

جواب سوال ۳ از فصل ۳

صفحه ۶۰

$$F/P: F = P (1+i)^n \Rightarrow P(F/P, i, n)$$

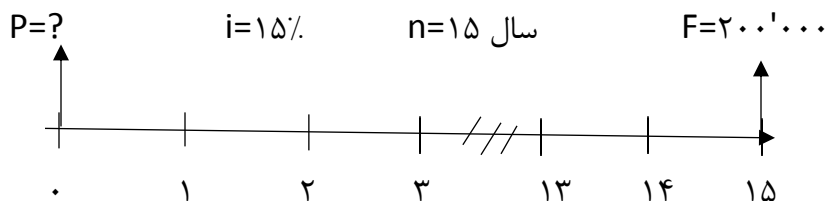
$$F = 100,000 (1 + 15\%)^6 \Rightarrow 100,000 (2,313) = 231,300$$

از طریق فرمول

$$F = 100,000 (F/P, 15\%, 6) \Rightarrow 100,000 (2,313) = 231,300$$

یعنی اگر در حال حاضر ۱۰۰,۰۰۰ روپیه بگذارید بعد از گذشت ۶ سال با نرخ بهره ۱۵٪ میتوانید مبلغ ۲۳۱,۳۰۰ روپیه برداشت کنید.

شایان ذکر است که علامت (^) نشان دهنده توان است / علامت (') نشان دهنده جدا کردن سه رقم اعداد میباشد و همچنین علامت (.) نشان دهنده اعشار میباشد.



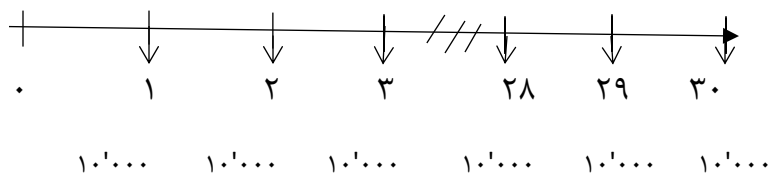
جواب سوال ۴ از فصل ۳

صفحه ۶۰

$$P/F: P = F (P/F, i, n) \Rightarrow 200,000 (0,123) = 24,600$$

$i = 15\%$ $n = 30$ سال

جواب سوال ۵ از فصل ۳



صفحه ۶۰

$$F/A: F=A (F/A, i, n) \Rightarrow 10'000(350,787)=3'507'870$$

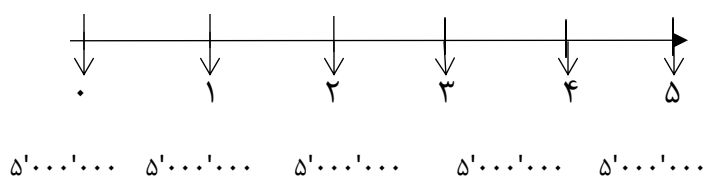
لازم به ذکر است که سوال ۵ گفته با نرخ بهره ۱۵٪ محاسبه شود ولی چون در جدول ارائه شده این نرخ موجود نیست یا درصد بالا یا پایین آنرا محاسبه میکنیم مثلاً برای مثال فوق از نرخ بهره ۱۴٪ استفاده گردیده است. و همچنین هرگاه روی محور، فلش به سمت پایین بود یعنی خروجی و بالعکس به سمت بالا بود یعنی ورودی است.

$$i=18\%$$

$$n=5 \text{ سال}$$

جواب سوال ۶ از فصل ۳

خیر - صفحه ۶۰



$$F/A: F=A(F/A, i, n) \Rightarrow 5'000'000(7,154)=35'770'000$$

$$35'770'000 < 50'000'000$$

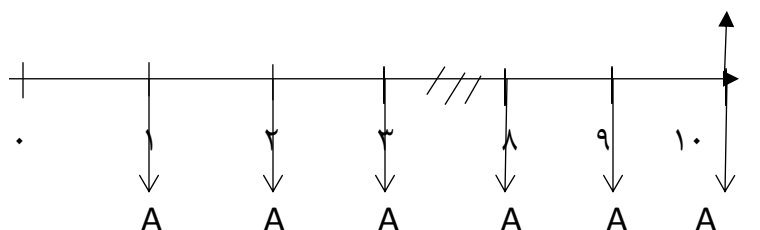
$$i=18\%$$

$$n=10 \text{ سال}$$

$$1'500'000$$

جواب سوال ۷ از فصل ۳

صفحه ۶۱



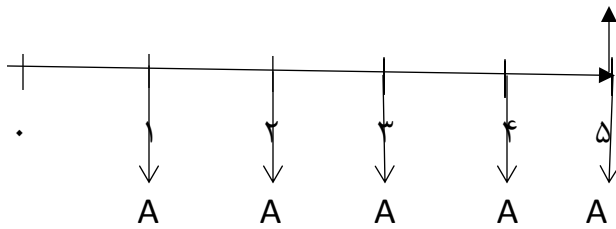
$$A/F: A=F(A/F, i, n) \Rightarrow F \left(\frac{1}{(F.A, i, n)} \right) \Rightarrow \left(\frac{1}{23.521} \right) \Rightarrow 1'500'000(0,425)=63'750$$

در مثال فوق به دلیل نداشتن جدول A/F ما باید ۱ رو تقسیم بر F/A کنیم.

جواب سوال ۸ از فصل ۳

$i=16\%$ $n=5$ سال $40'000'000$

صفحه ۶۱



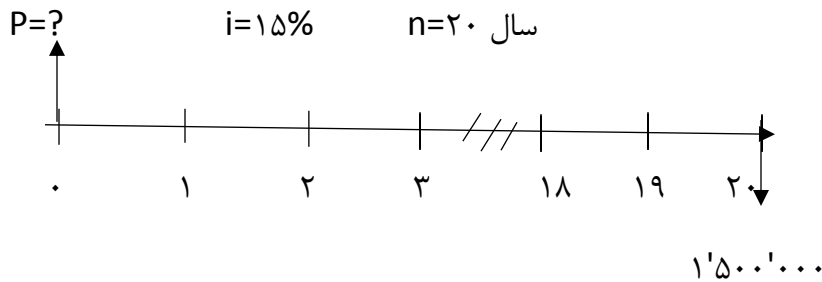
$$A/F: A = F \left(\frac{1}{(F.A, i, n)} \right) \Rightarrow 40'000'000 \left(\frac{1}{6.877} \right) \Rightarrow 40'000'000 (0.1454) = 5'816'000$$

این مسئله هم طبق سوال قبل حل میشود.

