

## ***Appendix A: Financial Tables***



## APPENDIX A: FINANCIAL TABLES

Table A1

Future Value Factors for One Dollar Compounded at  $r$  Percent for  $n$  Periods

$$FVF_{r\%,n} = (1+r)^n$$

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%
1	1.010	1.020	1.030	1.040	1.050	1.060	1.070	1.080	1.090	1.100	1.110	1.120	1.130	1.140	1.150
2	1.020	1.040	1.061	1.082	1.103	1.124	1.145	1.166	1.188	1.210	1.232	1.254	1.277	1.300	1.323
3	1.030	1.061	1.093	1.125	1.158	1.191	1.225	1.260	1.295	1.331	1.368	1.405	1.443	1.482	1.521
4	1.041	1.082	1.126	1.170	1.216	1.262	1.311	1.360	1.412	1.464	1.518	1.574	1.630	1.689	1.749
5	1.051	1.104	1.159	1.217	1.276	1.338	1.403	1.469	1.539	1.611	1.685	1.762	1.842	1.925	2.011
6	1.062	1.126	1.194	1.265	1.340	1.419	1.501	1.587	1.677	1.772	1.870	1.974	2.082	2.195	2.313
7	1.072	1.149	1.230	1.316	1.407	1.504	1.606	1.714	1.828	1.949	2.076	2.211	2.353	2.502	2.660
8	1.083	1.172	1.267	1.369	1.477	1.594	1.718	1.851	1.993	2.144	2.305	2.476	2.658	2.853	3.059
9	1.094	1.195	1.305	1.423	1.551	1.689	1.838	1.999	2.172	2.358	2.558	2.773	3.004	3.252	3.518
10	1.105	1.219	1.344	1.480	1.629	1.791	1.967	2.159	2.367	2.594	2.839	3.106	3.395	3.707	4.046
11	1.116	1.243	1.384	1.539	1.710	1.898	2.105	2.332	2.580	2.853	3.152	3.479	3.836	4.226	4.652
12	1.127	1.268	1.426	1.601	1.796	2.012	2.252	2.518	2.813	3.138	3.498	3.896	4.335	4.818	5.350
13	1.138	1.294	1.469	1.665	1.886	2.133	2.410	2.720	3.066	3.452	3.883	4.363	4.898	5.492	6.153
14	1.149	1.319	1.513	1.732	1.980	2.261	2.579	2.937	3.342	3.797	4.310	4.887	5.535	6.261	7.076
15	1.161	1.346	1.558	1.801	2.079	2.397	2.759	3.172	3.642	4.177	4.785	5.474	6.254	7.138	8.137
16	1.173	1.373	1.605	1.873	2.183	2.540	2.952	3.426	3.970	4.595	5.311	6.130	7.067	8.137	9.358
17	1.184	1.400	1.653	1.948	2.292	2.693	3.159	3.700	4.328	5.054	5.895	6.866	7.986	9.276	10.761
18	1.196	1.428	1.702	2.026	2.407	2.854	3.380	3.996	4.717	5.560	6.544	7.690	9.024	10.575	12.375
19	1.208	1.457	1.754	2.107	2.527	3.026	3.617	4.316	5.142	6.116	7.263	8.613	10.197	12.056	14.232
20	1.220	1.486	1.806	2.191	2.653	3.207	3.870	4.661	5.604	6.727	8.062	9.646	11.523	13.743	16.367
21	1.232	1.516	1.860	2.279	2.786	3.400	4.141	5.034	6.109	7.400	8.949	10.804	13.021	15.668	18.822
22	1.245	1.546	1.916	2.370	2.925	3.604	4.430	5.437	6.659	8.140	9.934	12.100	14.714	17.861	21.645
23	1.257	1.577	1.974	2.465	3.072	3.820	4.741	5.871	7.258	8.954	11.026	13.552	16.627	20.362	24.891
24	1.270	1.608	2.033	2.563	3.225	4.049	5.072	6.341	7.911	9.850	12.239	15.179	18.788	23.212	28.625
25	1.282	1.641	2.094	2.666	3.386	4.292	5.427	6.848	8.623	10.835	13.585	17.000	21.231	26.462	32.919
30	1.348	1.811	2.427	3.243	4.322	5.743	7.612	10.063	13.268	17.449	22.892	29.960	39.116	50.950	66.212
35	1.417	2.000	2.814	3.946	5.516	7.686	10.677	14.785	20.414	28.102	38.575	52.800	72.069	98.100	133.176
40	1.489	2.208	3.262	4.801	7.040	10.286	14.974	21.725	31.409	45.259	65.001	93.051	132.782	188.884	267.864
45	1.565	2.438	3.782	5.841	8.985	13.765	21.002	31.920	48.327	72.890	109.530	163.988	244.641	363.679	538.769
50	1.645	2.692	4.384	7.107	11.467	18.420	29.457	46.902	74.358	117.391	184.565	289.002	450.736	700.233	1083.657

