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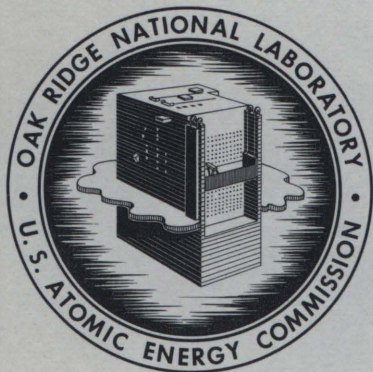
Section 2.7

SMOOTHED THERMOCOUPLE TABLES OF
EXTENDED SIGNIFICANCE (°C)

Volume 2

Section 2.7 Tungsten vs Tungsten-26%
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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Vol. 2, Sect. 2.7

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INSTRUMENTATION AND CONTROLS DIVISION

SMOOTHED THERMOCOUPLE TABLES OF EXTENDED SIGNIFICANCE (°C)

R. K. Adams and E. G. Davisson

Volume 2

SECTION 2.7 TUNGSTEN VS TUNGSTEN-26% 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 2.7 TUNGSTEN VS TUNGSTEN-26% 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 vs tungsten-26% rhenium thermocouples. The values in these tables, derived from a linear interpolation of the Hoskins Manufacturing Company table¹ adopted November 23, 1962, 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 7 a smoothed emf value is tabulated in absolute millivolts for every degree Celsius in the range of the table.

In Table 7A the first two columns contain the same information as given in Table 7. 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*Tungsten-Rhenium Thermocouple Alloys*, Hoskins Mfg. Co., Detroit.

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.

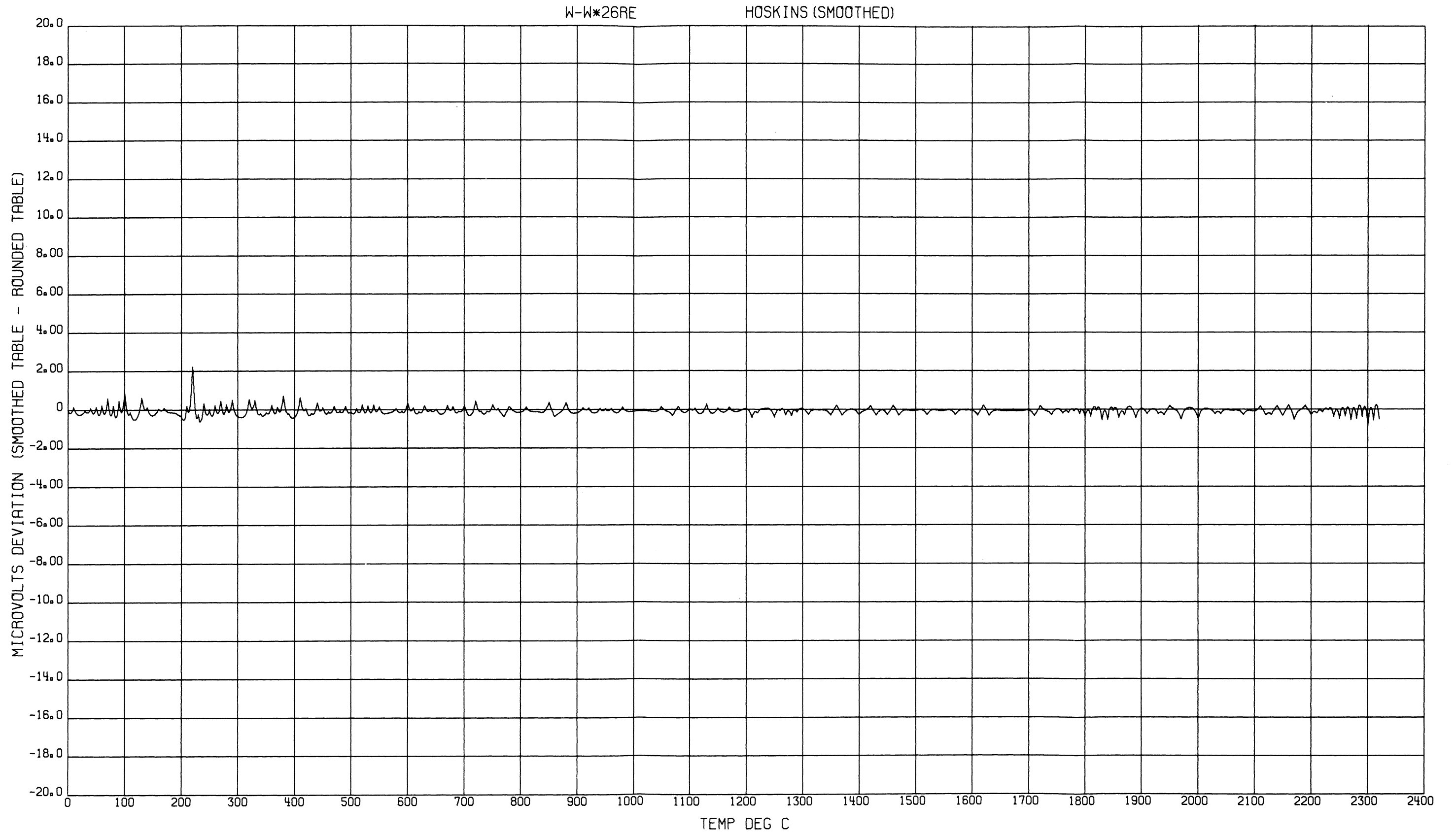


Fig. 1. Deviation of Original Table from Smoothed Table.

W-W*26RE

HOSKINS(SMOOTHED)

TABLE NO. 7

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

TEMP	0	1	2	3	4	5	6	7	8	9
	MILLIVOLTS									
0	0	.002323	.004669	.007036	.009424	.011832	.014259	.016704	.019167	.021646
10	.024140	.026650	.029172	.031708	.034256	.036815	.039382	.041958	.044540	.047130
20	.049725	.052325	.054931	.057541	.060156	.062776	.065400	.068030	.070666	.073309
30	.075959	.078617	.081284	.083962	.086651	.089353	.092068	.094798	.097544	.100308
40	.103089	.105890	.108711	.111554	.114419	.117308	.120221	.123160	.126126	.129119
50	.132141	.135193	.138276	.141391	.144539	.147723	.150943	.154200	.157497	.160833
60	.164212	.167634	.171101	.174613	.178173	.181781	.185439	.189147	.192907	.196719
70	.200583	.204501	.208472	.212498	.216577	.220712	.224901	.229144	.233443	.237796
80	.242205	.246669	.251190	.255767	.260401	.265093	.269844	.274654	.279525	.284457
90	.289452	.294509	.299631	.304816	.310066	.315380	.320758	.326200	.331705	.337271
100	.342897	.348581	.354320	.360112	.365954	.371842	.377772	.383742	.389748	.395786
110	.401852	.407944	.414057	.420190	.426340	.432505	.438683	.444874	.451075	.457288
120	.463512	.469747	.475995	.482257	.488535	.494829	.501141	.507474	.513829	.520207
130	.526611	.533040	.539497	.545981	.552493	.559033	.565600	.572194	.578814	.585458
140	.592125	.598814	.605523	.612250	.618993	.625750	.632520	.639301	.646091	.652890
150	.659695	.666507	.673324	.680147	.686974	.693806	.700643	.707485	.714332	.721186
160	.728045	.734912	.741786	.748667	.755557	.762455	.769362	.776277	.783202	.790135
170	.797076	.804026	.810984	.817948	.824920	.831897	.838880	.845867	.852859	.859853
180	.866850	.873848	.880847	.887847	.894847	.901845	.908843	.915838	.922831	.929822
190	.936810	.943796	.950779	.957760	.964740	.971720	.978701	.985684	.992671	.999665
200	1.006669	1.013686	1.020720	1.027774	1.034855	1.041966	1.049114	1.056304	1.063542	1.070835
210	1.078188	1.085608	1.093101	1.100671	1.108325	1.116066	1.123900	1.131829	1.139856	1.147983
220	1.156212	1.164541	1.172972	1.181501	1.190128	1.198849	1.207662	1.216561	1.225545	1.234607
230	1.243744	1.252951	1.262224	1.271558	1.280950	1.290396	1.299893	1.309436	1.319024	1.328655
240	1.338325	1.348034	1.357780	1.367562	1.377380	1.387232	1.397119	1.407041	1.416996	1.426986
250	1.437010	1.447069	1.457164	1.467293	1.477458	1.487659	1.497897	1.508172	1.518485	1.528836
260	1.539226	1.549657	1.560128	1.570641	1.581196	1.591794	1.602435	1.613121	1.623852	1.634628
270	1.645450	1.656319	1.667234	1.678196	1.689206	1.700263	1.711367	1.722518	1.733716	1.744961
280	1.756251	1.767587	1.778967	1.790392	1.801858	1.813366	1.824914	1.836501	1.848123	1.859781
290	1.871471	1.883192	1.894940	1.906714	1.918511	1.930328	1.942163	1.954012	1.965874	1.977746
300	1.989626	2.001512	2.013403	2.025296	2.037192	2.049090	2.060990	2.072891	2.084795	2.096702
310	2.108615	2.120534	2.132463	2.144403	2.156357	2.168327	2.180318	2.192330	2.204368	2.216434
320	2.228530	2.240658	2.252821	2.265020	2.277256	2.289531	2.301844	2.314196	2.326586	2.339014
330	2.351479	2.363980	2.376515	2.389082	2.401679	2.414305	2.426957	2.439632	2.452329	2.465046
340	2.477781	2.490531	2.503297	2.516075	2.528866	2.541668	2.554481	2.567305	2.580140	2.592985
350	2.605842	2.618711	2.631592	2.644488	2.657398	2.670324	2.683268	2.696231	2.709214	2.722219
360	2.735247	2.748299	2.761378	2.774485	2.787620	2.800786	2.813985	2.827216	2.840482	2.853785
370	2.867124	2.880501	2.893918	2.907374	2.920870	2.934407	2.947985	2.961603	2.975262	2.988959
380	3.002696	3.016469	3.030278	3.044121	3.057996	3.071901	3.085833	3.099790	3.113770	3.127769
390	3.141786	3.155819	3.169865	3.183923	3.197992	3.212069	3.226156	3.240250	3.254353	3.268464

W*W*26RE

HOSKINS(SMOOTHED)

TABLE NO. 7

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

TEMP	0	1	2	3	4	5	6	7	8	9
	MILLIVOLTS									
400	3.282584	3.296715	3.310857	3.325012	3.339182	3.353369	3.367573	3.381798	3.396045	3.410315
410	3.424611	3.438932	3.453280	3.467656	3.482059	3.496490	3.510949	3.525435	3.539947	3.554485
420	3.569047	3.583633	3.598241	3.612870	3.627519	3.642187	3.656874	3.671578	3.686299	3.701037
430	3.715792	3.730563	3.745352	3.760157	3.774981	3.789824	3.804686	3.819568	3.834472	3.849397
440	3.864344	3.879314	3.894307	3.909324	3.924365	3.939429	3.954516	3.969627	3.984760	3.999915
450	4.015092	4.030289	4.045507	4.060743	4.075998	4.091271	4.106560	4.121866	4.137187	4.152524
460	4.167875	4.183241	4.198621	4.214015	4.229423	4.244845	4.260281	4.275731	4.291195	4.306674
470	4.322167	4.337674	4.353196	4.368733	4.384285	4.399852	4.415434	4.431030	4.446642	4.462270
480	4.477912	4.493569	4.509242	4.524930	4.540633	4.556351	4.572085	4.587833	4.603596	4.619374
490	4.635167	4.650974	4.666796	4.682633	4.698483	4.714348	4.730227	4.746119	4.762026	4.777947
500	4.793881	4.809830	4.825793	4.841770	4.857763	4.873770	4.889794	4.905834	4.921892	4.937967
510	4.954061	4.970175	4.986309	5.002465	5.018643	5.034844	5.051070	5.067321	5.083598	5.099901
520	5.116232	5.132592	5.148980	5.165398	5.181846	5.198324	5.214833	5.231372	5.247943	5.264546
530	5.281179	5.297845	5.314542	5.331271	5.348031	5.364823	5.381646	5.398500	5.415384	5.432299
540	5.449244	5.466217	5.483219	5.500249	5.517305	5.534387	5.551493	5.568623	5.585775	5.602947
550	5.620139	5.637348	5.654574	5.671814	5.689066	5.706330	5.723604	5.740886	5.758175	5.775469
560	5.792768	5.810070	5.827375	5.844681	5.861988	5.879296	5.896603	5.913911	5.931219	5.948527
570	5.965835	5.983144	6.000453	6.017764	6.035077	6.052392	6.069711	6.087033	6.104360	6.121691
580	6.139029	6.156373	6.173724	6.191084	6.208453	6.225831	6.243220	6.260621	6.278034	6.295462
590	6.312903	6.330361	6.347835	6.365327	6.382838	6.400369	6.417920	6.435493	6.453089	6.470707
600	6.488349	6.506016	6.523706	6.541421	6.559161	6.576924	6.594712	6.612522	6.630356	6.648212
610	6.666089	6.683987	6.701904	6.719841	6.737796	6.755769	6.773758	6.791764	6.809785	6.827821
620	6.845873	6.863938	6.882018	6.900113	6.918222	6.936345	6.954483	6.972635	6.990802	7.008984
630	7.027181	7.045393	7.063620	7.081863	7.100121	7.118393	7.136681	7.154983	7.173299	7.191630
640	7.209973	7.228330	7.246698	7.265079	7.283470	7.301872	7.320283	7.338703	7.357131	7.375567
650	7.394009	7.412458	7.430913	7.449373	7.467838	7.486309	7.504784	7.523264	7.541750	7.560241
660	7.578737	7.597241	7.615751	7.634269	7.652796	7.671333	7.689881	7.708440	7.727012	7.745597
670	7.764197	7.782813	7.801445	7.820094	7.838760	7.857445	7.876148	7.894869	7.913610	7.932369
680	7.951147	7.969944	7.988760	8.007593	8.026445	8.045314	8.064200	8.083103	8.102023	8.120958
690	8.139909	8.158875	8.177856	8.196852	8.215861	8.234884	8.253921	8.272970	8.292032	8.311106
700	8.330192	8.349289	8.368398	8.387518	8.406649	8.425790	8.444943	8.464106	8.483281	8.502467
710	8.521665	8.540875	8.560099	8.579335	8.598586	8.617852	8.637133	8.656430	8.675744	8.695076
720	8.714425	8.733792	8.753178	8.772582	8.792005	8.811446	8.830905	8.850381	8.869874	8.889384
730	8.908909	8.928449	8.948004	8.967572	8.987154	9.006749	9.026357	9.045976	9.065608	9.085252
740	9.104909	9.124578	9.144260	9.163955	9.183664	9.203388	9.223126	9.242879	9.262648	9.282433
750	9.302234	9.322050	9.341883	9.361731	9.381594	9.401471	9.421362	9.441265	9.461179	9.481104
760	9.501037	9.520978	9.540925	9.560877	9.580833	9.600792	9.620752	9.640713	9.660674	9.680634
770	9.700594	9.720552	9.740509	9.760464	9.780419	9.800373	9.820327	9.840281	9.860235	9.880191
780	9.900149	9.920108	9.940070	9.960034	9.980002	9.999972	10.019946	10.039923	10.059903	10.079885
790	10.099871	10.119859	10.139850	10.159843	10.179838	10.199835	10.219833	10.239834	10.259837	10.279842

W-W*26RE

HOSKINS(SMOOTHED)

