




川川企業有限公司  
KAWAKAWA CO., LTD.


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# 日本製 牛頓原器

由  木下光学研究所 製造的鏡片原器，

不僅能提供多種規格的 R 值與外徑，還能符合您要求的超高精度！



 木下光学研究所 有 30 餘年的光學設計製造經驗，從早期流行的 35mm 單眼相機的交換鏡頭開始，做了非常多的設計，並致力於精度的提昇、設備的充實、挑戰新材料，製造各式各樣領域的光學產品，擁有豐富經驗與高度技術。今後木下光学研究所也將以客製化 LENS 製造廠來回應顧客的期望並為社會的發展做一份貢獻。

## 原器規格

- 母原器面精度
 

凹面	
PV 值	0.125Wave
RMS 值	0.025Wave
曲率	R ≤ 200 : ±0.03%
	200 < R ≤ 500 : ±0.04%
	500 < R ≤ 900 : ±0.05%
凸面	對凹面來說
	牛頓圈未滿 ±0.5 本 irregularity 未滿 ±0.25 本
- 新規原器 製作範圍 2.5mm ~ 950mm
- 交期 母原器 約 4 週，子原器 約 2 週 (詳另議)

## 主要服務項目

- |           |        |                 |
|-----------|--------|-----------------|
| φ Lens 設計 | φ 鏡筒設計 | φ Lens 試作       |
| φ 牛頓原器    | φ 小量生產 | φ ITV 鏡頭(OEM 可) |