**Table A1 (continued)**  
 Future Value Factors for One Dollar Compounded at  $r$  Percent for  $n$  Periods

$FV/F_{r\%,n} = (1+r)^n$	16%	17%	18%	19%	20%	25%	30%	35%	40%	45%	50%
1	1.160	1.170	1.180	1.190	1.200	1.250	1.300	1.350	1.400	1.450	1.500
2	1.346	1.369	1.392	1.416	1.440	1.563	1.690	1.823	1.960	2.103	2.250
3	1.561	1.602	1.643	1.685	1.728	1.953	2.197	2.460	2.744	3.049	3.375
4	1.811	1.874	1.939	2.005	2.074	2.441	2.856	3.322	3.842	4.421	5.063
5	2.100	2.192	2.288	2.386	2.488	3.052	3.713	4.484	5.378	6.410	7.594
6	2.436	2.565	2.700	2.840	2.986	3.815	4.827	6.053	7.530	9.294	11.391
7	2.826	3.001	3.185	3.379	3.583	4.768	6.275	8.172	10.541	13.476	17.086
8	3.278	3.511	3.759	4.021	4.300	5.960	8.157	11.032	14.758	19.541	25.629
9	3.803	4.108	4.435	4.785	5.160	7.451	10.604	14.894	20.661	28.334	38.443
10	4.411	4.807	5.234	5.695	6.192	9.313	13.786	20.107	28.925	41.085	57.665
11	5.117	5.624	6.176	6.777	7.430	11.642	17.922	27.144	40.496	59.573	86.498
12	5.936	6.580	7.288	8.064	8.916	14.552	23.298	36.644	56.694	86.381	129.746
13	6.886	7.699	8.599	9.596	10.699	18.190	30.288	49.470	79.371	125.252	194.620
14	7.988	9.007	10.147	11.420	12.839	22.737	39.374	66.784	111.120	181.615	291.929
15	9.266	10.539	11.974	13.590	15.407	28.422	51.186	90.158	155.568	263.342	437.894
16	10.748	12.330	14.129	16.172	18.488	35.527	66.542	121.714	217.795	381.846	656.841
17	12.468	14.426	16.672	19.244	22.186	44.409	86.504	164.314	304.913	553.676	985.261
18	14.463	16.879	19.673	22.901	26.623	55.511	112.455	221.824	426.879	802.831	1477.892
19	16.777	19.748	23.214	27.252	31.948	69.389	146.192	299.462	597.630	1164.105	2216.838
20	19.461	23.106	27.393	32.429	38.338	86.736	190.050	404.274	836.683	1687.952	3325.257
21	22.574	27.034	32.324	38.591	46.005	108.420	247.065	545.769	1171.356	2447.530	4987.885
22	26.186	31.629	38.142	45.923	55.206	135.525	321.184	736.789	1639.898	3548.919	7481.828
23	30.376	37.006	45.008	54.649	66.247	169.407	417.539	994.665	2295.857	5145.932	11222.741
24	35.236	43.297	53.109	65.032	79.497	211.758	542.801	1342.797	3214.200	7461.602	16834.112
25	40.874	50.658	62.669	77.388	95.396	264.698	705.641	1812.776	4499.880	10819.322	25251.168
30	85.850	111.065	143.371	184.675	237.376	807.794	2619.996	8128.550	24201.432	69348.978	191751.059
35	180.314	243.503	327.997	440.701	590.668	2465.190	9727.860	36448.688	130161.112	444508.508	*
40	378.721	533.869	750.378	1051.668	1469.772	7523.164	36118.865	163437.135	700037.697	*	*
45	795.444	1170.479	1716.684	2509.651	3657.262	22958.874	134106.817	732857.577	*	*	*
50	1670.704	2566.215	3927.357	5988.914	9100.438	70064.923	497929.223	*	*	*	*

\*Not shown because of space limitations.