جواب سوال ۹ از فصل ۳

$i=15\%$ $n=20$ سال

صفحه ۶۱



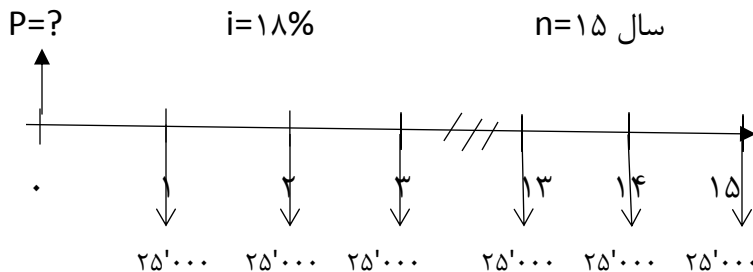
$$P/F: P = F(P/F, i, n) \Rightarrow 150'000 (0.61) = 91'500$$

نکته ای که سوال وجود دارد این است که گفته به صورت پرداخت تکی

جواب سوال ۱۰ از فصل ۳

$i=18\%$ $n=15$ سال

صفحه ۶۱

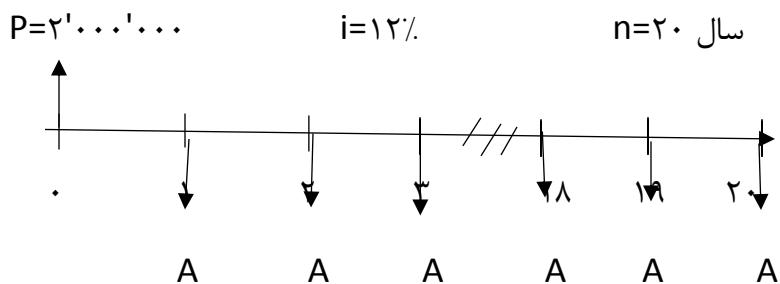


$$P/A: P = A(P/A, i, n) \Rightarrow 25'000 (5.92) = 127'300$$

روش اقساطی بهتر است " نقدی $127'300 < 150'000$ اقساطی

جواب سوال ۱۱ از فصل ۳

صفحه ۶۱

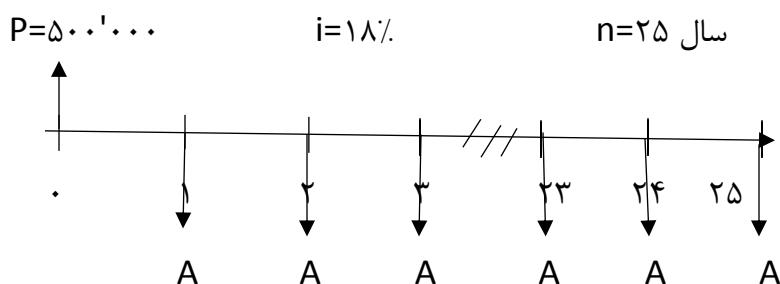


$$A/P: A = P(A/P, i, n) \Rightarrow P \left(\frac{1}{(P.A, i, n)} \right) \Rightarrow$$

$$۲' \dots ' \dots \left(\frac{1}{۷.۴۶۹} \right) \Rightarrow ۲' \dots ' \dots (۰, ۱۳۳۸) = ۲۶۷'۶ \dots$$

جواب سوال ۱۲ از فصل ۳

صفحه ۶۱



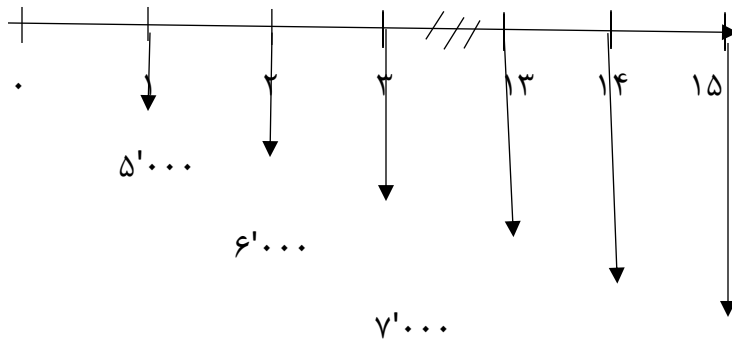
$$A/P: A = P(A/P, i, n) \Rightarrow P \left(\frac{1}{(P.A, i, n)} \right) \Rightarrow ۵ \dots ' \dots \left(\frac{1}{۵.۴۶۷} \right) \Rightarrow ۵ \dots ' \dots (۰, ۱۸۲۹) = ۹۱'۴۵$$

جواب سوال ۱۳ از فصل ۳

$i=18\%$

سال $n=15$

صفحه ۶۲

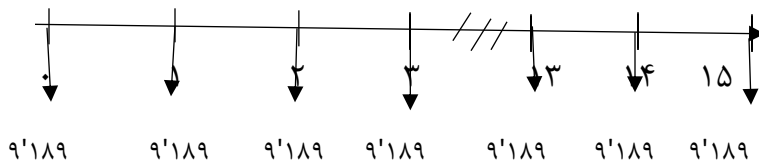


$$A + (n-1)G$$

$$\Delta' \dots + (15-1) 7' \dots = 19' \dots$$

$$A = A + G(A/G, i, n) \Rightarrow \Delta' \dots + 1' \dots (4, 18\%) = \Delta' \dots + 4' 18\% = 9' 18\%$$

$$\text{حالا } F = A(F/A, i, n) \Rightarrow 9' 18\% (60, 96\%) = 560' 207.385$$

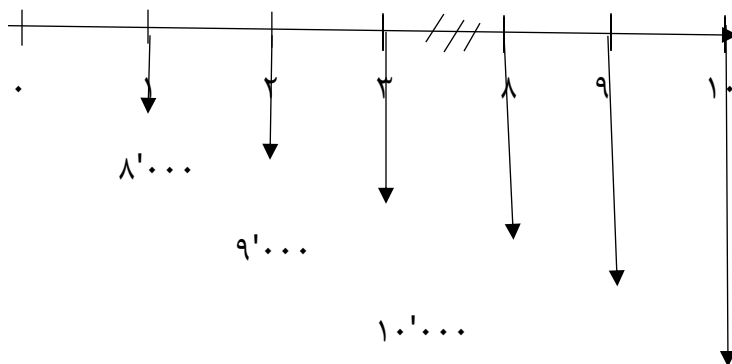


$i=12\%$

سال $n=10$

جواب سوال ۱۴ از فصل ۳

صفحه ۶۲

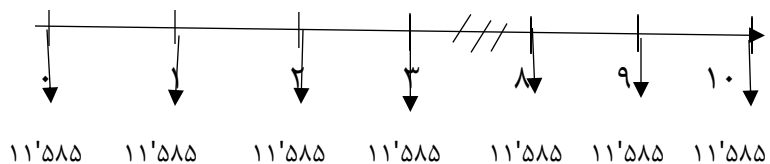


$$A + (n-1)G$$

$$8' \dots + (10-1) 1' \dots = 17' \dots$$

$$A = A_1 + G(A/G, i, n) \Rightarrow 1' \dots + 1' \dots (3, 585) \Rightarrow 1' \dots + 3' 585 = 11' 585$$