## 代理商聯絡處

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## 木下光学ニュートン板リスト1

2009/04/01現在 3095枚

2.476	3.984	5.046	6.100	6.900	7.701	8.762	9.743	10.518	11.600	12.821	13.793	14.797
2.500	4.000	5.060	6.114	6.914	7.710	8.767	9.780	10.550	11.614	12.830	13.800	14.801
2.711	4.003	5.083	6.120	6.922	7.740	8.771	9.788	10.600	11.653	12.880	13.840	14.806
2.723	4.007	5.100	6.146	6.942	7.743	8.800	9.797	10.630	11.664	12.889	13.882	14.900
2.855	4.059	5.120	6.160	6.962	7.754	8.818	9.798	10.640	11.675	12.898	13.886	14.921
2.874	4.073	5.129	6.167	6.980	7.770	8.860	9.799	10.670	11.693	12.902	13.897	14.959
2.904	4.077	5.200	6.172	6.997	7.781	8.896	9.819	10.679	11.697	12.920	13.906	14.975
2.980	4.095	5.206	6.200	6.998	7.786	8.944	9.820	10.680	11.700	12.971	13.918	14.980
3.000	4.100	5.210	6.226	7.022	7.791	8.986	9.830	10.707	11.729	12.990	13.930	14.989
3.009	4.117	5.282	6.230	7.032	7.800	8.989	9.840	10.724	11.740	13.000	13.950	15.000
3.011	4.137	5.290	6.250	7.040	7.830	9.000	9.863	10.757	11.767	13.003	13.991	15.012
3.043	4.146	5.300	6.280	7.050	7.847	9.013	9.866	10.780	11.787	13.052	14.007	15.091
3.054	4.168	5.340	6.293	7.060	7.850	9.026	9.873	10.800	11.800	13.069	14.012	15.093
3.064	4.188	5.346	6.300	7.068	7.892	9.038	9.888	10.806	11.816	13.077	14.013	15.102
3.065	4.216	5.349	6.303	7.080	7.893	9.045	9.892	10.840	11.840	13.078	14.050	15.129
3.072	4.266	5.350	6.309	7.094	7.933	9.047	9.908	10.897	11.850	13.083	14.095	15.141
3.081	4.280	5.366	6.325	7.116	7.935	9.082	9.916	10.899	11.868	13.103	14.098	15.145
3.093	4.285	5.378	6.327	7.144	7.940	9.130	9.928	10.905	11.889	13.124	14.100	15.154
3.095	4.287	5.405	6.330	7.150	7.948	9.138	9.947	10.920	11.900	13.127	14.149	15.201
3.119	4.300	5.406	6.333	7.177	7.953	9.142	9.980	10.938	11.918	13.138	14.158	15.238
3.160	4.315	5.407	6.342	7.200	7.971	9.155	9.998	10.965	11.937	13.173	14.161	15.247
3.175	4.349	5.417	6.363	7.217	8.000	9.162	10.000	10.975	11.950	13.176	14.171	15.259
3.192	4.386	5.431	6.372	7.236	8.010	9.174	10.017	10.990	11.963	13.180	14.172	15.290
3.195	4.399	5.461	6.373	7.243	8.030	9.180	10.030	11.000	12.000	13.194	14.179	15.309
3.200	4.435	5.473	6.378	7.249	8.045	9.189	10.036	11.013	12.009	13.200	14.192	15.327
3.223	4.466	5.500	6.400	7.251	8.049	9.196	10.046	11.039	12.040	13.203	14.200	15.391
3.227	4.482	5.511	6.412	7.268	8.069	9.225	10.080	11.050	12.050	13.217	14.230	15.415
3.248	4.500	5.570	6.420	7.280	8.082	9.241	10.090	11.072	12.060	13.245	14.240	15.449
3.259	4.503	5.600	6.438	7.287	8.105	9.250	10.099	11.102	12.079	13.260	14.260	15.460
3.270	4.504	5.634	6.460	7.300	8.110	9.266	10.102	11.103	12.104	13.269	14.300	15.500