**Table A2**Present Value Factors for One Dollar Discounted at  $r$  Percent for  $n$  Periods

$$PV_{r,n} = 1/(1+r)^n$$

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%
1	0.990	0.980	0.971	0.962	0.952	0.943	0.935	0.926	0.917	0.909	0.901	0.893	0.885	0.877	0.870
2	0.980	0.961	0.943	0.925	0.907	0.890	0.873	0.857	0.842	0.826	0.812	0.797	0.783	0.769	0.756
3	0.971	0.942	0.915	0.889	0.864	0.840	0.816	0.794	0.772	0.751	0.731	0.712	0.693	0.675	0.658
4	0.961	0.924	0.888	0.855	0.823	0.792	0.763	0.735	0.708	0.683	0.659	0.636	0.613	0.592	0.572
5	0.951	0.906	0.863	0.822	0.784	0.747	0.713	0.681	0.650	0.621	0.593	0.567	0.543	0.519	0.497
6	0.942	0.888	0.837	0.790	0.746	0.705	0.666	0.630	0.596	0.564	0.535	0.507	0.480	0.456	0.432
7	0.933	0.871	0.813	0.760	0.711	0.665	0.623	0.583	0.547	0.513	0.482	0.452	0.425	0.400	0.376
8	0.923	0.853	0.789	0.731	0.677	0.627	0.582	0.540	0.502	0.467	0.434	0.404	0.376	0.351	0.327
9	0.914	0.837	0.766	0.703	0.645	0.592	0.544	0.500	0.460	0.424	0.391	0.361	0.333	0.308	0.284
10	0.905	0.820	0.744	0.676	0.614	0.558	0.508	0.463	0.422	0.386	0.352	0.322	0.295	0.270	0.247
11	0.896	0.804	0.722	0.650	0.585	0.527	0.475	0.429	0.388	0.350	0.317	0.287	0.261	0.237	0.215
12	0.887	0.788	0.701	0.625	0.557	0.497	0.444	0.397	0.356	0.319	0.286	0.257	0.231	0.208	0.187
13	0.879	0.773	0.681	0.601	0.530	0.469	0.415	0.368	0.326	0.290	0.258	0.229	0.204	0.182	0.163
14	0.870	0.758	0.661	0.577	0.505	0.442	0.388	0.340	0.299	0.263	0.232	0.205	0.181	0.160	0.141
15	0.861	0.743	0.642	0.555	0.481	0.417	0.362	0.315	0.275	0.239	0.209	0.183	0.160	0.140	0.123
16	0.853	0.728	0.623	0.534	0.458	0.394	0.339	0.292	0.252	0.218	0.188	0.163	0.141	0.123	0.107
17	0.844	0.714	0.605	0.513	0.436	0.371	0.317	0.270	0.231	0.198	0.170	0.146	0.125	0.108	0.093
18	0.836	0.700	0.587	0.494	0.416	0.350	0.296	0.250	0.212	0.180	0.153	0.130	0.111	0.095	0.081
19	0.828	0.686	0.570	0.475	0.396	0.331	0.277	0.232	0.194	0.164	0.138	0.116	0.098	0.083	0.070
20	0.820	0.673	0.554	0.456	0.377	0.312	0.258	0.215	0.178	0.149	0.124	0.104	0.087	0.073	0.061
21	0.811	0.660	0.538	0.439	0.359	0.294	0.242	0.199	0.164	0.135	0.112	0.093	0.077	0.064	0.053
22	0.803	0.647	0.522	0.422	0.342	0.278	0.226	0.184	0.150	0.123	0.101	0.083	0.068	0.056	0.046
23	0.795	0.634	0.507	0.406	0.326	0.262	0.211	0.170	0.138	0.112	0.091	0.074	0.060	0.049	0.040
24	0.788	0.622	0.492	0.390	0.310	0.247	0.197	0.158	0.126	0.102	0.082	0.066	0.053	0.043	0.035
25	0.780	0.610	0.478	0.375	0.295	0.233	0.184	0.146	0.116	0.092	0.074	0.059	0.047	0.038	0.030
30	0.742	0.552	0.412	0.308	0.231	0.174	0.131	0.099	0.075	0.057	0.044	0.033	0.026	0.020	0.015
35	0.706	0.500	0.355	0.253	0.181	0.130	0.094	0.068	0.049	0.036	0.026	0.019	0.014	0.010	0.008
40	0.672	0.453	0.307	0.208	0.142	0.097	0.067	0.046	0.032	0.022	0.015	0.011	0.008	0.005	0.004
45	0.639	0.410	0.264	0.171	0.111	0.073	0.048	0.031	0.021	0.014	0.009	0.006	0.004	0.003	0.002
50	0.608	0.372	0.228	0.141	0.087	0.054	0.034	0.021	0.013	0.009	0.005	0.003	0.002	0.001	0.001

