Equal Temperament (ET) Musical Scale Worksheet

Ideal intervals: 1 | 1.2 | 1.25 | 1.333 | 1.5 | 1.6 | 1.667 | 2

Enter your preferred (ideal, perfect, just, or consonant) intervals, between 1 and 2, above.

Max scale size: 53 Calculate all ET scales up to this number of tones.

Goodness limit: 1.0 % difference from ideal interval. Intervals below this limit are called good and highlighted (green).

Calculate

Overall score for each scale is the number of good intervals minus the number of bad intervals.

In an ET scale with k tones, the nth interval = 2^(n/k).

ET scales - intervals and % differences from nearest "ideal" intervals

size	score		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53
1	1	int	2.000
		%dif	0.0
2	0	int	1.414	2.000
		%dif	6.1	0.0
3	3	int	1.260	1.587	2.000
		%dif	0.8	0.8	0.0
4	2	int	1.189	1.414	1.682	2.000
		%dif	0.9	6.1	0.9	0.0
5	-3	int	1.149	1.320	1.516	1.741	2.000
		%dif	4.5	1.0	1.0	4.5	0.0
6	0	int	1.122	1.260	1.414	1.587	1.782	2.000
		%dif	6.9	0.8	6.1	0.8	6.9	0.0
7	-1	int	1.104	1.219	1.346	1.486	1.641	1.811	2.000
		%dif	8.7	1.6	0.9	0.9	1.6	8.7	0.0
8	-2	int	1.091	1.189	1.297	1.414	1.542	1.682	1.834	2.000
		%dif	9.1	0.9	2.8	6.1	2.8	0.9	9.1	0.0
9	-3	int	1.080	1.167	1.260	1.361	1.470	1.587	1.714	1.852	2.000
		%dif	8.0	2.9	0.8	2.1	2.1	0.8	2.9	8.0	0.0
10	-8	int	1.072	1.149	1.231	1.320	1.414	1.516	1.625	1.741	1.866	2.000
		%dif	7.2	4.5	1.5	1.0	6.1	1.0	1.5	4.5	7.2	0.0
11	-5	int	1.065	1.134	1.208	1.287	1.370	1.459	1.554	1.656	1.763	1.878	2.000
		%dif	6.5	5.8	0.7	2.9	2.8	2.8	2.9	0.7	5.8	6.5	0.0
12	2	int	1.059	1.122	1.189	1.260	1.335	1.414	1.498	1.587	1.682	1.782	1.888	2.000
		%dif	5.9	6.9	0.9	0.8	0.1	6.1	0.1	0.8	0.9	6.9	5.9	0.0
13	-7	int	1.055	1.113	1.173	1.238	1.306	1.377	1.452	1.532	1.616	1.704	1.798	1.896	2.000
		%dif	5.5	7.9	2.3	1.0	2.1	3.3	3.3	2.1	1.0	2.3	7.9	5.5	0.0
14	-8	int	1.051	1.104	1.160	1.219	1.281	1.346	1.414	1.486	1.561	1.641	1.724	1.811	1.903	2.000
		%dif	5.1	8.7	3.4	1.6	2.5	0.9	6.1	0.9	2.5	1.6	3.4	8.7	5.1	0.0
15	-5	int	1.047	1.097	1.149	1.203	1.260	1.320	1.382	1.447	1.516	1.587	1.662	1.741	1.823	1.910	2.000
		%dif	4.7	9.4	4.5	0.3	0.8	1.0	3.6	3.6	1.0	0.8	0.3	4.5	9.4	4.7	0.0
16	-6	int	1.044	1.091	1.139	1.189	1.242	1.297	1.354	1.414	1.477	1.542	1.610	1.682	1.756	1.834	1.915	2.000
