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221. ORNL - 3649 RESEARCH REPORTS

V.2

Sec. 2.9

ORNL-3649, Vol. 2
UC-37 - Instruments
TID-4500 (37th ed.)

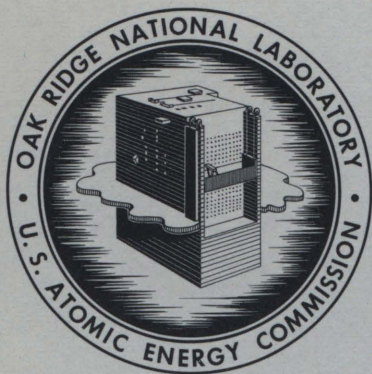
Section 2.9

SMOOTHED THERMOCOUPLE TABLES OF
EXTENDED SIGNIFICANCE (°C)

Volume 2

Section 2.9 Tungsten-3% Rhenium vs Tungsten-25%
Rhenium Thermocouples

R. K. Adams
E. G. Davisson



OAK RIDGE NATIONAL LABORATORY

operated by

UNION CARBIDE CORPORATION

for the

U. S. ATOMIC ENERGY COMMISSION

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ORNL-3649
Vol. 2, Sect. 2.9

Contract No. W-7405-eng-26

INSTRUMENTATION AND CONTROLS DIVISION

SMOOTHED THERMOCOUPLE TABLES OF EXTENDED SIGNIFICANCE (°C)

R. K. Adams and E. G. Davisson

Volume 2

SECTION 2.9 TUNGSTEN-3% RHENIUM VS TUNGSTEN-25% RHENIUM THERMOCOUPLES

MARCH 1965

OAK RIDGE NATIONAL LABORATORY
Oak Ridge, Tennessee
operated by
UNION CARBIDE CORPORATION
for the
U. S. ATOMIC ENERGY COMMISSION

SMOOTHED THERMOCOUPLE TABLES OF EXTENDED SIGNIFICANCE (°C)

R. K. Adams

E. G. Davisson

Volume 2

SECTION 2.9 TUNGSTEN-3% RHENIUM VS TUNGSTEN-25% RHENIUM THERMOCOUPLES

This section contains tables of emf (in absolute millivolts) vs temperature (in degrees Celsius on the International Temperature Scale of 1948) for tungsten-3% rhenium vs tungsten-25% rhenium thermocouples. The values in these tables, derived from a linear interpolation of the Engelhard Industries, Inc., table¹ published April 5, 1963, are computed to more significant digits, that is, to the nearest 0.001 μV . The techniques of computation are described in Vol. 1 of this report.

Figure 1, a plot of the difference in microvolts between the values in the smoothed table and those in the original table vs temperature, illustrates how the values in the smoothed table compare with those in the original table.

In Table 9 a smoothed emf value is tabulated in absolute millivolts for every degree Celsius in the range of the table.

In Table 9A the first two columns contain the same information as given in Table 9. To the right of these two columns is a difference table of the millivolt values in column 2. The difference table is expressed in thousandths of microvolts and contains orders 0 through 5. This difference table gives a convenient tabulation of differences for those engaged in temperature difference work.

Although these tables are expressed to the nearest 0.001 μV , which is roughly equivalent to 0.0001°C, this in no way implies that temperature measurements to this accuracy are possible. The user of these tables is reminded of the accuracy tolerances on thermocouples published by the American Society for Testing and Materials² and the Instrument Society of America.³

¹*Tentative EMF-Temperature Relationship 97% Tungsten-3% Rhenium vs 75% Tungsten-25% Rhenium Thermocouple*, Engelhard Industries, Inc., Form No. EI-6264-2, Newark, N.J. (Apr. 15, 1963).

²"Temperature Electromotive Force (EMF) Tables for Thermocouples, ASTM E 230-63," *Am. Soc. Testing Mater., ASTM Std. 1964*, Pt. 30, pp. 646-704; see Table XIII, p. 700.

³"Thermocouples and Thermocouple Extension Wires - Terminology, Limits of Error, and Wire Sizes," *Recommended Practice RP 1.3*, Instrument Society of America, Pittsburgh, Pa., 1959.

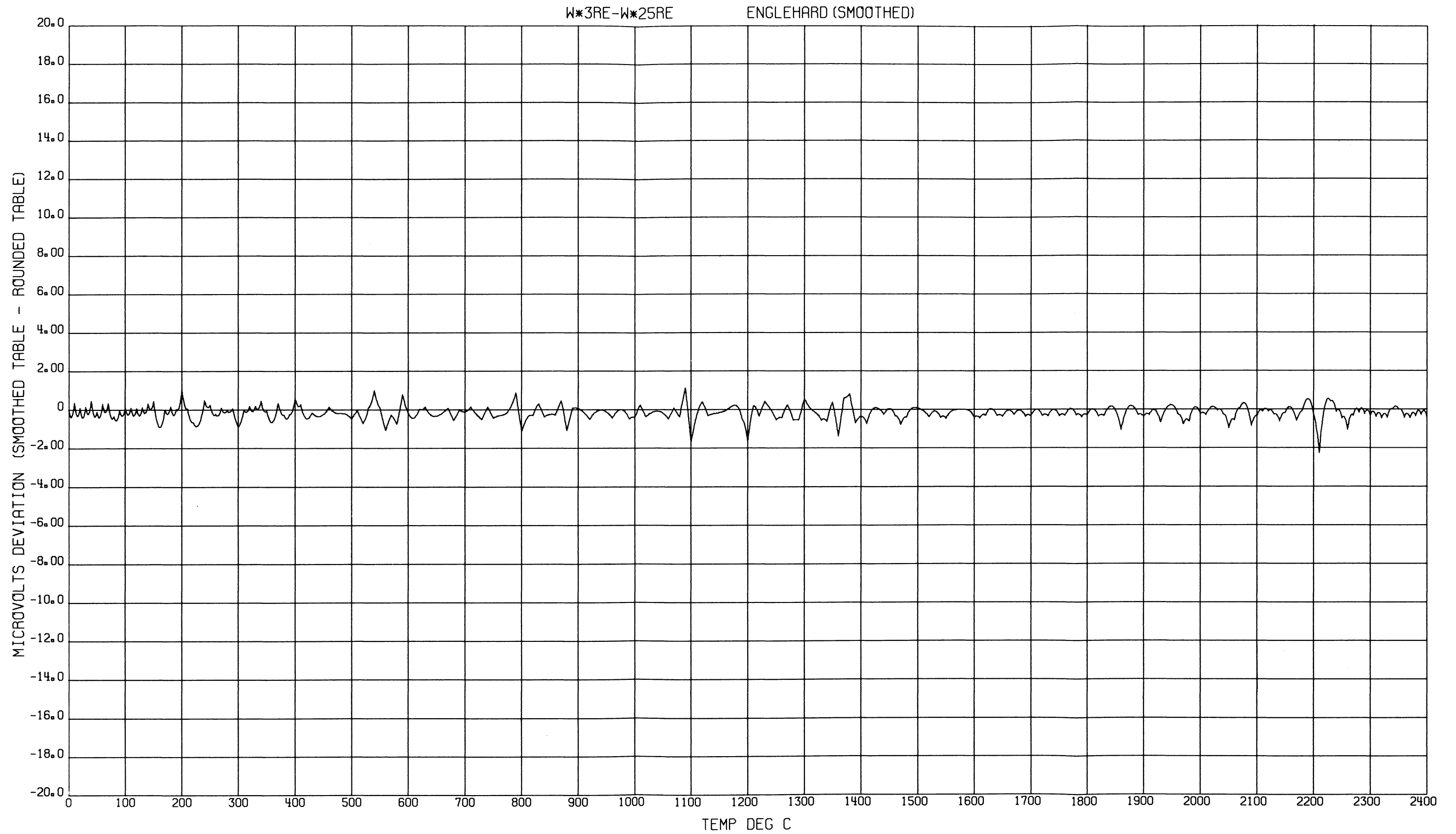


Fig. 1. Deviation of Original Table from Smoothed Table.

W*3RE-W*25RE ENGLEHARD(SMOOTHED)
TABLE NO. 9

TEMP=DEG C (INT,1948)
VOLTAGE=MILLIVOLT ABSOLUTE

TEMP	0	1	2	3	4	5	6	7	8	9
	MILLIVOLTS									
0	0	.009434	.018912	.028435	.038002	.047615	.057271	.066972	.076717	.086506
10	.096339	.106216	.116138	.126103	.136111	.146164	.156260	.166399	.176582	.186809
20	.197078	.207391	.217747	.228146	.238588	.249073	.259601	.270171	.280785	.291441
30	.302139	.312881	.323664	.334490	.345358	.356269	.367221	.378215	.389251	.400329
40	.411448	.422608	.433810	.445053	.456337	.467661	.479026	.490432	.501878	.513363
50	.524889	.536454	.548058	.559701	.571383	.583103	.594862	.606659	.618493	.630364
60	.642273	.654218	.666199	.678216	.690269	.702357	.714480	.726638	.738829	.751054
70	.763312	.775604	.787927	.800283	.812671	.825091	.837541	.850022	.862534	.875076
80	.887647	.900249	.912879	.925539	.938228	.950946	.963692	.976467	.989270	1.002101
90	1.014961	1.027848	1.040764	1.053707	1.066679	1.079679	1.092706	1.105762	1.118846	1.131958
100	1.145099	1.158268	1.171465	1.184691	1.197946	1.211230	1.224542	1.237884	1.251255	1.264656
110	1.278086	1.291546	1.305036	1.318555	1.332105	1.345685	1.359296	1.372937	1.386609	1.400311
120	1.414045	1.427809	1.441605	1.455432	1.469291	1.483181	1.497102	1.511055	1.525039	1.539055
130	1.553103	1.567182	1.581292	1.595434	1.609607	1.623812	1.638047	1.652312	1.666609	1.680935
140	1.695291	1.709677	1.724092	1.738536	1.753009	1.767510	1.782038	1.796594	1.811176	1.825785
150	1.840420	1.855080	1.869765	1.884475	1.899209	1.913966	1.928747	1.943551	1.958377	1.973226
160	1.988097	2.002989	2.017903	2.032838	2.047795	2.062773	2.077772	2.092793	2.107835	2.122899
170	2.137985	2.153093	2.168224	2.183379	2.198556	2.213757	2.228983	2.244234	2.259510	2.274813
180	2.290142	2.305498	2.320882	2.336294	2.351735	2.367206	2.382707	2.398238	2.413800	2.429393
190	2.445017	2.460673	2.476362	2.492082	2.507835	2.523620	2.539437	2.555286	2.571167	2.587079
200	2.603022	2.618996	2.635000	2.651034	2.667096	2.683186	2.699303	2.715447	2.731617	2.747812
210	2.764030	2.780272	2.796536	2.812821	2.829127	2.845452	2.861796	2.878158	2.894538	2.910934
220	2.927346	2.943773	2.960215	2.976672	2.993142	3.009626	3.026124	3.042634	3.059157	3.075693
230	3.092242	3.108804	3.125379	3.141966	3.158567	3.175182	3.191810	3.208452	3.225108	3.241779
240	3.258465	3.275166	3.291883	3.308616	3.325365	3.342131	3.358914	3.375714	3.392532	3.409367
250	3.426220	3.443091	3.459981	3.476888	3.493814	3.510759	3.527722	3.544703	3.561702	3.578720
260	3.595756	3.612810	3.629882	3.646971	3.664078	3.681203	3.698344	3.715502	3.732677	3.749869
270	3.767076	3.784298	3.801537	3.818790	3.836058	3.853340	3.870636	3.887945	3.905268	3.922604
280	3.939952	3.957313	3.974685	3.992069	4.009464	4.026869	4.044285	4.061712	4.079148	4.096593
290	4.114048	4.131512	4.148985	4.166466	4.183956	4.201455	4.218961	4.236476	4.253999	4.271531
300	4.289071	4.306619	4.324176	4.341742	4.359317	4.376902	4.394497	4.412102	4.429717	4.447344
310	4.464983	4.482634	4.500298	4.517976	4.535668	4.553374	4.571097	4.588835	4.606590	4.624362
320	4.642152	4.659961	4.677789	4.695637	4.713505	4.731394	4.749305	4.767237	4.785191	4.803168
330	4.821167	4.839189	4.857235	4.875304	4.893396	4.911512	4.929651	4.947813	4.965998	4.984207
340	5.002438	5.020693	5.038969	5.057267	5.075588	5.093929	5.112292	5.130675	5.149078	5.167501
350	5.185944	5.204405	5.222885	5.241384	5.259900	5.278433	5.296983	5.315550	5.334133	5.352732
360	5.371347	5.389977	5.408622	5.427283	5.445958	5.464647	5.483351	5.502070	5.520802	5.539550
370	5.558311	5.577087	5.595877	5.614681	5.633500	5.652334	5.671182	5.690045	5.708924	5.727818
380	5.746727	5.765653	5.784594	5.803552	5.822526	5.841517	5.860526	5.879551	5.898594	5.917656
390	5.936735	5.955832	5.974948	5.994083	6.013237	6.032409	6.051601	6.070812	6.090042	6.109291

W*3RE=W*25RE ENGLEHARD(SMOOTHED)
TABLE NO. 9

TEMP=DEG C (INT.1948)
VOLTAGE=MILLIVOLT ABSOLUTE

TEMP	0	1	2	3	4	5	6	7	8	9
	MILLIVOLTS									
400	6.128559	6.147846	6.167153	6.186477	6.205821	6.225183	6.244562	6.263960	6.283375	6.302806
410	6.322254	6.341719	6.361198	6.380693	6.400202	6.419725	6.439262	6.458811	6.478372	6.497945
420	6.517528	6.537122	6.556725	6.576337	6.595958	6.615586	6.635222	6.654864	6.674513	6.694167
430	6.713827	6.733492	6.753161	6.772834	6.792511	6.812191	6.831875	6.851562	6.871252	6.890945
440	6.910640	6.930338	6.950038	6.969742	6.989447	7.009155	7.028866	7.048579	7.068295	7.088014
450	7.107735	7.127460	7.147187	7.166918	7.186652	7.206389	7.226129	7.245872	7.265619	7.285370
460	7.305124	7.324881	7.344642	7.364406	7.384173	7.403944	7.423718	7.443494	7.463274	7.483057
470	7.502842	7.522629	7.542419	7.562211	7.582004	7.601800	7.621596	7.641394	7.661193	7.680992
480	7.700792	7.720591	7.740391	7.760190	7.779989	7.799787	7.819584	7.839379	7.859173	7.878965
490	7.898755	7.918542	7.938327	7.958110	7.977890	7.997666	8.017440	8.037211	8.056978	8.076742
500	8.096503	8.116260	8.136014	8.155765	8.175513	8.195258	8.215000	8.234739	8.254476	8.274211
510	8.293944	8.313677	8.333408	8.353139	8.372869	8.392601	8.412333	8.432068	8.451805	8.471545
520	8.491289	8.511037	8.530791	8.550550	8.570316	8.590090	8.609871	8.629662	8.649462	8.669272
530	8.689093	8.708924	8.728768	8.748624	8.768492	8.788372	8.808266	8.828173	8.848093	8.868027
540	8.887973	8.907932	8.927904	8.947889	8.967885	8.987893	9.007912	9.027941	9.047980	9.068028
550	9.088084	9.108148	9.128218	9.148293	9.168374	9.188458	9.208546	9.228636	9.248727	9.268820
560	9.288912	9.309004	9.329094	9.349183	9.369270	9.389353	9.409434	9.429512	9.449586	9.469657
570	9.489724	9.509788	9.529845	9.549906	9.569960	9.590012	9.610061	9.630109	9.650155	9.670200
580	9.690244	9.710289	9.730334	9.750380	9.770428	9.790478	9.810531	9.830588	9.850648	9.870713
590	9.890782	9.910857	9.930937	9.951023	9.971116	9.991215	10.011320	10.031433	10.051553	10.071680
600	10.091815	10.111956	10.132106	10.152263	10.172427	10.192599	10.212778	10.232964	10.253158	10.273359
610	10.293567	10.313783	10.334005	10.354235	10.374471	10.394714	10.414964	10.435220	10.455483	10.475752
620	10.496028	10.516310	10.536598	10.556892	10.577192	10.597498	10.617810	10.638127	10.658450	10.678779
630	10.699112	10.719451	10.739795	10.760144	10.780498	10.800856	10.821218	10.841585	10.861956	10.882331
640	10.902710	10.923092	10.943477	10.963866	10.984258	11.004652	11.025049	11.045449	11.065851	11.086255
650	11.106661	11.127069	11.147478	11.167890	11.188303	11.208717	11.229132	11.249549	11.269967	11.290386
660	11.310806	11.331228	11.351650	11.372073	11.392498	11.412923	11.433349	11.453777	11.474205	11.494634
670	11.515065	11.535496	11.555929	11.576363	11.596798	11.617234	11.637672	11.658111	11.678552	11.698995
680	11.719439	11.739885	11.760333	11.780783	11.801235	11.821689	11.842146	11.862605	11.883068	11.903533
690	11.924001	11.944472	11.964946	11.985424	12.005906	12.026391	12.046880	12.067373	12.087870	12.108370
700	12.128875	12.149384	12.169897	12.190414	12.210935	12.231460	12.251989	12.272523	12.293059	12.313600
710	12.334144	12.354692	12.375243	12.395797	12.416354	12.436913	12.457476	12.478040	12.498607	12.519175
720	12.539745	12.560317	12.580889	12.601462	12.622036	12.642611	12.663185	12.683760	12.704334	12.724907
730	12.745480	12.766052	12.786622	12.807191	12.827759	12.848325	12.868889	12.889451	12.910012	12.930569
740	12.951125	12.971678	12.992228	13.012776	13.033321	13.053863	13.074403	13.094939	13.115473	13.136003
750	13.156531	13.177056	13.197578	13.218098	13.238615	13.259130	13.279642	13.300153	13.320661	13.341168
760	13.361674	13.382180	13.402684	13.423189	13.443693	13.464198	13.484704	13.505211	13.525720	13.546231
770	13.566744	13.587260	13.607779	13.628301	13.648828	13.669358	13.689892	13.710431	13.730975	13.751523
780	13.772077	13.792635	13.813198	13.833765	13.854338	13.874915	13.895496	13.916081	13.936670	13.957262
790	13.977857	13.998454	14.019054	14.039654	14.060256	14.080858	14.101459	14.122060	14.142659	14.163256

