

**ITS-90 Table for Type S Thermocouple (Ref Junction 0°C)**

°C	0	-1	-2	-3	-4	-5	-6	-7	-8	-9	-10
<b>Thermoelectric Voltage in mV</b>											
<b>-50</b>	-0.236										
<b>-40</b>	-0.194	-0.199	-0.203	-0.207	-0.211	-0.215	-0.219	-0.224	-0.228	-0.232	-0.236
<b>-30</b>	-0.150	-0.155	-0.159	-0.164	-0.168	-0.173	-0.177	-0.181	-0.186	-0.190	-0.194
<b>-20</b>	-0.103	-0.108	-0.113	-0.117	-0.122	-0.127	-0.132	-0.136	-0.141	-0.146	-0.150
<b>-10</b>	-0.053	-0.058	-0.063	-0.068	-0.073	-0.078	-0.083	-0.088	-0.093	-0.098	-0.103
<b>0</b>	0.000	-0.005	-0.011	-0.016	-0.021	-0.027	-0.032	-0.037	-0.042	-0.048	-0.053
°C	0	-1	-2	-3	-4	-5	-6	-7	-8	-9	-10

### ITS-90 Table for Type S Thermocouple (Ref Junction 0°C)

°C	0	1	2	3	4	5	6	7	8	9	10
<b>Thermoelectric Voltage in mV</b>											
<b>0</b>	0.000	0.005	0.011	0.016	0.022	0.027	0.033	0.038	0.044	0.050	0.055
<b>10</b>	0.055	0.061	0.067	0.072	0.078	0.084	0.090	0.095	0.101	0.107	0.113
<b>20</b>	0.113	0.119	0.125	0.131	0.137	0.143	0.149	0.155	0.161	0.167	0.173
<b>30</b>	0.173	0.179	0.185	0.191	0.197	0.204	0.210	0.216	0.222	0.229	0.235
<b>40</b>	0.235	0.241	0.248	0.254	0.260	0.267	0.273	0.280	0.286	0.292	0.299
<b>50</b>	0.299	0.305	0.312	0.319	0.325	0.332	0.338	0.345	0.352	0.358	0.365
<b>60</b>	0.365	0.372	0.378	0.385	0.392	0.399	0.405	0.412	0.419	0.426	0.433
<b>70</b>	0.433	0.440	0.446	0.453	0.460	0.467	0.474	0.481	0.488	0.495	0.502
<b>80</b>	0.502	0.509	0.516	0.523	0.530	0.538	0.545	0.552	0.559	0.566	0.573
<b>90</b>	0.573	0.580	0.588	0.595	0.602	0.609	0.617	0.624	0.631	0.639	0.646
<b>100</b>	0.646	0.653	0.661	0.668	0.675	0.683	0.690	0.698	0.705	0.713	0.720
<b>110</b>	0.720	0.727	0.735	0.743	0.750	0.758	0.765	0.773	0.780	0.788	0.795
<b>120</b>	0.795	0.803	0.811	0.818	0.826	0.834	0.841	0.849	0.857	0.865	0.872
<b>130</b>	0.872	0.880	0.888	0.896	0.903	0.911	0.919	0.927	0.935	0.942	0.950
<b>140</b>	0.950	0.958	0.966	0.974	0.982	0.990	0.998	1.006	1.013	1.021	1.029