3.329	4.505	5.659	6.477	7.330	8.155	9.269	10.110	11.121	12.130	13.330	14.307	15.501
3.340	4.511	5.665	6.479	7.350	8.176	9.289	10.120	11.135	12.150	13.335	14.310	15.506
3.360	4.517	5.670	6.483	7.360	8.200	9.299	10.137	11.150	12.182	13.341	14.319	15.510
3.370	4.531	5.677	6.486	7.373	8.203	9.320	10.151	11.185	12.190	13.342	14.320	15.515
3.400	4.540	5.683	6.500	7.386	8.209	9.330	10.159	11.195	12.201	13.348	14.364	15.529
3.487	4.550	5.685	6.528	7.400	8.240	9.354	10.168	11.200	12.220	13.351	14.390	15.539
3.500	4.554	5.691	6.540	7.415	8.259	9.386	10.179	11.268	12.227	13.380	14.400	15.550
3.507	4.566	5.693	6.563	7.422	8.280	9.400	10.190	11.280	12.268	13.385	14.434	15.597
3.530	4.588	5.730	6.569	7.432	8.305	9.410	10.198	11.287	12.282	13.394	14.440	15.601
3.537	4.600	5.743	6.600	7.461	8.316	9.416	10.206	11.296	12.292	13.398	14.449	15.610
3.543	4.666	5.780	6.643	7.472	8.319	9.441	10.215	11.317	12.327	13.412	14.461	15.612
3.584	4.670	5.782	6.645	7.475	8.331	9.450	10.218	11.330	12.340	13.420	14.473	15.618
3.615	4.685	5.820	6.647	7.478	8.353	9.494	10.220	11.336	12.364	13.434	14.500	15.641
3.620	4.688	5.826	6.671	7.479	8.370	9.497	10.260	11.370	12.380	13.440	14.507	15.645
3.630	4.702	5.839	6.713	7.499	8.392	9.500	10.300	11.379	12.420	13.447	14.511	15.651
3.632	4.725	5.869	6.740	7.503	8.418	9.514	10.310	11.399	12.459	13.471	14.515	15.681
3.650	4.729	5.873	6.750	7.504	8.438	9.530	10.320	11.419	12.500	13.497	14.532	15.717
3.688	4.780	5.879	6.752	7.506	8.470	9.536	10.330	11.422	12.540	13.500	14.545	15.770
3.700	4.791	5.900	6.770	7.542	8.489	9.550	10.365	11.429	12.569	13.580	14.551	15.779
3.713	4.800	5.910	6.773	7.559	8.500	9.600	10.370	11.446	12.598	13.604	14.560	15.799
3.732	4.813	5.916	6.776	7.564	8.505	9.608	10.374	11.460	12.620	13.630	14.580	15.860
3.737	4.815	5.917	6.778	7.580	8.507	9.613	10.380	11.470	12.630	13.633	14.590	15.880
3.742	4.832	5.922	6.796	7.594	8.520	9.616	10.400	11.483	12.652	13.647	14.597	15.940
3.800	4.872	5.956	6.799	7.612	8.575	9.633	10.414	11.499	12.675	13.651	14.616	16.000
3.822	4.920	5.960	6.800	7.622	8.598	9.665	10.416	11.501	12.680	13.689	14.650	16.022
3.837	4.933	5.976	6.810	7.626	8.599	9.666	10.427	11.506	12.700	13.699	14.696	16.048
3.892	4.960	6.000	6.835	7.629	8.675	9.669	10.452	11.510	12.729	13.721	14.699	16.049
3.900	4.967	6.005	6.843	7.630	8.694	9.699	10.487	11.520	12.780	13.734	14.720	16.053
3.975	4.983	6.040	6.850	7.660	8.734	9.716	10.488	11.540	12.800	13.750	14.750	16.069
3.981	5.000	6.085	6.861	7.673	8.740	9.734	10.504	11.560	12.819	13.770	14.790	16.076