9

W*3RE=W*25RE ENGLEHARD(SMOOTHED)
TABLE NO, 9

TEMP=DEG C (INT.1948)
VOLTAGE=MILLIVOLT ABSOLUTE

TEMP	0	1	2	3	4	5	6	7	8	9
	MILLIVOLTS									
800	14.183851	14.204442	14.225030	14.245614	14.266194	14.286768	14.307338	14.327902	14.348460	14.369013
810	14.389559	14.410099	14.430633	14.451160	14.471682	14.492196	14.512705	14.533208	14.553704	14.574195
820	14.594681	14.615161	14.635636	14.656106	14.676572	14.697033	14.717491	14.737945	14.758395	14.778842
830	14.799286	14.819727	14.840166	14.860602	14.881037	14.901468	14.921898	14.942327	14.962753	14.983178
840	15.003600	15.024022	15.044441	15.064860	15.085276	15.105691	15.126104	15.146516	15.166926	15.187335
850	15.207741	15.228146	15.248550	15.268951	15.289351	15.309748	15.330144	15.350538	15.370929	15.391319
860	15.411706	15.432091	15.452473	15.472853	15.493231	15.513606	15.533979	15.554349	15.574716	15.595081
870	15.615443	15.635802	15.656158	15.676512	15.696862	15.717210	15.737555	15.757897	15.778236	15.798571
880	15.818904	15.839234	15.859561	15.879886	15.900207	15.920526	15.940842	15.961155	15.981467	16.001775
890	16.022082	16.042386	16.062689	16.082989	16.103288	16.123584	16.143879	16.164173	16.184465	16.204755
900	16.225044	16.245331	16.265617	16.285901	16.306184	16.326465	16.346745	16.367023	16.387300	16.407575
910	16.427848	16.448120	16.468389	16.488657	16.508923	16.529186	16.549448	16.569707	16.589964	16.610218
920	16.630470	16.650720	16.670967	16.691211	16.711452	16.731691	16.751928	16.772161	16.792392	16.812620
930	16.832846	16.853068	16.873289	16.893507	16.913722	16.933935	16.954146	16.974354	16.994560	17.014764
940	17.034966	17.055165	17.075363	17.095558	17.115751	17.135942	17.156131	17.176318	17.196502	17.216685
950	17.236865	17.257044	17.277220	17.297393	17.317564	17.337733	17.357900	17.378064	17.398225	17.418384
960	17.438539	17.458692	17.478842	17.498989	17.519133	17.539274	17.559411	17.579546	17.599676	17.619803
970	17.639927	17.660046	17.680162	17.700274	17.720382	17.740485	17.760585	17.780680	17.800771	17.820857
980	17.840939	17.861016	17.881089	17.901157	17.921220	17.941278	17.961331	17.981380	18.001423	18.021462
990	18.041496	18.061524	18.081548	18.101567	18.121581	18.141590	18.161595	18.181595	18.201590	18.221581
1000	18.241568	18.261550	18.281529	18.301503	18.321474	18.341441	18.361404	18.381364	18.401321	18.421275
1010	18.441225	18.461173	18.481119	18.501062	18.521003	18.540941	18.560878	18.580812	18.600745	18.620676
1020	18.640605	18.660533	18.680459	18.700384	18.720308	18.740230	18.760151	18.780071	18.799990	18.819907
1030	18.839823	18.859738	18.879652	18.899564	18.919475	18.939385	18.959293	18.979199	18.999104	19.019007
1040	19.038909	19.058808	19.078706	19.098602	19.118496	19.138388	19.158278	19.178165	19.198051	19.217934
1050	19.237815	19.257693	19.277570	19.297444	19.317316	19.337186	19.357053	19.376919	19.396782	19.416644
1060	19.436504	19.456363	19.476220	19.496077	19.515932	19.535786	19.555640	19.575493	19.595346	19.615199
1070	19.635051	19.654904	19.674758	19.694611	19.714465	19.734319	19.754174	19.774029	19.793884	19.813739
1080	19.833594	19.853449	19.873304	19.893158	19.913011	19.932863	19.952713	19.972562	19.992408	20.012251
1090	20.032092	20.051929	20.071762	20.091590	20.111414	20.131233	20.151046	20.170853	20.190653	20.210447
1100	20.230234	20.250013	20.269784	20.289548	20.309304	20.329052	20.348792	20.368524	20.388248	20.407964
1110	20.427673	20.447374	20.467067	20.486754	20.506434	20.526107	20.545775	20.565436	20.585093	20.604744
1120	20.624390	20.644032	20.663670	20.683304	20.702934	20.722562	20.742187	20.761809	20.781429	20.801047
1130	20.820663	20.840278	20.859891	20.879504	20.899115	20.918725	20.938334	20.957943	20.977551	20.997158
1140	21.016765	21.036372	21.055978	21.075584	21.095189	21.114795	21.134400	21.154005	21.173610	21.193215
1150	21.212820	21.232425	21.252031	21.271638	21.291245	21.310853	21.330461	21.350071	21.369682	21.389294
1160	21.408907	21.428522	21.448138	21.467755	21.487373	21.506993	21.526613	21.546234	21.565856	21.585477
1170	21.605099	21.624720	21.644339	21.663957	21.683573	21.703186	21.722796	21.742401	21.762001	21.781596
1180	21.801184	21.820764	21.840336	21.859899	21.879452	21.898993	21.918523	21.938040	21.957544	21.977033
1190	21.996507	22.015965	22.035406	22.054830	22.074237	22.093625	22.112994	22.132345	22.151676	22.170987

W*3RE=W*25RE ENGLEHARD(SMOOTHED)
TABLE NO. 9

TEMP=DEG C (INT.1948)
VOLTAGE=MILLIVOLT ABSOLUTE

TEMP	0	1	2	3	4	5	6	7	8	9
	MILLIVOLTS									
1200	22.190280	22.209552	22.228806	22.248040	22.267256	22.286453	22.305632	22.324794	22.343939	22.363067
1210	22.382180	22.401279	22.420363	22.439434	22.458493	22.477540	22.496576	22.515602	22.534620	22.553629
1220	22.572631	22.591626	22.610616	22.629600	22.648580	22.667555	22.686528	22.705498	22.724466	22.743431
1230	22.762396	22.781358	22.800320	22.819282	22.838242	22.857202	22.876161	22.895119	22.914076	22.933033
1240	22.951989	22.970943	22.989896	23.008847	23.027797	23.046744	23.065689	23.084632	23.103572	23.122509
1250	23.141442	23.160373	23.179299	23.198222	23.217141	23.236056	23.254966	23.273872	23.292773	23.311670
1260	23.330562	23.349450	23.368332	23.387210	23.406082	23.424950	23.443813	23.462671	23.481524	23.500373
1270	23.519217	23.538057	23.556892	23.575723	23.594551	23.613374	23.632194	23.651011	23.669824	23.688635
1280	23.707443	23.726248	23.745052	23.763854	23.782655	23.801454	23.820253	23.839052	23.857851	23.876650
1290	23.895450	23.914251	23.933053	23.951858	23.970664	23.989473	24.008285	24.027101	24.045919	24.064741
1300	24.083567	24.102397	24.121232	24.140070	24.158912	24.177759	24.196610	24.215465	24.234324	24.253186
1310	24.272052	24.290921	24.309793	24.328667	24.347544	24.366421	24.385300	24.404180	24.423059	24.441939
1320	24.460817	24.479693	24.498568	24.517440	24.536308	24.555173	24.574034	24.592889	24.611739	24.630583
1330	24.649421	24.668251	24.687074	24.705890	24.724697	24.743496	24.762286	24.781066	24.799838	24.818600
1340	24.837352	24.856095	24.874828	24.893551	24.912265	24.930969	24.949664	24.968349	24.987026	25.005695
1350	25.024355	25.043007	25.061651	25.080289	25.098920	25.117545	25.136165	25.154779	25.173389	25.191995
1360	25.210598	25.229198	25.247796	25.266393	25.284989	25.303585	25.322181	25.340778	25.359376	25.377976
1370	25.396579	25.415184	25.433792	25.452404	25.471019	25.489638	25.508261	25.526888	25.545518	25.564153
1380	25.582791	25.601432	25.620076	25.638723	25.657373	25.676024	25.694676	25.713330	25.731984	25.750637
1390	25.769289	25.787940	25.806589	25.825234	25.843877	25.862515	25.881148	25.899776	25.918398	25.937013
1400	25.955622	25.974223	25.992816	26.011401	26.029977	26.048544	26.067102	26.085651	26.104191	26.122722
1410	26.141243	26.159754	26.178257	26.196750	26.215235	26.233711	26.252179	26.270639	26.289091	26.307536
1420	26.325974	26.344405	26.362830	26.381249	26.399663	26.418071	26.436474	26.454873	26.473268	26.491658
1430	26.510045	26.528428	26.546808	26.565184	26.583557	26.601927	26.620294	26.638657	26.657018	26.675375
1440	26.693729	26.712079	26.730425	26.748768	26.767106	26.785440	26.803769	26.822093	26.840411	26.858723
1450	26.877029	26.895328	26.913619	26.931904	26.950180	26.968447	26.986706	27.004955	27.023195	27.041424
1460	27.059643	27.077851	27.096048	27.114234	27.132408	27.150570	27.168721	27.186859	27.204985	27.223099
1470	27.241201	27.259291	27.277368	27.295434	27.313488	27.331531	27.349562	27.367583	27.385593	27.403592
1480	27.421583	27.439563	27.457535	27.475499	27.493454	27.511402	27.529344	27.547278	27.565207	27.583131
1490	27.601050	27.618964	27.636874	27.654781	27.672684	27.690585	27.708483	27.726380	27.744274	27.762167
1500	27.780058	27.797948	27.815837	27.833725	27.851611	27.869497	27.887382	27.905266	27.923149	27.941031
1510	27.958912	27.976791	27.994668	28.012543	28.030417	28.048288	28.066157	28.084022	28.101885	28.119744
1520	28.137600	28.155452	28.173299	28.191142	28.208981	28.226814	28.244642	28.262465	28.280281	28.298092
1530	28.315897	28.333695	28.351486	28.369271	28.387049	28.404820	28.422584	28.440341	28.458091	28.475833
1540	28.493568	28.511295	28.529016	28.546729	28.564435	28.582133	28.599825	28.617511	28.635189	28.652861
1550	28.670527	28.688187	28.705841	28.723490	28.741133	28.758772	28.776406	28.794035	28.811661	28.829283
1560	28.846901	28.864517	28.882130	28.899741	28.917349	28.934956	28.952561	28.970165	28.987768	29.005371
1570	29.022972	29.040574	29.058175	29.075776	29.093377	29.110978	29.128579	29.146180	29.163781	29.181382
1580	29.198982	29.216583	29.234183	29.251782	29.269380	29.286977	29.304573	29.322167	29.339758	29.357348
1590	29.374934	29.392517	29.410097	29.427673	29.445245	29.462812	29.480373	29.497930	29.515481	29.533025

W*3RE=W*25RE ENGLEHARD(SMOOTHED)
TABLE NO. 9

TEMP=DEG C (INT,1948)
VOLTAGE=MILLIVOLT ABSOLUTE

TEMP	0	1	2	3	4	5	6	7	8	9
	MILLIVOLTS									
1600	29.550564	29.568095	29.585620	29.603137	29.620647	29.638149	29.655643	29.673130	29.690608	29.708077
1610	29.725539	29.742992	29.760436	29.777872	29.795299	29.812718	29.830128	29.847530	29.864924	29.882309
1620	29.899686	29.917055	29.934416	29.951769	29.969114	29.986452	30.003781	30.021104	30.038419	30.055726
1630	30.073027	30.090320	30.107607	30.124886	30.142158	30.159424	30.176683	30.193935	30.211180	30.228419
1640	30.245651	30.262876	30.280095	30.297307	30.314513	30.331712	30.348904	30.366091	30.383270	30.400444
1650	30.417611	30.434772	30.451926	30.469075	30.486217	30.503353	30.520484	30.537608	30.554726	30.571839
1660	30.588946	30.606048	30.623143	30.640234	30.657318	30.674398	30.691472	30.708540	30.725604	30.742662
1670	30.759714	30.776762	30.793804	30.810841	30.827872	30.844899	30.861919	30.878935	30.895945	30.912949
1680	30.929948	30.946942	30.963929	30.980911	30.997887	31.014857	31.031821	31.048778	31.065730	31.082675
1690	31.099614	31.116547	31.133473	31.150392	31.167305	31.184211	31.201110	31.218003	31.234889	31.251768
1700	31.268640	31.285506	31.302364	31.319216	31.336061	31.352899	31.369730	31.386554	31.403371	31.420182
1710	31.436986	31.453782	31.470573	31.487356	31.504133	31.520903	31.537666	31.554422	31.571172	31.587915
1720	31.604651	31.621381	31.638104	31.654821	31.671530	31.688233	31.704930	31.721620	31.738303	31.754979
1730	31.771649	31.788313	31.804969	31.821619	31.838262	31.854899	31.871528	31.888151	31.904768	31.921378
1740	31.937981	31.954577	31.971167	31.987750	32.004326	32.020896	32.037459	32.054016	32.070566	32.087110
1750	32.103646	32.120177	32.136701	32.153218	32.169729	32.186233	32.202731	32.219223	32.235708	32.252186
1760	32.268658	32.285124	32.301583	32.318036	32.334482	32.350921	32.367354	32.383780	32.400199	32.416612
1770	32.433018	32.449417	32.465808	32.482193	32.498571	32.514942	32.531305	32.547661	32.564009	32.580350
1780	32.596684	32.613009	32.629328	32.645638	32.661940	32.678235	32.694521	32.710800	32.727070	32.743332
1790	32.759587	32.775833	32.792071	32.808301	32.824523	32.840737	32.856942	32.873140	32.889330	32.905511
1800	32.921685	32.937851	32.954009	32.970160	32.986302	33.002438	33.018565	33.034686	33.050799	33.066905
1810	33.083004	33.099096	33.115181	33.131259	33.147331	33.163396	33.179455	33.195507	33.211553	33.227593
1820	33.243627	33.259656	33.275678	33.291694	33.307705	33.323711	33.339711	33.355705	33.371694	33.387677
1830	33.403655	33.419628	33.435595	33.451557	33.467513	33.483464	33.499408	33.515347	33.531280	33.547207
1840	33.563127	33.579041	33.594948	33.610849	33.626742	33.642628	33.658507	33.674378	33.690241	33.706096
1850	33.721942	33.737780	33.753610	33.769430	33.785242	33.801044	33.816837	33.832620	33.848395	33.864159
1860	33.879914	33.895660	33.911395	33.927122	33.942839	33.958547	33.974245	33.989935	34.005616	34.021288
1870	34.036951	34.052606	34.068253	34.083893	34.099524	34.115148	34.130765	34.146374	34.161976	34.177572
1880	34.193161	34.208744	34.224319	34.239889	34.255452	34.271010	34.286560	34.302105	34.317644	34.333176
1890	34.348702	34.364221	34.379734	34.395241	34.410740	34.426233	34.441720	34.457198	34.472670	34.488134
1900	34.503591	34.519040	34.534481	34.549914	34.565339	34.580755	34.596163	34.611562	34.626952	34.642334
1910	34.657706	34.673070	34.688424	34.703770	34.719106	34.734434	34.749752	34.765062	34.780362	34.795654
1920	34.810937	34.826212	34.841478	34.856736	34.871985	34.887227	34.902461	34.917688	34.932907	34.948118
1930	34.963323	34.978522	34.993713	35.008899	35.024078	35.039251	35.054419	35.069581	35.084738	35.099889
1940	35.115035	35.130176	35.145312	35.160443	35.175568	35.190689	35.205804	35.220914	35.236019	35.251117
1950	35.266210	35.281296	35.296375	35.311448	35.326514	35.341571	35.356621	35.371662	35.386694	35.401717
1960	35.416730	35.431733	35.446725	35.461705	35.476675	35.491632	35.506576	35.521508	35.536427	35.551332
1970	35.566224	35.581101	35.595965	35.610814	35.625648	35.640469	35.655274	35.670065	35.684842	35.699604
1980	35.714352	35.729085	35.743805	35.758512	35.773204	35.787884	35.802551	35.817206	35.831849	35.846480
1990	35.861100	35.875709	35.890307	35.904896	35.919474	35.934044	35.948604	35.963156	35.977700	35.992236

W*3RE=W*25RE ENGLEHARD(SMOOTHED)
TABLE NO. 9

TEMP=DEG C (INT,1948)
VOLTAGE=MILLIVOLT ABSOLUTE

TEMP	0	1	2	3	4	5	6	7	8	9
	MILLIVOLTS									
2000	36.006765	36.021286	36.035801	36.050309	36.064810	36.079306	36.093796	36.108280	36.122759	36.137232
2010	36.151700	36.166164	36.180622	36.195075	36.209524	36.223968	36.238406	36.252840	36.267268	36.281691
2020	36.296109	36.310521	36.324927	36.339327	36.353720	36.368106	36.382485	36.396856	36.411219	36.425573
2030	36.439918	36.454253	36.468577	36.482891	36.497193	36.511484	36.525761	36.540025	36.554276	36.568512
2040	36.582732	36.596938	36.611127	36.625299	36.639455	36.653593	36.667713	36.681814	36.695898	36.709962
2050	36.724007	36.738034	36.752041	36.766029	36.779997	36.793947	36.807877	36.821789	36.835682	36.849557
2060	36.863413	36.877252	36.891073	36.904877	36.918664	36.932434	36.946189	36.959927	36.973651	36.987359
2070	37.001052	37.014732	37.028397	37.042048	37.055685	37.069309	37.082920	37.096518	37.110102	37.123674
2080	37.137233	37.150779	37.164313	37.177833	37.191341	37.204836	37.218318	37.231787	37.245243	37.258685
2090	37.272115	37.285531	37.298933	37.312322	37.325698	37.339059	37.352408	37.365742	37.379064	37.392371
2100	37.405665	37.418946	37.432213	37.445467	37.458708	37.471936	37.485151	37.498354	37.511543	37.524721
2110	37.537885	37.551038	37.564179	37.577307	37.590424	37.603529	37.616622	37.629704	37.642774	37.655833
2120	37.668880	37.681915	37.694939	37.707952	37.720953	37.733943	37.746921	37.759888	37.772842	37.785785
2130	37.798717	37.811636	37.824543	37.837439	37.850322	37.863193	37.876052	37.888899	37.901733	37.914555
2140	37.927365	37.940163	37.952948	37.965721	37.978482	37.991230	38.003967	38.016691	38.029404	38.042105
2150	38.054794	38.067472	38.080138	38.092793	38.105437	38.118070	38.130692	38.143304	38.155906	38.168497
2160	38.181079	38.193651	38.206213	38.218766	38.231310	38.243845	38.256371	38.268889	38.281398	38.293899
2170	38.306393	38.318878	38.331356	38.343826	38.356288	38.368743	38.381198	38.393630	38.406062	38.418486
2180	38.430901	38.443308	38.455707	38.468096	38.480476	38.492845	38.505204	38.517552	38.529887	38.542210
2190	38.554520	38.566816	38.579097	38.591362	38.603611	38.615842	38.628055	38.640249	38.652424	38.664577
2200	38.676709	38.688819	38.700906	38.712970	38.725009	38.737024	38.749013	38.760977	38.772916	38.784828
2210	38.796714	38.808575	38.820409	38.832217	38.843999	38.855756	38.867488	38.879195	38.890878	38.902538
2220	38.914174	38.925788	38.937380	38.948951	38.960501	38.972031	38.983542	38.995033	39.006507	39.017962
2230	39.029400	39.040821	39.052224	39.063612	39.074982	39.086336	39.097674	39.108995	39.120300	39.131588
2240	39.142859	39.154112	39.165347	39.176565	39.187763	39.198942	39.210101	39.221240	39.232358	39.243454
2250	39.254528	39.265579	39.276606	39.287610	39.298588	39.309542	39.320470	39.331372	39.342248	39.353098
2260	39.363920	39.374716	39.385484	39.396225	39.406939	39.417625	39.428285	39.438918	39.449524	39.460103
2270	39.470656	39.481183	39.491685	39.502161	39.512613	39.523039	39.533442	39.543821	39.554176	39.564509
2280	39.574818	39.585106	39.595371	39.605615	39.615838	39.626040	39.636221	39.646381	39.656521	39.666641
2290	39.676741	39.686821	39.696882	39.706922	39.716943	39.726945	39.736927	39.746889	39.756832	39.766755
2300	39.776659	39.786542	39.796406	39.806250	39.816074	39.825878	39.835662	39.845425	39.855169	39.864892
2310	39.874596	39.884279	39.893941	39.903584	39.913207	39.922809	39.932392	39.941955	39.951499	39.961022
2320	39.970527	39.980013	39.989480	39.998928	40.008358	40.017770	40.027164	40.036540	40.045899	40.055242
2330	40.064568	40.073877	40.083170	40.092448	40.101711	40.110958	40.120190	40.129408	40.138611	40.147800
2340	40.156975	40.166136	40.175284	40.184418	40.193538	40.202645	40.211738	40.220817	40.229883	40.238936
2350	40.247974	40.256999	40.266010	40.275006	40.283988	40.292955	40.301908	40.310845	40.319767	40.328673
2360	40.337564	40.346438	40.355296	40.364137	40.372960	40.381767	40.390556	40.399327	40.408081	40.416816
2370	40.425532	40.434230	40.442908	40.451568	40.460208	40.468829	40.477429	40.486010	40.494571	40.503112
2380	40.511634	40.520134	40.528615	40.537075	40.545514	40.553932	40.562329	40.570705	40.579060	40.587393
2390	40.595705	40.603994	40.612262	40.620507	40.628730	40.636931	40.645109	40.653264	40.661396	40.669505
2400	40.677591									