TABLE NO. 7

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

TEMP	0	1	2	3	4	5	6	7	8	9
	MILLIVOLTS									
800	10.299849	10.319858	10.339871	10.359886	10.379905	10.399928	10.419956	10.439988	10.460025	10.480067
810	10.500115	10.520168	10.540227	10.560292	10.580362	10.600436	10.620516	10.640600	10.660688	10.680780
820	10.700874	10.720970	10.741069	10.761168	10.781268	10.801369	10.821469	10.841568	10.861666	10.881764
830	10.901860	10.921955	10.942049	10.962143	10.982237	11.002332	11.022428	11.042526	11.062628	11.082733
840	11.102843	11.122959	11.143081	11.163211	11.183349	11.203495	11.223650	11.243814	11.263988	11.284170
850	11.304362	11.324562	11.344769	11.364984	11.385204	11.405429	11.425658	11.445890	11.466123	11.486357
860	11.506591	11.526823	11.547054	11.567283	11.587509	11.607733	11.627955	11.648175	11.668395	11.688614
870	11.708835	11.729057	11.749282	11.769512	11.789747	11.809990	11.830240	11.850499	11.870767	11.891047
880	11.911337	11.931638	11.951951	11.972275	11.992610	12.012955	12.033309	12.053673	12.074044	12.094423
890	12.114807	12.135196	12.155590	12.175987	12.196387	12.216789	12.237192	12.257597	12.278003	12.298410
900	12.318818	12.339227	12.359639	12.380053	12.400470	12.420891	12.441316	12.461746	12.482183	12.502626
910	12.523076	12.543534	12.564001	12.584476	12.604960	12.625453	12.645956	12.666467	12.686988	12.707517
920	12.728054	12.748599	12.769152	12.789712	12.810278	12.830851	12.851429	12.872013	12.892602	12.913195
930	12.933793	12.954395	12.975002	12.995613	13.016228	13.036849	13.057474	13.078106	13.098743	13.119386
940	13.140037	13.160695	13.181361	13.202036	13.222719	13.243412	13.264115	13.284827	13.305550	13.326284
950	13.347029	13.367784	13.388550	13.409326	13.430113	13.450910	13.471717	13.492533	13.513359	13.534192
960	13.555034	13.575884	13.596740	13.617604	13.638474	13.659350	13.680231	13.701118	13.722010	13.742908
970	13.763810	13.784716	13.805628	13.826544	13.847466	13.868392	13.889323	13.910259	13.931200	13.952147
980	13.973098	13.994055	14.015017	14.035984	14.056956	14.077932	14.098912	14.119897	14.140885	14.161877
990	14.182871	14.203868	14.224867	14.245868	14.266871	14.287874	14.308878	14.329882	14.350887	14.371892
1000	14.392896	14.413900	14.434904	14.455907	14.476909	14.497911	14.518913	14.539914	14.560915	14.581915
1010	14.602916	14.623916	14.644916	14.665916	14.686916	14.707916	14.728916	14.749916	14.770916	14.791916
1020	14.812916	14.833915	14.854915	14.875914	14.896913	14.917912	14.938910	14.959907	14.980904	15.001900
1030	15.022896	15.043891	15.064886	15.085881	15.106876	15.127871	15.148867	15.169864	15.190862	15.211863
1040	15.232865	15.253871	15.274881	15.295894	15.316912	15.337934	15.358962	15.379996	15.401035	15.422080
1050	15.443132	15.464189	15.485252	15.506320	15.527393	15.548470	15.569551	15.590635	15.611721	15.632808
1060	15.653896	15.674983	15.696070	15.717154	15.738236	15.759315	15.780390	15.801462	15.822530	15.843594
1070	15.864655	15.885712	15.906765	15.927816	15.948865	15.969912	15.990958	16.012004	16.033050	16.054097
1080	16.075146	16.096197	16.117250	16.138307	16.159367	16.180432	16.201500	16.222574	16.243652	16.264735
1090	16.285824	16.306918	16.328018	16.349124	16.370236	16.391355	16.412480	16.433613	16.454752	16.475899
1100	16.497054	16.518216	16.539386	16.560564	16.581751	16.602945	16.624148	16.645358	16.666577	16.687803
1110	16.709037	16.730278	16.751527	16.772782	16.794045	16.815314	16.836590	16.857873	16.879163	16.900461
1120	16.921765	16.943077	16.964397	16.985725	17.007062	17.028407	17.049762	17.071127	17.092501	17.113886
1130	17.135281	17.156686	17.178102	17.199529	17.220965	17.242412	17.263868	17.285334	17.306809	17.328293
1140	17.349785	17.371284	17.392791	17.414305	17.435825	17.457351	17.478883	17.500420	17.521963	17.543510
1150	17.565062	17.586619	17.608179	17.629745	17.651315	17.672889	17.694468	17.716051	17.737639	17.759232
1160	17.780829	17.802432	17.824040	17.845653	17.867271	17.888895	17.910524	17.932159	17.953799	17.975444
1170	17.997095	18.018752	18.040413	18.062080	18.083751	18.105427	18.127107	18.148792	18.170479	18.192171
1180	18.213865	18.235563	18.257262	18.278964	18.300669	18.322375	18.344083	18.365792	18.387502	18.409214
1190	18.430927	18.452640	18.474354	18.496067	18.517781	18.539493	18.561204	18.582913	18.604620	18.626323

W-W*26RE HOSKINS(SMOOTHED)
TABLE NO. 7

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

TEMP	0	1	2	3	4	5	6	7	8	9
	MILLIVOLTS									
1200	18.648022	18.669715	18.691402	18.713083	18.734755	18.756417	18.778070	18.799711	18.821340	18.842956
1210	18.864558	18.886147	18.907721	18.929280	18.950824	18.972353	18.993869	19.015370	19.036858	19.058333
1220	19.079797	19.101250	19.122693	19.144128	19.165555	19.186976	19.208391	19.229803	19.251211	19.272617
1230	19.294021	19.315425	19.336828	19.358230	19.379632	19.401034	19.422435	19.443836	19.465234	19.486631
1240	19.508024	19.529414	19.550798	19.572177	19.593549	19.614913	19.636268	19.657614	19.678949	19.700272
1250	19.721583	19.742882	19.764167	19.785438	19.806694	19.827936	19.849164	19.870376	19.891574	19.912756
1260	19.933922	19.955073	19.976209	19.997328	20.018432	20.039519	20.060589	20.081643	20.102679	20.123697
1270	20.144698	20.165680	20.186643	20.207588	20.228513	20.249419	20.270305	20.291172	20.312019	20.332847
1280	20.353656	20.374446	20.395219	20.415974	20.436713	20.457436	20.478144	20.498839	20.519521	20.540191
1290	20.560850	20.581499	20.602140	20.622772	20.643397	20.664016	20.684629	20.705236	20.725838	20.746436
1300	20.767030	20.787619	20.808204	20.828785	20.849362	20.869934	20.890502	20.911065	20.931623	20.952176
1310	20.972724	20.993267	21.013806	21.034339	21.054867	21.075391	21.095910	21.116426	21.136937	21.157446
1320	21.177952	21.198455	21.218957	21.239457	21.259956	21.280455	21.300953	21.321451	21.341950	21.362449
1330	21.382949	21.403449	21.423950	21.444450	21.464951	21.485452	21.505951	21.526450	21.546947	21.567442
1340	21.587935	21.608425	21.628912	21.649396	21.669877	21.690353	21.710827	21.731296	21.751762	21.772225
1350	21.792685	21.813143	21.833598	21.854051	21.874503	21.894953	21.915403	21.935853	21.956302	21.976752
1360	21.997201	22.017651	22.038101	22.058552	22.079002	22.099451	22.119901	22.140348	22.160795	22.181240
1370	22.201683	22.222123	22.242561	22.262995	22.283427	22.303856	22.324281	22.344704	22.365124	22.385540
1380	22.405955	22.426366	22.446776	22.467183	22.487589	22.507992	22.528394	22.548794	22.569191	22.589587
1390	22.609980	22.630370	22.650757	22.671140	22.691519	22.711894	22.732264	22.752629	22.772989	22.793343
1400	22.813691	22.834034	22.854371	22.874703	22.895030	22.915353	22.935673	22.955989	22.976304	22.996617
1410	23.016929	23.037242	23.057556	23.077872	23.098190	23.118510	23.138835	23.159163	23.179495	23.199831
1420	23.220171	23.240514	23.260861	23.281211	23.301563	23.321917	23.342271	23.362626	23.382981	23.403334
1430	23.423685	23.444034	23.464379	23.484721	23.505058	23.525390	23.545717	23.566038	23.586353	23.606662
1440	23.626966	23.647263	23.667554	23.687839	23.708119	23.728394	23.748664	23.768930	23.789191	23.809450
1450	23.829705	23.849958	23.870209	23.890459	23.910707	23.930956	23.951204	23.971452	23.991700	24.011949
1460	24.032199	24.052449	24.072699	24.092950	24.113201	24.133451	24.153701	24.173950	24.194197	24.214442
1470	24.234685	24.254926	24.275163	24.295397	24.315628	24.335855	24.356079	24.376299	24.396515	24.416728
1480	24.436938	24.457145	24.477349	24.497551	24.517751	24.537949	24.558146	24.578342	24.598538	24.618734
1490	24.638929	24.659125	24.679322	24.699519	24.719718	24.739917	24.760117	24.780318	24.800520	24.820723
1500	24.840927	24.861131	24.881336	24.901541	24.921746	24.941951	24.962155	24.982359	25.002560	25.022760
1510	25.042957	25.063152	25.083343	25.103531	25.123715	25.143894	25.164069	25.184238	25.204402	25.224561
1520	25.244713	25.264861	25.285002	25.305138	25.325269	25.345394	25.365515	25.385631	25.405743	25.425852
1530	25.445957	25.466060	25.486160	25.506259	25.526356	25.546451	25.566547	25.586642	25.606736	25.626831
1540	25.646927	25.667023	25.687119	25.707217	25.727316	25.747415	25.767516	25.787617	25.807719	25.827823
1550	25.847927	25.868031	25.888136	25.908242	25.928347	25.948451	25.968556	25.988659	26.008760	26.028860
1560	26.048957	26.069052	26.089143	26.109231	26.129315	26.149394	26.169469	26.189538	26.209602	26.229661
1570	26.249713	26.269760	26.289801	26.309837	26.329867	26.349892	26.369913	26.389929	26.409941	26.429949
1580	26.449955	26.469958	26.489959	26.509959	26.529958	26.549956	26.569954	26.589952	26.609950	26.629949
1590	26.649949	26.669949	26.689950	26.709950	26.729951	26.749951	26.769951	26.789950	26.809947	26.829942

W-W*26RE HOSKINS(SMOOTHED)
TABLE NO. 7

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

TEMP	0	1	2	3	4	5	6	7	8	9
	MILLIVOLTS									
1600	26.849935	26.869925	26.889912	26.909896	26.929877	26.949853	26.969827	26.989796	27.009762	27.029725
1610	27.049685	27.069643	27.089598	27.109551	27.129503	27.149453	27.169403	27.189353	27.209302	27.229252
1620	27.249201	27.269152	27.289102	27.309052	27.329003	27.348953	27.368902	27.388851	27.408798	27.428743
1630	27.448685	27.468626	27.488563	27.508497	27.528428	27.548355	27.568278	27.588198	27.608115	27.628028
1640	27.647938	27.667845	27.687749	27.707651	27.727552	27.747450	27.767348	27.787245	27.807141	27.827036
1650	27.846932	27.866828	27.886724	27.906621	27.926518	27.946416	27.966314	27.986212	28.006111	28.026010
1660	28.045910	28.065810	28.085710	28.105610	28.125511	28.145411	28.165312	28.185212	28.205112	28.225013
1670	28.244913	28.264813	28.284712	28.304612	28.324512	28.344411	28.364311	28.384210	28.404110	28.424010
1680	28.443910	28.463810	28.483711	28.503612	28.523513	28.543415	28.563318	28.583221	28.603124	28.623028
1690	28.642932	28.662837	28.682741	28.702645	28.722549	28.742452	28.762354	28.782254	28.802152	28.822048
1700	28.841941	28.861830	28.881717	28.901599	28.921478	28.941352	28.961223	28.981089	29.000951	29.020810
1710	29.040666	29.060519	29.080369	29.100218	29.120066	29.139914	29.159762	29.179612	29.199463	29.219317
1720	29.239173	29.259034	29.278897	29.298765	29.318636	29.338511	29.358389	29.378270	29.398154	29.418040
1730	29.437927	29.457814	29.477702	29.497588	29.517473	29.537355	29.557234	29.577109	29.596980	29.616846
1740	29.636708	29.656564	29.676414	29.696259	29.716098	29.735932	29.755760	29.775582	29.795400	29.815212
1750	29.835019	29.854820	29.874617	29.894408	29.914194	29.933975	29.953750	29.973518	29.993281	30.013037
1760	30.032786	30.052527	30.072261	30.091988	30.111705	30.131415	30.151115	30.170806	30.190489	30.210161
1770	30.229825	30.249478	30.269122	30.288756	30.308380	30.327994	30.347597	30.367191	30.386773	30.406345
1780	30.425906	30.445454	30.464991	30.484514	30.504024	30.523520	30.543000	30.562464	30.581912	30.601341
1790	30.620751	30.640140	30.659509	30.678855	30.698178	30.717476	30.736750	30.755997	30.775217	30.794409
1800	30.813573	30.832709	30.851815	30.870893	30.889941	30.908960	30.927949	30.946910	30.965843	30.984747
1810	31.003624	31.022473	31.041295	31.060091	31.078860	31.097603	31.116321	31.135013	31.153679	31.172318
1820	31.190932	31.209518	31.228077	31.246608	31.265109	31.283580	31.302020	31.320428	31.338803	31.357144
1830	31.375449	31.393718	31.411951	31.430146	31.448304	31.466423	31.484504	31.502548	31.520553	31.538521
1840	31.556452	31.574347	31.592207	31.610032	31.627823	31.645583	31.663310	31.681007	31.698673	31.716311
1850	31.733921	31.751502	31.769056	31.786584	31.804085	31.821559	31.839008	31.856430	31.873827	31.891197
1860	31.908543	31.925863	31.943158	31.960429	31.977677	31.994901	32.012102	32.029282	32.046442	32.063582
1870	32.080703	32.097807	32.114895	32.131968	32.149026	32.166072	32.183105	32.200127	32.217139	32.234141
1880	32.251133	32.268116	32.285090	32.302055	32.319011	32.335958	32.352896	32.369825	32.386745	32.403655
1890	32.420556	32.437446	32.454327	32.471199	32.488060	32.504912	32.521755	32.538589	32.555413	32.572230
1900	32.589038	32.605838	32.622632	32.639418	32.656198	32.672971	32.689739	32.706502	32.723260	32.740012
1910	32.756761	32.773505	32.790244	32.806980	32.823712	32.840439	32.857163	32.873883	32.890598	32.907309
1920	32.924016	32.940718	32.957415	32.974106	32.990791	33.007471	33.024143	33.040809	33.057466	33.074116
1930	33.090758	33.107391	33.124015	33.140630	33.157236	33.173834	33.190423	33.207004	33.223577	33.240144
1940	33.256705	33.273261	33.289812	33.306361	33.322908	33.339454	33.356000	33.372548	33.389097	33.405650
1950	33.422207	33.438768	33.455333	33.471902	33.488476	33.505054	33.521635	33.538218	33.554802	33.571387
1960	33.587971	33.604553	33.621131	33.637704	33.654272	33.670832	33.687383	33.703925	33.720457	33.736978
1970	33.753489	33.769988	33.786475	33.802952	33.819418	33.835875	33.852322	33.868762	33.885193	33.901619
1980	33.918038	33.934453	33.950864	33.967271	33.983674	34.000075	34.016474	34.032869	34.049262	34.065650
1990	34.082035	34.098416	34.114791	34.131160	34.147522	34.163876	34.180222	34.196558	34.212884	34.229200

W-W*26RE HOSKINS(SMOOTHED)
TABLE NO. 7

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

TEMP	0	1	2	3	4	5	6	7	8	9
	MILLIVOLTS									
2000	34.245505	34.261800	34.278083	34.294356	34.310619	34.326872	34.343116	34.359351	34.375579	34.391800
2010	34.408016	34.424226	34.440433	34.456636	34.472836	34.489035	34.505232	34.521427	34.537622	34.553815
2020	34.570008	34.586198	34.602387	34.618574	34.634757	34.650936	34.667112	34.683281	34.699445	34.715603
2030	34.731752	34.747894	34.764027	34.780152	34.796267	34.812372	34.828468	34.844555	34.860632	34.876699
2040	34.892758	34.908808	34.924850	34.940884	34.956912	34.972933	34.988949	35.004960	35.020967	35.036970
2050	35.052971	35.068970	35.084967	35.100964	35.116959	35.132955	35.148951	35.164948	35.180945	35.196944
2060	35.212943	35.228944	35.244945	35.260947	35.276950	35.292952	35.308955	35.324957	35.340958	35.356957
2070	35.372955	35.388949	35.404941	35.420930	35.436914	35.452894	35.468870	35.484840	35.500804	35.516763
2080	35.532716	35.548663	35.564604	35.580539	35.596468	35.612392	35.628310	35.644223	35.660132	35.676037
2090	35.691938	35.707836	35.723732	35.739626	35.755519	35.771412	35.787306	35.803200	35.819097	35.834996
2100	35.850899	35.866805	35.882716	35.898631	35.914551	35.930476	35.946406	35.962341	35.978281	35.994225
2110	36.010173	36.026125	36.042079	36.058035	36.073992	36.089949	36.105904	36.121857	36.137807	36.153753
2120	36.169694	36.185629	36.201557	36.217478	36.233392	36.249298	36.265196	36.281087	36.296970	36.312846
2130	36.328716	36.344580	36.360438	36.376292	36.392141	36.407988	36.423832	36.439675	36.455516	36.471357
2140	36.487199	36.503040	36.518883	36.534726	36.550571	36.566417	36.582265	36.598115	36.613966	36.629818
2150	36.645672	36.661527	36.677383	36.693239	36.709097	36.724954	36.740811	36.756668	36.772524	36.788378
2160	36.804229	36.820078	36.835923	36.851764	36.867599	36.883429	36.899253	36.915069	36.930877	36.946678
2170	36.962469	36.978252	36.994026	37.009791	37.025548	37.041297	37.057039	37.072775	37.088504	37.104230
2180	37.119952	37.135671	37.151390	37.167108	37.182828	37.198549	37.214273	37.230001	37.245732	37.261467
2190	37.277207	37.292951	37.308698	37.324449	37.340202	37.355957	37.371713	37.387468	37.403222	37.418974
2200	37.434722	37.450465	37.466202	37.481932	37.497655	37.513369	37.529074	37.544770	37.560455	37.576130
2210	37.591794	37.607447	37.623089	37.638721	37.654342	37.669953	37.685554	37.701145	37.716726	37.732298
2220	37.747861	37.763415	37.778959	37.794495	37.810021	37.825538	37.841045	37.856541	37.872027	37.887500
2230	37.902961	37.918408	37.933841	37.949257	37.964656	37.980036	37.995396	38.010734	38.026049	38.041340
2240	38.056604	38.071840	38.087048	38.102224	38.117369	38.132481	38.147559	38.162602	38.177609	38.192578
2250	38.207511	38.222404	38.237259	38.252074	38.266849	38.281583	38.296277	38.310929	38.325539	38.340108
2260	38.354633	38.369115	38.383554	38.397949	38.412299	38.426604	38.440864	38.455078	38.469245	38.483366
2270	38.497439	38.511465	38.525443	38.539373	38.553254	38.567087	38.580871	38.594606	38.608293	38.621930
2280	38.635518	38.649056	38.662545	38.675983	38.689371	38.702708	38.715994	38.729227	38.742408	38.755535
2290	38.768608	38.781626	38.794587	38.807491	38.820337	38.833123	38.845850	38.858515	38.871119	38.883661
2300	38.896140	38.908555	38.920908	38.933196	38.945420	38.957581	38.969677	38.981711	38.993682	39.005591
2310	39.017437	39.029221	39.040942	39.052602	39.064199	39.075735	39.087208	39.098620	39.109970	39.121258
2320	39.132485									