		%dif	4.4	9.1	5.4	0.9	0.7	2.8	1.6	6.1	1.6	2.8	0.7	0.9	5.4	9.1	4.4	0.0
17	-11	int	1.042	1.085	1.130	1.177	1.226	1.277	1.330	1.386	1.443	1.503	1.566	1.631	1.699	1.770	1.843	1.920	2.000
		%dif	4.2	8.5	6.2	1.9	1.9	2.2	0.2	3.9	3.9	0.2	2.2	1.9	1.9	6.2	8.5	4.2	0.0
18	-12	int	1.039	1.080	1.122	1.167	1.212	1.260	1.309	1.361	1.414	1.470	1.527	1.587	1.650	1.714	1.782	1.852	1.924	2.000
		%dif	3.9	8.0	6.9	2.9	1.0	0.8	1.8	2.1	6.1	2.1	1.8	0.8	1.0	2.9	6.9	8.0	3.9	0.0
19	-5	int	1.037	1.076	1.116	1.157	1.200	1.245	1.291	1.339	1.389	1.440	1.494	1.549	1.607	1.667	1.728	1.793	1.859	1.928	2.000
		%dif	3.7	7.6	7.6	3.7	0.0	0.4	3.3	0.4	4.1	4.1	0.4	3.3	0.4	0.0	3.7	7.6	7.6	3.7	0.0
20	-14	int	1.035	1.072	1.110	1.149	1.189	1.231	1.275	1.320	1.366	1.414	1.464	1.516	1.569	1.625	1.682	1.741	1.803	1.866	1.932	2.000
		%dif	3.5	7.2	8.2	4.5	0.9	1.5	2.0	1.0	2.5	6.1	2.5	1.0	2.0	1.5	0.9	4.5	8.1	7.2	3.5	0.0
21	-11	int	1.034	1.068	1.104	1.141	1.179	1.219	1.260	1.302	1.346	1.391	1.438	1.486	1.536	1.587	1.641	1.696	1.753	1.811	1.872	1.935	2.000
		%dif	3.4	6.8	8.7	5.2	1.7	1.6	0.8	2.4	0.9	4.3	4.3	0.9	2.4	0.8	1.6	1.7	5.2	8.7	6.8	3.4	0.0
22	-8	int	1.032	1.065	1.099	1.134	1.171	1.208	1.247	1.287	1.328	1.370	1.414	1.459	1.506	1.554	1.604	1.656	1.708	1.763	1.820	1.878	1.938	2.000
		%dif	3.2	6.5	9.2	5.8	2.5	0.7	0.3	2.9	0.4	2.8	6.1	2.8	0.4	2.9	0.3	0.7	2.5	5.8	9.2	6.5	3.2	0.0
23	-17	int	1.031	1.062	1.095	1.128	1.163	1.198	1.235	1.273	1.312	1.352	1.393	1.436	1.480	1.525	1.572	1.620	1.669	1.720	1.773	1.827	1.883	1.941	2.000
		%dif	3.1	6.2	9.5	6.4	3.2	0.2	1.2	1.8	1.7	1.4	4.5	4.5	1.4	1.7	1.8	1.2	0.1	3.2	6.4	9.5	6.2	3.1	0.0
24	-10	int	1.029	1.059	1.091	1.122	1.155	1.189	1.224	1.260	1.297	1.335	1.374	1.414	1.456	1.498	1.542	1.587	1.634	1.682	1.731	1.782	1.834	1.888	1.943	2.000
		%dif	2.9	5.9	9.1	6.9	3.9	0.9	2.0	0.8	2.8	0.1	3.0	6.1	3.0	0.1	2.8	0.8	2.0	0.9	3.9	6.9	9.1	5.9	2.9	0.0
25	-19	int	1.028	1.057	1.087	1.117	1.149	1.181	1.214	1.248	1.283	1.320	1.357	1.395	1.434	1.474	1.516	1.558	1.602	1.647	1.693	1.741	1.790	1.840	1.892	1.945	2.000
		%dif	2.8	5.7	8.7	7.4	4.5	1.6	1.2	0.1	2.7	1.0	1.7	4.6	4.6	1.7	1.0	2.7	0.1	1.2	1.6	4.5	7.4	8.7	5.7	2.8	0.0
26	-12	int	1.027	1.055	1.083	1.113	1.143	1.173	1.205	1.238	1.271	1.306	1.341	1.377	1.414	1.452	1.492	1.532	1.573	1.616	1.660	1.704	1.750	1.798	1.846	1.896	1.947	2.000