**Table A2 (continued)**  
 Present Value Factors for One Dollar Discounted at  $r$  Percent for  $n$  Periods  
 $PVF_{r\%,n} = 1/(1+r)^n$

Period	16%	17%	18%	19%	20%	25%	30%	35%	40%	45%	50%
1	0.862	0.855	0.847	0.840	0.833	0.800	0.769	0.741	0.714	0.690	0.667
2	0.743	0.731	0.718	0.706	0.694	0.640	0.592	0.549	0.510	0.476	0.444
3	0.641	0.624	0.609	0.593	0.579	0.512	0.455	0.406	0.364	0.328	0.296
4	0.552	0.534	0.516	0.499	0.482	0.410	0.350	0.301	0.260	0.226	0.198
5	0.476	0.456	0.437	0.419	0.402	0.328	0.269	0.223	0.186	0.156	0.132
6	0.410	0.390	0.370	0.352	0.335	0.262	0.207	0.165	0.133	0.108	0.088
7	0.354	0.333	0.314	0.296	0.279	0.210	0.159	0.122	0.095	0.074	0.059
8	0.305	0.285	0.266	0.249	0.233	0.168	0.123	0.091	0.068	0.051	0.039
9	0.263	0.243	0.225	0.209	0.194	0.134	0.094	0.067	0.048	0.035	0.026
10	0.227	0.208	0.191	0.176	0.162	0.107	0.073	0.050	0.035	0.024	0.017
11	0.195	0.178	0.162	0.148	0.135	0.086	0.056	0.037	0.025	0.017	0.012
12	0.168	0.152	0.137	0.124	0.112	0.069	0.043	0.027	0.018	0.012	0.008
13	0.145	0.130	0.116	0.104	0.093	0.055	0.033	0.020	0.013	0.008	0.005
14	0.125	0.111	0.099	0.088	0.078	0.044	0.025	0.015	0.009	0.006	0.003
15	0.108	0.095	0.084	0.074	0.065	0.035	0.020	0.011	0.006	0.004	0.002
16	0.093	0.081	0.071	0.062	0.054	0.028	0.015	0.008	0.005	0.003	0.002
17	0.080	0.069	0.060	0.052	0.045	0.023	0.012	0.006	0.003	0.002	0.001
18	0.069	0.059	0.051	0.044	0.038	0.018	0.009	0.005	0.002	0.001	0.001
19	0.060	0.051	0.043	0.037	0.031	0.014	0.007	0.003	0.002	0.001	*
20	0.051	0.043	0.037	0.031	0.026	0.012	0.005	0.002	0.001	0.001	*
21	0.044	0.037	0.031	0.026	0.022	0.009	0.004	0.002	0.001	*	*
22	0.038	0.032	0.026	0.022	0.018	0.007	0.003	0.001	0.001	*	*
23	0.033	0.027	0.022	0.018	0.015	0.006	0.002	0.001	*	*	*
24	0.028	0.023	0.019	0.015	0.013	0.005	0.002	0.001	*	*	*
25	0.024	0.020	0.016	0.013	0.010	0.004	0.001	*	*	*	*
30	0.012	0.009	0.007	0.005	0.004	0.001	*	*	*	*	*
35	0.006	0.004	0.003	0.002	0.002	*	*	*	*	*	*
40	0.003	0.002	0.001	0.001	0.001	*	*	*	*	*	*
45	0.001	0.001	0.001	*	*	*	*	*	*	*	*
50	0.001	*	*	*	*	*	*	*	*	*	*

\* $PVF$  is zero to three decimal places.