## 木下光学ニュートン板リスト2

2009/04/01現在 3095枚

16.098	17.332	18.663	19.660	20.643	22.007	23.300	24.759	26.223	27.680	29.478	31.419	33.298
16.109	17.387	18.678	19.670	20.700	22.061	23.320	24.770	26.247	27.689	29.495	31.442	33.337
16.130	17.400	18.705	19.675	20.705	22.074	23.327	24.808	26.259	27.704	29.521	31.460	33.360
16.151	17.402	18.711	19.690	20.721	22.081	23.360	24.840	26.300	27.719	29.525	31.500	33.397
16.161	17.439	18.720	19.700	20.741	22.100	23.409	24.874	26.318	27.722	29.530	31.576	33.399
16.176	17.466	18.731	19.723	20.785	22.113	23.459	24.900	26.360	27.755	29.541	31.599	33.444
16.180	17.470	18.750	19.733	20.810	22.135	23.536	24.929	26.395	27.787	29.562	31.694	33.500
16.189	17.485	18.785	19.762	20.814	22.171	23.550	25.000	26.448	27.857	29.592	31.760	33.526
16.199	17.494	18.847	19.791	20.820	22.175	23.553	25.010	26.460	27.870	29.607	31.773	33.536
16.230	17.500	18.850	19.798	20.850	22.190	23.563	25.048	26.471	27.899	29.630	31.820	33.559
16.249	17.508	18.854	19.807	20.860	22.204	23.569	25.102	26.531	27.988	29.673	31.832	33.595
16.255	17.530	18.859	19.821	20.909	22.225	23.580	25.128	26.543	28.001	29.699	31.900	33.632
16.270	17.534	18.900	19.832	20.918	22.226	23.599	25.192	26.557	28.014	29.716	31.932	33.693
16.299	17.540	18.910	19.849	20.955	22.259	23.622	25.200	26.561	28.042	29.768	31.950	33.758
16.312	17.542	18.929	19.860	20.959	22.270	23.662	25.208	26.600	28.075	29.772	31.970	33.780
16.330	17.601	18.930	19.864	20.992	22.294	23.670	25.232	26.620	28.100	29.779	32.002	33.800
16.350	17.602	18.938	19.866	20.999	22.330	23.685	25.262	26.650	28.120	29.800	32.004	33.843
16.430	17.621	18.950	19.869	21.003	22.341	23.692	25.287	26.663	28.152	29.837	32.014	33.902
16.470	17.628	18.970	19.902	21.008	22.349	23.700	25.301	26.691	28.165	29.883	32.041	33.931
16.483	17.643	18.990	19.909	21.030	22.359	23.708	25.312	26.694	28.178	29.910	32.063	33.950
16.500	17.673	19.000	19.917	21.038	22.370	23.772	25.336	26.731	28.226	29.940	32.101	33.969
16.526	17.684	19.011	19.930	21.048	22.390	23.822	25.380	26.790	28.232	29.960	32.140	33.980
16.551	17.688	19.016	19.990	21.050	22.400	23.829	25.400	26.802	28.275	30.000	32.150	34.000
16.560	17.722	19.017	19.997	21.120	22.402	23.848	25.440	26.818	28.300	30.012	32.161	34.040
16.589	17.739	19.043	20.000	21.129	22.420	23.875	25.471	26.826	28.305	30.055	32.164	34.098
16.611	17.752	19.061	20.002	21.143	22.429	23.896	25.473	26.849	28.370	30.065	32.202	34.158
16.643	17.761	19.064	20.012	21.156	22.444	23.900	25.491	26.920	28.400	30.150	32.229	34.189
16.650	17.762	19.069	20.069	21.160	22.480	23.931	25.498	26.999	28.513	30.170	32.237	34.198
16.660	17.847	19.072	20.100	21.193	22.481	23.981	25.499	27.050	28.590	30.190	32.340	34.221
16.671	17.900	19.075	20.102	21.214	22.490	24.000	25.504	27.119	28.592	30.229	32.350	34.227