TABLE 9A

W*3RE-W*23RE

ENGLHARD(SMOOTHED)

TEMP	MV	DIFFERENCE ORDER					
		0 TH	1 ST	2 ND	3 RD	4 TH	5 TH
0	0	0					
1	.009434	9434	9434	44			
2	.018912	18912	9479	45	1	2	
3	.028435	28435	9523	44	-1	3	5
4	.038002	38002	9567	46	2	5	-8
5	.047615	47615	9613	43	-3	5	10
6	.057271	57271	9655	45	2	3	8
7	.066972	66972	9701	44	-1		4
8	.076717	76717	9743	44	0		-1
9	.086506	86506	9789	44	0	0	0
10	.096339	96339	9833	44	0		1
11	.106216	106216	9877	45	1	3	-4
12	.116138	116138	9922	43	2	5	
13	.126103	126103	9965	43	0	2	0
14	.136111	136111	10008	45	2	4	-6
15	.146164	146164	10053	43	2	6	
16	.156260	156260	10095	43	0		1
17	.166399	166399	10139	44	1	2	-2
18	.176582	176582	10183	44	0	1	1
19	.186809	186809	10227	42	2	4	6
20	.197078	197078	10269	44	2	3	-7
21	.207391	207391	10313	43	1		4
22	.217747	217747	10355	43	0		1
23	.228146	228146	10399	43	0		0
24	.238588	238588	10442	43	0		0
25	.249073	249073	10483	43	0	1	1
26	.259601	259601	10523	42	1	3	4
27	.270171	270171	10570	44	2	4	-7
28	.280785	280785	10614	42	2	2	6
29	.291441	291441	10655	42	0	2	0
30	.302139	302139	10698	44	2	5	-7
31	.312881	312881	10742	41	-3	5	10
32	.323664	323664	10783	43	2	3	8
33	.334490	334490	10825	42	-1	2	5
34	.345358	345358	10865	43	1	3	-5
35	.356269	356269	10911	41	2	3	6
36	.367221	367221	10952	42	1	1	-4
			10994		0		1

37	.378215	378215		42		0	
38	.389251	389251	11035	42	0	-1	-1
39	.400329	400329	11078	41	-1	1	2
40	.411448	411448	11119	41	0	1	0
41	.422608	422608	11160	42	1	-2	-3
42	.433810	433810	11202	41	-1	1	3
43	.445053	445053	11243	41	0	-1	-2
44	.456337	456337	11284	40	-1	2	3
45	.467661	467661	11324	41	1	-1	-3
46	.479026	479026	11365	41	0	-1	0
47	.490432	490432	11405	40	-1	0	1
48	.501878	501878	11446	39	-1	3	3
49	.513363	513363	11485	41	2	-4	-7
50	.524889	524889	11525	39	-2	2	6
51	.536454	536454	11565	39	0	0	-2
52	.548058	548058	11604	39	0	0	0
53	.559701	559701	11643	39	0	-1	-1
54	.571383	571383	11682	38	-1	2	3
55	.583103	583103	11720	39	1	-2	-4
56	.594862	594862	11759	38	-1	0	2
57	.606659	606659	11797	37	-1	1	1
58	.618493	618493	11834	37	0	1	0
59	.630364	630364	11871	38	1	-3	-4
60	.642273	642273	11909	36	-2	2	5
61	.654218	654218	11945	36	0	0	-2
62	.666199	666199	11981	36	0	0	0
63	.678216	678216	12017	36	0	-1	-1
64	.690269	690269	12053	35	-1	1	2
65	.702357	702357	12088	35	0	0	-1
66	.714480	714480	12123	35	0	-2	-2
67	.726638	726638	12158	35	-2	3	5
68	.738829	738829	12191	34	1	-2	-5
69	.751054	751054	12225	33	-1	2	4
70	.763312	763312	12258	34	1	-4	-6
71	.775604	775604	12292	31	-3	5	9
72	.787927	787927	12323	33	2	-3	-8
73	.800283	800283	12355	32	-1	1	4
74	.812671	812671	12388	32	0	-2	-3
75	.825091	825091	12420	30	-2	3	5
76	.837541	837541	12450	31	1	-1	-4
77	.850022	850022	12481	31	0	-1	0
78	.862534	862534	12512	30	-1	0	1

79	.875 ₀ 76	875 ₀ 76	12542	29	=1	3	3
80	.887647	887647	12571	31	2	=5	-8
81	.900249	900249	12602	28	=3	5	10
82	.912879	912879	12630	30	2	=3	-8
83	.925539	925539	12660	29	=1	1	4
84	.938228	938228	12689	29	0	=1	-2
85	.950946	950946	12718	28	=1	2	3
86	.963692	963692	12746	29	1	=2	-4
87	.976467	976467	12773	28	=1	1	3
88	.989270	989270	12803	28	0	1	0
89	1.002101	1002101	12831	29	1	=3	-4
90	1.014961	1014961	12860	27	=2	4	7
91	1.027848	1027848	12887	29	2	=4	-8
92	1.040764	1040764	12916	27	=2	4	8
93	1.053707	1053707	12943	29	2	=3	-7
94	1.066679	1066679	12972	28	=1	0	3
95	1.079679	1079679	13000	27	=1	3	3
96	1.092706	1092706	13027	29	2	=3	-6
97	1.105762	1105762	13056	28	=1	1	4
98	1.118846	1118846	13084	28	0	1	0
99	1.131958	1131958	13112	29	1	=2	-3
100	1.145099	1145099	13141	28	=1	1	3
101	1.158268	1158268	13169	28	0	1	0
102	1.171465	1171465	13197	29	1	=1	-2
103	1.184691	1184691	13226	29	0	0	1
104	1.197946	1197946	13255	29	0	=1	-1
105	1.211230	1211230	13284	28	=1	3	4
106	1.224542	1224542	13312	30	2	=3	-6
107	1.237884	1237884	13342	29	=1	2	5
108	1.251255	1251255	13371	30	1	=2	-4
109	1.264656	1264656	13401	29	=1	2	4
110	1.278086	1278086	13430	30	1	=1	-3
111	1.291546	1291546	13460	30	0	=1	0
112	1.305036	1305036	13490	29	=1	3	4
113	1.318555	1318555	13519	31	2	=3	-6
114	1.332105	1332105	13550	30	=1	2	5
115	1.345685	1345685	13580	31	1	=2	-4
116	1.359296	1359296	13611	30	=1	2	4
117	1.372937	1372937	13641	31	1	=2	-4
118	1.386609	1386609	13672	30	=1	3	5
119	1.400311	1400311	13702	32	2	=4	-7
			13734		=2		8

120	1.414045	1414045		30		4	
121	1.427809	1427809	13764	32	2	03	-7
122	1.441605	1441605	13796	31	-1	2	5
123	1.455432	1455432	13827	32	1	02	-4
124	1.469291	1469291	13859	31	-1	1	3
125	1.483181	1483181	13890	31	0	1	0
126	1.497102	1497102	13921	32	1	-2	03
127	1.511055	1511055	13953	31	01	2	4
128	1.525039	1525039	13984	32	1	-1	-3
129	1.539055	1539055	14016	32	0	-1	0
130	1.553103	1553103	14048	31	-1	1	2
131	1.567182	1567182	14079	31	0	1	0
132	1.581292	1581292	14110	32	1	-2	-3
133	1.595434	1595434	14142	31	01	2	4
134	1.609607	1609607	14173	32	1	03	-5
135	1.623812	1623812	14205	30	-2	2	5
136	1.638047	1638047	14235	30	0	2	0
137	1.652312	1652312	14265	32	2	05	-7
138	1.666609	1666609	14297	29	-3	4	9
139	1.680935	1680935	14326	30	1	01	-5
140	1.695291	1695291	14355	30	0	01	0
141	1.709677	1709677	14385	29	-1	1	2
142	1.724092	1724092	14415	29	0	0	-1
143	1.738536	1738536	14444	29	0	01	-1
144	1.753009	1753009	14473	28	-1	0	1
145	1.767510	1767510	14501	27	-1	2	2
146	1.782038	1782038	14528	28	1	03	05
147	1.796594	1796594	14555	26	-2	3	6
148	1.811176	1811176	14582	27	1	02	-5
149	1.825785	1825785	14609	26	-1	0	2
150	1.840420	1840420	14635	25	-1	1	1
151	1.855080	1855080	14660	25	0	0	-1
152	1.869765	1869765	14685	25	0	-1	-1
153	1.884475	1884475	14710	24	01	0	1
154	1.899209	1899209	14734	23	01	2	2
155	1.913966	1913966	14757	24	1	02	-4
156	1.928747	1928747	14781	23	-1	0	2
157	1.943551	1943551	14804	22	01	2	2
158	1.958377	1958377	14826	23	1	02	04
159	1.973226	1973226	14849	22	01	0	2
160	1.988097	1988097	14871	21	-1	2	2
161	2.002989	2002989	14892	22	1	02	-4
			14914		-1		4

162	2.017903	2017903		21		2	
163	2.032838	2032838	14935	22	1	*2	*4
164	2.047795	2047795	14957	21	*1		3
165	2.062773	2062773	14979	21	0		0
166	2.077772	2077772	14999	22	1	*2	*3
167	2.092793	2092793	15021	21	*1	2	4
168	2.107835	2107835	15042	22	1	*1	*3
169	2.122899	2122899	15064	22	0	0	1
170	2.137985	2137985	15085	22	0		1
171	2.153093	2153093	15109	23	1		*1
172	2.168224	2168224	15131	24	1	*3	*3
173	2.183379	2183379	15155	22	*2	4	7
174	2.198556	2198556	15177	24	2	*1	*5
175	2.213757	2213757	15201	25	1	*1	0
176	2.228983	2228983	15225	25	0	0	1
177	2.244234	2244234	15251	25	0	2	2
178	2.259510	2259510	15275	27	2	*3	*5
179	2.274813	2274813	15303	26	*1	2	5
180	2.290142	2290142	15329	27	1		*2
181	2.305498	2305498	15356	28	1	*1	*1
182	2.320882	2320882	15384	28	0		2
183	2.336294	2336294	15412	29	1		*1
184	2.351735	2351735	15441	30	1	*1	*1
185	2.367206	2367206	15471	30	0	0	1
186	2.382707	2382707	15501	30	0		1
187	2.398238	2398238	15531	31	1	*1	*2
188	2.413800	2413800	15562	31	0	0	1
189	2.429393	2429393	15593	31	0		1
190	2.445017	2445017	15624	32	1		*1
191	2.460673	2460673	15655	33	1	-3	*3
192	2.476362	2476362	15689	31	*2	4	7
193	2.492082	2492082	15720	33	2	*3	*7
194	2.507835	2507835	15753	32	*1		4
195	2.523620	2523620	15785	32	0		*1
196	2.539437	2539437	15817	32	0	0	0
197	2.555286	2555286	15849	32	0	*1	*1
198	2.571167	2571167	15881	31	-1		2
199	2.587079	2587079	15912	31	0		*1
200	2.603022	2603022	15943	31	0	*1	*1
201	2.618996	2618996	15974	30	-1		2
202	2.635000	2635000	16004	30	0	*2	*3
			15034		*2		4

203	2.651834	2651834		28		2	
204	2.667096	2667096	15062	28	0	-1	-3
205	2.683786	2683786	15090	27	-1		2
206	2.699303	2699303	15117	27	0	1	-2
207	2.715447	2715447	15144	26	-1		1
208	2.731617	2731617	15170	25	-1	0	-1
209	2.747812	2747812	15195	25	-2	1	4
210	2.764030	2764030	15218	24	1	-3	-6
211	2.780272	2780272	15242	22	-2		4
212	2.796536	2796536	15264	21	-1	1	0
213	2.812821	2812821	15285	21	0	-2	-3
214	2.829127	2829127	15305	19	-2		4
215	2.845452	2845452	15325	19	0	2	-3
216	2.861796	2861796	15344	18	-1	-1	2
217	2.878158	2878158	15362	18	0	1	-3
218	2.894538	2894538	15380	16	-2	-2	4
219	2.910934	2910934	15396	16	0	2	-3
220	2.927346	2927346	15412	15	-1	-1	2
221	2.943773	2943773	15427	15	0	1	-1
222	2.960215	2960215	15442	15	0	0	-2
223	2.976672	2976672	15457	13	-2	-2	5
224	2.993142	2993142	15470	14	1	3	-4
225	3.009626	3009626	15484	14	0	-1	-1
226	3.026124	3026124	15499	12	-2	-2	5
227	3.042634	3042634	15510	12	1	3	-4
228	3.059157	3059157	15523	13	0	-1	1
229	3.075693	3075693	15536	13	0	0	0
230	3.092242	3092242	15549	15	0	0	0
231	3.108804	3108804	15562	16	0	0	-1
232	3.125379	3125379	15575	13	-1	-1	4
233	3.141966	3141966	15587	12	2	3	-5
234	3.158567	3158567	15601	14	0	-2	1
235	3.175182	3175182	15615	14	-1	-1	3
236	3.191810	3191810	15628	13	1	2	-3
237	3.208452	3208452	15642	14	0	-1	2
238	3.225108	3225108	15656	14	1	1	-2
239	3.241779	3241779	15671	15	0	0	1
240	3.258465	3258465	15685	15	0	1	1
241	3.275166	3275166	15701	15	1	-1	-2
242	3.291883	3291883	15717	16	0	0	1
243	3.308616	3308616	15733	16	0	1	1
244	3.325365	3325365	15749	17	1	-1	-2
			15766		0		1

245	3.342131	3342131	16783	17	0	0	1
246	3.358914	3358914	16800	17	0	1	-3
247	3.375714	3375714	16818	18	1	=2	4
248	3.392932	3392932	16835	17	=1	2	=3
249	3.409367	3409367	16853	18	1	=1	2
250	3.426220	3426220	16871	18	0	1	-4
251	3.443091	3443091	16890	19	1	=3	7
252	3.459981	3459981	16907	17	=2	4	=6
253	3.476888	3476888	16926	19	2	=2	1
254	3.493814	3493814	16945	19	0	=1	2
255	3.510759	3510759	16963	18	=1	1	-1
256	3.527722	3527722	16981	18	0	0	1
257	3.544703	3544703	16999	18	0	1	-3
258	3.561702	3561702	17018	19	1	-2	3
259	3.578720	3578720	17036	18	=1	1	=1
260	3.595756	3595756	17054	18	0	0	=1
261	3.612810	3612810	17072	18	0	=1	3
262	3.629882	3629882	17089	17	=1	2	=3
263	3.646971	3646971	17107	18	1	=1	-1
264	3.664078	3664078	17125	18	0	=2	5
265	3.681203	3681203	17141	16	=2	3	-4
266	3.698344	3698344	17158	17	1	=1	1
267	3.715502	3715502	17175	17	0	0	=2
268	3.732677	3732677	17192	17	0	=2	4
269	3.749869	3749869	17192	19	=2	2	0
270	3.767076	3767076	17207	19	0	2	=7
271	3.784298	3784298	17222	17	2	=5	9
272	3.801537	3801537	17239	14	=3	4	=6
273	3.818790	3818790	17255	19	1	=2	3
274	3.836058	3836058	17268	14	=1	1	=2
275	3.853340	3853340	17282	14	0	=1	3
276	3.870636	3870636	17296	13	=1	2	=4
277	3.887945	3887945	17309	14	1	=2	2
278	3.905268	3905268	17323	13	=1	0	2
279	3.922604	3922604	17335	12	=1	2	=5
280	3.939952	3939952	17348	13	1	-3	6
281	3.957313	3957313	17361	11	=2	3	=5
282	3.974685	3974685	17372	12	1	-2	2
283	3.992069	3992069	17384	11	=1	0	2
284	4.009464	4009464	17395	10	=1	2	=3
285	4.026869	4026869	17405	11	1	=1	-1
286	4.044285	4044285	17416	11	0	=2	4
			17427		=2		

287	4.061712	4061712		9		2	
288	4.079148	4079148	17435	9	0	1	-1
289	4.096593	4096593	17445	10	1	-2	-3
290	4.114048	4114048	17455	9	-1	1	3
291	4.131512	4131512	17464	9	0	-1	-2
292	4.148985	4148985	17473	8	-1	2	3
293	4.166466	4166466	17481	9	1	-1	-3
294	4.183956	4183956	17490	9	0	-2	-1
295	4.201455	4201455	17499	7	-2	4	6
296	4.218961	4218961	17505	9	2	-3	-7
297	4.236476	4236476	17515	8	-1	2	5
298	4.253999	4253999	17523	9	1	-2	-4
299	4.271531	4271531	17532	8	-1	1	3
300	4.289071	4289071	17540	8	0	1	0
301	4.306619	4306619	17548	9	1	-1	-2
302	4.324176	4324176	17557	9	0	0	1
303	4.341742	4341742	17566	9	0	1	1
304	4.359317	4359317	17575	10	1	-1	-2
305	4.376902	4376902	17585	10	0	0	1
306	4.394497	4394497	17595	10	0	0	0
307	4.412102	4412102	17605	10	0	2	2
308	4.429717	4429717	17615	12	2	-2	-4
309	4.447344	4447344	17627	12	0	0	2
310	4.464983	4464983	17639	12	0	1	1
311	4.482634	4482634	17651	13	1	0	-1
312	4.500298	4500298	17664	14	1	-1	-1
313	4.517976	4517976	17678	14	0	0	1
314	4.535668	4535668	17692	14	0	3	3
315	4.553374	4553374	17705	17	3	-5	-8
316	4.571097	4571097	17723	15	-2	4	9
317	4.588835	4588835	17738	17	2	-2	-6
318	4.606590	4606590	17753	17	0	1	3
319	4.624362	4624362	17772	18	1	0	-1
320	4.642152	4642152	17790	19	1	-1	-1
321	4.659961	4659961	17809	19	0	1	2
322	4.677789	4677789	17828	20	1	-1	-2
323	4.695637	4695637	17848	20	0	1	2
324	4.713505	4713505	17868	21	1	0	-1
325	4.731394	4731394	17889	22	1	-2	-2
326	4.749305	4749305	17911	21	-1	2	4
327	4.767237	4767237	17932	22	1	0	-2
328	4.785191	4785191	17954	23	1	-2	-2
			17977		-1		4