<b>150</b>	1.029	1.037	1.045	1.053	1.061	1.069	1.077	1.085	1.094	1.102	1.110
<b>160</b>	1.110	1.118	1.126	1.134	1.142	1.150	1.158	1.167	1.175	1.183	1.191
<b>170</b>	1.191	1.199	1.207	1.216	1.224	1.232	1.240	1.249	1.257	1.265	1.273
<b>180</b>	1.273	1.282	1.290	1.298	1.307	1.315	1.323	1.332	1.340	1.348	1.357
<b>190</b>	1.357	1.365	1.373	1.382	1.390	1.399	1.407	1.415	1.424	1.432	1.441
<b>200</b>	1.441	1.449	1.458	1.466	1.475	1.483	1.492	1.500	1.509	1.517	1.526
<b>210</b>	1.526	1.534	1.543	1.551	1.560	1.569	1.577	1.586	1.594	1.603	1.612
<b>220</b>	1.612	1.620	1.629	1.638	1.646	1.655	1.663	1.672	1.681	1.690	1.698
<b>230</b>	1.698	1.707	1.716	1.724	1.733	1.742	1.751	1.759	1.768	1.777	1.786
<b>240</b>	1.786	1.794	1.803	1.812	1.821	1.829	1.838	1.847	1.856	1.865	1.874
<b>250</b>	1.874	1.882	1.891	1.900	1.909	1.918	1.927	1.936	1.944	1.953	1.962
<b>260</b>	1.962	1.971	1.980	1.989	1.998	2.007	2.016	2.025	2.034	2.043	2.052
<b>270</b>	2.052	2.061	2.070	2.078	2.087	2.096	2.105	2.114	2.123	2.132	2.141
<b>280</b>	2.141	2.151	2.160	2.169	2.178	2.187	2.196	2.205	2.214	2.223	2.232
<b>290</b>	2.232	2.241	2.250	2.259	2.268	2.277	2.287	2.296	2.305	2.314	2.323
<b>300</b>	2.323	2.332	2.341	2.350	2.360	2.369	2.378	2.387	2.396	2.405	2.415
<b>310</b>	2.415	2.424	2.433	2.442	2.451	2.461	2.470	2.479	2.488	2.497	2.507
<b>320</b>	2.507	2.516	2.525	2.534	2.544	2.553	2.562	2.571	2.581	2.590	2.599
<b>330</b>	2.599	2.609	2.618	2.627	2.636	2.646	2.655	2.664	2.674	2.683	2.692
<b>340</b>	2.692	2.702	2.711	2.720	2.730	2.739	2.748	2.758	2.767	2.776	2.786
<b>350</b>	2.786	2.795	2.805	2.814	2.823	2.833	2.842	2.851	2.861	2.870	2.880
<b>360</b>	2.880	2.889	2.899	2.908	2.917	2.927	2.936	2.946	2.955	2.965	2.974
<b>370</b>	2.974	2.983	2.993	3.002	3.012	3.021	3.031	3.040	3.050	3.059	3.069
<b>380</b>	3.069	3.078	3.088	3.097	3.107	3.116	3.126	3.135	3.145	3.154	3.164
<b>390</b>	3.164	3.173	3.183	3.192	3.202	3.212	3.221	3.231	3.240	3.250	3.259
°C	0	1	2	3	4	5	6	7	8	9	10