		%dif	2.7	5.5	8.3	7.9	5.0	2.3	0.4	1.0	1.7	2.1	0.6	3.3	6.1	3.3	0.6	2.1	1.7	1.0	0.4	2.3	5.0	7.9	8.3	5.5	2.7	0.0
27	-13	int	1.026	1.053	1.080	1.108	1.137	1.167	1.197	1.228	1.260	1.293	1.326	1.361	1.396	1.432	1.470	1.508	1.547	1.587	1.629	1.671	1.714	1.759	1.805	1.852	1.900	1.949	2.000
		%dif	2.6	5.3	8.0	8.3	5.5	2.9	0.3	1.8	0.8	3.1	0.5	2.1	4.7	4.7	2.1	0.5	3.1	0.8	1.8	0.3	2.9	5.5	8.3	8.0	5.3	2.6	0.0
28	-14	int	1.025	1.051	1.077	1.104	1.132	1.160	1.189	1.219	1.250	1.281	1.313	1.346	1.380	1.414	1.450	1.486	1.523	1.561	1.601	1.641	1.682	1.724	1.767	1.811	1.857	1.903	1.951	2.000
		%dif	2.5	5.1	7.7	8.7	6.0	3.4	0.9	1.6	0.0	2.5	1.5	0.9	3.5	6.1	3.5	0.9	1.5	2.5	0.0	1.6	0.9	3.4	6.0	8.7	7.7	5.1	2.5	0.0
29	-15	int	1.024	1.049	1.074	1.100	1.127	1.154	1.182	1.211	1.240	1.270	1.301	1.332	1.364	1.397	1.431	1.466	1.501	1.538	1.575	1.613	1.652	1.692	1.733	1.775	1.818	1.862	1.907	1.953	2.000
		%dif	2.4	4.9	7.4	9.1	6.5	4.0	1.5	0.9	0.8	1.6	2.5	0.1	2.3	4.8	4.8	2.3	0.1	2.5	1.6	0.8	0.9	1.5	4.0	6.5	9.1	7.4	4.9	2.4	0.0
30	-20	int	1.023	1.047	1.072	1.097	1.122	1.149	1.176	1.203	1.231	1.260	1.289	1.320	1.350	1.382	1.414	1.447	1.481	1.516	1.551	1.587	1.625	1.662	1.701	1.741	1.782	1.823	1.866	1.910	1.954	2.000
		%dif	2.3	4.7	7.2	9.4	6.9	4.5	2.1	0.3	1.5	0.8	3.1	1.0	1.3	3.6	6.1	3.6	1.3	1.0	3.1	0.8	1.5	0.3	2.1	4.5	6.9	9.4	7.2	4.7	2.3	0.0
31	-17	int	1.023	1.046	1.069	1.094	1.118	1.144	1.169	1.196	1.223	1.251	1.279	1.308	1.337	1.368	1.398	1.430	1.462	1.496	1.529	1.564	1.599	1.635	1.672	1.710	1.749	1.788	1.829	1.870	1.913	1.956	2.000
		%dif	2.3	4.6	6.9	9.4	7.3	4.9	2.6	0.3	1.9	0.0	2.3	2.0	0.3	2.6	4.9	4.9	2.6	0.3	2.0	2.3	0.0	1.9	0.3	2.6	4.9	7.3	9.4	6.9	4.6	2.3	0.0
32	-18	int	1.022	1.044	1.067	1.091	1.114	1.139	1.164	1.189	1.215	1.242	1.269	1.297	1.325	1.354	1.384	1.414	1.445	1.477	1.509	1.542	1.576	1.610	1.646	1.682	1.719	1.756	1.795	1.834	1.874	1.915	1.957	2.000
		%dif	2.2	4.4	6.7	9.1	7.7	5.4	3.1	0.9	1.3	0.7	1.5	2.8	0.6	1.6	3.8	6.1	3.8	1.6	0.6	2.8	1.5	0.7	1.3	0.9	3.1	5.4	7.7	9.1	6.7	4.4	2.2	0.0
33	-19	int	1.021	1.043	1.065	1.088	1.111	1.134	1.158	1.183	1.208	1.234	1.260	1.287	1.314	1.342	1.370	1.399	1.429	1.459	1.490	1.522	1.554	1.587	1.621	1.656	1.691	1.727	1.763	1.801	1.839	1.878	1.918	1.958	2.000