329	4.803168	4803168		22		2	
330	4.821167	4821167	17999	23	1	0	-2
331	4.839189	4839189	18022	24	1	-2	-2
332	4.857235	4857235	18045	23	-1	1	3
333	4.875304	4875304	18069	23	0	1	0
334	4.893396	4893396	18092	24	1	-2	-3
335	4.911512	4911512	18116	23	-1	1	3
336	4.929651	4929651	18139	23	0	0	-1
337	4.947813	4947813	18162	23	0	1	1
338	4.965998	4965998	18185	24	1	-3	-4
339	4.984207	4984207	18209	22	-2	4	7
340	5.002438	5002438	18231	24	2	-5	-9
341	5.020693	5020693	18255	21	-3	4	9
342	5.038969	5038969	18275	22	1	0	-4
343	5.057267	5057267	18298	23	1	-4	-4
344	5.075588	5075588	18321	20	-3	5	9
345	5.093929	5093929	18341	22	2	-4	-9
346	5.112292	5112292	18363	20	-2	2	6
347	5.130675	5130675	18383	20	0	0	-2
348	5.149078	5149078	18403	20	0	0	0
349	5.167501	5167501	18423	20	0	-2	-2
350	5.185944	5185944	18443	18	-2	3	5
351	5.204405	5204405	18461	19	1	-1	-4
352	5.222885	5222885	18480	19	0	-2	-1
353	5.241384	5241384	18499	17	-2	2	4
354	5.259900	5259900	18516	17	0	0	-2
355	5.278433	5278433	18533	17	0	0	0
356	5.296983	5296983	18550	17	0	-1	-1
357	5.315550	5315550	18567	16	-1	1	2
358	5.334133	5334133	18583	16	0	0	-1
359	5.352732	5352732	18599	16	0	-1	-1
360	5.371347	5371347	18613	15	-1	1	2
361	5.389977	5389977	18630	15	0	1	0
362	5.408622	5408622	18643	16	1	-3	-4
363	5.427283	5427283	18661	14	-2	2	5
364	5.445958	5445958	18673	14	0	1	-1
365	5.464647	5464647	18689	15	1	-1	-2
366	5.483351	5483351	18704	15	0	-2	-1
367	5.502070	5502070	18719	13	-2	5	7
368	5.520802	5520802	18732	16	3	-6	-11
369	5.539550	5539550	18748	13	-3	5	11
370	5.558311	5558311	18761	15	2	-3	-8
			18776		-1		4

37 ₁	5.577 ₀ 87	5577 ₀ 87		4		1	
37 ₂	5.595877	5595877	18790		0		0
37 ₃	5.61468 ₁	561468 ₁	188 ₀ 4	5	1	-1	-2
37 ₄	5.6335 ₀₀	56335 ₀₀	188 ₁ 9	5	0	-1	0
37 ₅	5.652334	5652334	18834	4	=1		3
37 ₆	5.671182	5671182	18848	5	1		-2
37 ₇	5.690045	5690045	18863	6	1	=2	-2
37 ₈	5.708924	5708924	18879	5	=1		3
37 ₉	5.727818	5727818	18894	5	0		1
38 ₀	5.746727	5746727	18909	7	2	=4	-6
38 ₁	5.765653	5765653	18925	5	=2		8
38 ₂	5.784594	5784594	18941	7	2		-7
38 ₃	5.803552	5803552	18958	6	=1		5
38 ₄	5.822526	5822526	18974	7	1		-2
38 ₅	5.841517	5841517	18991	8	1	=3	-3
38 ₆	5.860526	5860526	19009	6	=2		7
38 ₇	5.879551	5879551	19025	8	2	=1	-5
38 ₈	5.898594	5898594	19043	9	1		-2
38 ₉	5.917656	5917656	19062	7	=2		6
39 ₀	5.936735	5936735	19079	8	1		-3
39 ₁	5.955832	5955832	19097	9	1		-1
39 ₂	5.974948	5974948	19115	9	0		1
39 ₃	5.994083	5994083	19133	9	0	=1	-1
39 ₄	6.013237	6013237	19154	8	=1		4
39 ₅	6.032409	6032409	19172	20	2	=3	-6
39 ₆	6.051601	6051601	19192	9	=1		4
39 ₇	6.070812	6070812	19211	9	0		-1
39 ₈	6.090042	6090042	19230	9	0		0
39 ₉	6.109291	6109291	19249	9	0		0
40 ₀	6.128559	6128559	19268	9	0		1
40 ₁	6.147846	6147846	19287	20	1		-5
40 ₂	6.167153	6167153	19307	17	=3		10
40 ₃	6.186477	6186477	19324	20	3	=5	=11
40 ₄	6.205821	6205821	19344	18	=2		6
40 ₅	6.225183	6225183	19362	17	=1		2
40 ₆	6.244562	6244562	19379	19	2	=4	-7
40 ₇	6.263960	6263960	19398	17	=2		5
40 ₈	6.283375	6283375	19415	16	=1		1
40 ₉	6.302806	6302806	19431	17	1	=1	-3
41 ₀	6.322254	6322254	19448	17	0	=3	-2
41 ₁	6.341719	6341719	19463	14	=2		8
			19479		2		-9

412	6.361198	6361198		16		=4	
413	6.380693	6380693	19495	14	=2	2	6
414	6.400202	6400202	19509	14	0	0	=2
415	6.419725	6419725	19523	14	0	=2	
416	6.439262	6439262	19537	12	=2	2	4
417	6.458811	6458811	19549	12	0	0	=2
418	6.478372	6478372	19561	12	0	=2	=2
419	6.497945	6497945	19573	10	=2	3	5
420	6.517528	6517528	19583	11	1	=3	=6
421	6.537122	6537122	19594	9	=2	2	5
422	6.556725	6556725	19603	9	0	0	=2
423	6.576337	6576337	19612	9	0	=2	=2
424	6.595958	6595958	19621	7	=2	3	5
425	6.615586	6615586	19628	8	1	=3	=6
426	6.635222	6635222	19635	6	=2	3	6
427	6.654864	6654864	19642	7	1	=3	=6
428	6.674513	6674513	19649	5	=2	3	6
429	6.694167	6694167	19654	6	1	=2	=5
430	6.713827	6713827	19660	5	=1	0	2
431	6.733492	6733492	19665	4	=1	1	1
432	6.753161	6753161	19669	4	0	0	=1
433	6.772834	6772834	19673	4	0	=1	=1
434	6.792511	6792511	19677	3	=1	2	3
435	6.812191	6812191	19680	4	1	=2	=4
436	6.831875	6831875	19684	3	=1	1	3
437	6.851562	6851562	19687	3	0	0	=1
438	6.871252	6871252	19690	3	0	=1	=1
439	6.890945	6890945	19693	2	=1	2	3
440	6.910640	6910640	19695	3	1	=2	=4
441	6.930338	6930338	19698	2	=1	3	5
442	6.950038	6950038	19700	4	2	=5	=8
443	6.969742	6969742	19704	1	=3	5	10
444	6.989447	6989447	19705	3	2	=2	=7
445	7.009155	7009155	19708	3	0	=1	1
446	7.028866	7028866	19711	2	=1	2	3
447	7.048579	7048579	19713	3	1	=1	=3
448	7.068295	7068295	19716	3	0	=1	0
449	7.088014	7088014	19719	2	=1	3	4
450	7.107735	7107735	19721	4	2	=4	=7
451	7.127460	7127460	19723	2	=2	4	8
452	7.147187	7147187	19727	4	2	=3	=7
453	7.166918	7166918	19731	3	=1	1	4
			19734		0		=1

454	7.186652	7186652		3		0	
455	7.206389	7206389	19737	3	0	0	0
456	7.226129	7226129	19740	3	0	1	1
457	7.245872	7245872	19743	4	1	=1	-2
458	7.265619	7265619	19747	4	0	=1	0
459	7.285370	7285370	19751	3	=1	1	2
460	7.305124	7305124	19754	3	0	1	0
461	7.324881	7324881	19757	4	1	=2	-3
462	7.344642	7344642	19761	3	=1	1	3
463	7.364406	7364406	19764	3	0	1	0
464	7.384173	7384173	19767	4	1	=2	-3
465	7.403944	7403944	19771	3	=1	0	2
466	7.423718	7423718	19774	2	=1	3	3
467	7.443494	7443494	19776	4	2	=3	-6
468	7.463274	7463274	19780	3	=1	0	3
469	7.483057	7483057	19783	2	=1	1	1
470	7.502842	7502842	19785	2	0	1	0
471	7.522629	7522629	19787	3	1	=2	-3
472	7.542419	7542419	19790	2	=1	0	2
473	7.562211	7562211	19792	1	=1	3	3
474	7.582004	7582004	19793	3	2	=5	-8
475	7.601800	7601800	19796	0	=3	5	10
476	7.621596	7621596	19795	2	2	=3	-8
477	7.641394	7641394	19798	1	=1	0	3
478	7.661193	7661193	19797	0	=1	2	2
479	7.680992	7680992	19799	1	1	=3	-5
480	7.700792	7700792	19800	=1	=2	4	7
481	7.720591	7720591	19797	1	2	=4	-8
482	7.740391	7740391	19800	=1	=2	3	7
483	7.760190	7760190	19799	0	1	=2	-5
484	7.779989	7779989	19799	=1	=1	1	3
485	7.799787	7799787	19798	=1	0	=1	-2
486	7.819584	7819584	19797	=2	=1	2	3
487	7.839379	7839379	19795	=1	1	=2	-4
488	7.859173	7859173	19794	=2	=1	1	3
489	7.878965	7878965	19792	=2	0	=1	-2
490	7.898755	7898755	19790	=3	=1	2	3
491	7.918542	7918542	19787	=2	1	=1	-3
492	7.938327	7938327	19785	=2	0	=1	0
493	7.958110	7958110	19783	=3	=1	0	1
494	7.977890	7977890	19780	=4	=1	3	3
			19776		2		-6

495	7.997666	7997666	19774	2	-1	-3	5
496	8.017440	8017440	19771	3	-1	0	2
497	8.037211	8037211	19767	4	1	2	-3
498	8.056978	8056978	19764	5	0	-1	0
499	8.076742	8076742	19761	3	-1	-1	3
500	8.096503	8096503	19757	4	1	2	-3
501	8.116260	8116260	19754	3	0	-1	1
502	8.136014	8136014	19751	3	0	0	0
503	8.155765	8155765	19748	3	0	0	0
504	8.175513	8175513	19745	3	0	0	0
505	8.195258	8195258	19742	3	0	0	1
506	8.215000	8215000	19739	3	1	1	-2
507	8.234739	8234739	19737	2	0	-1	1
508	8.254476	8254476	19735	2	0	0	2
509	8.274211	8274211	19733	2	2	2	-6
510	8.293944	8293944	19733	0	-2	-4	8
511	8.313677	8313677	19731	2	2	4	-7
512	8.333408	8333408	19731	0	3	-3	7
513	8.353139	8353139	19730	1	3	4	-9
514	8.372869	8372869	19732	2	-2	-5	10
515	8.392601	8392601	19732	0	3	5	-9
516	8.412333	8412333	19735	3	-1	-4	6
517	8.432068	8432068	19737	2	1	2	-2
518	8.451805	8451805	19740	3	1	0	-1
519	8.471545	8471545	19744	4	0	-1	3
520	8.491289	8491289	19743	4	2	2	-5
521	8.511037	8511037	19754	6	-1	-3	6
522	8.530791	8530791	19759	5	2	3	-4
523	8.550550	8550550	19763	7	1	-1	-1
524	8.570316	8570316	19774	8	-1	-2	6
525	8.590090	8590090	19781	7	3	4	-8
526	8.609871	8609871	19791	10	-1	-4	6
527	8.629662	8629662	19800	9	1	2	-2
528	8.649462	8649462	19810	10	1	0	-2
529	8.669272	8669272	19821	11	-1	-2	6
530	8.689093	8689093	19831	10	3	4	-8
531	8.708924	8708924	19844	13	-1	-4	5
532	8.728768	8728768	19856	12	0	1	-1
533	8.748624	8748624	19868	12	0	0	2
534	8.768492	8768492	19880	12	2	2	-5
535	8.788372	8788372	19894	14	-1	-3	4
536	8.808266	8808266		13	1		

537	8.828173	8828173	19907	3	0	1	0
538	8.848093	8848093	19920	4	1	=3	=4
539	8.868027	8868027	19934	12	=2	3	6
540	8.887973	8887973	19945	13	1	=1	=4
541	8.907932	8907932	19959	13	0	0	1
542	8.927904	8927904	19972	13	0	=2	-2
543	8.947889	8947889	19985	11	=2	3	5
544	8.967885	8967885	19996	12	1	=2	=5
545	8.987893	8987893	20008	11	=1	0	2
546	9.007912	9007912	20019	10	=1	1	1
547	9.027941	9027941	20029	10	0	=1	-2
548	9.047980	9047980	20039	9	=1	0	1
549	9.068028	9068028	20048	8	=1	1	1
550	9.088084	9088084	20055	8	0	=2	=3
551	9.108148	9108148	20064	6	=2	1	3
552	9.128218	9128218	20070	5	=1	2	1
553	9.148293	9148293	20075	6	1	=4	=6
554	9.168374	9168374	20081	3	=3	4	8
555	9.188458	9188458	20084	4	1	=3	=7
556	9.208546	9208546	20088	2	=2	1	4
557	9.228636	9228636	20090	1	=1	2	1
558	9.248727	9248727	20091	2	1	=4	=6
559	9.268820	9268820	20093	=1	=3	4	8
560	9.288912	9288912	20092	0	1	-3	-7
561	9.309004	9309004	20092	-2	=2	3	6
562	9.329094	9329094	20090	=1	1	=2	=5
563	9.349183	9349183	20089	=2	=1	=1	1
564	9.369270	9369270	20087	-4	-2	4	5
565	9.389353	9389353	20083	=2	2	-3	=7
566	9.409434	9409434	20081	-3	=1	0	3
567	9.429512	9429512	20078	-4	=1	2	2
568	9.449586	9449586	20074	-3	1	-2	=4
569	9.469657	9469657	20071	=4	=1	2	4
570	9.489724	9489724	20067	=3	1	=1	=3
571	9.509788	9509788	20064	=3	0	=1	0
572	9.529849	9529849	20061	-4	=1	2	3
573	9.549906	9549906	20057	=3	1	0	-2
574	9.569960	9569960	20054	-2	1	=2	=2
575	9.590012	9590012	20052	=3	=1	3	5
576	9.610061	9610061	20049	=4	2	=3	=6
577	9.630109	9630109	20048	=2	=1	2	5
			20045		1		=3

620	10.496028	10496028		6		1	
621	10.516310	10516310	20282	6	0	0	-1
622	10.536598	10536598	20283	6	0	0	0
623	10.556892	10556892	20294	6	0	0	0
624	10.577192	10577192	20300	6	0	0	0
625	10.597498	10597498	20305	6	0	-1	-1
626	10.617810	10617810	20312	5	-1	-1	3
627	10.638127	10638127	20317	6	1	-1	-3
628	10.658450	10658450	20323	6	0	2	-1
629	10.678779	10678779	20329	4	-2	2	6
630	10.699112	10699112	20333	6	2	-3	-7
631	10.719451	10719451	20339	5	-1	1	4
632	10.739795	10739795	20344	5	0	1	-1
633	10.760144	10760144	20349	5	0	-1	-1
634	10.780498	10780498	20354	4	-1	1	2
635	10.800856	10800856	20358	4	0	1	0
636	10.821218	10821218	20362	5	1	-2	-3
637	10.841585	10841585	20367	4	-1	1	3
638	10.861956	10861956	20371	4	0	0	-1
639	10.882331	10882331	20375	4	0	-1	-1
640	10.902710	10902710	20379	3	-1	1	2
641	10.923092	10923092	20382	3	0	1	0
642	10.943477	10943477	20385	4	1	-2	-3
643	10.963866	10963866	20389	3	-1	0	2
644	10.984258	10984258	20392	2	-1	2	2
645	11.004652	11004652	20394	3	1	-1	-3
646	11.025049	11025049	20397	3	0	-1	0
647	11.045449	11045449	20400	2	-1	1	2
648	11.065851	11065851	20402	2	0	0	-1
649	11.086255	11086255	20404	2	0	0	0
650	11.106661	11106661	20405	2	0	-1	-1
651	11.127069	11127069	20409	1	-1	3	4
652	11.147478	11147478	20409	3	2	-4	-7
653	11.167890	11167890	20412	1	-2	2	6
654	11.188303	11188303	20413	1	0	0	-2
655	11.208717	11208717	20414	1	0	1	1
656	11.229132	11229132	20415	2	1	-2	-3
657	11.249549	11249549	20417	1	-1	1	3
658	11.269967	11269967	20419	1	0	0	-1
659	11.290386	11290386	20419	1	0	1	1
660	11.310806	11310806	20420	2	1	-3	-4
661	11.331228	11331228	20422	0	-2	3	6
			20422		1		-3