TABLE 7A

TEMP	MV	DIFFERENCE ORDER					
		0 TH	1 ST	2 ND	3 RD	4 TH	5 TH
0	0	0					
			2323				
1	.002323	2323	2346	23			
2	.004669	4669	2367	21	-2	2	
3	.007036	7036	2388	21	0	-1	-3
4	.009424	9424	2408	20	-1	0	1
5	.011832	11832	2427	19	-1	0	0
6	.014259	14259	2445	18	0	1	1
7	.016704	16704	2463	18	0	-2	-3
8	.019167	19167	2479	16	-2	1	3
9	.021646	21646	2494	15	-1	2	1
10	.024140	24140	2494	15	1	-5	-7
11	.026650	26650	2510	16	-4	6	11
12	.029172	29172	2522	12	2	-4	-10
13	.031708	31708	2536	14	-2	1	5
14	.034256	34256	2548	12	-1	1	-3
15	.036815	36815	2559	11	-3	-2	6
16	.039382	39382	2567	8	1	4	8
17	.041958	41958	2576	9	-3	-4	9
18	.044540	44540	2582	6	2	5	-10
19	.047130	47130	2590	8	-3	-5	8
20	.049725	49725	2595	5	0	3	2
21	.052325	52325	2600	5	1	1	-4
22	.054931	54931	2606	6	-2	-3	6
23	.057541	57541	2610	4	1	3	4
24	.060156	60156	2615	5	1	-1	0
25	.062776	62776	2620	5	0	-1	4
26	.065400	65400	2624	4	-1	3	5
27	.068030	68030	2630	6	2	-2	3
28	.070666	70666	2636	6	0	1	2
29	.073309	73309	2643	7	1	-1	2
30	.075959	75959	2650	7	0	1	-1
31	.078617	78617	2658	8	1	0	1
32	.081284	81284	2658	9	1	1	-3
33	.083962	83962	2667	11	2	-2	4
34	.086651	86651	2678	11	0	2	4
35	.089353	89353	2689	13	2	-2	-4
36	.092068	92068	2702	13	0	2	4
			2715	15	2	-1	-3

			2730		1		2
37	.094798	94798	2746	16	2		=4
38	.097544	97544	2764	18	=1	-3	7
39	.100308	100308	2781	17	3	4	=7
40	.103089	103089	2801	20	0	-3	5
41	.105890	105890	2821	20	2	2	=4
42	.108711	108711	2843	22	0	=2	4
43	.111554	111554	2865	22	2	2	=4
44	.114419	114419	2889	24	0	=2	4
45	.117308	117308	2913	24	2	2	=3
46	.120221	120221	2939	26	1	=1	0
47	.123160	123160	2966	27	0	=1	3
48	.126126	126126	2993	27	2	2	=3
49	.129119	129119	3022	29	1	=1	1
50	.132141	132141	3052	30	1	0	0
51	.135193	135193	3083	31	1	0	0
52	.138276	138276	3115	32	1	0	2
53	.141391	141391	3148	33	3	2	=5
54	.144539	144539	3184	36	0	-3	4
55	.147723	147723	3220	36	1	1	1
56	.150943	150943	3257	37	3	2	=6
57	.154200	154200	3297	40	=1	-4	9
58	.157497	157497	3336	39	4	5	=9
59	.160833	160833	3379	43	0	-4	6
60	.164212	164212	3422	43	2	2	=4
61	.167634	167634	3467	45	0	-2	5
62	.171101	171101	3512	45	3	3	=6
63	.174613	174613	3560	48	0	-3	5
64	.178173	178173	3608	48	2	2	=4
65	.181781	181781	3658	50	0	-2	4
66	.185439	185439	3708	50	2	2	=4
67	.189147	189147	3760	52	0	-2	2
68	.192907	192907	3812	52	0	0	2
69	.196719	196719	3864	52	2	2	=5
70	.200583	200583	3918	54	=1	-3	6
71	.204501	204501	3971	53	2	3	=7
72	.208472	208472	4026	55	=2	-4	9
73	.212498	212498	4079	53	3	5	=10
74	.216577	216577	4135	56	=2	-5	7
75	.220712	220712	4189	54	0	2	0
76	.224901	224901	4243	54	2	2	=6

77	.229144	229144	4299	56	-2	-4	8
78	.233443	233443	4353	54	2	4	7
79	.237796	237796	4409	56	-1	-3	6
80	.242205	242205	4464	59	2	3	6
81	.246669	246669	4521	57	-1	-3	5
82	.251190	251190	4577	56	1	2	2
83	.255767	255767	4634	57	1	0	0
84	.260401	260401	4692	58	1	0	1
85	.265093	265093	4751	59	0	-1	3
86	.269844	269844	4810	59	2	2	4
87	.274654	274654	4871	61	0	-2	4
88	.279525	279525	4932	61	2	2	5
89	.284457	284457	4995	63	-1	-3	7
90	.289452	289452	5057	62	3	4	9
91	.294509	294509	5122	65	-2	-5	9
92	.299631	299631	5185	63	2	4	7
93	.304816	304816	5250	65	-1	-3	4
94	.310066	310066	5314	64	0	1	1
95	.315380	315380	5378	64	0	0	1
96	.320758	320758	5442	64	-1	-1	0
97	.326200	326200	5505	63	-2	-1	2
98	.331705	331705	5566	61	-1	1	2
99	.337271	337271	5626	60	-2	-1	0
100	.342897	342897	5684	58	-3	-1	2
101	.348581	348581	5739	59	-2	1	2
102	.354320	354320	5792	53	-3	-1	0
103	.360112	360112	5842	50	-4	-1	1
104	.365954	365954	5888	46	-4	0	2
105	.371842	371842	5930	42	-2	2	4
106	.377772	377772	5970	40	-4	-2	2
107	.383742	383742	6006	36	-4	0	0
108	.389748	389748	6038	32	-4	0	2
109	.395786	395786	6066	28	-2	2	5
110	.401852	401852	6092	26	-5	-3	7
111	.407944	407944	6113	21	-1	4	6
112	.414057	414057	6133	20	-3	-2	3
113	.420190	420190	6150	17	-2	1	1
114	.426340	426340	6165	15	-2	0	2
115	.432505	432505	6178	13	0	2	5
116	.438683	438683	6191	13	-3	-3	8
117	.444874	444874	6201	10	2	5	6
118	.451075	451075	6213	12	-1	-3	4

119	.457288	457288		11	0	1	1
120	.463512	463512	6224	11	2	2	#3
121	.469747	469747	6235	13	1	-1	2
122	.475995	475995	6248	14	2	1	#3
123	.482257	482257	6262	16	0	-2	4
124	.488535	488535	6278	16	2	2	#1
125	.494829	494829	6294	18	3	1	#3
126	.501141	501141	6312	21	1	-2	2
127	.507474	507474	6333	22	1	0	2
128	.513829	513829	6355	23	3	2	#6
129	.520207	520207	6378	26	-1	-4	8
130	.526611	526611	6404	25	3	4	#8
131	.533040	533040	6429	28	-1	-4	6
132	.539497	539497	6457	27	1	2	#3
133	.545981	545981	6484	28	0	-1	0
134	.552493	552493	6512	28	-1	-1	2
135	.559033	559033	6540	27	0	1	#2
136	.565600	565600	6567	27	-1	-1	0
137	.572194	572194	6594	26	-2	-1	2
138	.578814	578814	6620	24	-1	1	#1
139	.585458	585458	6644	23	-1	0	#1
140	.592125	592125	6667	22	-2	-1	1
141	.598814	598814	6689	20	-2	0	0
142	.605523	605523	6709	18	-2	0	0
143	.612250	612250	6727	16	-2	0	1
144	.618993	618993	6743	14	-1	1	#2
145	.625750	625750	6757	13	-2	-1	1
146	.632520	632520	6770	11	-2	0	2
147	.639301	639301	6781	9	0	2	#5
148	.646091	646091	6790	9	-3	-3	7
149	.652890	652890	6799	6	1	4	#7
150	.659695	659695	6805	7	-2	-3	6
151	.666507	666507	6812	5	1	3	#6
152	.673324	673324	6817	6	-2	-3	6
153	.680147	680147	6823	4	1	3	#4
154	.686974	686974	6827	5	0	-1	1
155	.693806	693806	6832	5	0	0	0
156	.700643	700643	6837	5	0	0	2
157	.707485	707485	6842	5	2	2	#6
158	.714332	714332	6847	7	-2	-4	9
159	.721186	721186	6854	5	3	5	#9
160	.728045	728045	6859	8	-1	-4	5
			6867				

161	.734912	734912		7		1	
162	.741786	741786	6874	7	0	2	1
163	.748667	748667	6881	9	2	-3	=5
164	.755557	755557	6890	8	=1	2	5
165	.762455	762455	6898	9	1	-2	=4
166	.769362	769362	6907	8	=1	3	5
167	.776277	776277	6915	8	2	-4	=7
168	.783202	783202	6925	10	=2	2	6
169	.790135	790135	6933	8	0	1	=1
170	.797076	797076	6941	8	1	-2	=3
171	.804026	804026	6950	9	=1	-2	1
172	.810984	810984	6958	8	=2	-1	5
173	.817948	817948	6964	6	2	4	=9
174	.824920	824920	6972	8	=3	-5	9
175	.831897	831897	6977	5	1	4	=7
176	.838880	838880	6983	6	=2	-3	6
177	.845867	845867	6987	4	1	3	-7
178	.852859	852859	6992	5	=3	-4	8
179	.859853	859853	6994	2	1	4	=7
180	.866850	866850	6997	3	=2	-3	5
181	.873848	873848	6998	1	0	2	=2
182	.880847	880847	6999	1	0	0	=1
183	.887847	887847	7000	1	=1	-1	0
184	.894847	894847	7000	0	=2	-1	5
185	.901845	901845	6998	-2	2	4	=9
186	.908843	908843	6998	0	=3	-5	9
187	.915838	915838	6995	-3	1	4	=5
188	.922831	922831	6993	-2	1	-1	0
189	.929822	929822	6993	-2	0	-1	0
190	.936810	936810	6991	-3	=1	2	3
191	.943796	943796	6988	-3	1	-2	=4
192	.950779	950779	6986	-2	=1	-2	4
193	.957760	957760	6986	-2	=1	2	-2
194	.964740	964740	6981	-1	1	0	0
195	.971720	971720	6980	-1	1	0	0
196	.978701	978701	6980	0	1	0	0
197	.985684	985684	6981	1	1	0	1
198	.992671	992671	6983	2	2	1	0
199	.999665	999665	6987	4	3	1	=1
200	1.006669	1006669	6987	7	3	0	0
201	1.013686	1013686	6994	10	3	0	1
			7004	13	3	1	1
			7017	17	4	-1	=2
			7034	3	3	-1	5

202	1.020720	1020720		20		4	
203	1.027774	1027774	7054	27	7	-4	=8
204	1.034855	1034855	7081	30	3		8
205	1.041966	1041966	7111	37	7	4	=6
206	1.049114	1049114	7148	42	5	-2	3
207	1.056304	1056304	7190	48	6		0
208	1.063542	1063542	7238	55	7	1	=3
209	1.070835	1070835	7293	60	5	-2	4
210	1.078188	1078188	7353	67	7	2	=3
211	1.085608	1085608	7420	73	6	-1	=1
212	1.093101	1093101	7493	77	4	-2	5
213	1.100671	1100671	7570	84	7	3	=7
214	1.108325	1108325	7654	87	3	-4	7
215	1.116066	1116066	7741	93	6	3	=7
216	1.123900	1123900	7834	99	2	-4	5
217	1.131829	1131829	7929	98	3	1	=2
218	1.139856	1139856	8027	100	2	-1	1
219	1.147983	1147983	8127	102	2	0	=4
220	1.156212	1156212	8229	100	-2	-4	8
221	1.164541	1164541	8329	102	2	4	=10
222	1.172972	1172972	8431	98	-4	-6	10
223	1.181501	1181501	8529	98	0	4	=8
224	1.190128	1190128	8627	98	-4	-4	6
225	1.198849	1198849	8721	94	-4	2	=6
226	1.207662	1207662	8813	92	-2	-4	9
227	1.216561	1216561	8899	86	-6	5	=11
228	1.225545	1225545	8984	85	-1	-6	10
229	1.234607	1234607	9062	78	-7	4	=6
230	1.243744	1243744	9137	75	-3	-2	3
231	1.252951	1252951	9207	70	-5	-2	3
232	1.262224	1262224	9273	66	-4	1	=2
233	1.271558	1271558	9334	61	-5	-1	3
234	1.280950	1280950	9392	58	-3	2	=3
235	1.290396	1290396	9446	54	-4	1	2
236	1.299893	1299893	9497	51	-3	-2	=3
237	1.309436	1309436	9543	46	-5	4	6
238	1.319024	1319024	9588	45	-1	-4	=5
239	1.328655	1328655	9631	43	-2	-1	=1
240	1.338325	1338325	9670	39	-2	-2	6
241	1.348034	1348034	9709	39	-4	4	=6
242	1.357780	1357780	9746	37	0	2	3
			9782	36	-2	-2	3
					-1	1	0
					0	1	=3

243	1.367562	1367562		36		-2	-2	5
244	1.377380	1377380	9818	34		-2	3	
245	1.387232	1387232	9852	35		1	-1	=4
246	1.397119	1397119	9887	35		0	-2	-1
247	1.407041	1407041	9922	33		-2	4	6
248	1.416996	1416996	9955	39		2		=7
249	1.426986	1426986	9990	39		-1	-3	5
250	1.437010	1437010	10024	34		1	2	=2
251	1.447069	1447069	10059	39		1	0	=3
252	1.457164	1457164	10095	36		-2	-3	7
253	1.467293	1467293	10129	34		2	4	=6
254	1.477458	1477458	10165	36		0	-2	3
255	1.487659	1487659	10201	36		1	1	=2
256	1.497897	1497897	10238	37		0	-1	2
257	1.508172	1508172	10275	37		1	1	=2
258	1.518485	1518485	10313	38		0	-1	2
259	1.528836	1528836	10351	38		1	1	0
260	1.539226	1539226	10390	39		2	1	=4
261	1.549657	1549657	10431	41		-1	-3	6
262	1.560128	1560128	10471	40		2	3	-5
263	1.570641	1570641	10513	42		0	-2	3
264	1.581196	1581196	10555	42		1	1	=2
265	1.591794	1591794	10598	43		0	-1	3
266	1.602435	1602435	10641	43		2	2	=4
267	1.613121	1613121	10686	45		0	-2	2
268	1.623852	1623852	10731	45		0	0	2
269	1.634628	1634628	10776	45		0	0	1
270	1.645450	1645450	10822	46		1	0	-1
271	1.656319	1656319	10869	47		1	-2	=2
272	1.667234	1667234	10915	47		-1	-2	4
273	1.678196	1678196	10962	46		1	2	=2
274	1.689206	1689206	11010	47		1	0	=2
275	1.700263	1700263	11057	48		0	-2	3
276	1.711367	1711367	11104	47		-1	1	-1
277	1.722518	1722518	11151	47		0	0	-1
278	1.733716	1733716	11198	47		0	0	0
279	1.744961	1744961	11245	47		0	0	0
280	1.756251	1756251	11290	47		-2	-2	=2
281	1.767587	1767587	11336	45		1	3	5
282	1.778967	1778967	11380	48		-2	-3	=6
283	1.790392	1790392	11425	46		1	3	6
			11466	44		-2	3	=8
				45		1	-3	=8
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284	1.801858	1801855	11508	42	-2	-3	4
285	1.813366	1813366	11548	40	-1	1	-4
286	1.824914	1824914	11587	39	-4	-3	8
287	1.836501	1836501	11622	35	1	5	-10
288	1.848123	1848123	11658	36	-4	-5	8
289	1.859781	1859781	11690	32	-1	3	-6
290	1.871471	1871471	11721	31	-4	-3	6
291	1.883192	1883192	11748	27	-1	3	-5
292	1.894940	1894940	11774	26	-3	-2	2
293	1.906714	1906714	11797	23	-3	0	1
294	1.918511	1918511	11817	20	-2	1	-3
295	1.930328	1930328	11835	18	-4	-2	5
296	1.942163	1942163	11849	14	-1	3	-5
297	1.954012	1954012	11862	13	-3	-2	3
298	1.965874	1965874	11872	10	-2	1	-1
299	1.977746	1977746	11880	8	-2	0	1
300	1.989626	1989626	11886	6	-1	1	-3
301	2.001512	2001512	11891	5	-3	-2	6
302	2.013403	2013403	11893	2	1	4	-6
303	2.025296	2025296	11896	3	-1	-2	3
304	2.037192	2037192	11898	2	0	1	-2
305	2.049090	2049090	11900	2	-1	-1	4
306	2.060990	2060990	11901	1	2	3	-5
307	2.072891	2072891	11904	3	0	-2	5
308	2.084795	2084795	11907	3	3	3	-6
309	2.096702	2096702	11913	6	0	-3	7
310	2.108615	2108615	11919	6	4	4	-7
311	2.120534	2120534	11929	10	1	-3	5
312	2.132463	2132463	11940	11	3	2	-3
313	2.144403	2144403	11954	14	2	-1	4
314	2.156357	2156357	11970	16	5	3	-8
315	2.168327	2168327	11991	21	0	-5	10
316	2.180318	2180318	12012	21	5	-3	-8
317	2.192330	2192330	12038	26	2	0	3
318	2.204368	2204368	12066	28	2	0	0
319	2.216434	2216434	12096	30	2	0	1
320	2.228530	2228530	12128	32	3	1	-3
321	2.240658	2240658	12163	35	1	-2	2
322	2.252821	2252821	12199	38	1	0	1
323	2.265020	2265020	12236	37	2	1	-4
324	2.277256	2277256	12275	39	-1	-3	5