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**Table A3**Future Value Factors for a One-Dollar Ordinary Annuity Compounded at  $r$  Percent for  $n$  Periods
$$FVFA_{r\%,n} = PMT \times \frac{(1+r)^n - 1}{r}$$

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%
1	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2	2.010	2.020	2.030	2.040	2.050	2.060	2.070	2.080	2.090	2.100	2.110	2.120	2.130	2.140	2.150
3	3.030	3.060	3.091	3.122	3.153	3.184	3.215	3.246	3.278	3.310	3.342	3.374	3.407	3.440	3.473
4	4.060	4.122	4.184	4.246	4.310	4.375	4.440	4.506	4.573	4.641	4.710	4.779	4.850	4.921	4.993
5	5.101	5.201	5.309	5.416	5.526	5.637	5.751	5.867	5.985	6.105	6.228	6.353	6.480	6.610	6.742
6	6.152	6.308	6.468	6.633	6.802	6.975	7.153	7.336	7.523	7.716	7.913	8.115	8.323	8.536	8.754
7	7.214	7.434	7.662	7.898	8.142	8.394	8.654	8.923	9.200	9.487	9.783	10.089	10.405	10.730	11.067
8	8.286	8.583	8.892	9.214	9.549	9.897	10.260	10.637	11.028	11.436	11.859	12.300	12.757	13.233	13.727
9	9.369	9.755	10.159	10.583	11.027	11.491	11.978	12.488	13.021	13.579	14.164	14.776	15.416	16.085	16.786
10	10.462	10.950	11.464	12.006	12.578	13.181	13.816	14.487	15.193	15.937	16.722	17.549	18.420	19.337	20.304
11	11.567	12.169	12.808	13.486	14.207	14.972	15.784	16.645	17.560	18.531	19.561	20.655	21.814	23.045	24.349
12	12.683	13.412	14.192	15.026	15.917	16.870	17.888	18.977	20.141	21.384	22.713	24.133	25.650	27.271	29.002
13	13.809	14.680	15.618	16.627	17.713	18.882	20.141	21.495	22.953	24.523	26.212	28.029	29.985	32.089	34.352
14	14.947	15.974	17.086	18.292	19.599	21.015	22.550	24.215	26.019	27.975	30.095	32.393	34.883	37.581	40.505
15	16.097	17.293	18.599	20.024	21.579	23.276	25.129	27.152	29.361	31.772	34.405	37.280	40.417	43.842	47.580
16	17.258	18.639	20.157	21.825	23.657	25.673	27.888	30.324	33.003	35.950	39.190	42.753	46.672	50.980	55.717
17	18.430	20.012	21.762	23.698	25.840	28.213	30.840	33.750	36.974	40.545	44.501	48.884	53.739	59.118	65.075
18	19.615	21.412	23.414	25.645	28.132	30.906	33.999	37.450	41.301	45.599	50.396	55.750	61.725	68.394	75.836
19	20.811	22.841	25.117	27.671	30.539	33.760	37.379	41.446	46.018	51.159	56.939	63.440	70.749	78.969	88.212
20	22.019	24.297	26.870	29.778	33.066	36.786	40.995	45.762	51.160	57.275	64.203	72.052	80.947	91.025	102.444
21	23.239	25.783	28.676	31.969	35.719	39.993	44.865	50.423	56.765	64.002	72.265	81.699	92.470	104.768	118.810
22	24.472	27.299	30.537	34.248	38.505	43.392	49.006	55.457	62.873	71.403	81.214	92.503	105.491	120.436	137.632
23	25.716	28.845	32.453	36.618	41.430	46.996	53.436	60.893	69.532	79.543	91.148	104.603	120.205	138.297	159.276
24	26.973	30.422	34.426	39.083	44.502	50.816	58.177	66.765	76.790	88.497	102.174	118.155	136.831	158.659	184.168
25	28.243	32.030	36.459	41.646	47.727	54.865	63.249	73.106	84.701	98.347	114.413	133.334	155.620	181.871	212.793
30	34.785	40.568	47.575	56.085	66.439	79.058	94.461	113.283	136.308	164.494	199.021	241.333	293.199	356.787	434.745
35	41.660	49.994	60.462	73.652	90.320	111.435	138.237	172.317	215.711	271.024	341.590	431.663	546.681	693.573	881.170
40	48.886	60.402	75.401	95.026	120.800	154.762	199.635	259.057	337.882	442.593	581.826	767.091	1013.704	1342.025	1779.090
45	56.481	71.893	92.720	121.029	159.700	212.744	285.749	386.506	525.859	718.905	986.639	1358.230	1874.165	2590.565	3585.128
50	64.463	84.579	112.797	152.667	209.348	290.336	406.529	573.770	815.084	1163.909	1668.771	2400.018	3459.507	4994.521	7217.716