662	11.351650	11351650		1		0	
663	11.372073	11372073	20423	2	1	=3	-3
664	11.392498	11392498	20425	0	=2	3	6
665	11.412923	11412923	20425	1	1		-3
666	11.433349	11433349	20426	2	1	=3	-3
667	11.453777	11453777	20428	0	=2	3	6
668	11.474205	11474205	20428	1	1		-3
669	11.494634	11494634	20429	2	1	=3	-3
670	11.515065	11515065	20431	0	=2	4	7
671	11.535496	11535496	20431	2	2	=3	-7
672	11.555929	11555929	20433	1	=1		4
673	11.576363	11576363	20434	1	0		=1
674	11.596798	11596798	20435	1	0		1
675	11.617234	11617234	20435	2	1	=2	-3
676	11.637672	11637672	20438	1	=1	2	4
677	11.658111	11658111	20439	2	1	=1	-3
678	11.678552	11678552	20441	2	0		0
679	11.698995	11698995	20443	1	=1	2	3
680	11.719439	11719439	20444	2	1	=1	-3
681	11.739885	11739885	20446	2	0		1
682	11.760333	11760333	20448	2	0		0
683	11.780783	11780783	20450	2	0		0
684	11.801235	11801235	20452	2	0		1
685	11.821689	11821689	20454	3	1	=2	-3
686	11.842146	11842146	20457	2	=1	3	5
687	11.862605	11862605	20459	4	2	=4	-7
688	11.883068	11883068	20463	2	=2	3	7
689	11.903533	11903533	20465	3	1	=1	-4
690	11.924001	11924001	20465	5	0		1
691	11.944472	11944472	20471	3	0		1
692	11.964946	11964946	20474	4	1	=1	-2
693	11.985424	11985424	20478	4	0		0
694	12.005906	12005906	20482	4	=1	=1	-3
695	12.026391	12026391	20485	4	1	=1	=3
696	12.046880	12046880	20489	4	0		1
697	12.067373	12067373	20493	4	0		=1
698	12.087870	12087870	20497	4	=1		4
699	12.108370	12108370	20500	5	2	=3	-6
700	12.128875	12128875	20505	4	=1		4
701	12.149384	12149384	20509	4	0		=1
702	12.169897	12169897	20513	4	0		0
703	12.190414	12190414	20517	4	0		0
			20521		0		0

704	12.210935	12210935		4		0	
705	12.231460	12231460	20 ⁵²⁵	4	0	1	1
706	12.251989	12251989	20 ⁵²⁹	5	1	-4	-5
707	12.272523	12272523	20 ⁵³⁴	2	-3	6	10
708	12.293059	12293059	20 ⁵³⁵	5	3	-5	11
709	12.313600	12313600	20 ⁵⁴¹	5	-2		8
710	12.334144	12334144	20 ⁵⁴⁴	4	1	-2	-5
711	12.354692	12354692	20 ⁵⁴⁹	3	-1	1	3
712	12.375243	12375243	20 ⁵⁵¹	3	0	0	-1
713	12.395797	12395797	20 ⁵⁵⁴	5	0	1	-1
714	12.416354	12416354	20 ⁵⁵⁷	2	-1	3	4
715	12.436913	12436913	20 ⁵⁵⁹	4	2	-5	-8
716	12.457476	12457476	20 ⁵⁶³	1	-3	5	10
717	12.478040	12478040	20 ⁵⁶⁴	3	2	-4	-9
718	12.498607	12498607	20 ⁵⁶⁷	1	-2	3	7
719	12.519175	12519175	20 ⁵⁶⁸	2	1	-1	-4
720	12.539745	12539745	20 ⁵⁷⁰	2	0	-2	-1
721	12.560317	12560317	20 ⁵⁷²	0	-2	3	5
722	12.580889	12580889	20 ⁵⁷²	1	1	-1	-4
723	12.601462	12601462	20 ⁵⁷³	1	0	0	1
724	12.622036	12622036	20 ⁵⁷⁴	1	0	-2	-2
725	12.642611	12642611	20 ⁵⁷⁵	-1	-2	4	6
726	12.663185	12663185	20 ⁵⁷⁴	1	2	-4	-8
727	12.683760	12683760	20 ⁵⁷⁵	1	-2	2	6
728	12.704334	12704334	20 ⁵⁷⁴	1	0	1	-1
729	12.724907	12724907	20 ⁵⁷³	1	1	-1	-3
730	12.745480	12745480	20 ⁵⁷³	0	-1	0	2
731	12.766052	12766052	20 ⁵⁷²	1	-1	0	2
732	12.786622	12786622	20 ⁵⁷⁰	2	1	2	-3
733	12.807191	12807191	20 ⁵⁶⁹	-1	0	-1	0
734	12.827759	12827759	20 ⁵⁶⁸	-2	-1	1	2
735	12.848325	12848325	20 ⁵⁶⁶	-2	0	0	-1
736	12.868889	12868889	20 ⁵⁶⁴	-2	0	1	1
737	12.889451	12889451	20 ⁵⁶²	-1	1	-4	-5
738	12.910012	12910012	20 ⁵⁶¹	-4	-3	6	10
739	12.930569	12930569	20 ⁵⁵⁷	-1	3	-5	11
740	12.951125	12951125	20 ⁵⁵⁶	-3	-2	2	7
741	12.971678	12971678	20 ⁵⁵³	-3	0	1	-1
742	12.992228	12992228	20 ⁵⁵⁰	-2	1	-2	-3
743	13.012776	13012776	20 ⁵⁴⁸	-3	-1	1	3
744	13.033321	13033321	20 ⁵⁴³	-3	0	1	0
745	13.053863	13053863	20 ⁵⁴²	-2	1	-3	-4
746	13.074403	13074403	20 ⁵⁴⁰	-4	-2	4	7

747	13.094939	13094939	20535	*2	2	*4	-8
748	13.115473	13115473	20534	*4	*2	4	8
749	13.136003	13136003	20530	*2	2	*3	*7
750	13.156531	13156531	20529	*3	*1	1	4
751	13.177056	13177056	20525	*3	0	1	0
752	13.197578	13197578	20522	*2	1	*2	*3
753	13.218098	13218098	20520	*3	*1	2	4
754	13.238615	13238615	20517	*2	1	*2	-4
755	13.259130	13259130	20515	-3	*1	3	5
756	13.279642	13279642	20512	*1	2	*4	*7
757	13.300153	13300153	20511	*3	*2	4	8
758	13.320661	13320661	20509	-1	2	*2	*6
759	13.341168	13341168	20507	-1	0	1	3
760	13.361674	13361674	20506	0	1	*3	-4
761	13.382180	13382180	20505	*2	*2	5	8
762	13.402684	13402684	20504	1	3	*5	*10
763	13.423189	13423189	20503	*1	*2	4	9
764	13.443693	13443693	20504	1	2	*2	-6
765	13.464198	13464198	20503	1	0	0	2
766	13.484704	13484704	20505	1	0	1	1
767	13.505211	13505211	20507	2	1	*1	-2
768	13.525720	13525720	20509	2	0	0	1
769	13.546231	13546231	20511	2	0	1	1
770	13.566744	13566744	20513	3	1	*1	-2
771	13.587260	13587260	20515	3	0	0	1
772	13.607779	13607779	20519	3	0	2	2
773	13.628301	13628301	20522	5	2	*4	*6
774	13.648828	13648828	20527	3	*2	3	7
775	13.669358	13669358	20530	4	1	0	*3
776	13.689892	13689892	20534	5	1	*1	*1
777	13.710431	13710431	20539	5	0	*1	0
778	13.730975	13730975	20544	4	*1	3	4
779	13.751523	13751523	20548	6	2	*4	*7
780	13.772077	13772077	20554	4	*2	3	7
781	13.792635	13792635	20559	5	1	*2	*5
782	13.813198	13813198	20563	4	*1	3	5
783	13.833765	13833765	20567	6	2	*4	*7
784	13.854338	13854338	20573	4	*2	2	6
785	13.874915	13874915	20577	4	0	0	-2
786	13.895496	13895496	20581	4	0	0	0
787	13.916081	13916081	20585	4	0	-1	*1
			20589		*1		2

788	13.936670	13936670		3		1	
789	13.957262	13957262	20592	3	0	=1	=2
790	13.977857	13977857	20593	2	=1	2	3
791	13.998454	13998454	20597	3	1	=4	=6
792	14.019054	14019054	20600	0	=3	5	9
793	14.039654	14039654	20600	2	2	=4	=9
794	14.060256	14060256	20602	0	-2	1	5
795	14.080858	14080858	20602	=1	=1	2	1
796	14.101459	14101459	20601	0	1	=3	=5
797	14.122060	14122060	20601	=2	=2	2	5
798	14.142659	14142659	20599	=2	0	0	=2
799	14.163256	14163256	20597	=2	0	=2	=2
800	14.183851	14183851	20595	=4	=2	3	5
801	14.204442	14204442	20591	=3	1	=2	=5
802	14.225030	14225030	20588	=4	=1	1	3
803	14.245614	14245614	20584	=4	0	=2	=3
804	14.266194	14266194	20580	=6	=2	4	6
805	14.286768	14286768	20574	=4	2	=4	=8
806	14.307338	14307338	20570	=6	=2	2	6
807	14.327902	14327902	20564	=6	0	1	
808	14.348460	14348460	20559	=5	1	=3	=4
809	14.369013	14369013	20553	-7	=2	3	6
810	14.389559	14389559	20546	-6	1	=1	=4
811	14.410099	14410099	20540	-6	0	=1	0
812	14.430633	14430633	20534	-7	=1	3	4
813	14.451160	14451160	20527	-5	2	=5	=8
814	14.471682	14471682	20522	-8	=3	6	11
815	14.492196	14492196	20514	=5	3	=4	=10
816	14.512705	14512705	20509	=6	=1	0	4
817	14.533208	14533208	20503	=7	=1	3	3
818	14.553704	14553704	20496	=5	2	=2	=5
819	14.574195	14574195	20491	=5	0	=1	1
820	14.594681	14594681	20486	-6	=1	2	3
821	14.615161	14615161	20480	=5	1	=1	=3
822	14.635636	14635636	20475	=5	0		2
823	14.656106	14656106	20470	=4	1	=2	=3
824	14.676572	14676572	20466	=5	=1	3	5
825	14.697033	14697033	20461	=3	2	=3	=6
826	14.717491	14717491	20458	=4	=1		4
827	14.737945	14737945	20454	=4	0		0
828	14.758395	14758395	20450	=3	1	=1	=2
829	14.778842	14778842	20447	=3	0	0	1
			20444		0		1

83 ₀	14.799286	14799286		-3		1	
83 ₁	14.819727	14819727	20441	-2	1	-2	-3
83 ₂	14.840166	14840166	20439	-3	-1	3	5
83 ₃	14.860602	14860602	20436	-1	2	-5	-8
83 ₄	14.881037	14881037	20435	-4	-3	6	11
83 ₅	14.901468	14901468	20431	-1	3	-3	-9
83 ₆	14.921898	14921898	20430	-1	0	-2	1
83 ₇	14.942327	14942327	20429	-3	-2	4	6
83 ₈	14.962753	14962753	20426	-1	2	-4	-8
83 ₉	14.983178	14983178	20425	-3	-2	5	9
84 ₀	15.003600	15003600	20422	0	3	-6	-11
84 ₁	15.024022	15024022	20422	-3	-3	6	12
84 ₂	15.044441	15044441	20419	0	3	-6	-12
84 ₃	15.064860	15064860	20419	-3	-3	5	11
84 ₄	15.085276	15085276	20415	-1	2	-3	-8
84 ₅	15.105691	15105691	20415	-2	-1	2	5
84 ₆	15.126104	15126104	20413	-1	1	-2	-4
84 ₇	15.146516	15146516	20412	-2	-1	2	4
84 ₈	15.166926	15166926	20410	-1	1	-3	-5
84 ₉	15.187335	15187335	20409	-3	-2	4	7
85 ₀	15.207741	15207741	20406	-1	2	-2	-6
85 ₁	15.228146	15228146	20403	-1	0	-2	0
85 ₂	15.248550	15248550	20404	-3	-2	4	6
85 ₃	15.268951	15268951	20401	-1	2	-4	-8
85 ₄	15.289351	15289351	20400	-3	-2	4	8
85 ₅	15.309748	15309748	20397	-1	2	-3	-7
85 ₆	15.330144	15330144	20395	-2	-1	0	3
85 ₇	15.350538	15350538	20394	-3	-1	3	3
85 ₈	15.370929	15370929	20391	-1	2	-4	-7
85 ₉	15.391319	15391319	20390	-3	-2	3	7
86 ₀	15.411706	15411706	20387	-2	1	-2	-5
86 ₁	15.432091	15432091	20385	-3	-1	2	4
86 ₂	15.452473	15452473	20382	-2	1	-1	-3
86 ₃	15.472853	15472853	20380	-2	0	-1	0
86 ₄	15.493231	15493231	20378	-3	-1	2	3
86 ₅	15.513606	15513606	20375	-2	1	-2	-4
86 ₆	15.533979	15533979	20373	-3	-1	1	3
86 ₇	15.554349	15554349	20370	-3	0	1	0
86 ₈	15.574716	15574716	20367	-2	1	-2	-3
86 ₉	15.595081	15595081	20365	-3	-1	1	3
87 ₀	15.615443	15615443	20362	-3	0	0	-1
87 ₁	15.635802	15635802	20359	-3	0	1	1
			20356		1		-4

872	15.656158	15656158	20354	*2		*3	7
873	15.616512	15676512	20350	*4	*2	4	*7
874	15.696862	15696862	20348	*2	2	*3	4
875	15.717210	15717210	20343	*3	*1		*1
876	15.737555	15737555	20342	*3	0	0	*1
877	15.757897	15757897	20339	*3	0	*1	4
878	15.778236	15778236	20333	*4	*1	3	*6
879	15.798571	15798571	20333	*2	2	*3	4
880	15.818904	15818904	20330	*3	*1		0
881	15.839234	15839234	20327	*3	0		*4
882	15.859561	15859561	20323	*2	1	*3	7
883	15.879886	15879886	20321	*4	*2	4	*7
884	15.900207	15900207	20319	*2	2	*3	4
885	15.920526	15920526	20315	*3	*1		1
886	15.940842	15940842	20313	*3	0	2	*7
887	15.961155	15961155	20312	*1	2	*5	11
888	15.981467	15981467	20308	*4	*3	6	*11
889	16.001775	16001775	20307	*1	3	*5	9
890	16.022082	16022082	20304	*3	*2	4	*8
891	16.042386	16042386	20303	*1	2	*4	8
892	16.062689	16062689	20300	*3	*2	4	*8
893	16.082989	16082989	20299	*1	2	*4	8
894	16.103288	16103288	20295	*3	*2	4	*6
895	16.123584	16123584	20293	*1	0	*2	1
896	16.143879	16143879	20294	*1	*1	*1	2
897	16.164173	16164173	20292	*2	0		0
898	16.184465	16184465	20290	*2	1		*3
899	16.204755	16204755	20289	*1	*1	*2	4
900	16.225044	16225044	20287	*2		2	*4
901	16.245331	16245331	20285	*1	1	*2	4
902	16.265617	16265617	20284	*2	*1	2	*4
903	16.285901	16285901	20283	*1		*2	4
904	16.306184	16306184	20281	*2	*1	2	*4
905	16.326465	16326465	20280	*1		*2	4
906	16.346745	16346745	20278	*2	*1	2	*4
907	16.367023	16367023	20277	*1		*2	3
908	16.387300	16387300	20273	*2	*1		0
909	16.407575	16407575	20273	*2	0		*4
910	16.427848	16427848	20272	*1	*2	*3	7
911	16.448120	16448120	20269	*3	2	4	*7
912	16.468389	16468389	20268	*1	*1	*3	3
913	16.488657	16488657	20265	*2		0	3

914	16.508923	16508923	20263	#3	2	3	-7
915	16.529186	16529186	20262	#1	#2	#4	7
916	16.549448	16549448	20259	#3	1	3	-5
917	16.569707	16569707	20257	#2	#1	#2	4
918	16.589964	16589964	20254	#3	1	2	-3
919	16.610218	16610218	20252	#2	0	#1	0
920	16.630470	16630470	20250	#2	#1	#1	2
921	16.650720	16650720	20247	#3	0	1	-1
922	16.670967	16670967	20244	#3	0	0	1
923	16.691211	16691211	20241	#3	1	1	-2
924	16.711452	16711452	20239	#2	0	#1	-1
925	16.731691	16731691	20237	#2	#2	#2	6
926	16.751928	16751928	20233	#4	2	4	-7
927	16.772161	16772161	20231	#2	#1	#3	5
928	16.792392	16792392	20228	#3	1	2	-5
929	16.812620	16812620	20226	#2	#2	#3	8
930	16.832846	16832846	20222	-4	3	5	#10
931	16.853068	16853068	20221	#1	#2	#5	7
932	16.873289	16873289	20218	#3	0	2	-1
933	16.893507	16893507	20215	#3	1	1	-2
934	16.913722	16913722	20213	#2	0	#1	0
935	16.933935	16933935	20211	#2	#1	#1	3
936	16.954146	16954146	20209	#3	1	2	-3
937	16.974354	16974354	20205	#2	0	#1	1
938	16.994560	16994560	20204	#2	0	0	-1
939	17.014764	17014764	20202	#2	#1	#1	4
940	17.034966	17034966	20199	#3	2	3	-7
941	17.055165	17055165	20198	#1	#2	#4	7
942	17.075363	17075363	20195	#3	1	3	-4
943	17.095558	17095558	20193	#2	0	#1	1
944	17.115751	17115751	20191	#2	0	0	0
945	17.135942	17135942	20189	#2	0	0	-1
946	17.156131	17156131	20187	#2	#1	#1	4
947	17.176318	17176318	20184	#3	2	3	-7
948	17.196502	17196502	20183	#1	#2	#4	8
949	17.216685	17216685	20180	#3	2	4	-8
950	17.236865	17236865	20175	#1	#2	#4	6
951	17.257044	17257044	20176	#3	0	2	-1
952	17.277220	17277220	20173	#3	1	1	-2
953	17.297393	17297393	20171	#2	0	0	1
954	17.317564	17317564	20169	#2	0	0	-1
955	17.337733	17337733	20167	#2	#1	#1	2
956	17.357900	17357900		#3	1	1	

957	17.378064	17378064	20164	03	0		0
958	17.398225	17398225	20161	02	1	03	-4
959	17.418384	17418384	20159	04	-2	4	7
960	17.438539	17438539	20155	02	2	03	-7
961	17.458692	17458692	20153	03	01		4
962	17.478842	17478842	20150	03	0	0	01
963	17.498989	17498989	20147	03	0	0	0
964	17.519133	17519133	20144	03	0	01	01
965	17.539274	17539274	20141	04	01	3	4
966	17.559411	17559411	20137	02	2	05	-8
967	17.579546	17579546	20135	03	-3		10
968	17.599676	17599676	20130	03	2	02	-7
969	17.619803	17619803	20127	03	0	02	0
970	17.639927	17639927	20124	03	02	4	6
971	17.660046	17660046	20119	03	2	03	-7
972	17.680162	17680162	20115	04	01		4
973	17.700274	17700274	20112	04	0	01	02
974	17.720382	17720382	20108	03	01	3	4
975	17.740485	17740485	20103	03	2	04	07
976	17.760585	17760585	20100	03	02		7
977	17.780680	17780680	20095	03	1	3	05
978	17.800771	17800771	20091	03	01	-2	4
979	17.820857	17820857	20085	03	1	02	-4
980	17.840939	17840939	20082	03	01	02	4
981	17.861016	17861016	20077	03	1	02	04
982	17.881089	17881089	20073	03	01		3
983	17.901157	17901157	20068	03	0	1	01
984	17.921220	17921220	20063	03	0	0	0
985	17.941278	17941278	20059	03	0	1	1
986	17.961331	17961331	20053	03	1	03	04
987	17.981380	17981380	20049	03	02	4	7
988	18.001423	18001423	20043	03	2	03	07
989	18.021462	18021462	20039	03	01		3
990	18.041496	18041496	20034	03	01	0	3
991	18.061524	18061524	20029	03	2	03	06
992	18.081548	18081548	20024	03	01		4
993	18.101567	18101567	20019	03	0	1	01
994	18.121581	18121581	20014	03	0	1	1
995	18.141590	18141590	20009	03	1	02	03
996	18.161595	18161595	20003	03	01		3
997	18.181595	18181595	20000	03	0	1	0
			19995		1		02