$$\text{حالا } F = A(F/A, i, n) \Rightarrow 11' 585 (17, 549) = 20.3' 30.5.165$$



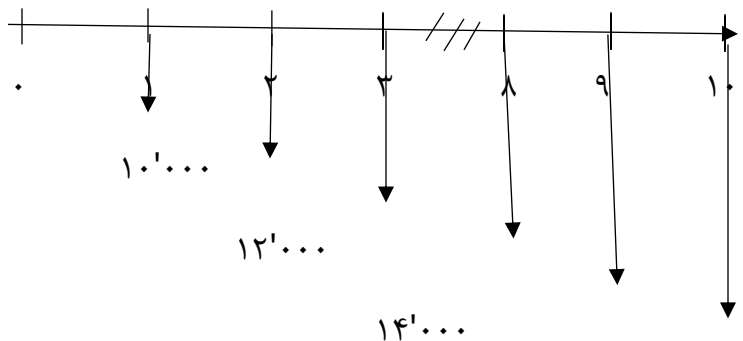
در این مبحث ما باید پول های نابرابر را به پول برابر تبدیل کنیم و سپس مثل مسائل قبل حل کنیم.

$$i = 20\%$$

$$n = 10 \text{ سال}$$

جواب سوال ۱۵ از فصل ۳

صفحه ۶۲

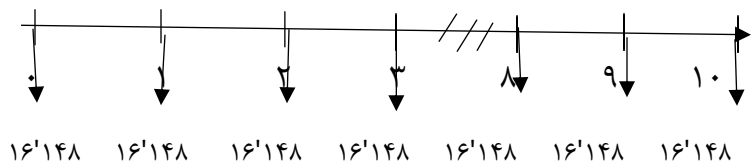


$$A_1 + (n-1)G$$

$$10' \dots + (10-1)2' \dots = 28' \dots$$

$$A = A_1 + G(A/G, i, n) \Rightarrow 10' \dots + 2' \dots (3, 074) \Rightarrow 10' \dots + 6' 148 = 16' 148$$

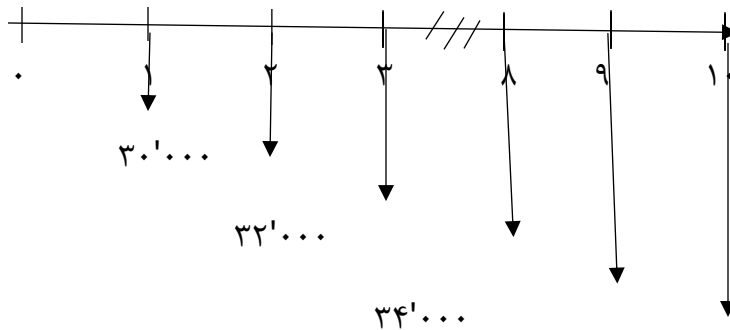
$$\text{حالا } F = A(F/A, i, n) \Rightarrow 16' 148 (25, 959) = 419' 185.932$$



جواب سوال ۱۶ از فصل ۳

$$i=20\%$$

$$n=10 \text{ سال}$$

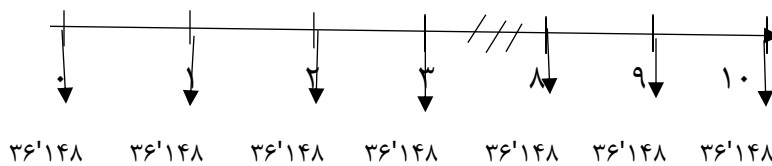


$$A + (n-1)G$$

$$30 + \dots + (10-1)2 = 48$$

$$A = A + G(A/G, i, n) \Rightarrow 30 + \dots + 2 \dots (3, 0.2) \Rightarrow 30 + \dots + 6'148 = 36'148$$

$$\text{حالا } F = A(F/A, i, n) \Rightarrow 36'148(25, 959) = 938'365.932$$



جواب سوال ۱۷ از فصل ۳

$$F/P: F = P \left(1 + \left(\frac{i}{12} \right) \right)^{n*12} \Rightarrow 50'000 \left(1 + \left(\frac{18\%}{12} \right) \right)^{15*12} \Rightarrow 50'000(14,584) = 729'200$$

چون در جدول ارائه شده مقادیر بر حسب سال است ولی صورت سوال ماه رو از ما میخواد ما آنرا تبدیل میکنیم به این ترتیب نرخ بهره تقسیم بر ۱۲ و سال ضربدر ۱۲ می شود.

استاد بنیاد

جمہوریہ اقتصادی

۲۴۶

جدول ضمیمہ یک -
ارزش مرکب یک ریال

(F/P)

Year	1%	2%	3%	4%	5%	6%	7%
1	1.010	1.020	1.030	1.040	1.050	1.060	1.070
2	1.020	1.040	1.061	1.082	1.102	1.124	1.145
3	1.030	1.061	1.093	1.125	1.158	1.191	1.225
4	1.041	1.082	1.126	1.170	1.216	1.262	1.311
5	1.051	1.104	1.159	1.217	1.276	1.338	1.403
6	1.062	1.126	1.194	1.265	1.340	1.419	1.501
7	1.072	1.149	1.230	1.318	1.407	1.504	1.600
8	1.083	1.172	1.267	1.369	1.477	1.594	1.718
9	1.094	1.195	1.305	1.423	1.551	1.689	1.838
10	1.105	1.219	1.344	1.480	1.629	1.791	1.967
11	1.116	1.243	1.384	1.539	1.710	1.898	2.105
12	1.127	1.263	1.428	1.601	1.790	2.012	2.252
13	1.138	1.294	1.469	1.665	1.880	2.133	2.410
14	1.149	1.319	1.513	1.732	1.980	2.261	2.579
15	1.161	1.346	1.558	1.801	2.079	2.397	2.759
16	1.173	1.373	1.605	1.873	2.183	2.540	2.952
17	1.184	1.400	1.653	1.948	2.292	2.693	3.159
18	1.196	1.428	1.702	2.026	2.407	2.854	3.380
19	1.208	1.457	1.754	2.107	2.527	3.026	3.617
20	1.220	1.486	1.806	2.191	2.653	3.207	3.870
25	1.282	1.641	2.094	2.668	3.386	4.292	5.427
30	1.348	1.811	2.427	3.243	4.322	5.743	7.612