325	2.289531	2289531		38		2	
326	2.301844	2301844	12313	39	1	-2	-4
327	2.314196	2314196	12352	38	-1		3
328	2.326586	2326586	12390	38	0		-2
329	2.339014	2339014	12428	37	-1	0	1
330	2.351479	2351479	12465	36	-1		-1
331	2.363980	2363980	12501	34	-2	-1	1
332	2.376515	2376515	12535	34	-2	0	0
333	2.389082	2389082	12567	32	-2		1
334	2.401679	2401679	12597	30	-1	1	-3
335	2.414305	2414305	12626	29	-3	-2	2
336	2.426957	2426957	12652	26	-3	0	2
337	2.439632	2439632	12675	23	-1	2	-3
338	2.452329	2452329	12697	22	-2	-1	1
339	2.465046	2465046	12717	20	-2	0	-1
340	2.477781	2477781	12735	18	-3	-1	5
341	2.490531	2490531	12750	15		4	-9
342	2.503297	2503297	12766	16	1	-5	10
343	2.516075	2516075	12778	12	-4	5	-8
344	2.528866	2528866	12791	12	1	-3	5
345	2.541668	2541668	12802	13	-2		5
346	2.554481	2554481	12813	11	0	2	-2
347	2.567305	2567305	12824	11	0	0	0
348	2.580140	2580140	12835	11	0	0	-1
349	2.592985	2592985	12845	11	-1	-1	4
350	2.605842	2605842	12857	10	2	3	-5
351	2.618711	2618711	12869	12	0	-2	2
352	2.631592	2631592	12881	12	0	0	3
353	2.644488	2644488	12896	12	3	3	-7
354	2.657398	2657398	12910	15	-1	-4	7
355	2.670324	2670324	12926	14	2	3	-3
356	2.683268	2683268	12944	16	2	0	-1
357	2.696231	2696231	12963	18	2	-1	1
358	2.709214	2709214	12983	19	1	0	1
359	2.722219	2722219	13005	20	2	1	-2
360	2.735247	2735247	13028	22	1	-1	1
361	2.748299	2748299	13052	23	1	0	2
362	2.761378	2761378	13079	24	3	2	-4
363	2.774485	2774485	13107	27	1	-2	1
364	2.787620	2787620	13135	28	0	-1	4
365	2.800786	2800786	13166	28	0	3	-4
			13199	31	3	-1	4
				33	2	-1	-2
					-1	-3	7

366	2.813985	2813985		32		4	
367	2.827216	2827216	13231	35	3	-1	=5
368	2.840482	2840482	13266	37	2	-3	=2
369	2.853785	2853785	13303	36	=1	3	6
370	2.867124	2867124	13339	38	2	0	=3
371	2.880501	2880501	13377	40	2	-3	=3
372	2.893918	2893918	13417	39	=1	2	5
373	2.907374	2907374	13456	40	1	0	=2
374	2.920870	2920870	13496	41	1	-1	=1
375	2.934407	2934407	13537	41	0	-1	0
376	2.947985	2947985	13578	40	=1	2	3
377	2.961603	2961603	13618	41	1	-4	=6
378	2.975262	2975262	13659	38	-3	5	9
379	2.988959	2988959	13697	40	2	-6	=11
380	3.002696	3002696	13737	36	-4	4	10
381	3.016469	3016469	13773	36	0	-2	=6
382	3.030278	3030278	13809	34	=2	0	2
383	3.044121	3044121	13843	32	=2	0	0
384	3.057996	3057996	13875	30	=2	-1	=1
385	3.071901	3071901	13905	27	-3	1	2
386	3.085833	3085833	13932	25	=2	0	=1
387	3.099790	3099790	13957	23	=2	=2	=2
388	3.113770	3113770	13980	19	-4	3	5
389	3.127769	3127769	13999	16	=1	-1	=4
390	3.141786	3141786	14017	16	=2	-1	0
391	3.155819	3155819	14033	13	=3	-1	3
392	3.169865	3169865	14046	13	=1	2	=2
393	3.183923	3183923	14058	11	=1	-2	=2
394	3.197992	3197992	14069	8	=3	5	7
395	3.212069	3212069	14077	8	2	-5	=10
396	3.226156	3226156	14087	10	=3	5	10
397	3.240250	3240250	14094	7	2	5	=8
398	3.254353	3254353	14103	9	=1	-3	=5
399	3.268464	3268464	14111	8	1	1	=1
400	3.282584	3282584	14120	9	2	1	=3
401	3.296715	3296715	14131	11	0	-2	4
402	3.310857	3310857	14142	11	0	2	=2
403	3.325012	3325012	14155	13	2	0	0
404	3.339182	3339182	14170	15	2	0	=2
405	3.353369	3353369	14187	17	0	-2	6
406	3.367573	3367573	14204	17	4	4	=7
			14225	21	1	-3	3

407	3.381798	3381798		22		0	
408	3.396045	3396045	14247	23	1	2	2
409	3.410315	3410315	14270	26	3	-4	-6
410	3.424611	3424611	14296	29	-1	3	7
411	3.438932	3438932	14321	27	2	-1	-4
412	3.453280	3453280	14348	28	1	-2	-1
413	3.467656	3467656	14376	27	-1	2	4
414	3.482059	3482059	14403	28	1	-1	-3
415	3.496490	3496490	14431	28	0	-1	0
416	3.510949	3510949	14459	27	-1	0	1
417	3.525435	3525435	14486	26	-1	1	1
418	3.539947	3539947	14512	26	0	-2	-3
419	3.554485	3554485	14538	24	-2	2	4
420	3.569047	3569047	14562	24	0	-2	-4
421	3.583633	3583633	14586	22	-2	1	3
422	3.598241	3598241	14608	21	-1	0	-1
423	3.612870	3612870	14629	20	-1	0	0
424	3.627519	3627519	14649	19	-1	1	1
425	3.642187	3642187	14668	19	0	-2	-3
426	3.656874	3656874	14687	17	-2	2	4
427	3.671578	3671578	14704	17	0	0	-2
428	3.686299	3686299	14721	17	0	0	0
429	3.701037	3701037	14738	17	0	-1	-1
430	3.715792	3715792	14755	16	-1	3	4
431	3.730563	3730563	14771	18	2	-4	-7
432	3.745352	3745352	14789	16	-2	5	9
433	3.760157	3760157	14805	16	3	-3	-8
434	3.774981	3774981	14824	19	0	0	3
435	3.789824	3789824	14843	19	0	1	1
436	3.804686	3804686	14862	20	1	1	0
437	3.819568	3819568	14882	22	2	-3	-4
438	3.834472	3834472	14904	21	-1	2	5
439	3.849397	3849397	14925	22	1	0	-2
440	3.864344	3864344	14947	23	1	-1	-1
441	3.879314	3879314	14970	23	0	1	2
442	3.894307	3894307	14993	24	1	-1	-2
443	3.909324	3909324	15017	24	0	-1	0
444	3.924365	3924365	15041	23	-1	1	2
445	3.939429	3939429	15064	23	0	1	0
446	3.954516	3954516	15087	24	1	-3	-4
447	3.969627	3969627	15111	22	-2	2	5
448	3.984760	3984760	15133	22	0	0	-2
			15155		0	0	-2

449	3.999915	3999915		22		-2	
450	4.015092	4015092	15177	20	=2	3	5
451	4.030289	4030289	15197	21			=7
452	4.045507	4045507	15218	18	=3	4	8
453	4.060743	4060743	15236	19		-2	=6
454	4.075998	4075998	15255	18	=1		1
455	4.091271	4091271	15273	16	=2	-1	4
456	4.106560	4106560	15289	17		3	=6
457	4.121866	4121866	15306	19	=2		6
458	4.137187	4137187	15321	16		3	=6
459	4.152524	4152524	15337	14	=2	-3	6
460	4.167875	4167875	15351	14		3	=5
461	4.183241	4183241	15366	19	=1	-2	3
462	4.198621	4198621	15380	14	0		=1
463	4.214015	4214015	15394	14	0	0	0
464	4.229423	4229423	15408	14	0	0	0
465	4.244845	4244845	15422	14	0	0	0
466	4.260281	4260281	15436	14	0	0	0
467	4.275731	4275731	15450	14	0		1
468	4.291195	4291195	15464	14			=3
469	4.306674	4306674	15479	15	=1	-2	3
470	4.322167	4322167	15493	14	0		0
471	4.337674	4337674	15507	14			=2
472	4.353196	4353196	15522	19	0	-1	1
473	4.368733	4368733	15537	19	0	0	0
474	4.384285	4384285	15552	19	0	0	0
475	4.399852	4399852	15567	19	0	0	=1
476	4.415434	4415434	15582	19	=1	-1	4
477	4.431030	4431030	15596	14		3	=5
478	4.446642	4446642	15612	16	2		0
479	4.462270	4462270	15628	16	0	-2	5
480	4.477912	4477912	15642	14	=2	3	
481	4.493569	4493569	15657	19		0	=3
482	4.509242	4509242	15673	15		-2	=2
483	4.524930	4524930	15673	16	=1		3
484	4.540633	4540633	15688	19	0		=1
485	4.556351	4556351	15703	19	0	0	1
486	4.572085	4572085	15718	19	0		=4
487	4.587833	4587833	15734	16	=2	-3	6
488	4.603596	4603596	15748	14		3	
489	4.619374	4619374	15763	19			=4
			15778	19	0	-1	1
			15793	19	0	0	=1
					=1	-1	3

490	4.635167	4635167		14		2	
491	4.650974	4650974	15807	15	1	-1	+3
492	4.666796	4666796	15822	15	0	-2	+1
493	4.682633	4682633	15837	15	-2	-2	6
494	4.698483	4698483	15850	15	2	-3	+7
495	4.714348	4714348	15865	14	-1	0	3
496	4.730227	4730227	15879	15	-1	0	3
497	4.746119	4746119	15892	15	2	-3	+6
498	4.762026	4762026	15907	14	-1	0	3
499	4.777947	4777947	15921	15	-1	0	3
500	4.793881	4793881	15934	15	2	-3	+6
501	4.809830	4809830	15949	15	-1	-3	4
502	4.825793	4825793	15963	14	0	1	1
503	4.841770	4841770	15977	14	2	2	+6
504	4.857763	4857763	15993	16	-2	-4	9
505	4.873770	4873770	16007	14	-2	5	+9
506	4.889794	4889794	16024	17	-1	-4	7
507	4.905834	4905834	16040	16	2	3	+6
508	4.921892	4921892	16058	18	-1	-3	6
509	4.937967	4937967	16075	17	2	3	+4
510	4.954061	4954061	16094	19	1	-1	0
511	4.970175	4970175	16114	20	0	-1	3
512	4.986309	4986309	16134	20	2	2	+4
513	5.002465	5002465	16156	22	0	-2	3
514	5.018643	5018643	16178	22	0	1	0
515	5.034844	5034844	16201	23	1	1	+3
516	5.051070	5051070	16226	25	2	-2	3
517	5.067321	5067321	16251	25	0	1	+2
518	5.083598	5083598	16277	26	0	-1	3
519	5.099901	5099901	16303	26	2	2	+3
520	5.116232	5116232	16331	28	2	-1	+1
521	5.132592	5132592	16360	28	1	-2	5
522	5.148980	5148980	16388	28	-1	3	+5
523	5.165398	5165398	16418	30	2	-2	2
524	5.181846	5181846	16448	30	0	0	1
525	5.198324	5198324	16478	30	0	1	+3
526	5.214833	5214833	16509	31	1	-2	5
527	5.231372	5231372	16539	30	-1	3	+5
528	5.247943	5247943	16571	32	2	-2	0
529	5.264546	5264546	16603	32	0	-2	7
530	5.281179	5281179	16633	30	+2	5	-10
			16666	33	3	-5	8

531	5.297845	5297845		31		3	
			16697		1		-5
532	5.314542	5314542		32		-2	
			16729		-1		4
533	5.331271	5331271		31		2	
			16760		1		-4
534	5.348031	5348031		32		-2	
			16792		-1		3
535	5.364823	5364823		31		1	
			16823		0		-2
536	5.381646	5381646		31		-1	
			16854		-1		3
537	5.398500	5398500		30		2	
			16884		1		-4
538	5.415384	5415384		31		-2	
			16915		-1		1
539	5.432299	5432299		30		-1	
			16945		-2		4
540	5.449244	5449244		28		3	
			16973		1		-5
541	5.466217	5466217		29		-2	
			17002		-1		1
542	5.483219	5483219		28		-1	
			17030		-2		3
543	5.500249	5500249		26		2	
			17056		0		-4
544	5.517305	5517305		26		-2	
			17082		-2		4
545	5.534387	5534387		24		2	
			17106		0		-4
546	5.551493	5551493		24		-2	
			17130		-2		2
547	5.568623	5568623		22		0	
			17152		-2		2
548	5.585775	5585775		20		2	
			17172		0		-5
549	5.602947	5602947		20		-3	
			17192		-3		6
550	5.620139	5620139		17		3	
			17209		0		-6
551	5.637348	5637348		17		-3	
			17226		-3		4
552	5.654574	5654574		14		1	
			17240		-2		1
553	5.671814	5671814		12		2	
			17252		0		-4
554	5.689066	5689066		12		-2	
			17264		-2		2
555	5.706330	5706330		10		0	
			17274		-2		1
556	5.723604	5723604		8		1	
			17282		-1		-2
557	5.740886	5740886		7		-1	
			17289		-2		3
558	5.758175	5758175		5		2	
			17294		0		-4
559	5.775469	5775469		5		-2	
			17299		-2		4
560	5.792768	5792768		3		2	
			17302		0		-4
561	5.810070	5810070		3		-2	
			17305		-2		4
562	5.827375	5827375		1		2	
			17306		0		-2
563	5.844681	5844681		1		0	
			17307		0		-2
564	5.861988	5861988		1		-2	
			17308		-2		6
565	5.879296	5879296		-1		4	
			17307		2		-7
566	5.896603	5896603		1		-3	
			17308		-1		4
567	5.913911	5913911		0		1	
			17308		0		-1
568	5.931219	5931219		0		0	
			17308		0		1
569	5.948527	5948527		0		1	
			17308		1		-3
570	5.965835	5965835		1		-2	
			17309		-1		5
571	5.983144	5983144		0		3	
			17309		2		-5

572	6.000453	6000453		2		=2	2
573	6.017764	6017764	17311	2	0	0	2
574	6.035077	6035077	17313	2	0	2	2
575	6.052392	6052392	17315	4	2	-3	=5
576	6.069711	6069711	17319	3	=1	3	6
577	6.087033	6087033	17322	5	2	-3	=6
578	6.104360	6104360	17327	4	=1	4	7
579	6.121691	6121691	17331	4	3	4	=8
580	6.139029	6139029	17338	7	=1	-4	6
581	6.156373	6156373	17344	6		2	=1
582	6.173724	6173724	17344	7	1	1	=3
583	6.191084	6191084	17351	9	2	-2	2
584	6.208453	6208453	17360	9	0	0	2
585	6.225831	6225831	17369	9	0	2	=3
586	6.243220	6243220	17378	11	2	2	0
587	6.260621	6260621	17389	12	1	=1	4
588	6.278034	6278034	17401	12	0	3	=8
589	6.295462	6295462	17413	15	3	-5	11
590	6.312903	6312903	17428	13	=2	6	=11
591	6.330361	6330361	17441	17	4	-5	8
592	6.347835	6347835	17458	16	=1	3	=4
593	6.365327	6365327	17474	18	2	-1	1
594	6.382838	6382838	17492	19	1	0	=1
595	6.400369	6400369	17511	20	1	-1	3
596	6.417920	6417920	17531	20	0	2	=3
597	6.435493	6435493	17551	22	2	-1	=1
598	6.453089	6453089	17573	23	1	-2	5
599	6.470707	6470707	17596	22	=1	3	=4
600	6.488349	6488349	17618	24	2	-1	=2
601	6.506016	6506016	17642	25	1	-3	7
602	6.523706	6523706	17667	25	=2	4	=6
603	6.541421	6541421	17690	25	2	-2	0
604	6.559161	6559161	17715	25	0	-2	6
605	6.576924	6576924	17740	25	=2	4	=9
606	6.594712	6594712	17763	25	2	-5	10
607	6.612522	6612522	17788	22	-3	5	=9
608	6.630356	6630356	17810	24	2	-4	5
609	6.648212	6648212	17834	22	=2	1	0
610	6.666089	6666089	17856	21	=1	1	=3
611	6.683987	6683987	17877	21	0	-2	5
612	6.701904	6701904	17898	19	=2	3	=6
			17917	20	1	-3	5
			17937		=2		