### ITS-90 Table for Type S Thermocouple (Ref Junction 0°C)

°C	0	1	2	3	4	5	6	7	8	9	10
<b>Thermoelectric Voltage in mV</b>											
<b>400</b>	3.259	3.269	3.279	3.288	3.298	3.307	3.317	3.326	3.336	3.346	3.355
<b>410</b>	3.355	3.365	3.374	3.384	3.394	3.403	3.413	3.423	3.432	3.442	3.451
<b>420</b>	3.451	3.461	3.471	3.480	3.490	3.500	3.509	3.519	3.529	3.538	3.548
<b>430</b>	3.548	3.558	3.567	3.577	3.587	3.596	3.606	3.616	3.626	3.635	3.645
<b>440</b>	3.645	3.655	3.664	3.674	3.684	3.694	3.703	3.713	3.723	3.732	3.742
<b>450</b>	3.742	3.752	3.762	3.771	3.781	3.791	3.801	3.810	3.820	3.830	3.840
<b>460</b>	3.840	3.850	3.859	3.869	3.879	3.889	3.898	3.908	3.918	3.928	3.938
<b>470</b>	3.938	3.947	3.957	3.967	3.977	3.987	3.997	4.006	4.016	4.026	4.036
<b>480</b>	4.036	4.046	4.056	4.065	4.075	4.085	4.095	4.105	4.115	4.125	4.134
<b>490</b>	4.134	4.144	4.154	4.164	4.174	4.184	4.194	4.204	4.213	4.223	4.233
<b>500</b>	4.233	4.243	4.253	4.263	4.273	4.283	4.293	4.303	4.313	4.323	4.332
<b>510</b>	4.332	4.342	4.352	4.362	4.372	4.382	4.392	4.402	4.412	4.422	4.432
<b>520</b>	4.432	4.442	4.452	4.462	4.472	4.482	4.492	4.502	4.512	4.522	4.532
<b>530</b>	4.532	4.542	4.552	4.562	4.572	4.582	4.592	4.602	4.612	4.622	4.632
<b>540</b>	4.632	4.642	4.652	4.662	4.672	4.682	4.692	4.702	4.712	4.722	4.732
<b>550</b>	4.732	4.742	4.752	4.762	4.772	4.782	4.793	4.803	4.813	4.823	4.833
<b>560</b>	4.833	4.843	4.853	4.863	4.873	4.883	4.893	4.904	4.914	4.924	4.934
<b>570</b>	4.934	4.944	4.954	4.964	4.974	4.984	4.995	5.005	5.015	5.025	5.035
<b>580</b>	5.035	5.045	5.055	5.066	5.076	5.086	5.096	5.106	5.116	5.127	5.137
<b>590</b>	5.137	5.147	5.157	5.167	5.178	5.188	5.198	5.208	5.218	5.228	5.239
<b>600</b>	5.239	5.249	5.259	5.269	5.280	5.290	5.300	5.310	5.320	5.331	5.341
<b>610</b>	5.341	5.351	5.361	5.372	5.382	5.392	5.402	5.413	5.423	5.433	5.443
<b>620</b>	5.443	5.454	5.464	5.474	5.485	5.495	5.505	5.515	5.526	5.536	5.546
<b>630</b>	5.546	5.557	5.567	5.577	5.588	5.598	5.608	5.618	5.629	5.639	5.649
<b>640</b>	5.649	5.660	5.670	5.680	5.691	5.701	5.712	5.722	5.732	5.743	5.753
<b>650</b>	5.753	5.763	5.774	5.784	5.794	5.805	5.815	5.826	5.836	5.846	5.857
<b>660</b>	5.857	5.867	5.878	5.888	5.898	5.909	5.919	5.930	5.940	5.950	5.961
<b>670</b>	5.961	5.971	5.982	5.992	6.003	6.013	6.024	6.034	6.044	6.055	6.065
<b>680</b>	6.065	6.076	6.086	6.097	6.107	6.118	6.128	6.139	6.149	6.160	6.170
<b>690</b>	6.170	6.181	6.191	6.202	6.212	6.223	6.233	6.244	6.254	6.265	6.275
<b>700</b>	6.275	6.286	6.296	6.307	6.317	6.328	6.338	6.349	6.360	6.370	6.381
<b>710</b>	6.381	6.391	6.402	6.412	6.423	6.434	6.444	6.455	6.465	6.476	6.486
<b>720</b>	6.486	6.497	6.508	6.518	6.529	6.539	6.550	6.561	6.571	6.582	6.593
<b>730</b>	6.593	6.603	6.614	6.624	6.635	6.646	6.656	6.667	6.678	6.688	6.699
<b>740</b>	6.699	6.710	6.720	6.731	6.742	6.752	6.763	6.774	6.784	6.795	6.806
<b>750</b>	6.806	6.817	6.827	6.838	6.849	6.859	6.870	6.881	6.892	6.902	6.913
<b>760</b>	6.913	6.924	6.934	6.945	6.956	6.967	6.977	6.988	6.999	7.010	7.020
<b>770</b>	7.020	7.031	7.042	7.053	7.064	7.074	7.085	7.096	7.107	7.117	7.128
<b>780</b>	7.128	7.139	7.150	7.161	7.172	7.182	7.193	7.204	7.215	7.226	7.236
<b>790</b>	7.236	7.247	7.258	7.269	7.280	7.291	7.302	7.312	7.323	7.334	7.345
°C	0	1	2	3	4	5	6	7	8	9	10