Year	8%	9%	10%	12%	14%	16%	18%
1	1.080	1.090	1.100	1.120	1.140	1.150	1.160
2	1.168	1.188	1.210	1.254	1.300	1.322	1.348
3	1.260	1.295	1.331	1.405	1.482	1.521	1.561
4	1.360	1.412	1.464	1.574	1.689	1.749	1.811
5	1.469	1.539	1.611	1.762	1.925	2.011	2.100
6	1.587	1.677	1.772	1.974	2.195	2.313	2.436
7	1.714	1.828	1.949	2.211	2.502	2.660	2.826
8	1.851	1.993	2.144	2.476	2.853	3.059	3.278
9	1.999	2.172	2.358	2.773	3.252	3.518	3.803
10	2.159	2.367	2.594	3.106	3.707	4.046	4.411
11	2.332	2.580	2.853	3.479	4.226	4.652	5.117
12	2.518	2.813	3.138	3.896	4.818	5.350	5.906
13	2.720	3.066	3.452	4.363	5.492	6.153	6.866
14	2.937	3.342	3.797	4.887	6.261	7.076	7.982
15	3.172	3.642	4.177	5.474	7.138	8.137	9.266
16	3.426	3.970	4.595	6.130	8.137	9.358	10.748
17	3.700	4.328	5.054	6.866	9.276	10.761	12.408
18	3.998	4.717	5.560	7.690	10.575	12.375	14.463
19	4.316	5.142	6.116	8.613	12.058	14.232	16.777
20	4.651	5.604	6.728	9.648	13.743	16.367	19.461
25	6.848	8.623	10.835	17.000	28.462	32.919	40.874
30	10.063	13.208	17.446	28.960	50.950	60.212	85.850

(1)

جدول ضمیمہ یک -
ارزش مرکب یک ریال

(دراپ) F/P

Year	18%	20%	24%	28%	32%	36%
1	1.180	1.200	1.240	1.280	1.320	1.360
2	1.392	1.440	1.538	1.638	1.742	1.850
3	1.643	1.728	1.907	2.067	2.300	2.515
4	1.939	2.074	2.364	2.684	3.030	3.421
5	2.288	2.488	2.932	3.430	4.007	4.653
6	2.700	2.988	3.635	4.398	5.290	6.328
7	3.185	3.583	4.508	5.629	6.983	8.605
8	3.759	4.300	5.590	7.208	9.217	11.703
9	4.435	5.160	6.931	9.223	12.168	15.917
10	5.234	6.192	8.594	11.800	16.000	21.647
11	6.178	7.430	10.657	15.112	21.199	29.439
12	7.288	8.910	13.215	19.343	27.983	40.037
13	8.599	10.699	16.386	24.759	36.937	54.451
14	10.147	12.839	20.319	31.591	48.757	74.053
15	11.974	15.407	25.196	40.565	64.359	100.712
16	14.129	18.488	31.243	51.923	84.954	136.97
17	16.672	22.180	38.741	66.401	112.14	186.28
18	19.673	26.623	48.039	85.071	148.02	253.34
19	23.214	31.948	59.568	108.89	195.39	344.54
20	27.394	38.338	73.864	139.28	257.92	469.57
25	62.089	95.390	212.542	478.90	1033.8	2180.1
30	143.371	237.376	634.820	1645.5	4142.1	10143.

Year	40%	50%	60%	70%	80%	90%
1	1.400	1.500	1.600	1.700	1.800	1.900
2	1.960	2.250	2.560	2.890	3.240	3.610
3	2.744	3.375	4.096	4.913	5.832	6.859
4	3.842	5.002	6.544	8.352	10.498	13.032
5	5.378	7.594	10.486	14.199	18.896	24.761
6	7.530	11.391	16.777	24.138	34.012	47.046
7	10.541	17.086	26.844	41.034	61.222	89.387
8	14.758	25.629	42.950	69.758	110.200	169.836
9	20.661	38.443	68.720	118.568	198.359	322.688
10	28.925	57.665	109.951	201.599	357.047	613.107
11	40.496	86.496	175.922	342.719	642.684	1164.902
12	56.694	129.746	281.475	582.622	1156.831	2212.314
13	79.372	194.610	450.360	990.457	2082.295	4205.297
14	111.120	291.929	720.576	1683.777	3748.131	7990.065
15	155.568	437.894	1152.921	2802.421	6746.638	15181.122
16	217.795	650.84	1844.7	4868.1	12144.	28844.0
17	304.914	985.26	2951.5	8272.4	21859.	54604.0
18	426.879	1477.9	4722.4	14063.0	39340.	104130.0
19	597.030	2216.8	7555.8	23907.0	70824.	197840.0
20	836.683	3325.3	12089.0	40642.0	127480.	375900.0
25	4499.880	25251.	128780.0	577080.0	2408900.	8307600.9
30	24201.432	191750.	1329200.	8193500.0	45517000.	230470000.0