613	6.719841	6719841		18		2	
614	6.737796	6737796	17955	18	0	-2	=4
615	6.755769	6755769	17973	16	-2	3	5
616	6.773758	6773758	17989	17	1	-3	=6
617	6.791764	6791764	18006	15	-2	2	5
618	6.809785	6809785	18021	15	0	1	=1
619	6.827821	6827821	18036	16	1	-4	=5
620	6.845873	6845873	18052	13	-3	5	9
621	6.863938	6863938	18065	19	2	-2	-7
622	6.882018	6882018	18080	15	0	-1	1
623	6.900113	6900113	18095	15	-1	-1	2
624	6.918222	6918222	18109	14	0	1	0
625	6.936345	6936345	18123	15	1	-2	-3
626	6.954483	6954483	18138	14	=1	2	4
627	6.972635	6972635	18152	14	1	-1	-3
628	6.990802	6990802	18167	15	0	0	1
629	7.008984	7008984	18182	15	0	0	0
630	7.027181	7027181	18197	15	0	0	0
631	7.045393	7045393	18212	15	0	1	1
632	7.063620	7063620	18227	16	1	-2	-3
633	7.081863	7081863	18243	15	-1	0	2
634	7.100121	7100121	18258	14	-1	3	3
635	7.118393	7118393	18272	16	2	-4	=7
636	7.136681	7136681	18288	14	-2	2	6
637	7.154983	7154983	18302	14	0	1	=1
638	7.173299	7173299	18316	15	1	-4	-5
639	7.191630	7191630	18331	12	-3	5	9
640	7.209973	7209973	18343	14	2	-5	-10
641	7.228330	7228330	18357	11	-3	5	10
642	7.246698	7246698	18368	13	2	-5	-10
643	7.265079	7265079	18381	10	-3	4	9
644	7.283470	7283470	18391	11	1	-3	-7
645	7.301872	7301872	18402	9	-2	2	5
646	7.320283	7320283	18411	9	0	-1	=3
647	7.338703	7338703	18420	8	-1	1	2
648	7.357131	7357131	18428	8	0	-2	=3
649	7.375567	7375567	18436	6	-2	3	5
650	7.394009	7394009	18442	7	1	-2	=5
651	7.412458	7412458	18449	6	-1	0	2
652	7.430913	7430913	18455	5	-1	1	1
653	7.449373	7449373	18460	5	0	1	0
			18465		1		=4

654	7.467838	7467838		6	-3	6
655	7.486309	7486309	18471	4	-2	3
656	7.504784	7504784	18475	5	1	0
657	7.523264	7523264	18480	6	1	-2
658	7.541750	7541750	18486	5	-1	1
659	7.560241	7560241	18491	5	0	3
660	7.578737	7578737	18496	8	3	-5
661	7.597241	7597241	18504	6	-2	4
662	7.615751	7615751	18510	8	2	-1
663	7.634269	7634269	18518	9	1	0
664	7.652796	7652796	18527	10	1	0
665	7.671333	7671333	18537	11	1	-1
666	7.689881	7689881	18548	11	0	2
667	7.708440	7708440	18559	13	2	2
668	7.727012	7727012	18572	13	0	-2
669	7.745597	7745597	18585	15	2	2
670	7.764197	7764197	18600	16	1	-1
671	7.782813	7782813	18616	16	0	1
672	7.801445	7801445	18632	17	1	-1
673	7.820094	7820094	18649	17	0	2
674	7.838760	7838760	18666	19	2	2
675	7.857445	7857445	18685	18	-1	-3
676	7.876148	7876148	18703	18	0	1
677	7.894869	7894869	18721	18	2	2
678	7.913610	7913610	18741	20	-2	-4
679	7.932369	7932369	18741	18	-2	3
680	7.951147	7951147	18759	19	1	3
681	7.969944	7969944	18778	19	0	-1
682	7.988760	7988760	18797	19	0	0
683	8.007593	8007593	18816	17	-2	-2
684	8.026445	8026445	18833	17	-2	4
685	8.045314	8045314	18852	19	2	4
686	8.064200	8064200	18869	17	0	2
687	8.083103	8083103	18886	17	0	0
688	8.102023	8102023	18903	17	0	0
689	8.120958	8120958	18920	17	0	0
690	8.139909	8139909	18935	19	-2	-2
691	8.158875	8158875	18951	15	-2	3
692	8.177856	8177856	18966	16	1	-2
693	8.196852	8196852	18981	15	-1	-2
694	8.215861	8215861	18996	15	0	1
			19009	13	0	0
			19023	14	-2	3
					1	-1
					0	-1

695	8.234884	8234884		14		-2	-2	5
696	8.253921	8253921	19037			-2		
697	8.272970	8272970	19049	12		1	3	=5
698	8.292032	8292032	19062	13		-1	-2	3
699	8.311106	8311106	19074	12		0	1	-2
700	8.330192	8330192	19086	12		-1	-1	3
701	8.349289	8349289	19097	11		1	2	=4
702	8.368398	8368398	19109	12		-1	-2	3
703	8.387518	8387518	19120	11		0	1	=2
704	8.406649	8406649	19131	11		-1	-1	4
705	8.425790	8425790	19141	10		2	3	=7
706	8.444943	8444943	19153	12		-2	-4	8
707	8.464106	8464106	19163	10		2	4	=7
708	8.483281	8483281	19175	12		-1	-3	5
709	8.502467	8502467	19186	11		1	2	=3
710	8.521665	8521665	19198	12		0	-1	3
711	8.540875	8540875	19210	12		2	2	=6
712	8.560099	8560099	19224	14		-2	-4	9
713	8.579335	8579335	19236	12		3	5	=8
714	8.598586	8598586	19251	15		0	-3	3
715	8.617852	8617852	19266	15		0	0	1
716	8.637133	8637133	19281	15		1	1	=1
717	8.656430	8656430	19297	16		1	0	0
718	8.675744	8675744	19314	17		1	0	-2
719	8.695076	8695076	19332	18		-1	-2	4
720	8.714425	8714425	19349	17		1	2	=2
721	8.733792	8733792	19367	18		1	0	=2
722	8.753178	8753178	19386	19		-1	-2	4
723	8.772582	8772582	19404	18		1	2	=4
724	8.792005	8792005	19423	19		-1	-2	3
725	8.811446	8811446	19441	18		0	1	=2
726	8.830905	8830905	19459	18		-1	-1	2
727	8.850381	8850381	19476	17		0	1	=1
728	8.869874	8869874	19493	17		0	0	=2
729	8.889384	8889384	19510	17		-2	-2	4
730	8.908909	8908909	19525	15		0	2	=2
731	8.928449	8928449	19540	15		0	0	=2
732	8.948004	8948004	19555	15		-2	-2	5
733	8.967572	8967572	19568	13		1	3	=5
734	8.987154	8987154	19582	14		-1	-2	3
735	9.006749	9006749	19595	13		0	1	-3
			19608	13		-2	-2	6

736	9.026357	9026357		11		4	
737	9.045976	9045976	19619		2		=7
738	9.065608	9065608	19632	13	=1	-3	5
739	9.085252	9085252	19644	12		2	=4
740	9.104909	9104909	19657	13	=1		4
741	9.124578	9124578	19669	12		2	=3
742	9.144260	9144260	19682	13	0	=1	2
743	9.163955	9163955	19695	13			=1
744	9.183664	9183664	19709	14		0	=2
745	9.203388	9203388	19724	13	=1	-2	4
746	9.223126	9223126	19738	14		2	=2
747	9.242879	9242879	19753	15		0	=1
748	9.262648	9262648	19769	16	0	=1	1
749	9.282433	9282433	19785	16	0		=1
750	9.302234	9302234	19801	16	=1	-1	4
751	9.322050	9322050	19816	15		3	=7
752	9.341883	9341883	19833	17	2		6
753	9.361731	9361731	19848	15	=2	-4	6
754	9.381594	9381594	19863	15	0	2	=3
755	9.401471	9401471	19877	15	=1	=1	2
756	9.421362	9421362	19891	14			=3
757	9.441265	9441265	19903	14	0	-2	3
758	9.461179	9461179	19914	12	=2		0
759	9.481104	9481104	19925	11			=4
760	9.501037	9501037	19933	11	0	-3	6
761	9.520978	9520978	19941	8	=3	3	=5
762	9.540925	9540925	19947	8	0	-2	3
763	9.560877	9560877	19952	6	=2		=1
764	9.580833	9580833	19956	5	=1	0	0
765	9.600792	9600792	19959	4	=1	0	=1
766	9.620752	9620752	19960	3	=2	=1	3
767	9.640713	9640713	19961	1	0	2	=3
768	9.660674	9660674	19961	1	=1	=1	1
769	9.680634	9680634	19960	0	=1	0	2
770	9.700594	9700594	19960	-1		2	=5
771	9.720552	9720552	19960	0			6
772	9.740509	9740509	19958	-2	0	-3	6
773	9.760464	9760464	19957	-2	1	3	=5
774	9.780419	9780419	19955	-1	=1	-2	5
775	9.800373	9800373	19955	-2		3	=6
776	9.820327	9820327	19954	0	2	-3	=5
			19954	0	=1	2	=3
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			19954	0	0	0	

777	9.840281	9840281	19954	0	0	2	2
778	9.860235	9860235	19954	2	2	-2	=4
779	9.880191	9880191	19956	2	0	-1	1
780	9.900149	9900149	19958	1	=1	3	4
781	9.920108	9920108	19959	3	2	-3	=6
782	9.940070	9940070	19962	2	=1	3	6
783	9.960034	9960034	19964	4	2	-4	=7
784	9.980002	9980002	19968	2	=2	4	8
785	9.999972	9999972	19970	4	2	-3	=7
786	10.019946	10019946	19974	3	=1	1	4
787	10.039923	10039923	19977	3	0	-1	=2
788	10.059903	10059903	19980	2	=1	3	4
789	10.079885	10079885	19982	4	2	-4	=7
790	10.099871	10099871	19986	2	=2	3	7
791	10.119859	10119859	19988	3	1	-2	=5
792	10.139850	10139850	19991	2	=1	1	3
793	10.159843	10159843	19993	2	0	0	=1
794	10.179838	10179838	19995	2	0	-1	=1
795	10.199835	10199835	19997	1	=1	3	4
796	10.219833	10219833	19998	3	2	-3	=6
797	10.239834	10239834	20001	2	=1	1	4
798	10.259837	10259837	20003	2	0	0	=1
799	10.279842	10279842	20005	2	0	0	0
800	10.299849	10299849	20007	2	0	0	2
801	10.319858	10319858	20009	4	2	-4	=6
802	10.339871	10339871	20013	2	=2	4	6
803	10.359886	10359886	20015	4	2	-2	=6
804	10.379905	10379905	20019	4	0	1	3
805	10.399928	10399928	20023	5	1	-2	=3
806	10.419956	10419956	20028	4	=1	2	4
807	10.439988	10439988	20032	5	1	-1	=3
808	10.460025	10460025	20037	5	0	1	2
809	10.480067	10480067	20042	6	1	-2	=3
810	10.500115	10500115	20048	5	=1	2	4
811	10.520168	10520168	20053	6	1	-1	=3
812	10.540227	10540227	20059	6	0	-1	0
813	10.560292	10560292	20065	5	=1	0	1
814	10.580362	10580362	20070	5	=1	3	3
815	10.600436	10600436	20074	6	2	-4	=7
816	10.620516	10620516	20080	4	=2	2	6
817	10.640600	10640600	20084	4	0	0	=2
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818	10.660688	10660688		4		-2	
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819	10.680780	10680780		2		2	
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820	10.700874	10700874		2			
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821	10.720970	10720970		3		-4	
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822	10.741069	10741069		0		4	
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823	10.761168	10761168		1		-1	
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824	10.781268	10781268		1		-2	
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825	10.801369	10801369		-1		2	
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828	10.861666	10861666		0		-3	
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829	10.881764	10881764		-2		3	
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830	10.901860	10901860		-1		-1	
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831	10.921955	10921955		-1		1	
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834	10.982237	10982237		1		-1	
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835	11.002332	11002332		1		1	
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840	11.102843	11102843		6		-1	
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842	11.143081	11143081		8		-2	
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843	11.163211	11163211		8		0	
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844	11.183349	11183349		8		1	
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845	11.203495	11203495		9		-1	
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846	11.223650	11223650		9		1	
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847	11.243814	11243814		10		-3	
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848	11.263988	11263988		8		4	
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849	11.284170	11284170		10		-4	
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850	11.304362	11304362		8		1	
			20200		-1		1
851	11.324562	11324562		7		2	
			20207		1		=6
852	11.344769	11344769		8		-4	
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853	11.364984	11364984		5		3	
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854	11.385204	11385204		5		-1	
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855	11.405429	11405429		4		0	
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856	11.425658	11425658		3		-1	
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857	11.445890	11445890		1		2	
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858	11.466123	11466123		1		-1	
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859	11.486357	11486357		0		-1	
860	11.506591	11506591	20234	-2	=2	3	4
861	11.526823	11526823	20232	-1	1		=5
862	11.547054	11547054	20231	-2	=1	-2	2
863	11.567283	11567283	20229	-3	=1	0	2
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866	11.627955	11627955	20222	-2	0	0	2
867	11.648175	11648175	20220	0	2	2	=5
868	11.668395	11668395	20220	0	=1	-3	7
869	11.688614	11688614	20219	-1	3	4	=8
870	11.708835	11708835	20221	2		-4	7
871	11.729057	11729057	20222	1	=1	3	=3
872	11.749282	11749282	20225	3	2	0	=2
873	11.769512	11769512	20230	5	0	-2	5
874	11.789747	11789747	20235	5	3	3	=7
875	11.809990	11809990	20243	8	=1	-4	7
876	11.830240	11830240	20250	7		3	=5
877	11.850499	11850499	20259	9	2	-2	5
878	11.870767	11870767	20268	9	0	3	=8
879	11.891047	11891047	20280	12	3	-5	8
880	11.911337	11911337	20280	10	=2	3	=3
881	11.931638	11931638	20290	11	1	0	=2
882	11.951951	11951951	20301	12		-2	3
883	11.972275	11972275	20313	11	=1	1	=2
884	11.992610	11992610	20324	11	0		1
885	12.012955	12012955	20335	11	=1	-1	2
886	12.033309	12033309	20345	10	=1	0	=6
887	12.053673	12053673	20354	9		2	8
888	12.074044	12074044	20364	10	1	-4	=8
889	12.094423	12094423	20371	7	=3	4	7
890	12.114807	12114807	20379	8		-3	=3
891	12.135196	12135196	20384	5	0	3	=2
892	12.155590	12155590	20389	5	0	0	4
893	12.175987	12175987	20394	5	-2	-2	=3
894	12.196387	12196387	20397	3	0	2	1
895	12.216789	12216789	20400	3	=1	-1	2
896	12.237192	12237192	20402	2		0	=4
897	12.257597	12257597	20403	1	=1	2	3
898	12.278003	12278003	20405	2	=1	-2	=1
899	12.298410	12298410	20406	1	0	0	0
			20407	1	0	0	0
			20408	1	0	0	2