### ITS-90 Table for Type S Thermocouple (Ref Junction 0°C)

°C	0	1	2	3	4	5	6	7	8	9	10
<b>Thermoelectric Voltage in mV</b>											
<b>800</b>	7.345	7.356	7.367	7.378	7.388	7.399	7.410	7.421	7.432	7.443	7.454
<b>810</b>	7.454	7.465	7.476	7.487	7.497	7.508	7.519	7.530	7.541	7.552	7.563
<b>820</b>	7.563	7.574	7.585	7.596	7.607	7.618	7.629	7.640	7.651	7.662	7.673
<b>830</b>	7.673	7.684	7.695	7.706	7.717	7.728	7.739	7.750	7.761	7.772	7.783
<b>840</b>	7.783	7.794	7.805	7.816	7.827	7.838	7.849	7.860	7.871	7.882	7.893
<b>850</b>	7.893	7.904	7.915	7.926	7.937	7.948	7.959	7.970	7.981	7.992	8.003
<b>860</b>	8.003	8.014	8.026	8.037	8.048	8.059	8.070	8.081	8.092	8.103	8.114
<b>870</b>	8.114	8.125	8.137	8.148	8.159	8.170	8.181	8.192	8.203	8.214	8.226
<b>880</b>	8.226	8.237	8.248	8.259	8.270	8.281	8.293	8.304	8.315	8.326	8.337
<b>890</b>	8.337	8.348	8.360	8.371	8.382	8.393	8.404	8.416	8.427	8.438	8.449
<b>900</b>	8.449	8.460	8.472	8.483	8.494	8.505	8.517	8.528	8.539	8.550	8.562
<b>910</b>	8.562	8.573	8.584	8.595	8.607	8.618	8.629	8.640	8.652	8.663	8.674
<b>920</b>	8.674	8.685	8.697	8.708	8.719	8.731	8.742	8.753	8.765	8.776	8.787
<b>930</b>	8.787	8.798	8.810	8.821	8.832	8.844	8.855	8.866	8.878	8.889	8.900
<b>940</b>	8.900	8.912	8.923	8.935	8.946	8.957	8.969	8.980	8.991	9.003	9.014
<b>950</b>	9.014	9.025	9.037	9.048	9.060	9.071	9.082	9.094	9.105	9.117	9.128
<b>960</b>	9.128	9.139	9.151	9.162	9.174	9.185	9.197	9.208	9.219	9.231	9.242
<b>970</b>	9.242	9.254	9.265	9.277	9.288	9.300	9.311	9.323	9.334	9.345	9.357
<b>980</b>	9.357	9.368	9.380	9.391	9.403	9.414	9.426	9.437	9.449	9.460	9.472
<b>990</b>	9.472	9.483	9.495	9.506	9.518	9.529	9.541	9.552	9.564	9.576	9.587
<b>1000</b>	9.587	9.599	9.610	9.622	9.633	9.645	9.656	9.668	9.680	9.691	9.703
<b>1010</b>	9.703	9.714	9.726	9.737	9.749	9.761	9.772	9.784	9.795	9.807	9.819
<b>1020</b>	9.819	9.830	9.842	9.853	9.865	9.877	9.888	9.900	9.911	9.923	9.935
<b>1030</b>	9.935	9.946	9.958	9.970	9.981	9.993	10.005	10.016	10.028	10.040	10.051
<b>1040</b>	10.051	10.063	10.075	10.086	10.098	10.110	10.121	10.133	10.145	10.156	10.168
<b>1050</b>	10.168	10.180	10.191	10.203	10.215	10.227	10.238	10.250	10.262	10.273	10.285
<b>1060</b>	10.285	10.297	10.309	10.320	10.332	10.344	10.356	10.367	10.379	10.391	10.403
<b>1070</b>	10.403	10.414	10.426	10.438	10.450	10.461	10.473	10.485	10.497	10.509	10.520
<b>1080</b>	10.520	10.532	10.544	10.556	10.567	10.579	10.591	10.603	10.615	10.626	10.638
<b>1090</b>	10.638	10.650	10.662	10.674	10.686	10.697	10.709	10.721	10.733	10.745	10.757
<b>1100</b>	10.757	10.768	10.780	10.792	10.804	10.816	10.828	10.839	10.851	10.863	10.875
<b>1110</b>	10.875	10.887	10.899	10.911	10.922	10.934	10.946	10.958	10.970	10.982	10.994
<b>1120</b>	10.994	11.006	11.017	11.029	11.041	11.053	11.065	11.077	11.089	11.101	11.113
<b>1130</b>	11.113	11.125	11.136	11.148	11.160	11.172	11.184	11.196	11.208	11.220	11.232
<b>1140</b>	11.232	11.244	11.256	11.268	11.280	11.291	11.303	11.315	11.327	11.339	11.351
<b>1150</b>	11.351	11.363	11.375	11.387	11.399	11.411	11.423	11.435	11.447	11.459	11.471
<b>1160</b>	11.471	11.483	11.495	11.507	11.519	11.531	11.542	11.554	11.566	11.578	11.590
<b>1170</b>	11.590	11.602	11.614	11.626	11.638	11.650	11.662	11.674	11.686	11.698	11.710
<b>1180</b>	11.710	11.722	11.734	11.746	11.758	11.770	11.782	11.794	11.806	11.818	11.830
<b>1190</b>	11.830	11.842	11.854	11.866	11.878	11.890	11.902	11.914	11.926	11.939	11.951
<b>1200</b>	11.951	11.963	11.975	11.987	11.999	12.011	12.023	12.035	12.047	12.059	12.071
<b>1210</b>	12.071	12.083	12.095	12.107	12.119	12.131	12.143	12.155	12.167	12.179	12.191
<b>1220</b>	12.191	12.203	12.216	12.228	12.240	12.252	12.264	12.276	12.288	12.300	12.312
<b>1230</b>	12.312	12.324	12.336	12.348	12.360	12.372	12.384	12.397	12.409	12.421	12.433
<b>1240</b>	12.433	12.445	12.457	12.469	12.481	12.493	12.505	12.517	12.529	12.542	12.554
°C	0	1	2	3	4	5	6	7	8	9	10