**Table A3 (continued)**  
 Future Value Factors for a One-Dollar Ordinary Annuity Compounded at  $r$  Percent for  $n$  Periods

$FVFA_{r\%,n} = PMT \times \frac{r}{(1+r)^n - 1}$											
Period	16%	17%	18%	19%	20%	25%	30%	35%	40%	45%	50%
1	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2	2.160	2.170	2.180	2.190	2.200	2.250	2.300	2.350	2.400	2.450	2.500
3	3.506	3.539	3.572	3.606	3.640	3.813	3.990	4.173	4.360	4.553	4.750
4	5.066	5.141	5.215	5.291	5.368	5.766	6.187	6.633	7.104	7.601	8.125
5	6.877	7.014	7.154	7.297	7.442	8.207	9.043	9.954	10.946	12.022	13.188
6	8.977	9.207	9.442	9.683	9.930	11.259	12.756	14.438	16.324	18.431	20.781
7	11.414	11.772	12.142	12.523	12.916	15.073	17.583	20.492	23.853	27.725	32.172
8	14.240	14.773	15.327	15.902	16.499	19.842	23.858	28.664	34.395	41.202	49.258
9	17.519	18.285	19.086	19.923	20.799	25.802	32.015	39.696	49.153	60.743	74.887
10	21.321	22.393	23.521	24.709	25.959	33.253	42.619	54.590	69.814	89.077	113.330
11	25.733	27.200	28.755	30.404	32.150	42.566	56.405	74.697	98.739	130.162	170.995
12	30.850	32.824	34.931	37.180	39.581	54.208	74.327	101.841	139.235	189.735	257.493
13	36.786	39.404	42.219	45.244	48.497	68.760	97.625	138.485	195.929	276.115	387.239
14	43.672	47.103	50.818	54.841	59.196	86.949	127.913	187.954	275.300	401.367	581.859
15	51.660	56.110	60.965	66.261	72.035	109.687	167.286	254.738	386.420	582.982	873.788
16	60.925	66.649	72.939	79.850	87.442	138.109	218.472	344.897	541.988	846.324	1311.682
17	71.673	78.979	87.068	96.022	105.931	173.636	285.014	466.611	759.784	1228.170	1968.523
18	84.141	93.406	103.740	115.266	128.117	218.045	371.518	630.925	1064.697	1781.846	2953.784
19	98.603	110.285	123.414	138.166	154.740	273.556	483.973	852.748	1491.576	2584.677	4431.676
20	115.380	130.033	146.628	165.418	186.688	342.945	630.165	1152.210	2089.206	3748.782	6648.513
21	134.841	153.139	174.021	197.847	225.026	429.681	820.215	1556.484	2925.889	5436.734	9973.770
22	157.415	180.172	206.345	236.438	271.031	538.101	1067.280	2102.253	4097.245	7884.264	14961.655
23	183.601	211.801	244.487	282.362	326.237	673.626	1388.464	2839.042	5737.142	11433.182	22443.483
24	213.978	248.808	289.494	337.010	392.484	843.033	1806.003	3833.706	8032.999	16579.115	33666.224
25	249.214	292.105	342.603	402.042	471.981	1054.791	2348.803	5176.504	11247.199	24040.716	50500.337
30	530.312	647.439	790.948	966.712	1181.882	3227.174	8729.985	23221.570	60501.081	154106.618	383500.118
35	1120.713	1426.491	1816.652	2314.214	2948.341	9856.761	32422.868	104136.251	325400.279	987794.463	*
40	2360.757	3134.522	4163.213	5529.829	7343.858	30088.655	120392.883	466960.385	*	*	*
45	4965.274	6879.291	9531.577	13203.424	18281.310	91831.496	447019.389	*	*	*	*
50	10435.649	15089.502	21813.094	31515.336	45497.191	280255.693	*	*	*	*	*

\*Not a Linear Extension of Previous Limitations



**Table A4**Present Value Factors for a One-Dollar Ordinary Annuity Discounted at  $r$  Percent for  $n$  Periods
$$PVFA_{r\%,n} = \frac{PMT}{r} \times \left[ 1 - \frac{1}{(1+r)^n} \right]$$