16.708	17.950	19.090	20.122	21.240	22.495	24.017	25.513	27.146	28.628	30.298	32.360	34.305
16.722	17.957	19.100	20.140	21.270	22.500	24.019	25.537	27.148	28.640	30.385	32.412	34.306
16.728	17.998	19.109	20.166	21.291	22.539	24.080	25.578	27.150	28.653	30.402	32.500	34.410
16.751	18.000	19.120	20.178	21.300	22.563	24.100	25.580	27.158	28.660	30.429	32.507	34.420
16.759	18.013	19.134	20.179	21.310	22.596	24.122	25.591	27.182	28.664	30.480	32.545	34.500
16.766	18.070	19.150	20.210	21.318	22.614	24.135	25.592	27.188	28.700	30.500	32.560	34.570
16.768	18.150	19.170	20.230	21.330	22.631	24.198	25.596	27.198	28.740	30.516	32.615	34.644
16.775	18.162	19.176	20.280	21.386	22.635	24.209	25.602	27.211	28.790	30.600	32.625	34.680
16.791	18.166	19.200	20.300	21.400	22.645	24.231	25.609	27.236	28.800	30.631	32.654	34.750
16.887	18.199	19.217	20.303	21.413	22.700	24.258	25.614	27.244	28.855	30.687	32.730	34.770
16.940	18.210	19.221	20.320	21.419	22.710	24.291	25.639	27.262	28.900	30.720	32.800	34.800
16.950	18.230	19.279	20.331	21.499	22.730	24.302	25.650	27.289	28.910	30.770	32.810	34.871
16.965	18.244	19.291	20.338	21.537	22.769	24.335	25.663	27.306	28.952	30.800	32.829	34.951
16.970	18.302	19.300	20.350	21.540	22.794	24.345	25.670	27.354	28.965	30.844	32.850	34.954
16.984	18.335	19.310	20.369	21.548	22.798	24.397	25.720	27.375	28.969	30.863	32.885	34.975
16.997	18.350	19.320	20.380	21.600	22.827	24.488	25.745	27.390	28.981	30.900	32.958	34.980
17.000	18.361	19.329	20.400	21.610	22.849	24.491	25.759	27.398	29.000	30.953	33.000	35.000
17.020	18.370	19.350	20.430	21.614	22.860	24.493	25.790	27.427	29.006	31.000	33.018	35.010
17.040	18.381	19.367	20.462	21.620	22.880	24.500	25.840	27.466	29.100	31.003	33.027	35.100
17.082	18.415	19.400	20.468	21.640	22.913	24.503	25.860	27.470	29.109	31.008	33.126	35.143
17.099	18.429	19.436	20.480	21.686	23.000	24.511	25.882	27.498	29.138	31.031	33.136	35.162
17.130	18.490	19.491	20.482	21.719	23.080	24.550	25.900	27.549	29.220	31.070	33.140	35.190
17.150	18.512	19.498	20.500	21.750	23.130	24.579	25.943	27.563	29.229	31.115	33.160	35.283
17.215	18.552	19.539	20.501	21.760	23.140	24.600	25.950	27.570	29.249	31.137	33.163	35.321
17.229	18.557	19.572	20.528	21.795	23.158	24.620	25.978	27.581	29.270	31.171	33.186	35.330
17.236	18.560	19.575	20.534	21.830	23.190	24.688	26.017	27.588	29.300	31.223	33.200	35.342
17.250	18.577	19.578	20.544	21.853	23.198	24.700	26.060	27.598	29.311	31.250	33.211	35.362
17.286	18.600	19.590	20.569	21.941	23.230	24.708	26.114	27.623	29.320	31.310	33.235	35.374
17.299	18.640	19.604	20.580	22.001	23.243	24.720	26.189	27.646	29.330	31.375	33.271	35.466
17.305	18.648	19.630	20.628	22.002	23.269	24.743	26.200	27.660	29.405	31.380	33.289	35.470

