
75	8+2=10	4+6=10	4+5=9	6+10=16	5	75	3+14=17	11	10+13=23	12	4
76	6	3+5=8	8	11+7=18	10	76	14	12	16+13=29	18+17=35	14
77	14+17=31	7	13	12+9=21	5	77	12	5+8=13	12+7=19	5	18+2=20
78	13+6=19	6+11=17	11	12+8=20	7	78	10	13	16+19=5	14+12=26	13+18=31
79	9+7=16	11+12=23	12+12=24	12+12=24	9+12=21	79	17+19=36	12	21+6=27	3+19=22	16+15=31
80	11	9	13+13=26	12+13=25	9	80	13	15+18=33	12+10=22	15+15=30	7
81	16+11=27	15+16=31	9	12+11=23	8	81	19+15=34	8+15=23	15	10+11=21	7+12=19
82	9+3=12	15+9=24	13+10=23	14+9=23	10	82	14	5+6=11	7+8=15	12	12
83	11+12=23	3+6=9	11	10	8	83	12	10+13=23	13+18=31	8	7+11=18

Table 2: Left hand observation for Tribals and Control's Ridge Counts

	TH	PF	MF	RF	LF		TH	PF	MF	RF	LF
1	9	2	7	8	8	1	14	5	7+1=8	13+3=16	8+4=12
2	15	13	17	11+15=26	11+12=23	2	17+11=28	15+12=27	23	12+11=23	19+11=30
3	14+16=30	13+16=29	16+20=36	12+14=26	10+15=25	3	15	8+17=25	10	6+7=13	6+19=25
4	3	0	0	0	4	4	21+7=28	7+10=17	12+15=27	18	15+5=20
5	9+22=31	19+17=36	15+17=32	12+15=27	14	5	6+9=15	8	4+19=23	0	2+21=23
6	22	15+15=30	12+14=26	11+14=25	12	6	12	12+4=16	9+15=24	7+4=11	13+16=29
7	13	4	5	7	9	7	9+15=24	12+14=26	18+15=33	9+14=23	7
8	17	6	17	13	14	8	15+17=32	7+12=19	9	19+17=36	8+16=24
9	21+32=53	23+25=48	34+25=59	26+33=59	7+18=25	9	5+18=23	17+11=34	19+12=31	18	16+10=26
10	18	11+14=25	17	10	9	10	7+16=23	5+9=14	11+18=29	18+6=24	8+9=17
11	7+20=27	9+13=22	6+16=22	11+14=25	6+14=20	11	17	11+17=28	8+12=20	18+17=35	7+15=22
12	13+11=24	7+8=15	3+13=16	15+16=31	4+17=21	12	12+16=28	0	6+8=14	19	11+11=22
13	14	21+5=26	14+12=26	17+15=32	9+12=21	13	17+6=23	18+15=33	12+7=19	15+14=29	12+14=26
14	18+25=43		18+15=33	16+14=30	12+9=21	14	10+12=22	19	8+12=20	4+8=12	15
15	16+20=36	12+13=25	11+15=26	14+15=29	12+16=28	15	13	12+15=27	16+12=28	12	17+9=26
16	10+21=31	15+12=27	14+17=31	14+17=31	16	16	15+18=33	19+3=22	12+19=31	17+18=35	16+11=27
17	15+18=33	9+11=20	11+13=24	14+13=27	9+12=21	17	18+11=29	18	16+12=28	11+16=27	7+15=22
18	10+22=32	12+17=29	15+18=33	14+15=29	12	18	9+12=21	3+8=11	19+17=36	10+14=24	13
19	15	9	10+16=26	15+22=37	17	19	6+5=11	5+16=21	14	7+7=14	14+10=24
20	16	10	15	15+19=34	9+17=26	20	2+14=16	6+3=9	13+14=27	11+13=24	9+17=26
21	10	0	9	7+18=25	14	21	21+2=23	10	19+4=23	11+17=28	15+18=33
22	16	14+10=24	2+11=13	12+16=28	12	22	16+12=28	12+8=20	15+16=31	19+13=32	8+6=14