998	18.201590	18201590	19991	44	0	1	0
999	18.221581	18221581	19987	44	1	1	4
1000	18.241568	18241568	19982	45	2	3	7
1001	18.261550	18261550	19979	43	2	4	8
1002	18.281529	18281529	19974	45	2	4	7
1003	18.301503	18301503	19971	43	1	3	4
1004	18.321474	18321474	19967	44	0	1	0
1005	18.341441	18341441	19963	44	1	1	2
1006	18.361404	18361404	19960	43	0	1	1
1007	18.381364	18381364	19957	43	0	0	1
1008	18.401321	18401321	19954	43	1	1	4
1009	18.421275	18421275	19950	44	1	3	5
1010	18.441225	18441225	19948	42	2	2	1
1011	18.461173	18461173	19946	42	0	1	3
1012	18.481119	18481119	19943	43	1	2	4
1013	18.501062	18501062	19941	42	1	2	5
1014	18.521003	18521003	19938	43	1	3	7
1015	18.540941	18540941	19937	41	2	4	8
1016	18.560878	18560878	19934	43	2	4	7
1017	18.580812	18580812	19933	41	1	3	4
1018	18.600745	18600745	19931	42	1	1	0
1019	18.620676	18620676	19929	42	0	1	3
1020	18.640605	18640605	19928	41	1	2	4
1021	18.660533	18660533	19926	42	1	2	3
1022	18.680459	18680459	19925	41	0	1	0
1023	18.700384	18700384	19924	41	1	1	3
1024	18.720308	18720308	19922	42	1	2	3
1025	18.740230	18740230	19921	41	0	1	1
1026	18.760151	18760151	19920	41	0	0	1
1027	18.780071	18780071	19919	41	1	1	3
1028	18.799990	18799990	19917	42	1	2	3
1029	18.819907	18819907	19916	41	0	1	1
1030	18.839823	18839823	19915	41	0	0	1
1031	18.859738	18859738	19914	41	1	1	3
1032	18.879652	18879652	19912	42	1	2	3
1033	18.899564	18899564	19911	41	0	1	0
1034	18.919475	18919475	19910	41	1	1	2
1035	18.939385	18939385	19908	42	0	1	0
1036	18.959293	18959293	19906	41	1	1	3
1037	18.979199	18979199	19905	41	1	2	4
1038	18.999104	18999104	19903	42	1	2	5
1039	19.019007	19019007	19902	41	2	3	7

1040	19.038909	19038909	19899	*3		4	
1041	19.058808	19058808	19899	*1	2	*3	-7
1042	19.078706	19078706	19898	*2	*1		4
1043	19.098602	19098602	19895	*2	0		*1
1044	19.118496	19118496	19894	*2	0	0	0
1045	19.138388	19138388	19892	*2	0	*1	*1
1046	19.158278	19158278	19890	*3	*1	3	4
1047	19.178165	19178165	19887	*1	2		-7
1048	19.198051	19198051	19885	*3	*2	3	7
1049	19.217934	19217934	19883	*2		-2	-5
1050	19.237815	19237815	19881	*3	*1	3	5
1051	19.257693	19257693	19878	*1	2	*4	-7
1052	19.277570	19277570	19877	*3	*2	3	7
1053	19.297444	19297444	19874	*2		*1	-4
1054	19.317316	19317316	19872	*2	0	-1	0
1055	19.337186	19337186	19870	*3	*1	3	4
1056	19.357053	19357053	19867	*1	2	*4	-7
1057	19.376919	19376919	19865	*3	*2	4	8
1058	19.396782	19396782	19863	*1	2	*3	-7
1059	19.416644	19416644	19862	*2	*1	2	5
1060	19.436504	19436504	19860	*1		*2	-4
1061	19.456363	19456363	19859	*2	*1	3	5
1062	19.476220	19476220	19857		2	*4	-7
1063	19.496077	19496077	19857	0	*2		7
1064	19.515932	19515932	19855	*2		3	-3
1065	19.535786	19535786	19854	*1		0	-2
1066	19.555640	19555640	19854	0		*2	-2
1067	19.575493	19575493	19853		*1	2	4
1068	19.595346	19595346	19853	0		*1	*3
1069	19.615199	19615199	19853	0	*1	*1	0
1070	19.635051	19635051	19852	*1		3	4
1071	19.654904	19654904	19852		2	*2	*5
1072	19.674758	19674758	19853		0	*2	0
1073	19.694611	19694611	19854		*2		6
1074	19.714465	19714465	19854	*1		4	-7
1075	19.734319	19734319	19853		2		5
1076	19.754174	19754174	19854	0	*1	2	-4
1077	19.774029	19774029	19854			*2	3
1078	19.793884	19793884	19855	0	*1		3
1079	19.813739	19813739	19855	0		0	*1
1080	19.833594	19833594	19855	0	0	0	0
1081	19.853449	19853449	19855	0	0	0	0
			19855	0	0	*1	*1
			19855		*1		2

1082	19.873304	19873304		"1		1	
1083	19.893158	19893158	19854	"1	0	0	"1
1084	19.913011	19913011	19853	"1	0	"1	"1
1085	19.932863	19932863	19852	"2	"1	2	3
1086	19.952713	19952713	19850	"1	1	"3	"5
1087	19.970608	19972562	19849	"3	"2	2	5
1088	19.992408	19992408	19846	"3	0		"1
1089	20.012251	20012251	19843	"2	1	"3	"4
1090	20.032092	20032092	19841	"4	"2	2	5
1091	20.051929	20051929	19837	"4	0		"3
1092	20.071762	20071762	19833	"5	"1	2	3
1093	20.091590	20091590	19828	"4	1	"2	"4
1094	20.111414	20111414	19824	"5	"1	0	2
1095	20.131233	20131233	19819	"6	"1		1
1096	20.151046	20151046	19813	"6	0	"1	"2
1097	20.170853	20170853	19807	"7	"1	2	3
1098	20.190653	20190653	19800	"6	1	"2	"4
1099	20.210447	20210447	19794	"7	"1	0	2
1100	20.230234	20230234	19787	"8	"1		1
1101	20.250013	20250013	19779	"8	0		0
1102	20.269784	20269784	19771	"7	1	"2	"3
1103	20.289548	20289548	19764	"8	"1		3
1104	20.309304	20309304	19756	"8	0		"1
1105	20.329052	20329052	19748	"8	0	0	0
1106	20.348792	20348792	19740	"8	0	0	0
1107	20.368524	20368524	19732	"8	0	0	0
1108	20.388248	20388248	19724	"8	0		1
1109	20.407964	20407964	19716	"7	1	"2	"3
1110	20.427673	20427673	19709	"8	"1		3
1111	20.447374	20447374	19701	"8	0	2	1
1112	20.467067	20467067	19693	"6	2	"3	"5
1113	20.486754	20486754	19687	"7	"1		4
1114	20.506434	20506434	19680	"7	0	2	1
1115	20.526107	20526107	19673	"5	2	"4	"6
1116	20.545775	20545775	19668	"7	"2	5	9
1117	20.565436	20565436	19661	"4	3	"5	"10
1118	20.585093	20585093	19657	"6	"2	3	8
1119	20.604744	20604744	19651	"5	1		"3
1120	20.624390	20624390	19646	"4	1	"1	"1
1121	20.644032	20644032	19642	"4	0	0	1
1122	20.663670	20663670	19638	"4	0	0	0
1123	20.683304	20683304	19634	"4	0	0	2
			19630	"4	2	2	"5

1124	20.702934	20702934		*2		-3	
1125	20.722562	20722562	19625	*3	*1	1	4
1126	20.742187	20742187	19625	*3	0	1	0
1127	20.761809	20761809	19622	*2	1	1	*2
1128	20.781429	20781429	19620	*2	0	0	1
1129	20.801047	20801047	19615	*2	0	1	1
1130	20.820663	20820663	19615	*1	1	-2	-3
1131	20.840278	20840278	19615	*2	*1	3	5
1132	20.859891	20859891	19613	0	2	-4	-7
1133	20.879504	20879504	19613	-2	-2	3	7
1134	20.899115	20899115	19611	*1	1	*1	-4
1135	20.918725	20918725	19610	*1	0	1	2
1136	20.938334	20938334	19609	0	1	*2	-3
1137	20.957943	20957943	19609	*1	*1	1	3
1138	20.977551	20977551	19608	*1	0	1	0
1139	20.997158	20997158	19607	0	1	*1	*2
1140	21.016765	21016765	19607	0	0	*1	0
1141	21.036372	21036372	19607	*1	*1	2	3
1142	21.055978	21055978	19605	0	1	*2	-4
1143	21.075584	21075584	19605	0	-1	*2	5
1144	21.095189	21095189	19603	*1	2	-4	-7
1145	21.114795	21114795	19605	*1	-2	3	7
1146	21.134400	21134400	19603	*1	1	3	-4
1147	21.154005	21154005	19605	0	0	-1	1
1148	21.173610	21173610	19605	0	0	0	0
1149	21.193215	21193215	19605	0	0	0	0
1150	21.212820	21212820	19605	0	0	1	1
1151	21.232425	21232425	19603	0	1	1	-2
1152	21.252031	21252031	19606	1	0	*1	0
1153	21.271638	21271638	19607	1	*1	*1	3
1154	21.291245	21291245	19607	0	-1	2	4
1155	21.310853	21310853	19609	1	1	-2	*4
1156	21.330461	21330461	19608	0	*1	3	5
1157	21.350071	21350071	19608	0	2	*3	*6
1158	21.369682	21369682	19610	2	*1	4	4
1159	21.389294	21389294	19611	1	0	1	*1
1160	21.408907	21408907	19612	1	0	1	1
1161	21.428522	21428522	19613	1	1	1	-3
1162	21.448138	21448138	19615	2	*1	*2	3
1163	21.467755	21467755	19615	1	0	1	1
1164	21.487373	21487373	19617	1	0	1	1
			19618	1	1	1	-4
			19620	2	1	-3	6
					-2		

1165	21.506993	21506993		0		3	
1166	21.526613	21526613	19620		1	1	-4
1167	21.546234	21546234	19621			0	-1
1168	21.565856	21565856	19622		1	-2	6
1169	21.585477	21585477	19621	-1		2	-8
1170	21.605099	21605099	19622		1	-2	5
1171	21.624720	21624720	19621	-1		1	1
1172	21.644339	21644339	19619	-2		1	-4
1173	21.663957	21663957	19613	-1		1	2
1174	21.683573	21683573	19615	2		1	1
1175	21.703186	21703186	19613	-3		1	-3
1176	21.722796	21722796	19610	3		0	4
1177	21.742401	21742401	19610	-5		2	2
1178	21.762001	21762001	19605	5		0	-2
1179	21.781596	21781596	19600	5		0	3
1180	21.801184	21801184	19595	7		2	0
1181	21.820764	21820764	19588	8		1	-2
1182	21.840336	21840336	19580	8		0	1
1183	21.859899	21859899	19572	9		-1	-1
1184	21.879452	21879452	19563	10		-1	4
1185	21.898993	21898993	19553	11		2	3
1186	21.918523	21918523	19541	12		1	5
1187	21.938040	21938040	19530	13		-2	-4
1188	21.957544	21957544	19517	13		0	4
1189	21.977033	21977033	19504	-15		2	-3
1190	21.996507	21996507	19489	15		0	1
1191	22.015965	22015965	19474	15		1	1
1192	22.035406	22035406	19458	16		1	-1
1193	22.054830	22054830	19441	17		0	-2
1194	22.074237	22074237	19424	17		0	4
1195	22.093625	22093625	19407	19		-2	-1
1196	22.112994	22112994	19388	19		0	-4
1197	22.132345	22132345	19369	18		1	5
1198	22.151676	22151676	19351	20		-2	0
1199	22.170987	22170987	19331	20		1	-7
1200	22.190280	22190280	19311	18		2	11
1201	22.209552	22209552	19293	21		-3	-11
1202	22.228806	22228806	19272	18		3	9
1203	22.248040	22248040	19254	20		-2	-7
1204	22.267256	22267256	19234	18		2	5
1205	22.286453	22286453	19216	19		1	-2
1206	22.305632	22305632	19197	18		1	-1
			19179	17		1	1
			19162			0	

1207	22.324794	22324794		-17		0	
1208	22.343939	22343939	19145	-17	0	2	2
1209	22.363067	22363067	19123	-15	2	-1	-3
1210	22.382180	22382180	19113	-14	1	-1	-1
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1212	22.420363	22420363	19084	-13	2	-1	-4
1213	22.439434	22439434	19071	-12	1	-1	0
1214	22.458493	22458493	19059	-12	0	1	2
1215	22.477540	22477540	19047	-11	1	0	-1
1216	22.496576	22496576	19035	-10	1	1	1
1217	22.515602	22515602	19023	-8	2	-3	-4
1218	22.534620	22534620	19013	-9	-1	3	6
1219	22.553629	22553629	19007	-7	2	-2	-5
1220	22.572631	22572631	19002	-7	0	2	4
1221	22.591626	22591626	18995	-5	2	-3	-5
1222	22.610616	22610616	18990	-6	-1	3	6
1223	22.629600	22629600	18984	-4	2	-3	-6
1224	22.648580	22648580	18980	-5	-1	4	7
1225	22.667555	22667555	18975	-2	3	-4	-8
1226	22.686528	22686528	18973	-3	-1	2	6
1227	22.705498	22705498	18970	-2	1	-2	-4
1228	22.724466	22724466	18963	-3	-1	4	6
1229	22.743431	22743431	18963	0	3	-6	-10
1230	22.762396	22762396	18965	-3	-3	6	12
1231	22.781358	22781358	18962	0	3	-3	-9
1232	22.800320	22800320	18962	0	0	-2	1
1233	22.819282	22819282	18962	-2	-2	4	6
1234	22.838242	22838242	18960	0	2	-3	-7
1235	22.857202	22857202	18960	-1	-1	1	4
1236	22.876161	22876161	18959	-1	0	0	-1
1237	22.895119	22895119	18958	-1	0	1	1
1238	22.914076	22914076	18957	0	1	-2	-3
1239	22.933033	22933033	18957	-1	-1	0	2
1240	22.951989	22951989	18955	-2	-1	2	2
1241	22.970943	22970943	18954	-1	1	-2	-4
1242	22.989896	22989896	18953	-2	-1	2	4
1243	23.008847	23008847	18951	-1	1	-3	-5
1244	23.027797	23027797	18950	-3	-2	3	6
1245	23.046744	23046744	18947	-2	1	-1	-4
1246	23.065689	23065689	18945	-2	0	-1	0
1247	23.084632	23084632	18943	-3	-1	1	2
			18940		0		-2

1248	23.103572	23103572	19937	*3	*1		4
1249	23.122509	23122509	19933	*4	*1	3	-8
1250	23.141442	23141442	19931	*2	2	*5	10
1251	23.160373	23160373	19926	*5	*3	5	-8
1252	23.179299	23179299	19923	*3	2	*3	4
1253	23.198222	23198222	19919	*4	*1		-2
1254	23.217141	23217141	19915	*4	0	*1	3
1255	23.236056	23236056	19910	*5	*1	2	-4
1256	23.254966	23254966	19906	*4		*2	4
1257	23.273872	23273872	19901	*5	*1	2	-4
1258	23.292773	23292773	18897	*4		-2	4
1259	23.311670	23311670	18892	*5	*1	2	-5
1260	23.330562	23330562	18888	*4		-3	7
1261	23.349450	23349450	18882	*6	*2	4	-8
1262	23.368332	23368332	18878	*4	2	*4	8
1263	23.387210	23387210	18872	*6	*2	4	-7
1264	23.406082	23406082	18868	*4		*3	4
1265	23.424950	23424950	18863	*5	*1		-1
1266	23.443813	23443813	18858	*5	0	0	1
1267	23.462671	23462671	18853	*5	0		-3
1268	23.481524	23481524	18849	*4		*2	4
1269	23.500373	23500373	18844	*5	*1	2	-4
1270	23.519217	23519217	18840	*4		*2	4
1271	23.538057	23538057	18835	*5	*1	2	-2
1272	23.556892	23556892	18831	*4		0	-3
1273	23.575723	23575723	18828	*3	*2	-3	7
1274	23.594551	23594551	18823	*5		4	-6
1275	23.613374	23613374	18820	*3	2	*2	1
1276	23.632194	23632194	18817	*3	0	*1	4
1277	23.651011	23651011	18813	*4	*1	3	-6
1278	23.669824	23669824	18811	*2	2	*3	4
1279	23.688635	23688635	18809	*3	*1		1
1280	23.707443	23707443	18805	*3	0	2	-5
1281	23.726248	23726248	18804	*1	2	-3	5
1282	23.745052	23745052	18802	*2	*1	2	-4
1283	23.763854	23763854	18801	*1		*2	5
1284	23.782655	23782655	18799	*2	*1	3	-5
1285	23.801454	23801454	18799	0	2	*2	2
1286	23.820253	23820253	18799	0	0	0	0
1287	23.839052	23839052	18799	0	0	0	1
1288	23.857851	23857851	18799	0	0		-2
1289	23.876650	23876650	18800	1		*1	1

1290	23.895450	23895450		1		0	
1291	23.914251	23914251	18801	1	0	2	2
1292	23.933053	23933053	18802	3	2	-4	-6
1293	23.951858	23951858	18803	1	-2	4	8
1294	23.970664	23970664	18805	3	2	=2	-6
1295	23.989473	23989473	18807	3	0		3
1296	24.008285	24008285	18812	4	1		-4
1297	24.027101	24027101	18816	2	=2	4	7
1298	24.045919	24045919	18818	4	2	=2	-6
1299	24.064741	24064741	18822	4	0	0	2
1300	24.083567	24083567	18825	4	0		1
1301	24.102397	24102397	18830	5	1	=3	-4
1302	24.121232	24121232	18833	3	=2		6
1303	24.140070	24140070	18838	4	1	0	=3
1304	24.158912	24158912	18842	5	1	=2	-2
1305	24.177759	24177759	18847	4	=1		3
1306	24.196610	24196610	18851	4	0	0	=1
1307	24.215465	24215465	18855	4	0	-1	-1
1308	24.234324	24234324	18859	3	=1		3
1309	24.253186	24253186	18862	4	1	=2	-4
1310	24.272052	24272052	18866	3	=1		3
1311	24.290921	24290921	18869	3	0		=2
1312	24.309793	24309793	18872	2	=1	2	3
1313	24.328667	24328667	18874	3	1	-4	-6
1314	24.347544	24347544	18877	0	=3	5	9
1315	24.366421	24366421	18877	2	2		-8
1316	24.385300	24385300	18879	1	=1	=1	2
1317	24.404180	24404180	18880	-1	=2	4	5
1318	24.423059	24423059	18879	1	2	=5	-9
1319	24.441939	24441939	18880	-2	=3	3	8
1320	24.460817	24460817	18878	-2	0		-2
1321	24.479693	24479693	18876	=1	1	-3	-4
1322	24.498568	24498568	18875	=3	=2		4
1323	24.517440	24517440	18872	=4	=1	2	1
1324	24.536308	24536308	18868	=3	1	=2	-4
1325	24.555173	24555173	18865	=4	-1		1
1326	24.574034	24574034	18861	=6	=2	3	4
1327	24.592889	24592889	18855	=5	1		-5
1328	24.611739	24611739	18850	-6	=1		3
1329	24.630583	24630583	18844	-6	0	=2	=3
1330	24.649421	24649421	18838	-8	=2	3	5
1331	24.668251	24668251	18830	-7	1	=1	=4
			18823		0		=1