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%
1	0.990	0.980	0.971	0.962	0.952	0.943	0.935	0.926	0.917	0.909	0.901	0.893	0.885	0.877	0.870
2	1.970	1.942	1.913	1.886	1.859	1.833	1.808	1.783	1.759	1.736	1.713	1.690	1.668	1.647	1.626
3	2.941	2.884	2.829	2.775	2.723	2.673	2.624	2.577	2.531	2.487	2.444	2.402	2.361	2.322	2.283
4	3.902	3.808	3.717	3.630	3.546	3.465	3.387	3.312	3.240	3.170	3.102	3.037	2.974	2.914	2.855
5	4.853	4.713	4.580	4.452	4.329	4.212	4.100	3.993	3.890	3.791	3.696	3.605	3.517	3.433	3.352
6	5.795	5.601	5.417	5.242	5.076	4.917	4.767	4.623	4.486	4.355	4.231	4.111	3.998	3.889	3.784
7	6.728	6.472	6.230	6.002	5.786	5.582	5.389	5.206	5.033	4.868	4.712	4.564	4.423	4.288	4.160
8	7.652	7.325	7.020	6.733	6.463	6.210	5.971	5.747	5.535	5.335	5.146	4.968	4.799	4.639	4.487
9	8.566	8.162	7.786	7.435	7.108	6.802	6.515	6.247	5.995	5.759	5.537	5.328	5.132	4.946	4.772
10	9.471	8.983	8.530	8.111	7.722	7.360	7.024	6.710	6.418	6.145	5.889	5.650	5.426	5.216	5.019
11	10.368	9.787	9.253	8.760	8.306	7.887	7.499	7.139	6.805	6.495	6.207	5.938	5.687	5.453	5.234
12	11.255	10.575	9.954	9.385	8.863	8.384	7.943	7.536	7.161	6.814	6.492	6.194	5.918	5.660	5.421
13	12.134	11.348	10.635	9.986	9.394	8.853	8.358	7.904	7.487	7.103	6.750	6.424	6.122	5.842	5.583
14	13.004	12.106	11.296	10.563	9.899	9.295	8.745	8.244	7.786	7.367	6.982	6.628	6.302	6.002	5.724
15	13.865	12.849	11.938	11.118	10.380	9.712	9.108	8.559	8.061	7.606	7.191	6.811	6.462	6.142	5.847
16	14.718	13.578	12.561	11.652	10.838	10.106	9.447	8.851	8.313	7.824	7.379	6.974	6.604	6.265	5.954
17	15.562	14.292	13.166	12.166	11.274	10.477	9.763	9.122	8.544	8.022	7.549	7.120	6.729	6.373	6.047
18	16.398	14.992	13.754	12.659	11.690	10.828	10.059	9.372	8.756	8.201	7.702	7.250	6.840	6.467	6.128
19	17.226	15.678	14.324	13.134	12.085	11.158	10.336	9.604	8.950	8.365	7.839	7.366	6.938	6.550	6.198
20	18.046	16.351	14.877	13.590	12.462	11.470	10.594	9.818	9.129	8.514	7.963	7.469	7.025	6.623	6.259
21	18.857	17.011	15.415	14.029	12.821	11.764	10.836	10.017	9.292	8.649	8.075	7.562	7.102	6.687	6.312
22	19.660	17.658	15.937	14.451	13.163	12.042	11.061	10.201	9.442	8.772	8.176	7.645	7.170	6.743	6.359
23	20.456	18.292	16.444	14.857	13.489	12.303	11.272	10.371	9.580	8.883	8.266	7.718	7.230	6.792	6.399
24	21.243	18.914	16.936	15.247	13.799	12.550	11.469	10.529	9.707	8.985	8.348	7.784	7.283	6.835	6.434
25	22.023	19.523	17.413	15.622	14.094	12.783	11.654	10.675	9.823	9.077	8.422	7.843	7.330	6.873	6.464
30	25.808	22.396	19.600	17.292	15.372	13.765	12.409	11.258	10.274	9.427	8.694	8.055	7.496	7.003	6.566
35	29.409	24.999	21.487	18.665	16.374	14.498	12.948	11.655	10.567	9.644	8.855	8.176	7.586	7.070	6.617
40	32.835	27.355	23.115	19.793	17.159	15.046	13.332	11.925	10.757	9.779	8.951	8.244	7.634	7.105	6.642
45	36.095	29.490	24.519	20.720	17.774	15.456	13.606	12.108	10.881	9.863	9.008	8.283	7.661	7.123	6.654
50	39.196	31.424	25.730	21.482	18.256	15.762	13.801	12.233	10.962	9.915	9.042	8.304	7.675	7.133	6.661