23	10+18=28	10+2=12	15+22=37	12+25=37	12	23	15+12=27	17+11=28	11+18=29	19+12=31	16+5=21
24	13+12=25	4+11=12	9	10+12=22	10+14=24	24	11+14=25	17+14=31	11+12=23	20+13=33	18+13=31
25	14+11=25	9+8=17	13	7+11=18	10	25	4+13=17	16+17=33	12+9=21	18+17=35	18+6=24
26	9+6=15	2	15	11+15=26	2+18=20	26	14+11=25	15+15=30	12+17=19	15+8=23	11
27	17	14	15	16	10+16=26	27	19	15+19=34	15+11=26	16+7=23	5+12=17
28	9	0	9	6+10=16	1+12=13	28	17+19=36	11+10=21	17+4=21	6+13=19	19+14=33
29	20+21=41	17+22=39	17+18=35	18+21=39	13+19=32	29	12+12=24	17+11=28	6+17=23	8+2=10	17+15=32
30	10	15	10	6+11=17	10	30	17+6=23	17	17+12=29	12+14=26	17
31	18	13+10=23	15	10+11=21	11	31	11+16=27	10+12=22	11+7=18	12+13=25	2+21=23
32	15+20=35	7+8=15	0	12	15	32	19	16+17=33	15+19=34	8+14=22	10
33	19+27=46	10+4=14	11	8+17=25	10	33	19+2=21	11+17=28	11	8+15=23	8+7=15
34	18+16=34	18+9=27	16	16+22=38	18	34	17+16=33	13+11=24	11+11=22	18+11=29	8+14=22
35	15+14=29	11+13=24	14+13=27	14+16=30	12	35	12+16=28	11+17=28	6	11+15=26	9+13=22
36	20+14=34	15+13=28	12	13+15=28	11+14=25	36	9+9=18	17+7=24	10+10=20	4	9+15=24
37	18+14=32	11	14	16	11	37	17+8=25	18+13=31	6+8=14	12+16=28	6+9=15
38	11	14	14	16	11	38	13+11=24	12+20=32	4+14=18	17+11=28	9+13=22
39	13+15=28	9	12+15=27	13+12=25	13	39	10+13=23	14+17=31	22+5=27	17+6=23	14+14=28
40	10	0	6	9	4+11=15	40	8+17=25	8+16=24	12+11=23	14+4=18	2+19=21
41	13+17=30	9+11=20	14+19=33	12+12=24	16	41	15+21=36	18+9=27	11+15=26	15+18=33	17+14=31
42	4+16=20	9+14=23	11	9	13	42	14	24+4=28	12+14=26	19+12=31	16+10=26
43	16+22=38	14+15=29		13+16=29	13+14=27	43	17+16=33	12+19=31	0	16+7=23	12+15=27
44	15+14=29	12+14=26	17	11+13=24	18	44	24+5=29	11+17=28	10+14=24	17+11=28	10+15=25
45	15+20=35	12+13=25	19+16=35	18+21=39	11+15=26	45	11+17=28	10+13=23	12	13+18=31	9
46	14+5=19	5+14=19	12	7+13=20	4+12=16	46	13+18=31	12+17=29	12+16=28	8	21+12=33
47	19+24=43	16	26+20=46	19+27=46	19	47	11+16=27	13+4=17	17	12+16=28	15+23=38
48	13	8	13	5+10=15	12	48	15+7=22	0	12+19=31	19+15=34	17+10=27
49	10	9	0	8	7	49	14+12=26	18+18=36	12+18=30	11+13=24	16
50	13	7+8=15	9	9	10	50	3	12+16=28	4+13=17	14+17=31	5+24=29
51	12+18=30	17+14=31	17+15=32	16+18=34	9+17=26	51	3+8=11	2+17=19	17+15=32	16+17=33	13+18=31