1332	24.687 _n 74	24687 _n 74		*7		*2	
1333	24.70589 _n	2470589 _n	18815	*9	*2	3	5
1334	24.724697	24724697	18807	*8	1	*2	*5
1335	24.743496	24743496	18799	*9	*1	0	2
1336	24.762286	24762286	18790	*10	*1	3	3
1337	24.781066	24781066	18780	*8	2	*4	*7
1338	24.799838	24799838	18772	*10	*2	2	6
1339	24.818600	24818600	18762	*10	0	1	*1
1340	24.837352	24837352	18752	*9	1	*2	*3
1341	24.856095	24856095	18743	*10	*1	1	3
1342	24.874828	24874828	18733	*10	0	1	0
1343	24.893551	24893551	18723	*9	1	*2	*3
1344	24.912265	24912265	18714	*10	*1	2	4
1345	24.930969	24930969	18704	*9	1	*2	*4
1346	24.949664	24949664	18695	*10	*1	3	5
1347	24.968349	24968349	18685	*8	2	*2	*5
1348	24.987026	24987026	18677	*8	0	*1	1
1349	25.005695	25005695	18669	*9	*1	2	3
1350	25.024355	25024355	18660	*8	1	*1	*3
1351	25.043007	25043007	18652	*8	0	2	3
1352	25.061651	25061651	18644	*6	2	*3	*5
1353	25.080289	25080289	18638	*7	*1	2	5
1354	25.098920	25098920	18631	*6	1	0	*2
1355	25.117545	25117545	18623	*5	1	*2	*2
1356	25.136165	25136165	18620	*6	*1	3	5
1357	25.154779	25154779	18614	*4	2	*2	*5
1358	25.173389	25173389	18610	*4	0	1	3
1359	25.191995	25191995	18605	*3	1	*1	*2
1360	25.210598	25210598	18603	*3	0	1	2
1361	25.229198	25229198	18600	*2	1	0	*1
1362	25.247796	25247796	18598	*1	1	*1	*1
1363	25.266393	25266393	18597	*1	0	1	2
1364	25.284989	25284989	18595	0	1	*1	*2
1365	25.303585	25303585	18595	0	0	1	2
1366	25.322181	25322181	18595	1	1	*1	*2
1367	25.340778	25340778	18597	1	0	1	2
1368	25.359376	25359376	18598	2	1	0	*1
1369	25.377976	25377976	18600	3	1	*2	*2
1370	25.396579	25396579	18603	2	*1	2	4
1371	25.415184	25415184	18605	3	1	0	*2
1372	25.433792	25433792	18608	4	1	*2	*2
			18612		*1		4

1373	25.452404	25452404		3		2	
1374	25.471019	25471019	13615	4	1	=1	-3
1375	25.489638	25489638	13619	4	0	0	1
1376	25.508261	25508261	13623	4	0	=1	=1
1377	25.526888	25526888	13627	3	=1	3	4
1378	25.545518	25545518	13630	3	2	=4	-7
1379	25.564153	25564153	13635	3	=2	2	6
1380	25.582791	25582791	13639	3	0	0	-2
1381	25.601432	25601432	13641	3	0	0	0
1382	25.620076	25620076	13644	3	0	0	0
1383	25.638723	25638723	13647	3	0	=2	-2
1384	25.657373	25657373	13650		=2	2	4
1385	25.676024	25676024	13651		0		=1
1386	25.694676	25694676	13652	2	1	=3	-4
1387	25.713330	25713330	13654	0	=2		4
1388	25.731984	25731984	13654	=1	=1		0
1389	25.750637	25750637	13653	=1	0	0	=1
1390	25.769289	25769289	13652	=1	0	=1	=1
1391	25.787940	25787940	13651	=2	=1		0
1392	25.806589	25806589	13649	-4	-2	=1	5
1393	25.825234	25825234	13645	=2	2	=5	-9
1394	25.843877	25843877	13643	=5	=3	3	8
1395	25.862515	25862515	13638	=5	0	0	-3
1396	25.881148	25881148	13633	=5	0	=1	=1
1397	25.899776	25899776	13628	=6	=1	0	1
1398	25.918398	25918398	13622	=7	=1	0	2
1399	25.937013	25937013	13615	=6	1	=3	-5
1400	25.955622	25955622	13609	=8	=2	2	5
1401	25.974223	25974223	13601	=8	0	0	-2
1402	25.992816	25992816	13593	=6	0	=1	-1
1403	26.011401	26011401	13585	=9	=1	1	2
1404	26.029977	26029977	13576	=9	0	0	=1
1405	26.048544	26048544	13567	=9	0	0	0
1406	26.067102	26067102	13558	=9	0	0	0
1407	26.085651	26085651	13549	=9	0	0	0
1408	26.104191	26104191	13540	=9	0	=1	=1
1409	26.122722	26122722	13531	=10	=1	1	2
1410	26.141243	26141243	13521	=10	0	2	1
1411	26.159754	26159754	13511	=8	2	-4	-6
1412	26.178257	26178257	13503	=10	=2	4	8
1413	26.196750	26196750	13493	=8	2	=3	-7
1414	26.215235	26215235	13483	=9	=1	2	3
			13475		1		=3

1415	26.233711	26233711		8		1	
1416	26.252179	26252179	19468	8	0	0	1
1417	26.270639	26270639	19460	8	0	1	1
1418	26.289091	26289091	19452	7	1	-1	-2
1419	26.307536	26307536	19445	7	0	0	1
1420	26.325974	26325974	19438	7	0	1	1
1421	26.344405	26344405	19431	6	1	1	-2
1422	26.362830	26362830	19425	6	0	1	2
1423	26.381249	26381249	19419	5	1	2	-3
1424	26.399663	26399663	19414	6	1	2	4
1425	26.418071	26418071	19408	5	1	0	-2
1426	26.436474	26436474	19403	4	1	1	-1
1427	26.454873	26454873	19399	4	0	1	0
1428	26.473268	26473268	19395	5	-1	3	4
1429	26.491658	26491658	19390	3	2	3	-6
1430	26.510045	26510045	19387	4	1	2	5
1431	26.528428	26528428	19383	3	1	2	-4
1432	26.546808	26546808	19380	4	1	2	4
1433	26.565184	26565184	19376	3	1	1	-3
1434	26.583557	26583557	19373	3	0	0	1
1435	26.601927	26601927	19370	3	0	1	-1
1436	26.620294	26620294	19367	4	1	3	4
1437	26.638657	26638657	19363	2	2	4	-7
1438	26.657016	26657016	19361	4	-2	3	7
1439	26.675375	26675375	19357	3	1	2	-5
1440	26.693729	26693729	19354	4	1	1	3
1441	26.712079	26712079	19350	4	0	1	0
1442	26.730425	26730425	19346	3	1	3	-4
1443	26.748768	26748768	19343	5	2	3	6
1444	26.767106	26767106	19338	4	1	2	-5
1445	26.785440	26785440	19334	5	1	1	3
1446	26.803769	26803769	19329	5	0	1	-2
1447	26.822093	26822093	19324	6	1	1	2
1448	26.840411	26840411	19319	6	0	0	1
1449	26.858723	26858723	19312	6	0	1	-1
1450	26.877029	26877029	19305	7	1	0	1
1451	26.895328	26895328	19299	8	1	3	3
1452	26.913619	26913619	19291	6	2	5	-8
1453	26.931904	26931904	19285	9	-3	3	8
1454	26.950180	26950180	19276	9	0	1	-2
1455	26.968447	26968447	19267	8	1	3	-4
1456	26.986706	26986706	19259	10	2	3	6
			19249		1		-6

1457	27.004955	27004955		-9		*3	
1458	27.023195	27023195	18240	*1	*2	3	6
1459	27.041424	27041424	18229	*10	1	*2	*5
1460	27.059643	27059643	18219	*11	*1		3
1461	27.077851	27077851	18208	*11	0		*1
1462	27.096048	27096048	18197	*11	0	*1	-1
1463	27.114234	27114234	18186	*12	*1		2
1464	27.132408	27132408	18174	*12	0	1	0
1465	27.150570	27150570	18162	*11	1	*3	*4
1466	27.168721	27168721	18151	*13	*2	3	6
1467	27.186859	27186859	18138	*12	1	*1	*4
1468	27.204985	27204985	18125	*12	0	0	1
1469	27.223099	27223099	18114	*12	0	0	0
1470	27.241201	27241201	18102	*12	0	*1	*1
1471	27.259291	27259291	18090	*13	*1	3	4
1472	27.277368	27277368	18077	*11	2	*3	*6
1473	27.295434	27295434	18065	*12	*1	2	3
1474	27.313488	27313488	18054	*11	1	*2	*4
1475	27.331531	27331531	18043	*12	*1	3	5
1476	27.349562	27349562	18031	*10	2	*3	*6
1477	27.367583	27367583	18021	*11	*1		4
1478	27.385593	27385593	18010	*11	0	3	2
1479	27.403592	27403592	17999	*8	3	*6	*9
1480	27.421583	27421583	17991	*11	*3	6	12
1481	27.439563	27439563	17980	*8	3	*3	*9
1482	27.457535	27457535	17972	*8	0	*1	2
1483	27.475499	27475499	17964	*9	*1	3	4
1484	27.493454	27493454	17953	*7	2	*1	*4
1485	27.511402	27511402	17948	*6	1	*3	*2
1486	27.529344	27529344	17942	*8	*2	5	8
1487	27.547278	27547278	17934	*5	3	*3	*8
1488	27.565207	27565207	17929	*5	0		3
1489	27.583131	27583131	17924	*5	0	0	0
1490	27.601050	27601050	17919	*5	0	1	1
1491	27.618964	27618964	17914	*4	1		*1
1492	27.636874	27636874	17910	*3	1	0	-2
1493	27.654781	27654781	17907	*4	*1	3	5
1494	27.672684	27672684	17903	*2	2	*3	*6
1495	27.690585	27690585	17901	*3	*1	3	6
1496	27.708483	27708483	17898	*1	2	*4	*7
1497	27.726380	27726380	17897	*3	*2	4	8
1498	27.744274	27744274	17894	*1	2	*3	*7
			17893		*1		5

1499	27.762167	27762167	17891	*2		2	-3
1500	27.780058	27780058	17890	*1	1	*1	1
1501	27.797948	27797948	17889	*1	0	0	-1
1502	27.815837	27815837	17888	*1	0	*1	4
1503	27.833725	27833725	17885	*2	*1	3	*6
1504	27.851611	27851611	17885	0	2	*3	4
1505	27.869497	27869497	17885	*1	*1	1	*1
1506	27.887382	27887382	17885	*1	0	0	0
1507	27.905266	27905266	17884	*1	0	0	0
1508	27.923149	27923149	17883	*1	0	0	0
1509	27.941031	27941031	17882	*1	0	*1	-1
1510	27.958912	27958912	17881	*2	*1	1	2
1511	27.976791	27976791	17879	*2	0	0	-1
1512	27.994668	27994668	17877	*2	0	1	1
1513	28.012543	28012543	17875	*1	1	*3	*4
1514	28.030417	28030417	17874	*3	-2	3	6
1515	28.048288	28048288	17871	*2	1	*3	*6
1516	28.066157	28066157	17869	*4	*2	4	7
1517	28.084022	28084022	17863	*2	2	*4	*8
1518	28.101885	28101885	17863	*4	*2	3	7
1519	28.119744	28119744	17859	*3	1	*2	*5
1520	28.137600	28137600	17855	*4	*1	0	2
1521	28.155452	28155452	17852	*5	*1	2	2
1522	28.173299	28173299	17847	*4	1	*1	*3
1523	28.191142	28191142	17843	*4	0	*2	-1
1524	28.208981	28208981	17839	*6	*2	3	5
1525	28.226814	28226814	17833	*5	1	*1	*4
1526	28.244642	28244642	17828	*5	0	*2	-1
1527	28.262465	28262465	17823	*7	*4	4	6
1528	28.280281	28280281	17815	*5	2	*3	*7
1529	28.298092	28298092	17811	*6	*1	0	3
1530	28.315897	28315897	17805	*7	*1	1	1
1531	28.333695	28333695	17798	*7	0	1	0
1532	28.351486	28351486	17791	*6	1	*2	*3
1533	28.369271	28369271	17785	*7	*1	1	3
1534	28.387049	28387049	17778	*7	0	0	-1
1535	28.404820	28404820	17771	*7	0	0	0
1536	28.422584	28422584	17764	*7	0	0	0
1537	28.440341	28440341	17757	*7	0	*1	*1
1538	28.458091	28458091	17750	*8	*1	2	3
1539	28.475833	28475833	17742	*7	1	*2	*4
1540	28.493568	28493568	17735	*8	*1	3	5
			17727		2		*7

1541	28.51295	2851295		6		-4	
1542	28.52916	2852916	17721	8	2	3	7
1543	28.546729	28546729	17713	7	1	2	-5
1544	28.564435	28564435	17705	8	1	3	5
1545	28.582133	28582133	17699	6	2	2	-5
1546	28.599825	28599825	17692	6	0	2	0
1547	28.617511	28617511	17685	8	2	4	6
1548	28.635189	28635189	17678	6	2	2	-6
1549	28.652861	28652861	17672	6	0	0	2
1550	28.670527	28670527	17666	6	0	0	0
1551	28.688187	28688187	17660	6	0	1	1
1552	28.705841	28705841	17654	5	1	2	-3
1553	28.723490	28723490	17649	6	1	3	5
1554	28.741133	28741133	17643	4	2	3	-6
1555	28.758772	28758772	17639	5	1	1	4
1556	28.776406	28776406	17634	5	0	2	1
1557	28.794035	28794035	17629	3	2	3	-5
1558	28.811661	28811661	17626	4	1	1	4
1559	28.829283	28829283	17622	4	0	2	1
1560	28.846901	28846901	17618	2	2	3	-5
1561	28.864517	28864517	17615	3	1	2	5
1562	28.882130	28882130	17613	2	1	2	-4
1563	28.899741	28899741	17611	3	1	3	5
1564	28.917349	28917349	17609	1	2	3	-6
1565	28.934956	28934956	17607	2	1	2	5
1566	28.952561	28952561	17605	1	1	1	-3
1567	28.970165	28970165	17604	1	0	1	2
1568	28.987768	28987768	17603	0	1	3	-4
1569	29.005371	29005371	17603	2	2	5	8
1570	29.022972	29022972	17601	1	3	5	10
1571	29.040574	29040574	17602	1	2	3	8
1572	29.058175	29058175	17601	0	1	1	-4
1573	29.075776	29075776	17601	0	0	0	1
1574	29.093377	29093377	17601	0	0	0	0
1575	29.110978	29110978	17601	0	0	0	0
1576	29.128579	29128579	17601	0	0	0	0
1577	29.146180	29146180	17601	0	0	0	0
1578	29.163781	29163781	17601	0	0	1	1
1579	29.181382	29181382	17601	1	1	3	4
1580	29.198982	29198982	17600	1	2	4	-7
1581	29.216583	29216583	17601	1	2	2	6
1582	29.234183	29234183	17600	-1	0	0	-2
			17599		0		0

1583	29.251782	29251782		"1		0	
1584	29.269380	29269380	17598	"1	0	0	0
1585	29.286977	29286977	17597	"1	0	"1	-1
1586	29.304573	29304573	17595	"1	"1		1
1587	29.322167	29322167	17594	"2	"1	0	3
1588	29.339758	29339758	17591	"3	2	3	-8
1589	29.357348	29357348	17590	"1	"3	-5	9
1590	29.374934	29374934	17588	"4	"4	4	-5
1591	29.392517	29392517	17585	"3	1	"1	0
1592	29.410097	29410097	17583	"3	0	"1	0
1593	29.427673	29427673	17580	"4	"1		2
1594	29.445245	29445245	17575	"4	0	"1	-2
1595	29.462812	29462812	17572	"5	"1		1
1596	29.480373	29480373	17567	"5	"1	0	3
1597	29.497930	29497930	17561	"6	2	3	-7
1598	29.515481	29515481	17557	"4	"2	"4	5
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1670	30.759714	30759714	17048	04	02	04	7
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1909	34.642334	34642334	15382	10	2	4	7
1910	34.657706	34657706	15372	8	2	4	8
1911	34.673070	34673070	15364	10	2	4	8
1912	34.688424	34688424	15354	8	2	4	8
1913	34.703770	34703770	15346	10	2	4	8
1914	34.719106	34719106	15336	8	2	4	8
1915	34.734434	34734434	15328	10	2	4	8
1916	34.749752	34749752	15319	8	2	4	8
1917	34.765062	34765062	15310	10	2	4	8
1918	34.780362	34780362	15300	8	2	3	7
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1919	34.795654	34795654		#9		2	
1920	34.810937	34810937	15283	#8	1	#2	-4
1921	34.826212	34826212	15273	#9	#1	2	4
1922	34.841478	34841478	15265	#8	1	#2	-4
1923	34.856736	34856736	15258	#9	#1	3	5
1924	34.871985	34871985	15249	#7	2	#3	-6
1925	34.887227	34887227	15242	#8	#1	2	5
1926	34.902461	34902461	15234	#7	1	#2	-4
1927	34.917688	34917688	15227	#8	#1	1	3
1928	34.932907	34932907	15219	#8	0	2	1
1929	34.948118	34948118	15211	#6	2	#2	-4
1930	34.963323	34963323	15203	#6	0	#2	0
1931	34.978522	34978522	15199	#8	#2	5	7
1932	34.993713	34993713	15191	#5	3	#5	#10
1933	35.008899	35008899	15185	#7	#2	3	8
1934	35.024078	35024078	15179	#6	1	0	-3
1935	35.039251	35039251	15173	#5	1	#2	-2
1936	35.054419	35054419	15168	#6	#1	2	4
1937	35.069581	35069581	15162	#5	1	#2	-4
1938	35.084738	35084738	15157	#6	#1	2	4
1939	35.099889	35099889	15151	#5	1	#1	-3
1940	35.115035	35115035	15145	#5	0	0	1
1941	35.130176	35130176	15141	#5	0	0	0
1942	35.145312	35145312	15135	#5	0	#1	#1
1943	35.160443	35160443	15131	#6	#1	3	4
1944	35.175568	35175568	15125	#4	2	#4	-7
1945	35.190689	35190689	15121	#6	#2	3	7
1946	35.205804	35205804	15115	#5	1	#1	-4
1947	35.220914	35220914	15110	#5	0	#2	-1
1948	35.236019	35236019	15103	#7	#2	4	6
1949	35.251117	35251117	15098	#5	2	#4	-8
1950	35.266210	35266210	15093	#7	#2	2	6
1951	35.281296	35281296	15085	#7	0	1	#1
1952	35.296375	35296375	15079	#6	1	#2	-3
1953	35.311448	35311448	15073	#7	#1	#1	1
1954	35.326514	35326514	15065	#9	#2	4	5
1955	35.341571	35341571	15057	#7	2	#4	-8
1956	35.356621	35356621	15050	#9	#2	2	6
1957	35.371662	35371662	15041	#9	0	0	-2
1958	35.386694	35386694	15032	#9	0	#1	#1
1959	35.401717	35401717	15023	#10	#1	1	2
1960	35.416730	35416730	15013	#10	0	#1	-2
			15003	#10	#1	1	1