**Table A4 (continued)**  
Present Value Factors for a One-Dollar Ordinary Annuity Discounted at  $r$  Percent for  $n$  Periods

$$PVFA_{r\%,n} = \frac{PMT}{r} \times \left[ 1 - \frac{1}{(1+r)^n} \right]$$

Period	16%	17%	18%	19%	20%	25%	30%	35%	40%	45%	50%
1	0.862	0.855	0.847	0.840	0.833	0.800	0.769	0.741	0.714	0.690	0.667
2	1.605	1.585	1.566	1.547	1.528	1.440	1.361	1.289	1.224	1.165	1.111
3	2.246	2.210	2.174	2.140	2.106	1.952	1.816	1.696	1.589	1.493	1.407
4	2.798	2.743	2.690	2.639	2.589	2.362	2.166	1.997	1.849	1.720	1.605
5	3.274	3.199	3.127	3.058	2.991	2.689	2.436	2.220	2.035	1.876	1.737
6	3.685	3.589	3.498	3.410	3.326	2.951	2.643	2.385	2.168	1.983	1.824
7	4.039	3.922	3.812	3.706	3.605	3.161	2.802	2.508	2.263	2.057	1.883
8	4.344	4.207	4.078	3.954	3.837	3.329	2.925	2.598	2.331	2.109	1.922
9	4.607	4.451	4.303	4.163	4.031	3.463	3.019	2.665	2.379	2.144	1.948
10	4.833	4.659	4.494	4.339	4.192	3.571	3.092	2.715	2.414	2.168	1.965
11	5.029	4.836	4.656	4.486	4.327	3.656	3.147	2.752	2.438	2.185	1.977
12	5.197	4.988	4.793	4.611	4.439	3.725	3.190	2.779	2.456	2.196	1.985
13	5.342	5.118	4.910	4.715	4.533	3.780	3.223	2.799	2.469	2.204	1.990
14	5.468	5.229	5.008	4.802	4.611	3.824	3.249	2.814	2.478	2.210	1.993
15	5.575	5.324	5.092	4.876	4.675	3.859	3.268	2.825	2.484	2.214	1.995
16	5.668	5.405	5.162	4.938	4.730	3.887	3.283	2.834	2.489	2.216	1.997
17	5.749	5.475	5.222	4.990	4.775	3.910	3.295	2.840	2.492	2.218	1.998
18	5.818	5.534	5.273	5.033	4.812	3.928	3.304	2.844	2.494	2.219	1.999
19	5.877	5.584	5.316	5.070	4.843	3.942	3.311	2.848	2.496	2.220	1.999
20	5.929	5.628	5.353	5.101	4.870	3.954	3.316	2.850	2.497	2.221	1.999
21	5.973	5.665	5.384	5.127	4.891	3.963	3.320	2.852	2.498	2.221	2.000
22	6.011	5.696	5.410	5.149	4.909	3.970	3.323	2.853	2.498	2.222	2.000
23	6.044	5.723	5.432	5.167	4.925	3.976	3.325	2.854	2.499	2.222	2.000
24	6.073	5.746	5.451	5.182	4.937	3.981	3.327	2.855	2.499	2.222	2.000
25	6.097	5.766	5.467	5.195	4.948	3.985	3.329	2.856	2.499	2.222	2.000
30	6.177	5.829	5.517	5.235	4.979	3.995	3.332	2.857	2.500	2.222	2.000
35	6.215	5.858	5.539	5.251	4.992	3.998	3.333	2.857	2.500	2.222	2.000
40	6.233	5.871	5.548	5.258	4.997	3.999	3.333	2.857	2.500	2.222	2.000
45	6.242	5.877	5.552	5.261	4.999	4.000	3.333	2.857	2.500	2.222	2.000
50	6.246	5.880	5.554	5.262	4.999	4.000	3.333	2.857	2.500	2.222	2.000