جدول ضمیمه ٢
ارزش فعلی يك ريال

P/F

Year	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	12%	14%	15%
1	.990	.980	.971	.962	.952	.943	.935	.926	.917	.909	.893	.877	.870
2	.980	.961	.943	.925	.907	.890	.873	.857	.842	.826	.797	.769	.756
3	.971	.942	.915	.889	.864	.840	.816	.794	.772	.751	.712	.675	.658
4	.961	.924	.889	.855	.823	.792	.763	.735	.708	.683	.636	.592	.572
5	.951	.906	.863	.822	.784	.747	.713	.681	.650	.621	.567	.519	.497
6	.942	.889	.838	.790	.746	.705	.666	.630	.598	.564	.507	.456	.432
7	.933	.871	.813	.760	.711	.665	.623	.583	.547	.513	.452	.400	.376
8	.923	.853	.789	.731	.677	.627	.582	.540	.502	.467	.404	.351	.327
9	.914	.837	.760	.701	.645	.592	.544	.500	.460	.424	.361	.308	.284
10	.905	.820	.744	.676	.614	.558	.508	.463	.422	.386	.322	.270	.247
11	.890	.804	.728	.650	.585	.527	.475	.429	.388	.350	.287	.237	.215
12	.887	.788	.701	.625	.557	.497	.444	.397	.350	.319	.257	.208	.187
13	.879	.779	.691	.601	.530	.469	.415	.368	.320	.290	.229	.182	.163
14	.870	.758	.661	.577	.505	.442	.388	.340	.299	.267	.205	.160	.141
15	.861	.743	.642	.555	.481	.417	.362	.315	.275	.239	.183	.140	.123
16	.853	.728	.623	.531	.458	.394	.339	.292	.252	.218	.163	.123	.107
17	.844	.714	.605	.513	.438	.371	.317	.270	.231	.198	.146	.108	.093
18	.836	.700	.587	.494	.416	.350	.290	.250	.212	.180	.130	.095	.081
19	.828	.690	.570	.475	.396	.331	.270	.232	.194	.164	.116	.083	.070
20	.820	.673	.554	.458	.377	.312	.258	.215	.178	.149	.104	.073	.061
25	.780	.610	.478	.375	.295	.233	.184	.146	.116	.092	.059	.038	.030
30	.742	.552	.412	.308	.231	.174	.131	.099	.075	.057	.033	.020	.015
Year	16%	18%	20%	24%	28%	32%	36%	40%	50%	60%	70%	80%	90%
1	.862	.847	.833	.809	.781	.758	.735	.714	.667	.625	.588	.556	.528
2	.743	.718	.694	.650	.610	.574	.541	.510	.444	.391	.346	.309	.277
3	.641	.609	.579	.524	.477	.435	.398	.364	.298	.244	.204	.171	.146
4	.552	.516	.482	.423	.373	.329	.292	.260	.198	.153	.120	.095	.077
5	.470	.437	.402	.341	.291	.250	.215	.180	.132	.095	.070	.053	.040
6	.410	.370	.335	.275	.227	.189	.158	.133	.088	.060	.041	.029	.021
7	.354	.314	.279	.222	.178	.143	.116	.095	.059	.037	.024	.016	.011
8	.305	.266	.233	.179	.139	.109	.085	.063	.039	.023	.014	.009	.006
9	.263	.226	.194	.144	.108	.082	.063	.048	.026	.015	.008	.005	.003
10	.227	.191	.162	.110	.085	.062	.046	.035	.017	.009	.005	.003	.002
11	.195	.162	.135	.094	.068	.047	.034	.025	.012	.006	.003	.002	.001
12	.168	.137	.112	.076	.052	.030	.025	.018	.006	.004	.002	.001	.001
13	.145	.110	.093	.061	.040	.027	.018	.013	.005	.002	.001	.001	.000
14	.125	.099	.078	.049	.032	.021	.014	.009	.003	.001	.001	.000	.000
15	.108	.084	.065	.040	.025	.016	.010	.006	.002	.001	.000	.000	.000
16	.093	.071	.051	.032	.019	.012	.007	.005	.002	.001	.000	.000	.000
17	.080	.060	.045	.026	.015	.009	.005	.003	.001	.000	.000	.000	.000
18	.069	.051	.038	.021	.012	.007	.004	.002	.001	.000	.000	.000	.000
19	.060	.043	.031	.017	.009	.005	.003	.002	.000	.000	.000	.000	.000
20	.051	.037	.026	.014	.007	.004	.002	.001	.000	.000	.000	.000	.000
25	.024	.016	.010	.005	.002	.001	.000	.000	.000	.000	.000	.000	.000
30	.012	.007	.004	.002	.001	.000	.000	.000	.000	.000	.000	.000	.000

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F/A

جدول ضمیمه ۲

F/A

جمع اقساط مساوی سالیانه برای يك ريال

Year	1%	2%	3%	4%	5%	6%
1	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
3	3.030	3.060	3.091	3.122	3.152	3.184
4	4.060	4.122	4.184	4.240	4.310	4.375
5	5.101	5.204	5.309	5.418	5.528	5.637
6	6.152	6.308	6.468	6.633	6.802	6.975
7	7.214	7.434	7.662	7.898	8.142	8.394
8	8.286	8.533	8.892	9.214	9.549	9.897
9	9.369	9.755	10.159	10.583	11.027	11.491
10	10.462	10.950	11.464	12.000	12.578	13.181
11	11.567	12.169	12.808	13.486	14.207	14.972
12	12.683	13.412	14.192	15.026	15.917	16.870
13	13.809	14.680	15.618	16.627	17.713	18.882
14	14.947	15.974	17.086	18.292	19.599	21.051
15	16.097	17.293	18.599	20.024	21.578	23.278
16	17.258	18.639	20.157	21.825	23.657	25.673
17	18.430	20.012	21.762	23.698	25.840	28.213
18	19.615	21.412	23.414	25.645	28.132	30.900
19	20.811	22.841	25.117	27.671	30.539	33.760
20	22.019	24.297	26.870	29.778	33.066	36.788
25	28.243	32.030	36.459	41.618	47.727	54.885
30	34.755	39.505	44.513	50.685	60.439	70.058

Year	7%	8%	9%	10%	12%	14%
1	1.000	1.000	1.000	1.000	1.000	1.000
2	2.070	2.080	2.090	2.100	2.120	2.140
3	3.215	3.248	3.278	3.310	3.374	3.440
4	4.440	4.506	4.573	4.641	4.770	4.921
5	5.751	5.867	5.985	6.105	6.353	6.610
6	7.153	7.336	7.523	7.716	8.115	8.536
7	8.654	8.923	9.200	9.487	10.089	10.730
8	10.260	10.637	11.028	11.436	12.300	13.233
9	11.978	12.488	13.021	13.579	14.770	16.085
10	13.816	14.487	15.193	15.937	17.549	19.337
11	15.784	16.645	17.560	18.531	20.655	23.044
12	17.888	18.977	20.141	21.384	24.133	27.271
13	20.141	21.495	22.953	24.523	28.029	32.089
14	22.550	24.215	26.019	27.975	32.393	37.581
15	25.129	27.152	29.361	31.772	37.280	43.842
16	27.888	30.324	33.003	35.950	42.753	50.980
17	30.840	33.750	36.974	40.545	48.884	59.116
18	33.999	37.450	41.301	45.599	55.750	68.394
19	37.379	41.446	46.018	51.159	63.440	78.969
20	40.995	45.762	51.160	57.275	72.052	91.025
25	63.249	73.108	84.701	98.347	133.334	181.871
30	94.461	113.283	136.308	164.494	241.333	350.787