900	12.318818	12318818				2		
901	12.339227	12339227	20409	3	2	-3		=5
902	12.359639	12359639	20412	2	-1	2		5
903	12.380053	12380053	20414	3	1	0		=2
904	12.400470	12400470	20417	4	1	-1		=1
905	12.420891	12420891	20421	4	0	1		2
906	12.441316	12441316	20425	5	1	1		0
907	12.461746	12461746	20430	7	2	-3		=4
908	12.482183	12482183	20437	6	-1	2		5
909	12.502626	12502626	20443	7	1	0		=2
910	12.523076	12523076	20450	8	1	0		0
911	12.543534	12543534	20458	9	1	-2		=2
912	12.564001	12564001	20467	8	-1	2		4
913	12.584476	12584476	20475	9	1	-1		=3
914	12.604960	12604960	20484	9	0	1		2
915	12.625453	12625453	20493	10	1	-3		=4
916	12.645956	12645956	20503	8	-2	-3		7
917	12.666467	12666467	20511	10	2	4		=8
918	12.686988	12686988	20521	8	-2	2		6
919	12.707517	12707517	20529	8	0	0		=2
920	12.728054	12728054	20537	8	0	0		0
921	12.748599	12748599	20545	8	0	-1		=1
922	12.769152	12769152	20553	7	-1	-1		1
923	12.789712	12789712	20560	6	-1	0		2
924	12.810278	12810278	20566	6	1	2		=5
925	12.830851	12830851	20573	7	-2	-3		6
926	12.851429	12851429	20578	5	1	3		=5
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929	12.913195	12913195	20593	4	1	2		=4
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931	12.954395	12954395	20602	4	1	2		=4
932	12.975002	12975002	20607	5	-1	-2		3
933	12.995613	12995613	20611	4	0	1		1
934	13.016228	13016228	20615	4	2	2		=6
935	13.036849	13036849	20621	6	-2	-4		9
936	13.057474	13057474	20625	4	3	5		-10
937	13.078106	13078106	20632	7	-2	-5		8
938	13.098743	13098743	20637	5	1	3		=2
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941	13.160695	13160695		8		0	
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944	13.222719	13222719	20683	8	2		=5
945	13.243412	13243412	20693	10	0	-2	1
946	13.264115	13264115	20703	10	-1	-1	4
947	13.284827	13284827	20712	9	2	3	=5
948	13.305550	13305550	20723	11	0	-2	2
949	13.326284	13326284	20734	11	0	0	=1
950	13.347029	13347029	20745	11	-1	-1	3
951	13.367784	13367784	20755	10	1	2	=4
952	13.388550	13388550	20766	11	-1	-2	4
953	13.409326	13409326	20776	10	1	2	=4
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955	13.450910	13450910	20797	10	0	1	=2
956	13.471717	13471717	20807	10	-1	-1	3
957	13.492533	13492533	20816	9	1	2	=6
958	13.513359	13513359	20826	10	-4	-4	9
959	13.534192	13534192	20833	7	-3	5	=8
960	13.555034	13555034	20842	9	2	-3	=8
961	13.575884	13575884	20850	9	-1	-3	2
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963	13.617604	13617604	20864	6	2	4	=8
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965	13.659350	13659350	20870	6	-2	2	6
966	13.680231	13680231	20876	6	0	2	=3
967	13.701118	13701118	20876	6	-1	-1	3
968	13.722010	13722010	20881	5	1	2	=4
969	13.742908	13742908	20887	6	-1	-2	4
970	13.763810	13763810	20887	5	-1	2	4
971	13.784716	13784716	20892	5	1	2	=5
972	13.805628	13805628	20892	6	-1	-3	5
973	13.826544	13826544	20898	4	-2	2	5
974	13.847466	13847466	20902	4	0	2	0
975	13.868392	13868392	20906	4	2	2	=6
976	13.889323	13889323	20912	6	-2	-4	8
977	13.910259	13910259	20916	4	2	4	=8
978	13.931200	13931200	20922	6	-2	-4	7
979	13.952147	13952147	20922	4	-2	3	7
980	13.973098	13973098	20926	5	1	3	=4
981	13.994055	13994055	20931	5	0	-1	1
			20936	5	0	0	1
			20941	5	0	1	1
			20947	5	1	1	=4
			20951	6	-2	-3	7
			20957	4	2	4	=7
			20962	6	-3	-3	4
				5	-1	1	4
				5	0	1	=1

982	14.015017	14015017		5	0	0	=1
983	14.035984	14035984	20967	5	0	=1	2
984	14.056956	14056956	20972	4	=1	1	0
985	14.077932	14077932	20976	4	0	1	=4
986	14.098912	14098912	20980	5	1	=3	6
987	14.119897	14119897	20985	3	=2	3	=6
988	14.140885	14140885	20988	4	1	=3	6
989	14.161877	14161877	20992	2	=2	3	=5
990	14.182871	14182871	20994	3	1	=2	3
991	14.203868	14203868	20997	2	=1	1	=1
992	14.224867	14224867	20999	2	0	0	=2
993	14.245868	14245868	21001	2	0	=2	5
994	14.266871	14266871	21003	0	=2	3	=5
995	14.287874	14287874	21003	1	1	=2	4
996	14.308878	14308878	21004	0	=1	2	=4
997	14.329882	14329882	21004	1	1	=2	2
998	14.350887	14350887	21005	0	=1	0	2
999	14.371892	14371892	21005	-1	=1	2	=3
1000	14.392896	14392896	21004	0	1	=1	0
1001	14.413900	14413900	21004	0	0	=1	2
1002	14.434904	14434904	21004	-1	=1	1	0
1003	14.455907	14455907	21003	-1	0	1	=2
1004	14.476909	14476909	21002	0	1	=1	0
1005	14.497911	14497911	21002	0	0	=1	3
1006	14.518913	14518913	21002	-1	=1	2	=4
1007	14.539914	14539914	21001	0	1	=2	5
1008	14.560915	14560915	21001	-1	=1	3	=7
1009	14.581915	14581915	21000	1	2	=4	7
1010	14.602916	14602916	21001	-1	=2	3	=4
1011	14.623916	14623916	21000	0	1	=1	1
1012	14.644916	14644916	21000	0	0	0	0
1013	14.665916	14665916	21000	0	0	0	0
1014	14.686916	14686916	21000	0	0	0	0
1015	14.707916	14707916	21000	0	0	0	0
1016	14.728916	14728916	21000	0	0	0	0
1017	14.749916	14749916	21000	0	0	0	0
1018	14.770916	14770916	21000	0	0	0	=1
1019	14.791916	14791916	21000	0	0	=1	4
1020	14.812916	14812916	21000	-1	=1	3	=7
1021	14.833915	14833915	20999	1	2	=4	7
1022	14.854915	14854915	21000	-1	=2	3	=4
			20999	-1	1	3	

1023	14.875914	14875914		0		-1	0
1024	14.896913	14896913	20999	0	0	-1	0
1025	14.917912	14917912	20999	-1	-1	1	2
1026	14.938910	14938910	20998	-1	0	1	0
1027	14.959907	14959907	20997	0	1	-2	3
1028	14.980904	14980904	20997	-1	-1	2	4
1029	15.001900	15001900	20996	0	1	-2	4
1030	15.022896	15022896	20996	-1	-1	2	3
1031	15.043891	15043891	20995	0	1	-1	1
1032	15.064886	15064886	20995	0	0	0	0
1033	15.085881	15085881	20995	0	0	0	1
1034	15.106876	15106876	20995	0	0	1	1
1035	15.127871	15127871	20995	1	1	-1	2
1036	15.148867	15148867	20996	1	0	-1	1
1037	15.169864	15169864	20997	1	0	0	2
1038	15.190862	15190862	20998	1	2	2	6
1039	15.211863	15211863	21001	3	-2	-4	9
1040	15.232865	15232865	21002	1	3	5	8
1041	15.253871	15253871	21006	4	0	-3	2
1042	15.274881	15274881	21010	4	-1	-1	4
1043	15.295894	15295894	21013	3	2	3	6
1044	15.316912	15316912	21018	5	2	-3	6
1045	15.337934	15337934	21018	4	-1	3	5
1046	15.358962	15358962	21022	6	2	-2	1
1047	15.379996	15379996	21028	6	0	-1	3
1048	15.401035	15401035	21034	5	-1	2	2
1049	15.422080	15422080	21039	6	1	0	3
1050	15.443132	15443132	21045	7	1	-3	6
1051	15.464189	15464189	21052	5	-2	3	5
1052	15.485252	15485252	21057	6	1	-2	3
1053	15.506320	15506320	21063	5	-1	1	2
1054	15.527393	15527393	21068	5	0	-1	2
1055	15.548470	15548470	21073	4	-1	1	2
1056	15.569551	15569551	21077	4	0	-1	1
1057	15.590635	15590635	21081	3	-1	0	0
1058	15.611721	15611721	21084	2	-1	0	1
1059	15.632808	15632808	21086	1	-1	1	3
1060	15.653896	15653896	21087	1	0	-2	5
1061	15.674983	15674983	21088	-1	-2	3	7
1062	15.696070	15696070	21087	0	1	-4	8
1063	15.717154	15717154	21087	-3	-3	4	6
			21084	-2	1	-2	2
			21082	-2	-1		

1064	15.738236	15738236		-3		0	
			21079		-1		2
1065	15.759315	15759315		-4		2	
			21075		1		=4
1066	15.780390	15780390		-3		-2	
			21072		-1		3
1067	15.801462	15801462		-4		1	
			21068		0		0
1068	15.822530	15822530		-4		1	
			21064		1		=3
1069	15.843594	15843594		-3		-2	
			21061		-1		3
1070	15.864655	15864655		-4		1	
			21057		0		1
1071	15.885712	15885712		-4		2	
			21053		2		=4
1072	15.906765	15906765		-2		-2	
			21051		0		2
1073	15.927816	15927816		-2		0	
			21049		0		1
1074	15.948865	15948865		-2		1	
			21047		1		=1
1075	15.969912	15969912		-1		0	
			21046		1		=1
1076	15.990958	15990958		0		-1	
			21046		0		2
1077	16.012004	16012004		0		1	
			21046		1		-1
1078	16.033050	16033050		1		0	
			21047		1		=1
1079	16.054097	16054097		2		-1	
			21049		0		1
1080	16.075146	16075146		2		0	
			21051		0		2
1081	16.096197	16096197		2		2	
			21053		2		=5
1082	16.117250	16117250		4		-3	
			21057		-1		6
1083	16.138307	16138307		3		3	
			21060		2		=7
1084	16.159367	16159367		5		-4	
			21065		-2		9
1085	16.180432	16180432		3		5	
			21068		3		-10
1086	16.201500	16201500		6		-5	
			21074		-2		8
1087	16.222574	16222574		4		3	
			21078		1		=3
1088	16.243652	16243652		5		0	
			21083		1		=2
1089	16.264735	16264735		6		-2	
			21089		-1		4
1090	16.285824	16285824		5		2	
			21094		1		=3
1091	16.306918	16306918		6		-1	
			21100		0		1
1092	16.328018	16328018		6		0	
			21106		0		1
1093	16.349124	16349124		6		1	
			21112		1		=3
1094	16.370236	16370236		7		-2	
			21119		-1		5
1095	16.391355	16391355		6		3	
			21125		2		=7
1096	16.412480	16412480		8		-4	
			21133		-2		8
1097	16.433613	16433613		6		4	
			21139		2		-6
1098	16.454752	16454752		8		-2	
			21147		0		1
1099	16.475899	16475899		8		-1	
			21155		-1		3
1100	16.497054	16497054		7		2	
			21162		1		=3
1101	16.518216	16518216		8		-1	
			21170		0		2
1102	16.539386	16539386		8		1	
			21178		1		=4
1103	16.560564	16560564		9		-3	
			21187		-2		7
1104	16.581751	16581751		7		4	
			21194		2		=8

1105	16.602945	16602945		9		-4	
1106	16.624148	16624148	21203	7	-2	4	8
1107	16.645358	16645358	21210	9	2	-4	8
1108	16.666577	16666577	21219	7	-2	3	7
1109	16.687803	16687803	21226	8	1	-2	5
1110	16.709037	16709037	21234	7	-1	2	4
1111	16.730278	16730278	21241	8	1	-2	5
1112	16.751527	16751527	21249	6	-2	4	7
1113	16.772782	16772782	21255	8	2	-4	8
1114	16.794045	16794045	21263	6	-2	3	7
1115	16.815314	16815314	21269	7	1	-1	4
1116	16.836590	16836590	21276	7	0	0	1
1117	16.857873	16857873	21283	7	0	1	1
1118	16.879163	16879163	21290	8	1	-1	4
1119	16.900461	16900461	21298	6	-2	4	7
1120	16.921765	16921765	21304	8	2	-2	6
1121	16.943077	16943077	21312	8	0	0	2
1122	16.964397	16964397	21320	8	0	1	1
1123	16.985725	16985725	21328	9	1	-2	3
1124	17.007062	17007062	21337	9	-1	-2	5
1125	17.028407	17028407	21345	8	2	3	5
1126	17.049762	17049762	21355	10	0	-1	1
1127	17.071127	17071127	21365	10	-1	-1	4
1128	17.092501	17092501	21374	9	2	3	6
1129	17.113886	17113886	21385	11	2	-3	6
1130	17.135281	17135281	21395	10	-1	4	4
1131	17.156686	17156686	21405	10	0	1	0
1132	17.178102	17178102	21416	11	1	-1	2
1133	17.199529	17199529	21427	11	0	-1	1
1134	17.220965	17220965	21436	11	-2	-2	6
1135	17.242412	17242412	21447	9	2	4	8
1136	17.263868	17263868	21456	11	-2	-4	7
1137	17.285334	17285334	21467	9	1	3	7
1138	17.306809	17306809	21475	10	1	-2	5
1139	17.328293	17328293	21484	9	-1	-1	3
1140	17.349785	17349785	21492	9	0	-1	2
1141	17.371284	17371284	21499	8	-1	0	1
1142	17.392791	17392791	21507	7	1	2	4
1143	17.414305	17414305	21514	8	-1	-2	2
1144	17.435825	17435825	21520	7	1	0	1
1145	17.457351	17457351	21526	6	-1	0	1
			21532	6	0	-1	1
					-1		3

1146	17.478883	17478883		5		2	
			21537		1		=5
1147	17.500420	17500420		6		-3	
			21543		-2		6
1148	17.521963	17521963		4		3	
			21547		1		=4
1149	17.543510	17543510		5		-1	
			21552		0		-1
1150	17.565062	17565062		5		-2	
			21557		-2		7
1151	17.586619	17586619		3		5	
			21560		3		-10
1152	17.608179	17608179		6		-5	
			21566		-2		7
1153	17.629745	17629745		4		2	
			21570		0		-1
1154	17.651315	17651315		4		1	
			21574		1		-3
1155	17.672889	17672889		5		-2	
			21579		-1		4
1156	17.694468	17694468		4		2	
			21583		1		=3
1157	17.716051	17716051		5		-1	
			21588		0		0
1158	17.737639	17737639		5		-1	
			21593		-1		4
1159	17.759232	17759232		4		3	
			21597		2		=6
1160	17.780829	17780829		6		-3	
			21603		-1		4
1161	17.802432	17802432		5		1	
			21608		0		-1
1162	17.824040	17824040		5		0	
			21613		0		1
1163	17.845653	17845653		5		1	
			21618		1		=3
1164	17.867271	17867271		6		-2	
			21624		-1		4
1165	17.888895	17888895		5		2	
			21629		1		=4
1166	17.910524	17910524		6		-2	
			21635		-1		3
1167	17.932159	17932159		5		1	
			21640		0		0
1168	17.953799	17953799		5		1	
			21645		1		-2
1169	17.975444	17975444		6		-1	
			21651		0		=1
1170	17.997095	17997095		6		-2	
			21657		-2		6
1171	18.018752	18018752		4		4	
			21661		2		=8
1172	18.040413	18040413		6		-4	
			21667		-2		7
1173	18.062080	18062080		4		3	
			21671		1		=5
1174	18.083751	18083751		5		-2	
			21676		-1		4
1175	18.105427	18105427		4		2	
			21680		1		=6
1176	18.127107	18127107		5		-4	
			21685		-3		10
1177	18.148792	18148792		2		6	
			21687		3		-12
1178	18.170479	18170479		5		-6	
			21692		-3		11
1179	18.192171	18192171		2		5	
			21694		2		-10
1180	18.213865	18213865		4		-5	
			21698		-3		10
1181	18.235563	18235563		1		5	
			21699		2		-7
1182	18.257262	18257262		3		-2	
			21702		0		0
1183	18.278964	18278964		3		-2	
			21705		-2		5
1184	18.300669	18300669		1		3	
			21706		1		=5
1185	18.322375	18322375		2		-2	
			21708		-1		3
1186	18.344083	18344083					
			21709		0		0

1187	18.365792	18365792		1	1	1	
1188	18.387502	18387502	21710	2	1	-2	+3
1189	18.409214	18409214	21712		-1	0	2
1190	18.430927	18430927	21713	0	-1	2	2
1191	18.452640	18452640	21713		1	-3	+5
1192	18.474354	18474354	21714	-1	-2	4	7
1193	18.496067	18496067	21713		2		+9
1194	18.517781	18517781	21714	1	-3	-5	9
1195	18.539493	18539493	21712	-2		4	+6
1196	18.561204	18561204	21711	-1	-1	-2	3
1197	18.582913	18582913	21709	-2	0	1	+3
1198	18.604620	18604620	21707	-2	-2	-2	4
1199	18.626323	18626323	21703	-4	0	2	+4
1200	18.648022	18648022	21699	-4	-2	-2	4
1201	18.669715	18669715	21693	-6	0	2	+2
1202	18.691402	18691402	21687	-6	0	0	-3
1203	18.713083	18713083	21681	-6	-3	-3	5
1204	18.734755	18734755	21672	-9	-1	2	0
1205	18.756417	18756417	21662	-10	1	2	+6
1206	18.778070	18778070	21653	-9	-3	-4	7
1207	18.799711	18799711	21641	-12	0	3	+4
1208	18.821340	18821340	21629	-12	-1	-1	1
1209	18.842956	18842956	21616	-13	-1	0	2
1210	18.864558	18864558	21602	-14	-1	2	+5
1211	18.886147	18886147	21589	-13	-2	-3	5
1212	18.907721	18907721	21574	-15	-2	2	+2
1213	18.929280	18929280	21559	-15	0	0	0
1214	18.950824	18950824	21544	-15	0	0	2
1215	18.972353	18972353	21529	-15	2	2	+6
1216	18.993869	18993869	21516	-13	-2	-4	8
1217	19.015370	19015370	21501	-15	-2	4	+6
1218	19.036858	19036858	21488	-13	0	-2	4
1219	19.058333	19058333	21475	-13	2	2	+4
1220	19.079797	19079797	21464	-11	0	-2	3
1221	19.101250	19101250	21453	-11	1	1	0
1222	19.122693	19122693	21443	-10	2	1	-3
1223	19.144128	19144128	21435	-8	0	-2	4
1224	19.165555	19165555	21427	-8	0	2	+4
1225	19.186976	19186976	21421	-6	2	-2	5
1226	19.208391	19208391	21415	-6	0	3	+7
1227	19.229803	19229803	21412	-3	3	-4	7
1228	19.251211	19251211	21408	-4	-1	3	+5
			21406	-2	2	-2	4
					0		