## 木下光学ニュートン板リスト3

2009/04/01現在 3095枚

35.530	37.560	39.700	42.249	44.840	47.538	50.700	54.027	57.496	61.980	65.920	71.310	77.858
35.560	37.570	39.725	42.270	44.848	47.660	50.750	54.082	57.510	62.003	65.940	71.358	78.122
35.563	37.627	39.776	42.303	44.860	47.804	50.772	54.097	57.529	62.008	66.000	71.455	78.177
35.574	37.660	39.810	42.317	44.894	47.863	50.856	54.130	57.643	62.020	66.203	71.500	78.200
35.580	37.700	39.837	42.362	44.909	47.930	50.905	54.194	57.664	62.100	66.334	71.721	78.500
35.593	37.704	39.876	42.451	44.913	48.000	50.990	54.297	57.752	62.130	66.350	71.838	78.636
35.599	37.720	39.889	42.453	45.000	48.012	51.005	54.331	57.770	62.145	66.363	71.850	78.885
35.615	37.780	39.977	42.500	45.132	48.045	51.050	54.351	57.800	62.149	66.404	71.888	78.900
35.725	37.800	40.000	42.539	45.304	48.070	51.177	54.383	57.994	62.158	66.503	71.906	79.000
35.800	37.803	40.100	42.543	45.384	48.080	51.234	54.400	58.000	62.210	66.550	72.094	79.010
35.888	38.000	40.252	42.627	45.399	48.094	51.268	54.522	58.190	62.330	66.651	72.245	79.080
35.914	38.042	40.272	42.630	45.423	48.123	51.280	54.544	58.237	62.428	66.800	72.290	79.102
35.942	38.057	40.339	42.690	45.440	48.150	51.362	54.604	58.305	62.470	66.810	72.500	79.152
35.948	38.068	40.399	42.720	45.441	48.190	51.395	54.707	58.316	62.500	67.023	72.555	79.340
36.003	38.118	40.409	42.797	45.460	48.293	51.426	54.754	58.382	62.524	67.059	73.000	79.532
36.010	38.120	40.500	42.838	45.565	48.300	51.441	54.802	58.430	62.530	67.065	73.115	79.560
36.031	38.130	40.505	42.880	45.587	48.315	51.456	54.990	58.600	62.602	67.180	73.210	79.782
36.050	38.203	40.600	42.934	45.705	48.432	51.548	55.000	58.684	62.700	67.198	73.287	80.000
36.084	38.210	40.698	42.950	45.764	48.452	51.640	55.022	58.766	62.712	67.235	73.400	80.122
36.098	38.222	40.700	42.995	45.785	48.472	51.682	55.125	58.807	62.745	67.345	73.579	80.372
36.100	38.239	40.710	43.019	45.900	48.500	51.709	55.140	58.995	62.804	67.458	73.684	80.404
36.105	38.258	40.730	43.067	45.913	48.527	51.750	55.267	59.000	62.889	67.500	73.816	80.700
36.138	38.303	40.754	43.100	45.920	48.560	51.778	55.321	59.086	62.992	67.584	73.920	80.800
36.167	38.310	40.800	43.140	45.950	48.600	51.781	55.330	59.178	63.000	67.699	74.003	81.000
36.170	38.314	40.873	43.192	45.994	48.700	51.832	55.332	59.190	63.100	67.750	74.016	81.122
36.188	38.350	40.950	43.235	45.996	48.744	51.850	55.429	59.243	63.280	67.796	74.114	81.238
36.190	38.369	40.999	43.280	46.087	48.919	51.997	55.500	59.482	63.344	67.800	74.345	81.300
36.300	38.400	41.003	43.300	46.093	48.940	52.000	55.506	59.510	63.470	67.851	74.653	81.382
36.328	38.416	41.019	43.350	46.107	48.987	52.024	55.516	59.623	63.498	68.000	74.954	81.400
36.350	38.470	41.072	43.374	46.195	49.000	52.029	55.559	59.850	63.550	68.050	74.987	81.495