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جدول ضمیمه ۳

F/A

جمع اقساط مساوی سالیانه برای يك ريال

Year	15%	15%	20%	24%	28%	32%
1	1.000	1.000	1.000	1.000	1.000	1.000
2	2.160	2.180	2.200	2.240	2.280	2.320
3	3.500	3.572	3.640	3.778	3.918	4.062
4	5.068	5.215	5.368	5.684	6.018	6.362
5	6.877	7.154	7.442	8.048	8.700	9.398
6	8.977	9.442	9.930	10.980	12.138	13.408
7	11.414	12.142	12.918	14.815	16.534	18.698
8	14.240	15.327	16.499	19.123	22.183	25.678
9	17.518	19.086	20.799	24.712	29.369	34.895
10	21.321	23.521	25.059	31.643	38.592	47.062
11	25.733	28.755	32.150	40.238	50.399	63.122
12	30.850	34.931	39.580	50.985	65.510	84.320
13	36.788	42.219	48.497	64.110	84.853	112.303
14	43.672	50.818	59.190	80.490	109.812	149.240
15	51.660	60.965	72.035	100.815	141.303	197.997
16	60.925	72.939	87.442	126.011	181.87	262.36
17	71.673	87.068	105.931	157.253	233.79	347.31
18	84.141	103.740	128.117	195.994	300.25	459.45
19	98.603	123.414	154.740	244.033	385.32	607.47
20	115.780	146.628	186.689	302.601	494.21	802.88
25	249.214	342.603	471.081	898.092	1706.8	3220.8
30	530.312	790.948	1181.882	2840.910	5873.2	12941.0
Year	36%	40%	50%	60%	70%	80%
1	1.000	1.000	1.000	1.000	1.000	1.000
2	2.380	2.460	2.500	2.600	2.700	2.800
3	4.210	4.360	4.750	5.160	5.590	6.040
4	6.725	7.104	8.125	9.258	10.503	11.872
5	10.140	10.818	13.188	15.810	18.855	22.370
6	14.799	16.324	20.781	26.295	33.054	41.265
7	21.128	23.853	32.172	43.073	57.191	75.278
8	29.732	34.395	49.258	69.918	98.225	136.500
9	41.435	49.153	74.887	112.868	167.983	246.699
10	57.352	69.814	113.330	181.585	286.570	445.058
11	78.998	98.739	170.995	291.536	488.170	802.105
12	108.437	139.235	257.493	467.458	830.888	1444.788
13	148.475	195.929	387.239	748.933	1413.510	2801.619
14	202.928	275.300	581.859	1199.293	2403.968	4883.914
15	278.979	386.420	873.788	1919.889	4087.745	8432.045
16	377.69	541.99	1311.7	3072.8	6950.2	15179.0
17	514.68	759.78	1968.5	4917.5	11816.0	27323.0
18	700.94	1064.7	2933.8	7868.9	20089.0	49182.0
19	954.28	1491.0	4431.7	12591.0	34152.0	88528.0
20	1298.8	2089.2	6648.5	20147.0	58059.0	159350.0
25	6053.0	11247.0	50500.0	211270.0	824370.0	3011100.0
30	28172.0	60501.0	383500.0	2215400.0	11765000.0	58896000.0