1961	35.431733	35431733	14992	"11	"1	0	3
1962	35.446725	35446725	14980	"12	"2	3	-8
1963	35.461705	35461705	14970	"10	"3	"5	8
1964	35.476675	35476675	14957	"13	0	3	-2
1965	35.491632	35491632	14944	"13	1	1	-3
1966	35.506576	35506576	14932	"12	"1	"2	2
1967	35.521508	35521508	14919	"13	"1	0	2
1968	35.536427	35536427	14905	"14	"1	2	-5
1969	35.551332	35551332	14892	"13	1	"3	7
1970	35.566224	35566224	14877	"15	"2	4	-8
1971	35.581101	35581101	14864	"13	"2	"4	6
1972	35.595965	35595965	14849	"15	0	2	0
1973	35.610814	35610814	14834	"15	2	2	-7
1974	35.625648	35625648	14821	"13	"3	"5	10
1975	35.640469	35640469	14805	"16	2	5	-7
1976	35.655274	35655274	14791	"14	0	"2	1
1977	35.670065	35670065	14777	"14	"1	"1	3
1978	35.684842	35684842	14762	"15	1	2	-4
1979	35.699604	35699604	14748	"14	"1	"2	5
1980	35.714352	35714352	14733	"15	2	3	-5
1981	35.729085	35729085	14720	"13	0	"2	0
1982	35.743805	35743805	14707	"13	"2	"2	7
1983	35.758512	35758512	14692	"15	3	5	-9
1984	35.773204	35773204	14680	"12	"1	"4	6
1985	35.787884	35787884	14667	"13	1	2	"3
1986	35.802551	35802551	14655	"12	0	"1	1
1987	35.817206	35817206	14643	"12	0	0	1
1988	35.831849	35831849	14631	"12	1	1	-2
1989	35.846480	35846480	14620	"11	0	"1	1
1990	35.861100	35861100	14609	"11	0	0	2
1991	35.875709	35875709	14598	"11	2	2	-6
1992	35.890307	35890307	14589	"9	"2	"4	9
1993	35.904896	35904896	14578	"11	3	5	"10
1994	35.919474	35919474	14570	"8	"2	"5	9
1995	35.934044	35934044	14560	"10	2	4	"6
1996	35.948604	35948604	14552	"8	0	"2	2
1997	35.963156	35963156	14544	"8	0	0	1
1998	35.977700	35977700	14535	"8	1	1	-3
1999	35.992236	35992236	14527	"7	"1	"2	5
2000	36.006765	36006765	14521	"8	2	3	-6
2001	36.021286	36021286	14513	"6	"1	"3	4
2002	36.035801	36035801	14505	"7	0	1	1

2003	36.050309	36050309	14501	7	2	2	-5
2004	36.064810	36064810	14495	5	1	-3	4
2005	36.079306	36079306	14490	6	0	1	0
2006	36.093796	36093796	14484	6	1	1	-3
2007	36.108280	36108280	14479	5	1	2	4
2008	36.122759	36122759	14473	6	1	2	-2
2009	36.137232	36137232	14468	5	1	0	-3
2010	36.151700	36151700	14464	4	2	3	6
2011	36.166164	36166164	14458	6	1	3	-3
2012	36.180622	36180622	14453	5	1	0	-2
2013	36.195075	36195075	14449	4	1	2	2
2014	36.209524	36209524	14444	5	1	0	3
2015	36.223968	36223968	14438	6	2	3	-7
2016	36.238406	36238406	14434	4	2	4	7
2017	36.252840	36252840	14428	6	1	3	-4
2018	36.267268	36267268	14423	5	0	1	0
2019	36.281691	36281691	14418	5	1	1	2
2020	36.296109	36296109	14412	6	0	1	-1
2021	36.310521	36310521	14406	6	0	0	-1
2022	36.324927	36324927	14400	6	1	1	2
2023	36.339327	36339327	14393	7	0	1	-1
2024	36.353720	36353720	14385	7	0	0	-1
2025	36.368106	36368106	14379	7	0	1	-1
2026	36.382485	36382485	14371	8	1	1	2
2027	36.396856	36396856	14363	8	0	1	-2
2028	36.411219	36411219	14354	9	1	1	2
2029	36.425573	36425573	14345	9	0	1	-2
2030	36.439918	36439918	14335	10	1	0	1
2031	36.454253	36454253	14324	11	1	2	2
2032	36.468577	36468577	14314	10	1	3	-5
2033	36.482891	36482891	14302	12	2	3	6
2034	36.497193	36497193	14291	11	1	4	-7
2035	36.511484	36511484	14277	14	3	4	8
2036	36.525761	36525761	14264	13	1	1	-5
2037	36.540025	36540025	14251	13	0	2	-1
2038	36.554276	36554276	14236	15	2	1	3
2039	36.568512	36568512	14220	16	1	3	2
2040	36.582732	36582732	14206	14	2	5	-8
2041	36.596938	36596938	14189	17	3	3	8
2042	36.611127	36611127	14172	17	0	1	-2
2043	36.625299	36625299	14156	16	1	3	4
2044	36.639455	36639455	14138	18	2	2	5
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2045	36.653993	36653993		=18		=1	
2046	36.667713	36667713	14120	=19	=1	3	4
2047	36.681814	36681814	14101	=17	2	=5	=8
2048	36.695898	36695898	14084	=20	=3	4	9
2049	36.709962	36709962	14064	=19	1		=4
2050	36.724007	36724007	14045	=18	1	=3	=3
2051	36.738034	36738034	14027	=20	=2	3	6
2052	36.752041	36752041	14007	=19	1	=2	=5
2053	36.766029	36766029	13988	=20	=1	3	5
2054	36.779997	36779997	13968	=18	2	=4	=7
2055	36.793947	36793947	13950	=20	=2	4	8
2056	36.807877	36807877	13930	=18	2	=3	=7
2057	36.821789	36821789	13912	=19	=1	2	5
2058	36.835682	36835682	13893	=18	1	=2	=4
2059	36.849557	36849557	13875	=19	=1	3	5
2060	36.863413	36863413	13856	=17	2	=3	=6
2061	36.877252	36877252	13839	=18	=1	2	5
2062	36.891073	36891073	13821	=17	1	=1	=3
2063	36.904877	36904877	13804	=17	0	0	1
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2069	36.987359	36987359	13708	=15	1		=2
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2072	37.028397	37028397	13665	=14	1	=1	=4
2073	37.042048	37042048	13651	=14	0		2
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2075	37.069309	37069309	13624	=13	0	0	1
2076	37.082920	37082920	13611	=13	0	=1	=1
2077	37.096518	37096518	13598	=14	=1	3	4
2078	37.110102	37110102	13584	=12	2	=3	=6
2079	37.123674	37123674	13572	=13	=1		4
2080	37.137233	37137233	13559	=13	0		0
2081	37.150779	37150779	13546	=12	1	=3	=4
2082	37.164313	37164313	13534	=14	=2	4	7
2083	37.177833	37177833	13520	=12	2	=3	=7
2084	37.191341	37191341	13508	=13	=1		4
2085	37.204836	37204836	13495	=13	0	0	=1
2086	37.218318	37218318	13482	=13	0	0	0
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2087	37.231787	37231787		"13		"1	
2088	37.245243	37245243	13456	"14	"1	3	4
2089	37.258685	37258685	13442	"12	2	"4	"7
2090	37.272115	37272115	13430	"14	"2	2	6
2091	37.285531	37285531	13415	"14	0		"1
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2093	37.312322	37312322	13389	"13	0	"2	"1
2094	37.325698	37325698	13375	"15	"2	5	7
2095	37.339059	37339059	13361	"12	3	"6	"11
2096	37.352408	37352408	13349	"15	"3	6	12
2097	37.365742	37365742	13334	"12	3	"6	"12
2098	37.379064	37379064	13322	"15	"3	5	11
2099	37.392371	37392371	13307	"13	2	"2	"7
2100	37.405665	37405665	13294	"13	0	"1	1
2101	37.418946	37418946	13281	"14	"1	2	3
2102	37.432213	37432213	13267	"13	1	"1	"3
2103	37.445467	37445467	13254	"13	0	0	1
2104	37.458708	37458708	13241	"13	0	0	0
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2106	37.485151	37485151	13215	"12	1	"3	"4
2107	37.498354	37498354	13203	"14	"2	5	8
2108	37.511543	37511543	13189	"11	3	"6	"11
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2110	37.537885	37537885	13164	"11	3	"4	"10
2111	37.551038	37551038	13153	"12	"1	0	4
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2113	37.577307	37577307	13128	"11	2	"3	"6
2114	37.590424	37590424	13117	"12	"1	1	4
2115	37.603529	37603529	13105	"12	0	1	0
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2119	37.655833	37655833	13059	"12	"1	1	3
2120	37.668880	37668880	13047	"12	0	1	0
2121	37.681915	37681915	13035	"11	1	"1	"2
2122	37.694939	37694939	13024	"11	0	"1	0
2123	37.707952	37707952	13013	"12	"1	2	3
2124	37.720953	37720953	13001	"11	1	"2	"4
2125	37.733943	37733943	12990	"12	"1	2	4
2126	37.746921	37746921	12978	"11	1	"3	"5
2127	37.759888	37759888	12967	"13	"2	4	7
2128	37.772842	37772842	12954	"11	2	"2	"6
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2129	37.785785	37785785		"11	"2	"2	
2130	37.798717	37798717	12932	"13	"2	3	
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2134	37.850322	37850322	12883	"12		"1	-4
2135	37.863193	37863193	12871	"12	0		1
2136	37.876052	37876052	12859	"12	0	0	-1
2137	37.888899	37888899	12847	"13	"1	2	3
2138	37.901733	37901733	12834	"12		"1	-3
2139	37.914555	37914555	12822	"12	0		1
2140	37.927365	37927365	12810	"12	0	"1	-1
2141	37.940163	37940163	12798	"13	"1	2	3
2142	37.952948	37952948	12785	"12		"1	-3
2143	37.965721	37965721	12773	"12	0	"1	0
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2146	38.003967	38003967	12737	"11	"2	"4	8
2147	38.016691	38016691	12724	"13	2	4	-7
2148	38.029404	38029404	12713	"11		-3	4
2149	38.042105	38042105	12701	"12	"1		0
2150	38.054794	38054794	12689	"12	0	1	0
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2152	38.080138	38080138	12665	"12	"1	2	4
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2155	38.118070	38118070	12629	"11	0	0	0
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2157	38.143304	38143304	12605	"10	1	"1	-2
2158	38.155906	38155906	12593	"10	0	"1	0
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2160	38.181079	38181079	12569	"9	2	"3	-6
2161	38.193651	38193651	12557	"9	"1		4
2162	38.206213	38206213	12545	"10	0		0
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2167	38.268889	38268889	12485	"8	1	"2	-3
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2170	38.306393	38306393	12449	"7	1	-3	-3
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			12425	"9	2		-7

2171	38.318878	38318878		n7		n3	
2172	38.331356	38331356	12478	n8	n1		4
2173	38.343826	38343826	12470	n8	0		8
2174	38.356288	38356288	12462	n7	1	n2	n3
2175	38.368743	38368743	12455	n8	n1		4
2176	38.381190	38381190	12447	n7	1	n2	n4
2177	38.393630	38393630	12440	n8	n1		3
2178	38.406062	38406062	12432	n8	0	n1	n2
2179	38.418486	38418486	12424	n9	n1		3
2180	38.430901	38430901	12415	n8	1		n3
2181	38.443308	38443308	12407	n8	0	n2	n1
2182	38.455707	38455707	12399	n10	n2		5
2183	38.468096	38468096	12389	n9	1		n6
2184	38.480476	38480476	12380	n11	n2		6
2185	38.492845	38492845	12369	n10	1	n2	n5
2186	38.505204	38505204	12359	n11	n1		1
2187	38.517552	38517552	12348	n13	n2		4
2188	38.529887	38529887	12335	n12	1	n2	n5
2189	38.542210	38542210	12325	n13	n1		2
2190	38.554520	38554520	12310	n14	n1		0
2191	38.566816	38566816	12295	n15	n1		0
2192	38.579097	38579097	12281	n16	n1		1
2193	38.591362	38591362	12265	n16	0	n2	n3
2194	38.603611	38603611	12249	n18	n2		4
2195	38.615842	38615842	12231	n18	0		n3
2196	38.628055	38628055	12215	n19	n1		2
2197	38.640249	38640249	12194	n19	0	n3	n4
2198	38.652424	38652424	12175	n22	n3		7
2199	38.664577	38664577	12155	n21	1	n2	n6
2200	38.676709	38676709	12132	n22	n1		2
2201	38.688819	38688819	12110	n23	n1		1
2202	38.700906	38700906	12087	n23	0	n2	n3
2203	38.712970	38712970	12064	n25	n2		5
2204	38.725009	38725009	12039	n24	1	n3	n6
2205	38.737024	38737024	12015	n26	n2		6
2206	38.749013	38749013	11989	n25	1		n4
2207	38.760977	38760977	11964	n25	0	n2	n1
2208	38.772916	38772916	11939	n27	n2		5
2209	38.784828	38784828	11912	n26	1		n3
2210	38.796714	38796714	11886	n25	1	n3	n3
2211	38.808575	38808575	11861	n27	n2		6
2212	38.820409	38820409	11834	n26	1		n4
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2213	38.832217	38832217		-26		1	
2214	38.843999	38843999	11782	-25	1	-1	-2
2215	38.855756	38855756	11757	-25	0	0	1
2216	38.867488	38867488	11732	-25	0	1	1
2217	38.879195	38879195	11707	-24	1	0	-1
2218	38.890878	38890878	11683	-23	1	-2	-2
2219	38.902538	38902538	11660	-24	-1	3	5
2220	38.914174	38914174	11636	-22	2	-2	-5
2221	38.925788	38925788	11614	-22	0	1	3
2222	38.937380	38937380	11592	-21	1	-1	-2
2223	38.948951	38948951	11571	-21	0	1	2
2224	38.960501	38960501	11550	-20	1	0	-1
2225	38.972031	38972031	11530	-19	1	-2	-2
2226	38.983542	38983542	11511	-20	-1	4	6
2227	38.995033	38995033	11491	-17	3	-5	-9
2228	39.006507	39006507	11474	-19	-2	4	9
2229	39.017962	39017962	11455	-17	2	-2	-6
2230	39.029400	39029400	11438	-17	0	-1	1
2231	39.040821	39040821	11421	-18	-1	4	5
2232	39.052224	39052224	11403	-15	3	-6	-10
2233	39.063612	39063612	11388	-18	-3	5	11
2234	39.074982	39074982	11370	-16	2	-2	-7
2235	39.086336	39086336	11354	-16	0	-1	1
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2237	39.108995	39108995	11321	-16	1	-2	-4
2238	39.120300	39120300	11305	-17	-1	1	3
2239	39.131588	39131588	11288	-17	0	-1	-2
2240	39.142859	39142859	11271	-18	-1	1	2
2241	39.154112	39154112	11253	-18	0	1	0
2242	39.165347	39165347	11235	-17	1	-4	-5
2243	39.176565	39176565	11218	-20	-3	4	8
2244	39.187763	39187763	11198	-19	1	-2	-6
2245	39.198942	39198942	11179	-20	-1	1	3
2246	39.210101	39210101	11159	-20	0	-1	-2
2247	39.221240	39221240	11139	-21	-1	0	1
2248	39.232358	39232358	11118	-22	-1	1	1
2249	39.243454	39243454	11095	-22	0	-1	-2
2250	39.254528	39254528	11074	-23	-1	0	1
2251	39.265579	39265579	11051	-24	-1	2	2
2252	39.276606	39276606	11027	-23	1	-4	-6
2253	39.287610	39287610	11004	-26	-3	5	9
2254	39.298588	39298588	10978	-24	2	-4	-9
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2255	39.309542	39309542		=26		2	
2256	39.320470	39320470	10928	=26	0	0	-2
2257	39.331372	39331372	10902	=26	0	0	0
2258	39.342248	39342248	10875	=26	0	0	-2
2259	39.353098	39353098	10850	=28	=2	4	6
2260	39.363920	39363920	10822	=26	2	=4	-8
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2262	39.385484	39385484	10768	=27	1	=1	-4
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2264	39.406939	39406939	10714	=28	=1	3	4
2265	39.417625	39417625	10686	=26	2	=3	-6
2266	39.428285	39428285	10660	=27	=1	1	4
2267	39.438918	39438918	10633	=27	0	0	=1
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2270	39.470656	39470656	10553	=26	0	1	2
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2276	39.533442	39533442	10403	=24	=1	1	5
2277	39.543821	39543821	10379	=24	0	2	1
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2279	39.564509	39564509	10333	=24	=2	5	9
2280	39.574818	39574818	10309	=21	3	=5	=10
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2282	39.595371	39595371	10265	=21	2	=2	-6
2283	39.605615	39605615	10244	=21	0	0	2
2284	39.615838	39615838	10223	=21	0	0	0
2285	39.626040	39626040	10202	=21	0	0	0
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2288	39.656521	39656521	10140	=20	0	0	1
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2290	39.676741	39676741	10100	=20	0	1	1
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2297	39.746889	39746889		=19		=2	
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2339	40.147800	40.147800	9175	=14	0	0	1
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2365	40.381767	40.381767	8789	=18	0	2	=1
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2370	40.425532	40.425532	8698	=18	=2	=3	7
2371	40.434230	40.434230	8678	=20	2	4	=8
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2374	40.460208	40.460208	8621	=19	=2	=3	7
2375	40.468829	40.468829	8600	=21	2	4	=7
2376	40.477429	40.477429	8581	=19	=1	=3	4
2377	40.486010	40.486010	8561	=20	0	1	0
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2379	40.503112	40.503112	8522	=19	=3	=4	10
2380	40.511634	40.511634	8500	=22	3	6	=11

2381	40.520134	40520134		*19		*5	
2382	40.528615	40528615	8481	*21	*2	2	7
2383	40.537075	40537075	8460	*21	0	0	-2
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2385	40.553932	40553932	8418	*21	0	0	0
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2393	40.620507	40620507	8245	*23		3	-4
2394	40.628730	40628730	8223	*22	1	*1	0
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