		%dif	2.1	4.3	6.5	8.8	8.0	5.8	3.6	1.4	0.7	1.3	0.8	2.9	1.5	0.6	2.8	5.0	5.0	2.8	0.6	1.5	2.9	0.8	1.3	0.7	1.4	3.6	5.8	8.0	8.8	6.5	4.3	2.1	0.0
34	-20	int	1.021	1.042	1.063	1.085	1.107	1.130	1.153	1.177	1.201	1.226	1.251	1.277	1.303	1.330	1.358	1.386	1.414	1.443	1.473	1.503	1.534	1.566	1.598	1.631	1.665	1.699	1.734	1.770	1.806	1.843	1.881	1.920	1.960	2.000
		%dif	2.1	4.2	6.3	8.5	8.4	6.2	4.0	1.9	0.1	1.9	0.1	2.2	2.3	0.2	1.8	3.9	6.1	3.9	1.8	0.2	2.3	2.2	0.1	1.9	0.1	1.9	4.0	6.2	8.4	8.5	6.3	4.2	2.1	0.0
35	-21	int	1.020	1.040	1.061	1.082	1.104	1.126	1.149	1.172	1.195	1.219	1.243	1.268	1.294	1.320	1.346	1.373	1.400	1.428	1.457	1.486	1.516	1.546	1.577	1.608	1.641	1.673	1.707	1.741	1.776	1.811	1.848	1.885	1.922	1.961	2.000
		%dif	2.0	4.0	6.1	8.2	8.7	6.6	4.5	2.4	0.4	1.6	0.5	1.5	3.1	1.0	0.9	3.0	5.0	5.0	3.0	0.9	1.0	3.1	1.5	0.5	1.6	0.4	2.4	4.5	6.6	8.7	8.2	6.1	4.0	2.0	0.0
36	-22	int	1.019	1.039	1.059	1.080	1.101	1.122	1.144	1.167	1.189	1.212	1.236	1.260	1.284	1.309	1.335	1.361	1.387	1.414	1.442	1.470	1.498	1.527	1.557	1.587	1.618	1.650	1.682	1.714	1.748	1.782	1.816	1.852	1.888	1.924	1.962	2.000
		%dif	1.9	3.9	5.9	8.0	9.0	6.9	4.9	2.9	0.9	1.0	1.1	0.8	2.8	1.8	0.1	2.1	4.0	6.1	4.0	2.1	0.1	1.8	2.8	0.8	1.1	1.0	0.9	2.9	4.9	6.9	9.0	8.0	5.9	3.9	1.9	0.0
37	-23	int	1.019	1.038	1.058	1.078	1.098	1.119	1.140	1.162	1.184	1.206	1.229	1.252	1.276	1.300	1.324	1.350	1.375	1.401	1.428	1.455	1.482	1.510	1.539	1.568	1.597	1.628	1.658	1.690	1.722	1.754	1.787	1.821	1.856	1.891	1.926	1.963	2.000
		%dif	1.9	3.8	5.8	7.8	9.3	7.2	5.3	3.3	1.4	0.5	1.7	0.2	2.1	2.6	0.7	1.2	3.1	5.1	5.1	3.1	1.2	0.7	2.6	2.1	0.2	1.7	0.5	1.4	3.3	5.3	7.2	9.3	7.8	5.8	3.8	1.9	0.0
38	-24	int	1.018	1.037	1.056	1.076	1.095	1.116	1.136	1.157	1.178	1.200	1.222	1.245	1.268	1.291	1.315	1.339	1.364	1.389	1.414	1.440	1.467	1.494	1.521	1.549	1.578	1.607	1.636	1.667	1.697	1.728	1.760	1.793	1.826	1.859	1.893	1.928	1.964	2.000
		%dif	1.8	3.7	5.6	7.6	9.5	7.6	5.6	3.7	1.8	0.0	1.8	0.4	1.4	3.3	1.4	0.4	2.3	4.1	6.1	4.1	2.3	0.4	1.4	3.3	1.4	0.4	1.8	0.0	1.8	3.7	5.6	7.6	9.5	7.6	5.6	3.7	1.8	0.0
39	-21	int	1.018	1.036	1.055	1.074	1.093	1.113	1.132	1.153	1.173	1.195	1.216	1.238	1.260	1.283	1.306	1.329	1.353	1.377	1.402	1.427	1.452	1.478	1.505	1.532	1.559	1.587	1.616	1.645	1.674	1.704	1.735	1.766	1.798	1.830	1.863	1.896	1.930	1.965	2.000