**ITS-90 Table for Type S Thermocouple (Ref Junction 0°C)**

°C	0	1	2	3	4	5	6	7	8	9	10
<b>Thermoelectric Voltage in mV</b>											
<b>1250</b>	12.554	12.566	12.578	12.590	12.602	12.614	12.626	12.638	12.650	12.662	12.675
<b>1260</b>	12.675	12.687	12.699	12.711	12.723	12.735	12.747	12.759	12.771	12.783	12.796
<b>1270</b>	12.796	12.808	12.820	12.832	12.844	12.856	12.868	12.880	12.892	12.905	12.917
<b>1280</b>	12.917	12.929	12.941	12.953	12.965	12.977	12.989	13.001	13.014	13.026	13.038
<b>1290</b>	13.038	13.050	13.062	13.074	13.086	13.098	13.111	13.123	13.135	13.147	13.159
<b>1300</b>	13.159	13.171	13.183	13.195	13.208	13.220	13.232	13.244	13.256	13.268	13.280
<b>1310</b>	13.280	13.292	13.305	13.317	13.329	13.341	13.353	13.365	13.377	13.390	13.402
<b>1320</b>	13.402	13.414	13.426	13.438	13.450	13.462	13.474	13.487	13.499	13.511	13.523
<b>1330</b>	13.523	13.535	13.547	13.559	13.572	13.584	13.596	13.608	13.620	13.632	13.644
<b>1340</b>	13.644	13.657	13.669	13.681	13.693	13.705	13.717	13.729	13.742	13.754	13.766
<b>1350</b>	13.766	13.778	13.790	13.802	13.814	13.826	13.839	13.851	13.863	13.875	13.887
<b>1360</b>	13.887	13.899	13.911	13.924	13.936	13.948	13.960	13.972	13.984	13.996	14.009
<b>1370</b>	14.009	14.021	14.033	14.045	14.057	14.069	14.081	14.094	14.106	14.118	14.130
<b>1380</b>	14.130	14.142	14.154	14.166	14.178	14.191	14.203	14.215	14.227	14.239	14.251
<b>1390</b>	14.251	14.263	14.276	14.288	14.300	14.312	14.324	14.336	14.348	14.360	14.373
<b>1400</b>	14.373	14.385	14.397	14.409	14.421	14.433	14.445	14.457	14.470	14.482	14.494
<b>1410</b>	14.494	14.506	14.518	14.530	14.542	14.554	14.567	14.579	14.591	14.603	14.615
<b>1420</b>	14.615	14.627	14.639	14.651	14.664	14.676	14.688	14.700	14.712	14.724	14.736
<b>1430</b>	14.736	14.748	14.760	14.773	14.785	14.797	14.809	14.821	14.833	14.845	14.857
<b>1440</b>	14.857	14.869	14.881	14.894	14.906	14.918	14.930	14.942	14.954	14.966	14.978
<b>1450</b>	14.978	14.990	15.002	15.015	15.027	15.039	15.051	15.063	15.075	15.087	15.099
<b>1460</b>	15.099	15.111	15.123	15.135	15.148	15.160	15.172	15.184	15.196	15.208	15.220
<b>1470</b>	15.220	15.232	15.244	15.256	15.268	15.280	15.292	15.304	15.317	15.329	15.341
<b>1480</b>	15.341	15.353	15.365	15.377	15.389	15.401	15.413	15.425	15.437	15.449	15.461
<b>1490</b>	15.461	15.473	15.485	15.497	15.509	15.521	15.534	15.546	15.558	15.570	15.582
<b>1500</b>	15.582	15.594	15.606	15.618	15.630	15.642	15.654	15.666	15.678	15.690	15.702
<b>1510</b>	15.702	15.714	15.726	15.738	15.750	15.762	15.774	15.786	15.798	15.810	15.822
<b>1520</b>	15.822	15.834	15.846	15.858	15.870	15.882	15.894	15.906	15.918	15.930	15.942
<b>1530</b>	15.942	15.954	15.966	15.978	15.990	16.002	16.014	16.026	16.038	16.050	16.062
<b>1540</b>	16.062	16.074	16.086	16.098	16.110	16.122	16.134	16.146	16.158	16.170	16.182
<b>1550</b>	16.182	16.194	16.205	16.217	16.229	16.241	16.253	16.265	16.277	16.289	16.301
<b>1560</b>	16.301	16.313	16.325	16.337	16.349	16.361	16.373	16.385	16.396	16.408	16.420
<b>1570</b>	16.420	16.432	16.444	16.456	16.468	16.480	16.492	16.504	16.516	16.527	16.539
<b>1580</b>	16.539	16.551	16.563	16.575	16.587	16.599	16.611	16.623	16.634	16.646	16.658
<b>1590</b>	16.658	16.670	16.682	16.694	16.706	16.718	16.729	16.741	16.753	16.765	16.777
<b>1600</b>	16.777	16.789	16.801	16.812	16.824	16.836	16.848	16.860	16.872	16.883	16.895
<b>1610</b>	16.895	16.907	16.919	16.931	16.943	16.954	16.966	16.978	16.990	17.002	17.013
<b>1620</b>	17.013	17.025	17.037	17.049	17.061	17.072	17.084	17.096	17.108	17.120	17.131
<b>1630</b>	17.131	17.143	17.155	17.167	17.178	17.190	17.202	17.214	17.225	17.237	17.249
<b>1640</b>	17.249	17.261	17.272	17.284	17.296	17.308	17.319	17.331	17.343	17.355	17.366
°C	0	1	2	3	4	5	6	7	8	9	10