36.420	38.477	41.105	43.387	46.230	49.136	52.061	55.573	59.965	63.822	68.337	75.000	81.560
36.426	38.505	41.166	43.460	46.237	49.190	52.103	55.624	59.995	63.868	68.387	75.060	81.571
36.477	38.550	41.202	43.570	46.336	49.210	52.112	55.728	60.050	63.992	68.494	75.200	81.592
36.587	38.650	41.253	43.600	46.479	49.248	52.203	55.800	60.072	64.000	68.650	75.234	81.885
36.595	38.679	41.274	43.695	46.500	49.318	52.290	55.818	60.150	64.061	68.664	75.443	82.000
36.653	38.708	41.329	43.806	46.564	49.337	52.360	55.899	60.172	64.082	68.890	75.456	82.030
36.673	38.740	41.347	43.820	46.569	49.386	52.402	55.996	60.314	64.184	68.985	75.495	82.180
36.684	38.760	41.400	43.828	46.600	49.390	52.500	56.100	60.320	64.203	69.000	75.540	82.260
36.738	38.798	41.479	43.838	46.699	49.451	52.610	56.121	60.441	64.224	69.164	75.600	82.330
36.747	38.800	41.663	43.843	46.731	49.500	52.785	56.198	60.446	64.310	69.300	75.631	82.445
36.752	38.838	41.681	43.880	46.774	49.570	52.800	56.300	60.500	64.540	69.359	75.730	82.490
36.802	38.900	41.684	44.002	46.810	49.590	52.993	56.390	60.546	64.706	69.429	75.850	82.495
36.878	38.995	41.732	44.008	46.900	49.695	53.000	56.425	60.574	64.780	69.443	76.003	82.504
36.911	38.997	41.740	44.010	46.921	49.907	53.054	56.522	60.620	64.817	69.569	76.090	82.553
36.925	39.000	41.813	44.039	46.925	49.930	53.200	56.630	60.688	65.000	69.604	76.448	82.752
37.000	39.030	41.860	44.055	46.984	49.981	53.260	56.670	60.755	65.017	69.700	76.560	82.754
37.007	39.070	41.870	44.160	46.997	50.000	53.270	56.690	60.854	65.122	69.842	76.765	82.770
37.060	39.120	41.920	44.201	47.000	50.019	53.320	56.773	60.870	65.170	69.986	76.791	82.775
37.118	39.135	41.932	44.250	47.098	50.027	53.431	56.840	60.998	65.241	70.000	76.847	82.781
37.143	39.145	41.965	44.271	47.184	50.100	53.500	56.868	61.152	65.294	70.011	76.930	82.941
37.173	39.268	41.978	44.300	47.206	50.232	53.600	56.920	61.354	65.305	70.345	76.981	83.000
37.200	39.330	41.991	44.305	47.230	50.246	53.608	56.959	61.385	65.436	70.564	77.095	83.218
37.223	39.389	42.004	44.398	47.256	50.282	53.650	56.960	61.505	65.480	70.591	77.178	83.393
37.234	39.400	42.008	44.400	47.296	50.320	53.714	57.000	61.595	65.500	70.976	77.330	83.555
37.300	39.415	42.030	44.435	47.315	50.334	53.730	57.052	61.620	65.527	70.996	77.480	83.775
37.320	39.422	42.040	44.480	47.400	50.392	53.800	57.150	61.725	65.550	71.159	77.550	83.973
37.377	39.450	42.087	44.700	47.430	50.410	53.890	57.160	61.767	65.602	71.163	77.600	84.000
37.415	39.538	42.111	44.739	47.444	50.495	53.915	57.272	61.779	65.604	71.195	77.731	84.030
37.419	39.600	42.142	44.782	47.493	50.500	53.935	57.284	61.850	65.852	71.250	77.790	84.182
37.500	39.610	42.160	44.786	47.530	50.580	54.010	57.385	61.880	65.910	71.300	77.800	84.320