جدول ضمیمه ۴

نرخ ارزش فعلی اقساط مساوی سالیانه

ar	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%
1	0.990	0.980	0.971	0.962	0.952	0.943	0.935	0.926	0.917	0.909
2	1.970	1.942	1.913	1.886	1.859	1.833	1.809	1.783	1.759	1.730
3	2.941	2.884	2.829	2.775	2.723	2.673	2.624	2.577	2.531	2.487
4	3.902	3.808	3.717	3.630	3.546	3.465	3.387	3.312	3.240	3.170
5	4.853	4.713	4.580	4.452	4.329	4.212	4.100	3.990	3.890	3.791
6	5.795	5.601	5.417	5.242	5.075	4.917	4.760	4.623	4.488	4.355
7	6.728	6.472	6.230	6.002	5.788	5.582	5.389	5.208	5.033	4.868
8	7.652	7.325	7.020	6.733	6.463	6.210	5.971	5.747	5.535	5.335
9	8.568	8.162	7.789	7.435	7.108	6.802	6.515	6.247	5.985	5.759
10	9.471	8.983	8.530	8.111	7.722	7.360	7.024	6.710	6.418	6.145
11	10.368	9.787	9.253	8.760	8.306	7.887	7.499	7.139	6.805	6.495
12	11.255	10.575	9.954	9.385	8.863	8.381	7.943	7.530	7.141	6.814
13	12.134	11.348	10.635	9.948	9.394	8.853	8.358	7.904	7.487	7.103
14	13.004	12.109	11.290	10.503	9.849	9.295	8.745	8.244	7.768	7.367
15	13.865	12.849	11.938	11.118	10.380	9.712	9.103	8.559	8.060	7.606
16	14.718	13.578	12.561	11.652	10.838	10.109	9.447	8.851	8.312	7.824
17	15.562	14.292	13.169	12.108	11.274	10.477	9.703	9.122	8.544	8.022
18	16.398	14.992	13.754	12.659	11.690	10.828	10.059	9.372	8.756	8.201
19	17.226	15.678	14.324	13.134	12.065	11.158	10.336	9.604	8.950	8.365
20	18.046	16.351	14.877	13.590	12.402	11.470	10.594	9.818	9.128	8.514
21	22.023	19.523	17.413	15.622	14.094	12.783	11.654	10.675	9.823	9.077
22	25.808	22.397	19.600	17.292	15.373	13.705	12.409	11.258	10.274	9.427
23	29.593	25.179	21.961	19.385	17.000	15.000	13.300	12.000	10.800	9.800
24	33.378	27.964	24.433	21.500	18.750	16.500	14.500	12.750	11.250	10.000
25	37.163	31.750	27.800	24.250	21.000	18.500	16.250	14.250	12.500	11.000
26	40.948	35.535	31.250	27.500	24.000	21.250	18.750	16.500	14.500	12.750
27	44.733	39.320	35.000	31.000	27.500	24.250	21.500	19.000	16.750	14.500
28	48.518	43.105	38.750	35.000	31.250	27.500	24.250	21.500	19.000	16.750
29	52.303	46.890	42.500	38.750	35.000	31.250	27.500	24.250	21.500	19.000
30	56.088	50.675	46.250	42.500	38.750	35.000	31.250	27.500	24.250	21.500
31	59.873	54.460	50.000	46.250	42.500	38.750	35.000	31.250	27.500	24.250
32	63.658	58.245	53.750	50.000	46.250	42.500	38.750	35.000	31.250	27.500
33	67.443	62.030	57.500	53.750	50.000	46.250	42.500	38.750	35.000	31.250
34	71.228	65.815	61.250	57.500	53.750	50.000	46.250	42.500	38.750	35.000
35	75.013	69.600	65.000	61.250	57.500	53.750	50.000	46.250	42.500	38.750
36	78.798	73.385	68.750	65.000	61.250	57.500	53.750	50.000	46.250	42.500
37	82.583	77.170	72.500	68.750	65.000	61.250	57.500	53.750	50.000	46.250
38	86.368	80.955	76.250	72.500	68.750	65.000	61.250	57.500	53.750	50.000
39	90.153	84.740	80.000	76.250	72.500	68.750	65.000	61.250	57.500	53.750
40	93.938	88.525	83.750	80.000	76.250	72.500	68.750	65.000	61.250	57.500
41	97.723	92.310	87.500	83.750	80.000	76.250	72.500	68.750	65.000	61.250
42	101.508	96.095	91.250	87.500	83.750	80.000	76.250	72.500	68.750	65.000
43	105.293	99.880	95.000	91.250	87.500	83.750	80.000	76.250	72.500	68.750
44	109.078	103.665	98.750	95.000	91.250	87.500	83.750	80.000	76.250	72.500
45	112.863	107.450	102.500	98.750	95.000	91.250	87.500	83.750	80.000	76.250
46	116.648	111.235	106.250	102.500	98.750	95.000	91.250	87.500	83.750	80.000
47	120.433	115.020	110.000	106.250	102.500	98.750	95.000	91.250	87.500	83.750
48	124.218	118.805	113.750	110.000	106.250	102.500	98.750	95.000	91.250	87.500
49	128.003	122.590	117.500	113.750	110.000	106.250	102.500	98.750	95.000	91.250
50	131.788	126.375	121.250	117.500	113.750	110.000	106.250	102.500	98.750	95.000
51	135.573	130.160	125.000	121.250	117.500	113.750	110.000	106.250	102.500	98.750
52	139.358	133.945	128.750	125.000	121.250	117.500	113.750	110.000	106.250	102.500
53	143.143	137.730	132.500	128.750	125.000	121.250	117.500	113.750	110.000	106.250
54	146.928	141.515	136.250	132.500	128.750	125.000	121.250	117.500	113.750	110.000
55	150.713	145.300	140.000	136.250	132.500	128.750	125.000	121.250	117.500	113.750
56	154.498	149.085	143.750	140.000	136.250	132.500	128.750	125.000	121.250	117.500
57	158.283	152.870	147.500	143.750	140.000	136.250	132.500	128.750	125.000	121.250
58	162.068	156.655	151.250	147.500	143.750	140.000	136.250	132.500	128.750	125.000
59	165.853	160.440	155.000	151.250	147.500	143.750	140.000	136.250	132.500	128.750
60	169.638	164.225	158.750	155.000	151.250	147.500	143.750	140.000	136.250	132.500
61	173.423	168.010	162.500	158.750	155.000	151.250	147.500	143.750	140.000	136.250
62	177.208	171.795	166.250	162.500	158.750	155.000	151.250	147.500	143.750	140.000
63	180.993	175.580	170.000	166.250	162.500	158.750	155.000	151.250	147.500	143.750
64	184.778	179.365	173.750	170.000	166.250	162.500	158.750	155.000	151.250	147.500
65	188.563	183.150	177.500	173.750	170.000	166.250	162.500	158.750	155.000	151.250
66	192.348	186.935	181.250	177.500	173.750	170.000	166.250	162.500	158.750	155.000
67	196.133	190.720	185.000	181.250	177.500	173.750	170.000	166.250	162.500	158.750
68	199.918	194.505	188.750	185.000	181.250	177.500	173.750	170.000	166.250	162.500
69	203.703	198.290	192.500	188.750	185.000	181.250	177.500	173.750	170.000	166.250
70	207.488	202.075	196.250	192.500	188.750	185.000	181.250	177.500	173.750	170.000
71	211.273	205.860	200.000	196.250	192.500	188.750	185.000	181.250	177.500	173.750
72	215.058	209.645	203.750	200.000	196.250	192.500	188.750	185.000	181.250	177.500
73	218.843	213.430	207.500	203.750	200.000	196.250	192.500	188.750	185.000	181.250
74	222.628	217.215	211.250	207.500	203.750	200.000	196.250	192.500	188.750	185.000
75	226.413	221.000	215.000	211.250	207.500	203.750	200.000	196.250	192.500	188.750
76	230.198	224.785	218.750	215.000	211.250	207.500	203.750	200.000	196.250	192.500
77	233.983	228.570	222.500	218.750	215.000	211.250	207.500	203.750	200.000	196.250
78	237.768	232.355	226.250	222.500	218.750	215.000	211.250	207.500	203.750	200.000
79	241.553	236.140	230.000	226.250	222.500	218.750	215.000	211.250	207.500	203.750
80	245.338	239.925	233.750	230.000	226.250	222.500	218.750	215.000	211.250	207.500
81	249.123	243.710	237.500	233.750	230.000	226.250	222.500	218.750	215.000	211.250
82	252.908	247.495	241.250	237.500	233.750	230.000	226.250	222.500	218.750	215.000
83	256.693	251.280	245.000	241.250	237.500	233.750	230.000	226.250	222.500	218.750
84	260.478	255.065	248.750	245.000	241.250	237.500	233.750	230.000	226.250	222.500
85	264.263	258.850	252.500	248.750	245.000	241.250	237.500	233.750	230.000	226.250
86	268.048	262.635	256.250	252.500	248.750	245.000	241.250	237.500	233.750	230.000
87	271.833	266.420	260.000	256.250	252.500	248.750	245.000	241.250	237.500	233.750
88	275.618	270.205	263.750	260.000	256.250	252.500	248.750	245.000	241.250	237.500
89	279.403	273.990	267.500	263.750	260.000	256.250	252.500	248.750	245.000	241.250
90	283.188	277.775	271.250	267.500	263.750	260.000	256.250	252.500	248.750	245.000
91	286.973	281.560	275.000	271.250	267.500	263.750	260.000	256.250	252.500	248.750
92	290.758	285.345	278.750	275.000	271.250	267.500	263.750	260.000	256.250	252.500
93	294.543	289.130	282.500	278.750	275.000	271.250	267.500	263.750	260.000	256.250
94	298.328	292.915	286.250	282.500	278.750	275.000	271.250	267.500	263.750	260.000
95	302.113	296.700	290.000	286.250	282.500	278.750	275.000	271.250	267.500	263.750
96	305.898	300.485	293.750	290.000	286.250	282.500	278.750	275.000	271.250	267.500
97	309.683	304.270	297.500							

A/G

ANNUAL COST GRADIENT FACTORS(A/G)