**ITS-90 Table for Type S Thermocouple (Ref Junction 0°C)**

°C	0	1	2	3	4	5	6	7	8	9	10
<b>Thermoelectric Voltage in mV</b>											
<b>1650</b>	17.366	17.378	17.390	17.401	17.413	17.425	17.437	17.448	17.460	17.472	17.483
<b>1660</b>	17.483	17.495	17.507	17.518	17.530	17.542	17.553	17.565	17.577	17.588	17.600
<b>1670</b>	17.600	17.612	17.623	17.635	17.647	17.658	17.670	17.682	17.693	17.705	17.717
<b>1680</b>	17.717	17.728	17.740	17.751	17.763	17.775	17.786	17.798	17.809	17.821	17.832
<b>1690</b>	17.832	17.844	17.855	17.867	17.878	17.890	17.901	17.913	17.924	17.936	17.947
<b>1700</b>	17.947	17.959	17.970	17.982	17.993	18.004	18.016	18.027	18.039	18.050	18.061
<b>1710</b>	18.061	18.073	18.084	18.095	18.107	18.118	18.129	18.140	18.152	18.163	18.174
<b>1720</b>	18.174	18.185	18.196	18.208	18.219	18.230	18.241	18.252	18.263	18.274	18.285
<b>1730</b>	18.285	18.297	18.308	18.319	18.330	18.341	18.352	18.362	18.373	18.384	18.395
<b>1740</b>	18.395	18.406	18.417	18.428	18.439	18.449	18.460	18.471	18.482	18.493	18.503
<b>1750</b>	18.503	18.514	18.525	18.535	18.546	18.557	18.567	18.578	18.588	18.599	18.609
<b>1760</b>	18.609	18.620	18.630	18.641	18.651	18.661	18.672	18.682	18.693		
°C	0	1	2	3	4	5	6	7	8	9	10