## 木下光学ニュートン板リスト4

2009/04/01現在 3095枚

84.458	92.596	100.84	114.00	132.06	149.83	170.31	194.62	234.32	295.60	409.94	650.78	1560.0
84.555	92.966	101.02	114.86	132.50	149.96	170.61	195.05	234.97	297.10	411.58	669.90	1597.9
84.600	93.000	101.17	115.00	132.90	150.44	171.44	195.38	236.22	297.44	412.00	676.48	1633.5
84.800	93.036	101.61	115.28	133.02	150.62	171.53	195.89	236.98	298.78	413.28	680.20	1656.0
84.863	93.330	101.98	115.42	133.20	151.00	172.56	197.38	237.06	300.00	414.52	696.98	1700.1
84.902	93.500	102.00	115.44	133.23	151.23	172.78	197.92	238.10	300.56	414.76	700.37	1732.0
84.987	93.755	102.32	115.47	133.40	151.37	172.91	198.02	239.20	301.21	415.13	703.77	1749.6
85.097	93.800	102.39	116.00	133.50	151.90	173.03	198.39	240.00	303.29	418.60	706.00	1800.0
85.491	93.918	102.55	116.66	133.52	152.09	173.17	198.93	240.86	303.60	424.79	721.80	1850.0
85.660	94.003	102.58	116.72	134.00	152.88	173.95	199.67	240.97	305.00	426.70	727.13	1863.7
85.832	94.023	102.76	117.32	134.51	153.00	174.07	199.84	242.74	306.03	428.73	729.66	1900.0
85.900	94.210	102.88	117.75	134.85	153.39	174.10	200.00	243.08	307.03	431.66	732.60	1999.8
86.003	94.388	103.10	117.79	135.01	153.45	174.65	200.47	243.98	307.84	436.32	738.00	2027.0
86.020	94.798	103.38	118.03	135.05	153.50	174.87	200.86	244.67	310.00	439.50	751.30	2079.2
86.109	95.000	103.47	118.39	135.20	153.79	174.95	201.18	245.00	311.77	449.95	778.85	2199.2
86.200	95.243	103.51	119.01	135.40	154.00	175.00	203.00	245.86	312.81	458.87	798.32	2450.0
86.438	95.379	103.57	119.08	135.70	154.10	175.78	203.50	246.07	313.41	469.10	800.00	2468.2
86.500	95.450	103.65	119.32	136.00	155.00	175.98	204.50	250.00	314.13	470.44	820.50	2500.0
86.550	95.466	104.29	119.38	136.30	155.19	176.00	205.01	250.53	317.83	473.55	830.00	2599.0
86.640	95.598	104.32	119.78	136.51	155.50	176.41	205.23	254.53	320.00	475.10	852.40	2670.0
86.790	95.892	104.46	119.93	136.55	155.82	176.73	205.81	255.00	324.31	478.75	855.70	2819.2
86.800	95.943	104.68	120.00	137.58	156.21	176.90	206.15	255.79	324.98	480.00	857.80	2893.8
86.838	96.014	105.01	120.22	138.00	156.35	177.00	206.63	256.21	327.10	481.90	880.08	2912.2
87.224	96.342	105.05	121.01	138.56	156.80	178.16	206.75	259.24	328.50	485.13	900.80	3395.0
87.341	96.361	105.24	121.34	138.69	157.02	178.18	207.15	259.94	328.92	489.00	909.34	3465.0
87.592	96.425	105.46	121.67	139.55	157.14	178.82	207.19	260.27	329.83	494.20	912.38	3612.7
87.989	96.481	105.50	122.00	139.65	157.99	180.00	207.27	261.08	330.44	495.02	919.00	4000.0
88.000	96.490	105.51	122.14	140.00	158.16	181.03	207.93	261.65	331.57	496.62	935.66	4214.0
88.270	96.525	105.58	122.16	140.03	159.09	181.41	208.85	263.36	333.00	500.00	949.30	5000.0
88.370	96.700	105.60	122.38	140.66	159.47	181.62	210.34	264.00	333.52	500.94	961.90	5079.3
88.529	97.108	105.70	122.92	140.69	159.62	182.00	210.70	264.18	334.60	502.05	970.00	5513.7
88.668	97.110	105.84	123.00	140.80	159.67	182.83	211.60	266.48	335.40	503.00	978.11	5547.8
88.800	97.240	106.13	123.31	141.60	160.00	183.00	212.20	267.17	335.67	505.13	988.74	6791.0
88.880	97.378	106.28	124.02	142.68	160.55	183.52	212.40	267.71	340.78	510.13	1000.0	6860.0
89.074	97.600	106.48	124.22	142.84	161.13	184.34	213.93	268.57	343.90	514.12	1011.9	7500.0
89.120	97.790	106.70	124.31	142.88	162.19	184.41	214.63	268.71	344.91	516.49	1038.7	
89.150	98.090	107.00	124.52	143.00	162.45	185.00	215.00	270.05	345.53	519.10	1050.0	
89.258	98.226	107.02	125.00	143.13	162.98	185.12	215.47	271.04	349.93	519.97	1073.4	
89.471	98.285	107.20	125.58	143.41	163.73	185.33	218.09	272.00	351.86	521.82	1075.3	
89.523	98.588	107.57	126.01	143.55	163.98	185.71	220.00	272.52	353.34	524.32	1087.7	
89.600	98.806	107.81	126.05	143.72	164.05	185.97	220.57	272.56	354.32	532.00	1090.0	
89.737	98.850	107.99	126.28	143.75	164.31	186.35	220.70	273.05	354.92	539.20	1115.4	
89.798	98.930	108.00	126.50	144.00	164.57	186.48	220.98	273.27	357.95	545.67	1132.5	
89.947	98.935	108.62	127.02	144.70	164.95	186.74	221.43	274.94	359.98	546.02	1140.3	
90.000	98.970	109.02	127.11	144.75	165.00	186.98	221.56	276.51	361.57	547.50	1190.0	
90.346	98.990	109.30	127.47	145.00	165.47	187.29	222.05	277.97	365.27	560.94	1215.0	
90.590	99.060	109.51	127.50	145.09	165.49	187.32	222.44	280.51	373.20	562.55	1228.0	
90.632	99.267	110.04	127.80	145.21	166.12	187.48	223.34	281.00	374.16	570.90	1231.2	
90.721	99.500	110.40	128.16	145.64	166.24	188.30	224.70	281.91	376.55	578.13	1299.9	
90.849	99.525	110.81	128.30	145.75	166.50	188.60	227.60	284.45	376.76	588.83	1307.3	
91.060	99.600	111.10	128.70	145.85	166.70	190.00	229.00	284.58	377.28	590.88	1333.0	
91.080	99.698	111.20	128.94	146.00	166.90	190.25	229.30	285.04	380.00	592.53	1344.0	
91.100	99.844	111.71	129.31	146.44	167.34	190.44	230.19	286.50	383.24	599.90	1356.8	
91.306	99.941	111.91	129.50	147.00	167.91	191.52	230.38	286.51	384.08	602.80	1370.0	
91.469	100.00	112.00	129.82	147.91	168.00	191.80	231.00	290.11	385.26	613.00	1383.3	
91.596	100.30	112.13	129.89	148.00	168.49	192.54	231.59	291.04	387.59	613.90	1399.5	
92.000	100.40	112.62	130.00	148.58	168.85	193.77	232.04	291.50	400.00	622.60	1450.0	
92.040	100.45	113.50	130.66	148.76	169.55	193.88	232.50	291.65	401.07	629.90	1474.7	
92.180	100.50	113.52	131.42	149.00	169.97	193.97	233.00	294.00	402.40	634.60	1504.5	
92.200	100.53	113.84	131.95	149.47	170.26	194.11	233.40	294.92	404.00	640.00	1523.7	