N	7%	8%	9%	10%	12%	15%	18%	N
2	0.483	0.481	0.478	0.476	0.472	0.465	0.459	2
3	0.955	0.949	0.943	0.936	0.925	0.907	0.890	3
4	1.415	1.404	1.392	1.381	1.359	1.326	1.295	4
5	1.865	1.846	1.828	1.810	1.775	1.723	1.673	5
6	2.303	2.276	2.253	2.224	2.172	2.097	2.025	6
7	2.730	2.694	2.657	2.622	2.551	2.450	2.353	7
8	3.146	3.099	3.051	3.004	2.913	2.781	2.656	8
9	3.552	3.491	3.431	3.372	3.257	3.092	2.936	9
10	3.946	3.871	3.798	3.725	3.585	3.383	3.194	10
11	4.330	4.239	4.151	4.064	3.895	3.655	3.430	11
12	4.702	4.596	4.491	4.388	4.190	3.908	3.647	12
13	5.065	4.940	4.818	4.699	4.468	4.144	3.845	13
14	5.417	5.273	5.133	4.995	4.732	4.362	4.025	14
15	5.758	5.594	5.435	5.279	4.980	4.565	4.189	15
16	6.090	5.905	5.724	5.549	5.215	4.752	4.337	16
17	6.411	6.204	6.002	5.807	5.435	4.925	4.471	17
18	6.722	6.492	6.267	6.053	5.643	5.084	4.572	18
19	7.024	6.770	6.524	6.286	5.838	5.231	4.700	19
20	7.316	7.037	6.767	6.508	6.020	5.365	4.798	20
22	7.872	7.541	7.223	6.919	6.351	5.601	4.963	22
24	8.392	8.007	7.638	7.288	6.641	5.798	5.095	24
25	8.639	8.225	7.832	7.458	6.771	5.883	5.150	25
26	8.877	8.435	8.016	7.619	6.892	5.961	5.199	26
28	9.329	8.829	8.357	7.914	7.110	6.096	5.281	28
30	9.749	9.190	8.666	8.176	7.297	6.207	5.345	30
32	10.138	9.520	8.944	8.409	7.459	6.257	5.394	32
34	10.499	9.821	9.193	8.615	7.596	6.371	5.433	34
35	10.669	9.961	9.308	8.709	7.658	6.402	5.449	35
36	10.832	10.095	9.417	8.796	7.714	6.430	5.462	36
38	11.140	10.344	9.617	8.956	7.814	6.478	5.485	38
40	11.423	10.570	9.796	9.096	7.899	6.517	5.502	40
45	12.036	11.045	10.160	9.374	8.057	6.583	5.529	45
50	12.529	11.411	10.429	9.570	8.160	6.620	5.543	50
55	12.921	11.690	10.626	9.708	8.225	6.641	5.549	55
60	13.232	11.902	10.768	9.802	8.266	6.653	5.553	60
65	13.476	12.060	10.870	9.867	8.292	6.659	5.554	65
70	13.666	12.178	10.943	9.911	8.308	6.663	5.555	70
75	13.814	12.266	10.994	9.941	8.318	6.665	5.555	75
80	13.927	12.330	11.030	9.961	8.324	6.666	5.555	80
85	14.015	12.377	11.055	9.974	8.328	6.666	5.555	85
90	14.081	12.412	11.073	9.983	8.330	6.666	5.556	90
95	14.132	12.437	11.085	9.989	8.331	6.667	5.556	95
100	14.170	12.455	11.093	9.993	8.332	6.667	5.556	100

A/G

TABLE A-26

ANNUAL COST GRADIENT FACTORS(A/G)

N	20%	25%	30%	35%	40%	45%	50%	N
2	0.455	0.444	0.435	0.426	0.417	0.408	0.400	2
3	0.979	0.852	0.827	0.803	0.790	0.758	0.737	3
4	1.274	1.225	1.178	1.134	1.092	1.053	1.015	4
5	1.641	1.563	1.490	1.422	1.358	1.298	1.242	5
6	1.979	1.868	1.765	1.670	1.581	1.499	1.423	6
7	2.290	2.142	2.006	1.881	1.766	1.661	1.565	7
8	2.576	2.387	2.216	2.063	1.919	1.791	1.675	8
9	2.836	2.605	2.396	2.209	2.042	1.893	1.760	9
10	3.074	2.797	2.551	2.334	2.142	1.973	1.824	10
11	3.289	2.966	2.683	2.436	2.221	2.034	1.871	11
12	3.484	3.115	2.795	2.520	2.285	2.082	1.907	12
13	3.660	3.244	2.889	2.589	2.334	2.118	1.933	13
14	3.817	3.356	2.968	2.644	2.373	2.145	1.952	14
15	3.959	3.453	3.034	2.689	2.403	2.165	1.966	15
16	4.085	3.537	3.089	2.725	2.426	2.180	1.976	16
17	4.198	3.608	3.135	2.753	2.444	2.191	1.983	17
18	4.298	3.670	3.172	2.776	2.458	2.200	1.988	18
19	4.386	3.722	3.202	2.793	2.468	2.206	1.991	19
20	4.464	3.767	3.228	2.808	2.476	2.210	1.994	20
22	4.554	3.836	3.265	2.827	2.487	2.216	1.997	22
24	4.644	3.886	3.289	2.839	2.493	2.219	1.999	24
25	4.735	3.905	3.298	2.843	2.494	2.220	1.999	25
26	4.771	3.921	3.305	2.847	2.496	2.221	1.999	26
28	4.829	3.946	3.315	2.851	2.498	2.221	2.000	28
30	4.873	3.963	3.322	2.853	2.499	2.222	2.000	30
32	4.906	3.975	3.326	2.855	2.499	2.222	2.000	32
34	4.931	3.983	3.329	2.856	2.500	2.222	2.000	34
35	4.941	3.986	3.330	2.856	2.500	2.222	2.000	35
36	4.949	3.988	3.330	2.856	2.500	2.222	2.000	36
38	4.963	3.992	3.332	2.857	2.500	2.222	2.000	38
40	4.973	3.995	3.332	2.857	2.500	2.222	2.000	40
45	4.988	3.998	3.333	2.857	2.500	2.222	2.000	45
50	4.995	3.999	3.333	2.857	2.500	2.222	2.000	50
55	4.998	4.000	3.333	2.857	2.500	2.222	2.000	55
60	4.999	4.000	3.333	2.857	2.500	2.222	2.000	60
65	5.000	4.000	3.333	2.857	2.500	2.222	2.000	65
70	5.000	4.000	3.333	2.857	2.500	2.222	2.000	70
75	5.000	4.000	3.333	2.857	2.500	2.222	2.000	75
80	5.000	4.000	3.333	2.857	2.500	2.222	2.000	80
85	5.000	4.000	3.333	2.857	2.500	2.222	2.000	85
90	5.000	4.000	3.333	2.857	2.500	2.222	2.000	90
95	5.000	4.000	3.333	2.857	2.500	2.222	2.000	95
100	5.000	4.000	3.333	2.857	2.500	2.222	2.000	100