		%dif	1.8	3.6	5.5	7.4	9.3	7.9	6.0	4.1	2.3	0.5	1.3	1.0	0.8	2.6	2.1	0.3	1.5	3.3	5.1	5.1	3.3	1.5	0.3	2.1	2.6	0.8	1.0	1.3	0.5	2.3	4.1	6.0	7.9	9.3	7.4	5.5	3.6	1.8	0.0
40	-22	int	1.017	1.035	1.053	1.072	1.091	1.110	1.129	1.149	1.169	1.189	1.210	1.231	1.253	1.275	1.297	1.320	1.343	1.366	1.390	1.414	1.439	1.464	1.490	1.516	1.542	1.569	1.597	1.625	1.653	1.682	1.711	1.741	1.772	1.803	1.834	1.866	1.899	1.932	1.966	2.000
		%dif	1.7	3.5	5.3	7.2	9.1	8.2	6.3	4.5	2.7	0.9	0.8	1.5	0.2	2.0	2.8	1.0	0.7	2.5	4.2	6.1	4.2	2.5	0.7	1.0	2.8	2.0	0.2	1.5	0.8	0.9	2.7	4.5	6.3	8.1	9.1	7.2	5.3	3.5	1.7	0.0
41	-27	int	1.017	1.034	1.052	1.070	1.088	1.107	1.126	1.145	1.164	1.184	1.204	1.225	1.246	1.267	1.289	1.311	1.333	1.356	1.379	1.402	1.426	1.451	1.475	1.500	1.526	1.552	1.578	1.605	1.633	1.661	1.689	1.718	1.747	1.777	1.807	1.838	1.869	1.901	1.934	1.966	2.000
		%dif	1.7	3.4	5.2	7.0	8.8	8.4	6.6	4.8	3.1	1.3	0.4	2.0	0.3	1.4	3.1	1.7	0.0	1.7	3.4	5.2	5.2	3.4	1.7	0.0	1.7	3.1	1.4	0.3	2.0	0.4	1.3	3.1	4.8	6.6	8.4	8.8	7.0	5.2	3.4	1.7	0.0
42	-20	int	1.017	1.034	1.051	1.068	1.086	1.104	1.122	1.141	1.160	1.179	1.199	1.219	1.239	1.260	1.281	1.302	1.324	1.346	1.368	1.391	1.414	1.438	1.462	1.486	1.511	1.536	1.561	1.587	1.614	1.641	1.668	1.696	1.724	1.753	1.782	1.811	1.842	1.872	1.903	1.935	1.967	2.000
		%dif	1.7	3.4	5.1	6.8	8.6	8.7	6.9	5.2	3.4	1.7	0.1	1.6	0.9	0.8	2.5	2.4	0.7	0.9	2.6	4.3	6.1	4.3	2.6	0.9	0.7	2.4	2.5	0.8	0.9	1.6	0.1	1.7	3.4	5.2	6.9	8.7	8.6	6.8	5.1	3.4	1.7	0.0
43	-29	int	1.016	1.033	1.050	1.067	1.084	1.102	1.119	1.138	1.156	1.175	1.194	1.213	1.233	1.253	1.274	1.294	1.315	1.337	1.358	1.380	1.403	1.426	1.449	1.472	1.496	1.521	1.545	1.570	1.596	1.622	1.648	1.675	1.702	1.730	1.758	1.787	1.816	1.845	1.875	1.906	1.937	1.968	2.000
		%dif	1.6	3.3	5.0	6.7	8.4	8.9	7.2	5.5	3.8	2.1	0.5	1.1	1.4	0.3	1.9	3.0	1.4	0.2	1.9	3.5	5.2	5.2	3.5	1.9	0.2	1.4	3.0	1.9	0.3	1.4	1.1	0.5	2.1	3.8	5.5	7.2	8.9	8.4	6.7	5.0	3.3	1.6	0.0
44	-26	int	1.016	1.032	1.048	1.065	1.082	1.099	1.117	1.134	1.152	1.171	1.189	1.208	1.227	1.247	1.267	1.287	1.307	1.328	1.349	1.370	1.392	1.414	1.437	1.459	1.483	1.506	1.530	1.554	1.579	1.604	1.630	1.656	1.682	1.708	1.736	1.763	1.791	1.820	1.849	1.878	1.908	1.938	1.969	2.000
		%dif	1.6	3.2	4.8	6.5	8.2	9.2	7.5	5.8	4.1	2.5	0.9	0.7	1.9	0.3	1.3	2.9	2.0	0.4	1.2	2.8	4.4	6.1	4.4	2.8	1.2	0.4	2.0	2.9	1.3	0.3	1.9	0.7	0.9	2.5	4.1	5.8	7.5	9.2	8.2	6.5	4.8	3.2	1.6	0.0