1229	19.272617	19272617		-2		2	
			21404		2		=5
1230	19.294021	19294021		0		-3	
			21404		-1		4
1231	19.315425	19315425		-1		1	
			21403		0		0
1232	19.336828	19336828		-1		1	
			21402		1		=2
1233	19.358230	19358230		0		-1	
			21402		0		0
1234	19.379632	19379632		0		-1	
			21402		-1		3
1235	19.401034	19401034		-1		2	
			21401		1		=6
1236	19.422435	19422435		0		-4	
			21401		-3		9
1237	19.443836	19443836		-3		5	
			21398		2		-10
1238	19.465234	19465234		-1		-5	
			21397		-3		9
1239	19.486631	19486631		-4		4	
			21393		1		-8
1240	19.508024	19508024		-3		-4	
			21390		-3		8
1241	19.529414	19529414		-6		4	
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1511	25.063152	25063152	20197	-3		3	
1512	25.083343	25083343	20197	-2		-3	=6
1513	25.103531	25103531	20195	-4	=2		6
1514	25.123715	25123715	20191	-4		3	=5
1515	25.143894	25143894	20188	-3	=1	-2	2
			20184	-4		0	2
			20179	-5	=1	2	
			20175	-4		-3	=5
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1516	25.164069	25164069		-6		3	
1517	25.184238	25184238	20169	-5	1	-1	=4
1518	25.204402	25204402	20164	-5	0	-2	=1
1519	25.224561	25224561	20159	-7	=2	5	7
1520	25.244713	25244713	20152	-4	3	-6	-11
1521	25.264861	25264861	20148	-7	=3	5	11
1522	25.285002	25285002	20141	-5	2	-2	=7
1523	25.305138	25305138	20136	-5	0	-1	1
1524	25.325269	25325269	20131	-6	=1	3	4
1525	25.345394	25345394	20125	-4	2	-3	=6
1526	25.365515	25365515	20121	-5	=1	2	5
1527	25.385631	25385631	20116	-4	1	0	=2
1528	25.405743	25405743	20112	-3	1	-2	=2
1529	25.425852	25425852	20109	-4	=1	3	5
1530	25.445957	25445957	20105	-2	2	-3	=6
1531	25.466060	25466060	20103	-3	=1	3	6
1532	25.486160	25486160	20100	-1	2	-3	=6
1533	25.506259	25506259	20099	-2	=1	1	4
1534	25.526356	25526356	20097	-2	0	3	2
1535	25.546451	25546451	20095	-2	3	-5	=8
1536	25.566547	25566547	20096	-1	=2	2	7
1537	25.586642	25586642	20095	-1	0	2	0
1538	25.606736	25606736	20094	-1	2	-2	=4
1539	25.626831	25626831	20095	-1	0	-1	1
1540	25.646927	25646927	20096	0	=1	1	2
1541	25.667023	25667023	20096	0	0	1	1
1542	25.687119	25687119	20096	2	2	-3	=5
1543	25.707217	25707217	20098	2	=1	3	3
1544	25.727316	25727316	20099	1	-1	0	3
1545	25.747415	25747415	20099	0	2	3	=7
1546	25.767516	25767516	20101	2	-4	-4	7
1547	25.787617	25787617	20101	0	=2	3	7
1548	25.807719	25807719	20101	0	1	0	=3
1549	25.827823	25827823	20102	2	1	-3	=3
1550	25.847927	25847927	20104	0	=2	2	5
1551	25.868031	25868031	20104	0	0	2	=1
1552	25.888136	25888136	20104	0	1	1	=2
1553	25.908242	25908242	20105	1	0	-1	=1
1554	25.928347	25928347	20105	-1	=2	-2	4
1555	25.948451	25948451	20105	-1	0	2	0
1556	25.968556	25968556	20104	-1	2	2	=7
			20105	1	-5	-5	8
				-2	=3	3	

1557	25.988659	25988659	20103		0		=2
			20101	-2	1	1	=4
1558	26.008760	26008760	20100	-1	-2	-3	6
1559	26.028860	26028860	20097	-3	1	3	=6
1560	26.048957	26048957	20095	-2	-2	-3	6
1561	26.069052	26069052	20091	-4	1	3	=5
1562	26.089143	26089143	20088	-3	-1	-2	2
1563	26.109231	26109231	20084	-4	-1	0	2
1564	26.129315	26129315	20079	-5	1	2	=5
1565	26.149394	26149394	20075	-4	-2	-3	6
1566	26.169469	26169469	20069	-6	1	3	=4
1567	26.189538	26189538	20064	-5	0	-1	=1
1568	26.209602	26209602	20059	-5	-2	-2	6
1569	26.229661	26229661	20052	-7	2	4	=7
1570	26.249713	26249713	20047	-5	-1	-3	5
1571	26.269760	26269760	20041	-6	1	2	=4
1572	26.289801	26289801	20036	-5	-1	-2	4
1573	26.309837	26309837	20030	-6	1	2	=2
1574	26.329867	26329867	20025	-5	1	0	=2
1575	26.349892	26349892	20021	-4	-1	-2	4
1576	26.369913	26369913	20016	-5	1	2	=3
1577	26.389929	26389929	20012	-4	0	-1	3
1578	26.409941	26409941	20008	-4	2	2	=5
1579	26.429949	26429949	20006	-2	-1	-3	5
1580	26.449955	26449955	20003	-3	1	2	=2
1581	26.469958	26469958	20001	-2	1	0	=1
1582	26.489959	26489959	20000	-1	0	-1	1
1583	26.509959	26509959	19999	-1	0	0	1
1584	26.529958	26529958	19998	-1	1	1	=2
1585	26.549956	26549956	19998	0	0	-1	1
1586	26.569954	26569954	19998	0	0	0	1
1587	26.589952	26589952	19998	0	0	1	1
1588	26.609950	26609950	19998	1	1	-1	=2
1589	26.629949	26629949	19999	1	0	-1	0
1590	26.649949	26649949	20000	0	-1	-1	3
1591	26.669949	26669949	20000	0	1	2	=5
1592	26.689950	26689950	20001	-1	-2	-3	7
1593	26.709950	26709950	20000	1	2	4	=8
1594	26.729951	26729951	20001	1	-2	-4	7
1595	26.749951	26749951	20000	-1	1	3	=5
1596	26.769951	26769951	20000	0	1	-2	2
1597	26.789950	26789950	19999	-1	-1	0	1
			19997	-2	0	1	=1

1639	27.628028	27626028		-3		-1	
1640	27.647938	27647938	19910	-3	0	0	1
1641	27.667845	27667845	19907	-3	0	1	1
1642	27.687749	27687749	19904	-2	1	0	-1
1643	27.707651	27707651	19902	-1	1	-3	-3
1644	27.727552	27727552	19901	-3	-2	5	8
1645	27.747450	27747450	19898	0	3	-4	-9
1646	27.767348	27767348	19898	-1	-1	1	5
1647	27.787245	27787245	19897	-1	0	0	-1
1648	27.807141	27807141	19896	-1	0	0	2
1649	27.827036	27827036	19895	1	2	2	-5
1650	27.846932	27846932	19896	1	-1	-3	4
1651	27.866828	27866828	19896	0	0	1	0
1652	27.886724	27886724	19896	0	1	1	-3
1653	27.906621	27906621	19897	1	-1	-2	4
1654	27.926518	27926518	19897	0	1	2	-4
1655	27.946416	27946416	19898	1	-1	-2	3
1656	27.966314	27966314	19898	0	0	1	0
1657	27.986212	27986212	19898	0	1	1	-3
1658	28.006111	28006111	19899	1	-1	-2	4
1659	28.026010	28026010	19899	0	1	2	-4
1660	28.045910	28045910	19900	1	-1	-2	3
1661	28.065810	28065810	19900	0	0	1	-1
1662	28.085710	28085710	19900	0	0	0	1
1663	28.105610	28105610	19900	0	1	1	-4
1664	28.125511	28125511	19901	1	-2	-3	7
1665	28.145411	28145411	19900	-1	4	4	-8
1666	28.165312	28165312	19901	1	2	-4	7
1667	28.185212	28185212	19901	-1	-2	3	7
1668	28.205112	28205112	19900	-1	1	3	-3
1669	28.225013	28225013	19900	0	1	0	-3
1670	28.244913	28244913	19901	-1	-2	3	6
1671	28.264813	28264813	19900	0	1	3	-5
1672	28.284712	28284712	19899	-1	-1	3	5
1673	28.304612	28304612	19899	1	2	-3	-6
1674	28.324512	28324512	19900	1	-1	-3	3
1675	28.344411	28344411	19900	0	1	0	3
1676	28.364311	28364311	19900	-1	-1	3	3
1677	28.384210	28384210	19899	1	2	-4	-7
1678	28.404110	28404110	19900	1	-2	-4	8
1679	28.424010	28424010	19899	-1	2	4	-7
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1680	28.443910	28443910		0		1	
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1687	28.583221	28583221	19903	0	0		0
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1689	28.623028	28623028	19904		=1		4
1690	28.642932	28642932	19904	0	1	2	=5
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1692	28.682741	28682741	19904	-1		3	=4
1693	28.702645	28702645	19904	0	0	=1	0
1694	28.722549	28722549	19903	-1	=1		2
1695	28.742452	28742452	19902	-1	0	=1	=2
1696	28.762354	28762354	19900	-2	=1		2
1697	28.782254	28782254	19898	-2	0	0	=1
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1701	28.861830	28861830	19887	-2	2	=5	10
1702	28.881717	28881717	19882	-5	=3	5	=9
1703	28.901599	28901599	19879	-3	2	-4	8
1704	28.921478	28921478	19874	-5	=2	4	=8
1705	28.941352	28941352	19871	-3	2	-4	7
1706	28.961223	28961223	19866	-5	=2	3	=3
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1708	29.000951	29000951	19859	-3		=1	1
1709	29.020810	29020810	19856	-3	0	0	0
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1711	29.060519	29060519	19850	-3	2	2	=4
1712	29.080369	29080369	19849	-1	0	-2	3
1713	29.100218	29100218	19848	=1		1	=2
1714	29.120066	29120066	19848	0	0	=1	3
1715	29.139914	29139914	19848	0	2	2	=5
1716	29.159762	29159762	19850	2	=1	-3	6
1717	29.179612	29179612	19851	1	2	3	=6
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1720	29.239173	29239173	19861	5	3	=6	12

1721	29.259034	29259034		2		6	
1722	29.278897	29278897	19863	5	3	-5	-1
1723	29.298765	29298765	19868	3	-2		8
1724	29.318636	29318636	19871	4	1	3	-5
1725	29.338511	29338511	19875	3	-1		3
1726	29.358389	29358389	19878	3	0		-1
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1728	29.398154	29398154	19884	2	-1	-1	1
1729	29.418040	29418040	19886	1	-1	0	0
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1731	29.457814	29457814	19887	0	1	2	-6
1732	29.477702	29477702	19888	1	-3	-4	8
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1734	29.517473	29517473	19885	-1	-2	-3	5
1735	29.537355	29537355	19882	-3	-3	2	-3
1736	29.557234	29557234	19879	-3	0	-1	2
1737	29.577109	29577109	19879	-4	-1	1	-2
1738	29.596980	29596980	19875	-4	0	-1	2
1739	29.616846	29616846	19871	-5	-1	2	3
1740	29.636708	29636708	19866	-4	1	-3	-5
1741	29.656564	29656564	19862	-4	-2	-3	5
1742	29.676414	29676414	19856	-6	0	2	-1
1743	29.696259	29696259	19850	-6	1	-1	3
1744	29.716098	29716098	19845	-5	-1	-2	4
1745	29.735932	29735932	19839	-6	1	2	-4
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1749	29.815212	29815212	19818	-4	-2	-4	7
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1751	29.854820	29854820	19807	-5	-1	-2	5
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1754	29.914194	29914194	19791	-6	1	3	-4
1755	29.933975	29933975	19786	-5	0	-1	0
1756	29.953750	29953750	19781	-5	-1	-1	1
1757	29.973518	29973518	19775	-6	-1	0	3
1758	29.993281	29993281	19768	-7	1	3	-7
1759	30.013037	30013037	19763	-5	2	-4	6
1760	30.032786	30032786	19756	-7	-2	2	-3
1761	30.052527	30052527	19749	-7	0	-1	3
			19741	-8	-1	2	-3
			19734	-7	0	-1	2

1762	30.072261	30072261		-7		-3	
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1765	30.131415	30131415	19710	-10	=3	4	10
1766	30.151115	30151115	19700	-9	1	0	=4
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1768	30.190489	30190489	19683	-11	=3	6	10
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1772	30.269122	30269122	19644	-10	=1	1	4
1773	30.288756	30288756	19634	-10	0	0	=1
1774	30.308380	30308380	19624	-10	0	=1	=1
1775	30.327994	30327994	19614	-11	=1	3	4
1776	30.347597	30347597	19603	-9	2	-5	=8
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1786	30.543000	30543000	19480	-16	0	0	=2
1787	30.562464	30562464	19464	-16	0	0	=3
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1795	30.717476	30717476	19298	-25	1	3	=7
1796	30.736750	30736750	19274	-24	=3	-4	7
1797	30.755997	30755997	19247	-27	0	3	=4
1798	30.775217	30775217	19220	-27	=1	=1	2
1799	30.794409	30794409	19192	-28	0	1	=1
1800	30.813573	30813573	19164	-28	0	0	=2
1801	30.832709	30832709	19136	-28	=2	-2	6
1802	30.851815	30851815	19106	-30	2	4	-8
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1803	30.870893	30870893		-30		3	
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1818	31.153679	31153679	18666	-26	=1	=1	4
1819	31.172318	31172318	18639	-27	2	3	=8
1820	31.190932	31190932	18614	-29	=3	-5	9
1821	31.209518	31209518	18586	-28	1	4	=6
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1823	31.246608	31246608	18531	-28	=2	=1	3
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1825	31.283580	31283580	18471	-30	=1	=1	1
1826	31.302020	31302020	18440	-31	=1	0	0
1827	31.320428	31320428	18408	-32	=1	0	0
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1829	31.357144	31357144	18341	-34	=2	=1	3
1830	31.375449	31375449	18305	-36	0	2	=2
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1833	31.430146	31430146	18195	-38	1	3	=6
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1835	31.466423	31466423	18119	-39	1	3	=3
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1837	31.502548	31502548	18044	-37	=2	-3	7
1838	31.520553	31520553	18005	-39	2	4	=6
1839	31.538521	31538521	17968	-37	0	-2	3
1840	31.556452	31556452	17931	-37	1	1	=1
1841	31.574347	31574347	17895	-36	1	0	=1
1842	31.592207	31592207	17860	-35	0	=1	2
1843	31.610032	31610032	17825	-35	1	1	1
			17791	-34	3	2	=7

1844	31.627823	31627823	17760	-31	-2	-5	10
1845	31.645583	31645583	17727	-33	3	5	-9
1846	31.663310	31663310	17697	-30	-1	-4	8
1847	31.681007	31681007	17666	-31	3	4	-7
1848	31.698673	31698673	17638	-28	0	-3	2
1849	31.716311	31716311	17610	-28	-1	-1	4
1850	31.733921	31733921	17581	-29	2	3	-4
1851	31.751502	31751502	17554	-27	1	-1	-1
1852	31.769056	31769056	17528	-26	-1	-2	3
1853	31.786584	31786584	17501	-27	0	1	1
1854	31.804085	31804085	17474	-27	2	2	-6
1855	31.821559	31821559	17449	-25	-2	-4	8
1856	31.839008	31839008	17422	-27	2	4	-8
1857	31.856430	31856430	17397	-25	-2	-4	9
1858	31.873827	31873827	17370	-27	3	5	-10
1859	31.891197	31891197	17346	-24	-2	-5	8
1860	31.908543	31908543	17320	-26	1	3	-3
1861	31.925863	31925863	17295	-25	1	0	0
1862	31.943158	31943158	17271	-24	1	0	-2
1863	31.960429	31960429	17248	-23	-1	-2	4
1864	31.977677	31977677	17224	-24	1	2	-1
1865	31.994901	31994901	17201	-23	2	1	-2
1866	32.012102	32012102	17180	-21	1	-1	0
1867	32.029282	32029282	17160	-20	0	-1	2
1868	32.046442	32046442	17140	-20	1	1	0
1869	32.063582	32063582	17121	-19	2	1	-2
1870	32.080703	32080703	17104	-17	1	-1	1
1871	32.097807	32097807	17088	-16	1	0	-1
1872	32.114895	32114895	17073	-15	0	-1	4
1873	32.131968	32131968	17058	-15	3	3	-7
1874	32.149026	32149026	17046	-12	-1	-4	7
1875	32.166072	32166072	17033	-13	2	3	-4
1876	32.183105	32183105	17022	-11	1	-1	0
1877	32.200127	32200127	17012	-10	0	-1	1
1878	32.217139	32217139	17002	-10	0	0	1
1879	32.234141	32234141	16992	-10	1	1	-2
1880	32.251133	32251133	16983	-9	0	-1	1
1881	32.268116	32268116	16974	-9	0	0	0
1882	32.285090	32285090	16965	-9	0	0	0
1883	32.302055	32302055	16956	-9	0	0	0
1884	32.319011	32319011	16947	-9	0	0	0