52	18+16=34	12+13=25	17	16+19=35	18	52	17+14=31	10+14=24	7	5+15=20	8+8=16
53	0	0	13	9+13=22	9	53	15	12+12=24	19+3=22	15+19=34	17+14=31
54	21	10	13	11	9	54	13+9=22	10	22+6=28	16+12=28	8+11=19
55	17	12+11=23	12+15=27	8+17=25	9+11=20	55	10+6=16	13+13=26	15+11=26	6+9=15	11+16=27
56	12	6+8=14	6+12=18	11+19=30	4+13=17	56	2+15=17	4+23=27	9+9=18	13+11=24	16+12=28
57	12+15=27	14+12=26	12	14+15=29	14	57	3+26=19	14+19=33	1+18=19	6+3=9	2+16=18
58	22	18	22	18+20=38	16	58	17+11=28	25+7=32	9	19+8=27	12+18=30
59	0	1	5	11	8	59	15+5=20	17+11=28	15+17=32	14+15=29	18+18=36
60	5	4	9	7	8	60	14+18=32	14+18=32	3+19=22	18+2=20	8+3=11
61	12	5+2=7	10	10	10	61	16+5=21	18+8=26	7+12=19	3+27=30	18+15=33
62	16	6	9	12	11	62	19+19=36	8	3+10=13	7+32=39	18+12=30
63	6	1	0	12	14	63	26+5=31	16+19=35	17+12=29	14+18=32	16+11=27
64	16	17	18+15=33	1+20=21	19	64	15	16+17=33	26+10=36	11+11=22	6+16=22
65	12	9+4=13	8	4+9=13	4	65	8+16=24	22+6=28	9+13=22	15+15=30	11+15=26
66	10	1	12	12+11=23	8+16=24	66	23+9=32	18+5=23	17	10+14=24	14+11=25
67	15	9	12	9	12	67	9+14=23	12+12=24	6+10=16	14+12=26	11+15=26
68	6	3	9	6	7	68	15+6=21	7+9=16	3+21=24	10+13=23	12+7=19
69	14+18=32	12	9	10	13	69	13+14=27	21+5=26	14+16=30	9+9=18	18
70	10+17=27	13+14=27	16	12+7=19	14	70	17+14=31	0	17+17=34	27+5=32	16+8=24
71	16	7	13	12+11=23	10+7=17	71	12+7=19	11+14=25	10+23=33	18+12=30	8+11=19
72	8+2=10	11	12	8+12=20	18	72	10+19=29	23+4=27	24+10=34	10	17+16=33
73	14	11+9=20	13	7+9=16	4+13=17	73	10+24=34	10+10=20	11+17=28	11+11=22	13+16=29
74	13+15=28	9+13=22	14+17=31	8+13=21	2+12=14	74	7+8=15	13+6=19	17+10=27	16+16=32	12+7=19
75	5	7+4=11	3+6=9	6+9=15	2+8=10	75	14+14=28	15+10=25	17+10=27	15+15=30	10
76	11	8	11	8+13=21	3+11=14	76	12+15=27	11+4=15	6+14=20	11+15=26	0
77	9+13=22	6+11=17	10+8=18	8+12=20	9	77	10+14=24	13+5=18	16+20=36	12+13=25	2+16=18
78	13	6+13=19	0	12+13=25	8+9=17	78	14+15=19	10+16=26	13+11=24	16+12=28	20+4=24
79	11	20+12=32	12+13=25	12+14=26	12+11=23	79	13+23=36	13+11=24	15+23=38	11+14=25	14+19=33
80	16	11+12=23	10+14=24	13+15=28	4+8=12	80	11+14=25	6+10=16	14+15=19	16	14+12=26
81	12+17=29	9+14=23	6+15=21	12+16=28	15	81	11	15+12=27	11+12=23	10	24+3=27
82	15	14+9=23	9+6=15	8+13=21	11	82	23+5=28	14+17=31	31+2=33	12+14=26	26+4=30
83	7+13=20	3+8=11	12	10	13	83	22+10=32	21+10=31	4+15=19	10+10=20	20+13=33