45	-27	int	1.016	1.031	1.047	1.064	1.080	1.097	1.114	1.131	1.149	1.167	1.185	1.203	1.222	1.241	1.260	1.279	1.299	1.320	1.340	1.361	1.382	1.403	1.425	1.447	1.470	1.493	1.516	1.539	1.563	1.587	1.612	1.637	1.662	1.688	1.714	1.741	1.768	1.796	1.823	1.852	1.880	1.910	1.939	1.969	2.000
		%dif	1.6	3.1	4.7	6.4	8.0	9.4	7.7	6.1	4.5	2.9	1.3	0.3	1.3	0.8	0.8	2.4	2.6	1.0	0.5	2.1	3.6	5.3	5.3	3.6	2.1	0.5	1.0	2.6	2.4	0.8	0.8	1.8	0.3	1.3	2.9	4.5	6.1	7.7	9.4	8.0	6.4	4.7	3.1	1.6	0.0
46	-32	int	1.015	1.031	1.046	1.062	1.078	1.095	1.111	1.128	1.145	1.163	1.180	1.198	1.216	1.235	1.254	1.273	1.292	1.312	1.331	1.352	1.372	1.393	1.414	1.436	1.457	1.480	1.502	1.525	1.548	1.572	1.595	1.620	1.644	1.669	1.695	1.720	1.746	1.773	1.800	1.827	1.855	1.883	1.912	1.941	1.970	2.000
		%dif	1.5	3.1	4.6	6.2	7.8	9.5	8.0	6.4	4.8	3.2	1.7	0.2	1.4	1.2	0.3	1.8	3.2	1.7	0.1	1.4	2.9	4.5	6.1	4.5	2.9	1.4	0.1	1.7	3.2	1.8	0.3	1.2	1.4	0.1	1.7	3.2	4.8	6.4	8.0	9.5	7.8	6.2	4.6	3.1	1.5	0.0
47	-25	int	1.015	1.030	1.045	1.061	1.077	1.093	1.109	1.125	1.142	1.159	1.176	1.194	1.211	1.229	1.248	1.266	1.285	1.304	1.323	1.343	1.363	1.383	1.404	1.425	1.446	1.467	1.489	1.511	1.534	1.556	1.580	1.603	1.627	1.651	1.676	1.700	1.726	1.751	1.777	1.804	1.831	1.858	1.885	1.913	1.942	1.971	2.000
		%dif	1.5	3.0	4.5	6.1	7.7	9.3	8.2	6.6	5.1	3.5	2.0	0.5	0.9	1.7	0.2	1.3	2.8	2.2	0.7	0.7	2.2	3.7	5.3	5.3	3.7	2.2	0.7	0.8	2.2	2.8	1.3	0.2	1.7	0.9	0.5	2.0	3.5	5.1	6.6	8.2	9.3	7.7	6.1	4.5	3.0	1.5	0.0
48	-26	int	1.015	1.029	1.044	1.059	1.075	1.091	1.106	1.122	1.139	1.155	1.172	1.189	1.207	1.224	1.242	1.260	1.278	1.297	1.316	1.335	1.354	1.374	1.394	1.414	1.435	1.456	1.477	1.498	1.520	1.542	1.565	1.587	1.610	1.634	1.658	1.682	1.706	1.731	1.756	1.782	1.808	1.834	1.861	1.888	1.915	1.943	1.971	2.000
		%dif	1.5	2.9	4.4	5.9	7.5	9.1	8.5	6.9	5.4	3.9	2.4	0.9	0.5	2.0	0.7	0.8	2.3	2.8	1.3	0.1	1.6	3.0	4.5	6.1	4.5	3.0	1.6	0.1	1.3	2.8	2.3	0.8	0.7	2.0	0.5	0.9	2.4	3.9	5.4	6.9	8.5	9.1	7.5	5.9	4.4	2.9	1.5	0.0
49	-31	int	1.014	1.029	1.043	1.058	1.073	1.089	1.104	1.120	1.136	1.152	1.168	1.185	1.202	1.219	1.236	1.254	1.272	1.290	1.308	1.327	1.346	1.365	1.385	1.404	1.424	1.445	1.465	1.486	1.507	1.529	1.550	1.573	1.595	1.618	1.641	1.664	1.688	1.712	1.736	1.761	1.786	1.811	1.837	1.863	1.890	1.917	1.944	1.972	2.000