1885	32.335958	32335958		-9	0	0	0
1886	32.352896	32352896	16938	-9	0	0	0
1887	32.369825	32369825	16929	-9	0	-1	=1
1888	32.386745	32386745	16920	-9	=1	-1	3
1889	32.403655	32403655	16910	-9	1	-3	=5
1890	32.420556	32420556	16901	-9	=2	-3	7
1891	32.437446	32437446	16890	=11	2	4	=6
1892	32.454327	32454327	16881	-9	0	-2	0
1893	32.471199	32471199	16872	-9	-2	4	6
1894	32.488060	32488060	16861	=11	2	4	=6
1895	32.504912	32504912	16852	-9	0	-2	2
1896	32.521755	32521755	16843	-9	0	0	=1
1897	32.538589	32538589	16834	-9	=1	-1	5
1898	32.555413	32555413	16824	=10	3	4	=9
1899	32.572230	32572230	16817	-7	-2	-5	8
1900	32.589038	32589038	16808	-9	1	3	=2
1901	32.605838	32605838	16800	-8	2	1	=5
1902	32.622632	32622632	16794	-6	-2	-4	8
1903	32.639418	32639418	16786	-8	2	4	=7
1904	32.656198	32656198	16780	-6	=1	-3	6
1905	32.672971	32672971	16773	-7	2	3	=5
1906	32.689739	32689739	16768	-5	0	-2	2
1907	32.706502	32706502	16763	-5	0	0	=1
1908	32.723260	32723260	16758	-5	=1	-1	5
1909	32.740012	32740012	16752	-6	3	4	=9
1910	32.756761	32756761	16749	-3	=2	-5	7
1911	32.773505	32773505	16744	-5	0	2	0
1912	32.790244	32790244	16739	-5	2	-3	=5
1913	32.806980	32806980	16736	-3	=1	-3	3
1914	32.823712	32823712	16732	-4	=1	0	3
1915	32.840439	32840439	16727	-5	2	3	=6
1916	32.857163	32857163	16724	-3	=1	-3	3
1917	32.873883	32873883	16720	-4	0	0	2
1918	32.890598	32890598	16715	-4	=1	2	=3
1919	32.907309	32907309	16711	-4	1	-1	0
1920	32.924016	32924016	16707	-4	0	-1	2
1921	32.940718	32940718	16702	-5	=1	1	=2
1922	32.957415	32957415	16697	-5	0	-1	2
1923	32.974106	32974106	16691	-6	=1	1	0
1924	32.990791	32990791	16685	-6	0	1	=5
1925	33.007471	33007471	16680	-5	=3	-4	9
			16672	-8	2	5	=10

1926	33.024143	33024143		-6		-5	
1927	33.040809	33040809	16666	-9	-3	5	10
1928	33.057466	33057466	16657	-7	2	-3	-8
1929	33.074116	33074116	16650	-8	-1	0	3
1930	33.090758	33090758	16642	-9	-1		1
1931	33.107391	33107391	16633	-9	0		-1
1932	33.124015	33124015	16624	-9	0	0	0
1933	33.140630	33140630	16615	-9	0		1
1934	33.157236	33157236	16606	-8	1		-3
1935	33.173834	33173834	16598	-9	-1	-2	4
1936	33.190423	33190423	16589	-8	1	2	-3
1937	33.207004	33207004	16581	-8	0	2	3
1938	33.223577	33223577	16573	-6	2		-4
1939	33.240144	33240144	16567	-6	0	-2	3
1940	33.256705	33256705	16561	-5	1		-2
1941	33.273261	33273261	16556	-5	0	-1	4
1942	33.289812	33289812	16551	-2	3	3	-6
1943	33.306361	33306361	16549	-2	0		4
1944	33.322908	33322908	16547	-1	1		-1
1945	33.339454	33339454	16546	0	1		1
1946	33.356000	33356000	16546	2	2	-3	-4
1947	33.372548	33372548	16548	1	-1	4	7
1948	33.389097	33389097	16549	4	3		-7
1949	33.405650	33405650	16553	4	0	-3	3
1950	33.422207	33422207	16557	4	0	0	0
1951	33.438768	33438768	16561	4	0	0	0
1952	33.455333	33455333	16565	4	0		1
1953	33.471902	33471902	16569	4	1	-2	-3
1954	33.488476	33488476	16574	5	-1		2
1955	33.505054	33505054	16578	4	-1	0	0
1956	33.521635	33521635	16581	3	-1	0	0
1957	33.538218	33538218	16583	2	-1		1
1958	33.554802	33554802	16584	1	0		-3
1959	33.571387	33571387	16585	1	-2	-2	3
1960	33.587971	33587971	16584	-1	-1		-2
1961	33.604553	33604553	16582	-2	-2	-1	2
1962	33.621131	33621131	16578	-4	-1		0
1963	33.637704	33637704	16573	-3	0		-4
1964	33.654272	33654272	16568	-5	-3	-3	5
1965	33.670832	33670832	16560	-8	-1	2	-1
1966	33.687383	33687383	16551	-9	0		-2
			16542	-9	-1	-1	1

1967	33.703925	33703925		-10		0	
1968	33.720457	33720457	16532	-11	=1	2	2
1969	33.736978	33736978	16521	-10		-3	=5
1970	33.753489	33753489	16511	-12	=2	2	5
1971	33.769988	33769988	16499	-12	0	2	0
1972	33.786475	33786475	16487	-10	2	-3	=5
1973	33.802952	33802952	16477	-11	=1	3	6
1974	33.819418	33819418	16466	-9	2	-3	=6
1975	33.835875	33835875	16457	-10	=1	4	7
1976	33.852322	33852322	16447	-7	3	-5	=9
1977	33.868762	33868762	16440	-9	=2	6	11
1978	33.885193	33885193	16431	-5	4	-6	-12
1979	33.901619	33901619	16426	-7	=2	5	11
1980	33.918038	33918038	16419	-4	3	-3	=8
1981	33.934453	33934453	16415	-4	0	0	3
1982	33.950864	33950864	16411	-4	0	0	0
1983	33.967271	33967271	16407	-4	0	2	2
1984	33.983674	33983674	16403	-2	2	-2	=4
1985	34.000075	34000075	16401	-2	0	-2	0
1986	34.016474	34016474	16399	-4	=2	4	6
1987	34.032869	34032869	16395	-2	2	-5	=9
1988	34.049262	34049262	16393	-5	=3	5	10
1989	34.065650	34065650	16388	-3	2	-3	=8
1990	34.082035	34082035	16385	-4	=1	-1	2
1991	34.098416	34098416	16381	-6	=2	2	3
1992	34.114791	34114791	16375	-6	0	-1	=3
1993	34.131160	34131160	16369	-7	=1	0	1
1994	34.147522	34147522	16362	-8	=1	1	1
1995	34.163876	34163876	16354	-8	0	-2	=3
1996	34.180222	34180222	16346	-10	=2	2	4
1997	34.196558	34196558	16336	-10	0	0	=2
1998	34.212884	34212884	16326	-10	0	-1	=1
1999	34.229200	34229200	16316	-11	=1	2	3
2000	34.245505	34245505	16305	-10	1	-3	=5
2001	34.261800	34261800	16295	-12	=2	4	7
2002	34.278083	34278083	16283	-10	2	-2	=6
2003	34.294356	34294356	16273	-10	0	0	2
2004	34.310619	34310619	16263	-10	0	1	1
2005	34.326872	34326872	16253	-9	1	-1	=2
2006	34.343116	34343116	16244	-9	0	2	3

2007	34.359351	34359351	16235		2		=4
			16228	-7	0	-2	4
2008	34.375579	34375579	16221	-7	2	2	=5
2009	34.391800	34391800	16216	-5	=1	-3	7
2010	34.408016	34408016	16210	-6	3	4	=8
2011	34.424226	34424226	16207	-3	=1	-4	6
2012	34.440433	34440433	16203	-4	1	2	=1
2013	34.456636	34456636	16200	-3	2	1	=4
2014	34.472836	34472836	16199	-1	=1	-3	4
2015	34.489035	34489035	16197	-2	0	1	1
2016	34.505232	34505232	16195	-2	2	2	=6
2017	34.521427	34521427	16195	0	-2	-4	8
2018	34.537622	34537622	16193	-2	2	4	=9
2019	34.553815	34553815	16193	0	-3	-5	10
2020	34.570008	34570008	16190	-3	2	5	=8
2021	34.586198	34586198	16189	-1	=1	-3	2
2022	34.602387	34602387	16187	-2	-2	-1	3
2023	34.618574	34618574	16183	-4	0	2	=1
2024	34.634757	34634757	16179	-4	1	1	=6
2025	34.650936	34650936	16176	-3	-4	-5	11
2026	34.667112	34667112	16169	-7	2	6	=9
2027	34.683281	34683281	16164	-5	=1	-3	1
2028	34.699445	34699445	16158	-6	-3	-2	7
2029	34.715603	34715603	16149	-9	2	5	=9
2030	34.731752	34731752	16142	-7	=2	-4	7
2031	34.747894	34747894	16133	-9	1	3	=6
2032	34.764027	34764027	16125	-8	-2	-3	5
2033	34.780152	34780152	16115	-10	0	2	=1
2034	34.796267	34796267	16105	-10	1	1	=2
2035	34.812372	34812372	16096	-9	0	-1	0
2036	34.828468	34828468	16087	-9	=1	-1	2
2037	34.844555	34844555	16077	-10	0	1	1
2038	34.860632	34860632	16067	-10	2	2	=5
2039	34.876699	34876699	16059	-8	=1	-3	5
2040	34.892758	34892758	16050	-9	1	2	=3
2041	34.908808	34908808	16042	-8	0	-1	3
2042	34.924850	34924850	16034	-8	2	2	=5
2043	34.940884	34940884	16028	-6	=1	-3	6
2044	34.956912	34956912	16021	-7	2	3	=5
2045	34.972933	34972933	16016	-5	0	-2	3
2046	34.988949	34988949	16011	-5	1	1	=2
2047	35.004960	35004960	16007	-4	0	-1	3

2048	35.020967	35020967		-4		2	
2049	35.036970	35036970	16003	-2	2	-2	=4
2050	35.052971	35052971	16001	-2	0	0	2
2051	35.068970	35068970	15999	-2	0	2	2
2052	35.084967	35084967	15997	0	2	-4	=6
2053	35.100964	35100964	15997	-2	=2	5	9
2054	35.116959	35116959	15995	1	3	-4	=9
2055	35.132955	35132955	15996	0	=1	2	6
2056	35.148951	35148951	15996	1	1	=1	=3
2057	35.164948	35164948	15997	1	0	-1	0
2058	35.180945	35180945	15998	1	=1	-1	3
2059	35.196944	35196944	15998	0	1	2	=2
2060	35.212943	35212943	15999	1	1	0	=3
2061	35.228944	35228944	16001	2	-2	-3	6
2062	35.244945	35244945	16001	0	1	3	=4
2063	35.260947	35260947	16002	1	0	-1	=1
2064	35.276950	35276950	16003	1	-2	-2	6
2065	35.292952	35292952	16002	-1	2	4	=8
2066	35.308955	35308955	16003	1	-2	-4	6
2067	35.324957	35324957	16003	-1	=2	2	6
2068	35.340958	35340958	16002	-1	0	1	=3
2069	35.356957	35356957	16001	-2	=1	2	3
2070	35.372955	35372955	15999	-1	1	-4	=6
2071	35.388949	35388949	15998	-1	-3	-4	9
2072	35.404941	35404941	15994	-4	2	5	=8
2073	35.420930	35420930	15992	-2	=1	-3	2
2074	35.436914	35436914	15989	-3	-2	-1	4
2075	35.452894	35452894	15984	-5	1	3	=4
2076	35.468870	35468870	15980	-4	0	-1	=1
2077	35.484840	35484840	15976	-4	0	-2	4
2078	35.500804	35500804	15970	-6	=2	2	4
2079	35.516763	35516763	15970	-6	0	2	=1
2080	35.532716	35532716	15964	-6	1	1	=3
2081	35.548663	35548663	15959	-5	1	-2	3
2082	35.564604	35564604	15953	-6	0	1	=1
2083	35.580539	35580539	15947	-6	0	0	=0
2084	35.596468	35596468	15941	-6	0	0	0
2085	35.612392	35612392	15935	-6	0	0	1
2086	35.628310	35628310	15929	-6	1	1	=3
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2088	35.660132	35660132	15918	-6	=1	2	4
2089	35.676037	35676037	15913	-5	1	0	-2
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			15905	-4	0	0	1
			15901	-4	1	1	=1

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2092	35.723732	35723732	15896	-2	0		2
2093	35.739626	35739626	15894	-1	1	0	=1
2094	35.755519	35755519	15893	0	1	0	0
2095	35.771412	35771412	15893		1		=2
2096	35.787306	35787306	15894	0	-1	-2	6
2097	35.803200	35803200	15894	3	3	-4	=8
2098	35.819097	35819097	15897	3	-1		7
2099	35.834996	35834996	15899	2	2	3	=6
2100	35.850899	35850899	15903	4	-1	-3	6
2101	35.866805	35866805	15906	3	2	3	=6
2102	35.882716	35882716	15911	5	-1	-3	
2103	35.898631	35898631	15915	4	1	2	=3
2104	35.914551	35914551	15920	5	0	-1	1
2105	35.930476	35930476	15925	5	0	0	0
2106	35.946406	35946406	15930	5	0	0	0
2107	35.962341	35962341	15935	5	0	0	=1
2108	35.978281	35978281	15940	5	-1	-1	2
2109	35.994225	35994225	15944	4	0	1	=1
2110	36.010173	36010173	15948	4	0	0	=2
2111	36.026125	36026125	15952	4	-2	-2	4
2112	36.042079	36042079	15954	2	0	2	=3
2113	36.058035	36058035	15956	2	-1	-1	1
2114	36.073992	36073992	15957	1	-1	0	=1
2115	36.089949	36089949	15957	0	-2	-1	3
2116	36.105904	36105904	15955	-2	0	2	=3
2117	36.121857	36121857	15953	-2	-1	-1	1
2118	36.137807	36137807	15950	-3	-1	0	0
2119	36.153753	36153753	15946	-4	-1	0	0
2120	36.169694	36169694	15941	-4	-1	0	0
2121	36.185629	36185629	15935	-6	1	0	1
2122	36.201557	36201557	15928	-7	0	1	=1
2123	36.217478	36217478	15921	-7	0	0	=1
2124	36.233392	36233392	15914	-7	-1	-1	2
2125	36.249298	36249298	15906	-8	0	1	0
2126	36.265196	36265196	15898	-8	1	-2	=3
2127	36.281087	36281087	15891	-7	-1	-2	4
2128	36.296970	36296970	15883	-8	1	2	=2
2129	36.312846	36312846	15876	-7	1	0	=1
2130	36.328716	36328716	15870	-6	0	-1	=1
2131	36.344580	36344580	15864	-6	0	0	1
			15858	-6	2	2	=5

2132	36.360438	36360438		-4	-3		
2133	36.376292	36376292	15854	-5	-1	4	7
2134	36.392141	36392141	15849	-2	3	-8	
2135	36.407988	36407988	15847	-3	-1	7	
2136	36.423832	36423832	15844	-1	2	-6	
2137	36.439675	36439675	15843	-2	-1	6	
2138	36.455516	36455516	15841	0	2	-4	
2139	36.471357	36471357	15841	1	1	-2	
2140	36.487199	36487199	15842	-1	-2	8	
2141	36.503040	36503040	15841	2	3	-10	
2142	36.518883	36518883	15843	0	-2	9	
2143	36.534726	36534726	15843	0	2	-7	
2144	36.550571	36550571	15845	2	-1	5	
2145	36.566417	36566417	15846	1	1	-3	
2146	36.582265	36582265	15848	2	0	0	
2147	36.598115	36598115	15850	2	-1	-1	2
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2150	36.645672	36645672	15854	2	-1	-2	3
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2154	36.709097	36709097	15856	2	2	-8	
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2162	36.835923	36835923	15851	-3	1	2	-5
2163	36.851764	36851764	15849	-2	-2	-3	5
2164	36.867599	36867599	15845	-4	0	2	-4
2165	36.883429	36883429	15841	-4	0	-2	5
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2167	36.915069	36915069	15830	-5	1	-2	1
2168	36.930877	36930877	15830	-6	-1	-1	1
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2170	36.962469	36962469	15816	-8	2	2	-1
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2173	37.009791	37009791	15791	-10	-3	5	9
			15783	-9	2	-3	-8
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2175	37,041297	37041297	15742	-7	1	0	=2
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2188	37,245732	37245732	15735	4	1	0	=2
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2320	39.132485	39132485	11227	-62	0	1

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