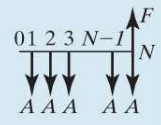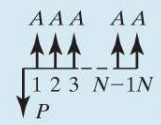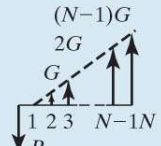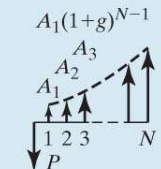**TABLE 3.4** Summary of Discrete Compounding Formulas With Discrete Payments

Flow Type	Factor Notation	Formula	Excel Command	Cash Flow Diagram
S I N G L E	Compound amount $(F/P, i, N)$	$F = P(1 + i)^N$	$=\text{FV}(i, N, 0, P)$	
	Present worth $(P/F, i, N)$	$P = F(1 + i)^{-N}$	$=\text{PV}(i, N, 0, F)$	
E Q U A L P A Y M E N T S E R I E S	Compound amount $(F/A, i, N)$	$F = A\left[\dfrac{(1 + i)^N - 1}{i}\right]$	$= \text{FV}(i, N, A)$	
	Sinking fund $(A/F, i, N)$	$A = F\left[\dfrac{i}{(1 + i)^N - 1}\right]$	$=\text{PMT}(i, N, 0, F)$	
	Present worth $(P/A, i, N)$	$P = A\left[\dfrac{(1 + i)^N - 1}{i(1 + i)^N}\right]$	$=\text{PV}(i, N, A)$	
	Capital recovery $(A/P, i, N)$	$A = P\left[\dfrac{i(1 + i)^N}{(1 + i)^N - 1}\right]$	$=\text{PMT}(i, N, P)$	
G R A D I E N T	Linear gradient Present worth $(P/G, i, N)$	$P = G\left[\dfrac{(1 + i)^N - iN - 1}{i^2(1 + i)^N}\right]$		
	Annual worth $(A/G, i, N)$	$A = G\left[\dfrac{(1 + i)^N - iN - 1}{i\left[(1 + i)^N - 1\right]}\right]$		
S E R I E S	Geometric gradient Present worth $(P/A_1, g, i, N)$	$P = \begin{bmatrix} A_1\left[\dfrac{1 - (1 + g)^N(1 + i)^{-N}}{i - g}\right] \\ A_1\left(\dfrac{N}{1 + i}\right), (\text{if } i = g) \end{bmatrix}$		

Additional Formula List

Effective Annual Interest Rates

$$i_a = \left(1 + \frac{r}{M}\right)^M - 1 \tag{4.1}$$

Effective Interest Rates per Payment Period

$$i = \left(1 + \frac{r}{M}\right)^C - 1 = \left(1 + \frac{r}{CK}\right)^C - 1 \tag{4.2}$$

Continuous compounding effective interest rate per payment period

$$i = e^{r/K} - 1 \tag{4.3}$$

Continuous compounding annual effective interest

$$i_a = e^r - 1 \tag{4.4}$$

Remaining Balance Method for Debt Management

$$B_n = A\,(P/A, i, N\text{-}n) \tag{4.13}$$

$$I_n = (B_{n\text{-}1})\,i = A\,(P/A, i, N-n+1)\,i \tag{4.14}$$

$$PP_n = A\,(P/F, i, N-n+1) \tag{4.15}$$

Capital Recovery Cost

$$CR(i) = (P - S)\,(A/P, i, N) + iS \tag{5.6}$$

CCA and UCC formulas

Let: P = the capital cost of the property
     U_n = the undepreciated capital cost at the end of year n
     CCA_n = the maximum claimable capital cost allowance in year n
     d = the prescribed CCA rate (declining-balance).

Year	Without 50% Rule		With 50% Rule	
	CCA	UCC	CCA	UCC
0		$U_0 = P$		$U_0 = P$
1	$CCA_1 = Pd$	$U_1 = P(1-d)$	$CCA_1 = Pd/2$	$U^1 = P(1-d/2)$
2	$CCA_2 = Pd(1-d)$	$U_2 = P(1-d)^2$	$CCA_2 = Pd(1-d/2)$	$U_2 = P(1-d/2)(1-d)$
$n\,(\geq 2)$	$CCA_n = Pd(1-d)^{n-1}$	$U_n = P(1-d)^n$	$CCA_n = Pd(1-d/2)(1-d)^{n-2}$	$U_n = P(1-d/2)(1-d)^{n-1}$

General Cash Flow Equations

$$A_n = \begin{aligned} &+ \text{Revenues at time } n, (R_n) \\ &- \text{Expenses excluding CCA and} \\ &\quad \text{debt interest at time } n, (E_n) \\ &- \text{Interest portion of debt payment at time } n, (I_n) \\ &- \text{Income taxes at time } n, (T_n) \end{aligned} \left.\begin{aligned}\\ \\ \\ \\ \end{aligned}\right\} \text{Operating activities}$$

$$\begin{aligned} &- \text{Investment at time } n, (P_n) \\ &+ \text{Net proceeds from sale at time } n, (S_n + G_n) \\ &- \text{Working capital investment at time } n, (W_n) \\ &+ \text{Working capital recovery at time } n, (W_n') \end{aligned} \left.\begin{aligned}\\ \\ \\ \end{aligned}\right\} \text{Investing activities}$$

$$\begin{aligned} &+ \text{Proceeds from loan at time } n, (L_n) \\ &- \text{Principal portion of debt payment at time } n, (PP_n), \end{aligned} \left.\begin{aligned}\\ \end{aligned}\right\} \text{Financing activities.}$$

where A_n is the net after-tax cash flow at the end of period n.

$$\begin{aligned} A_n = \ &R_n - E_n - I_n - T_n &\longleftarrow\quad \text{Operating activities} \\ &- P_n + (S_n + G_n) - W_n + W_n'\longleftarrow \text{Investing activities} \\ &+ L_n - PP_n \longleftarrow &\text{Financing activities.} \end{aligned} \qquad (10.1)$$

$$\begin{aligned} T_n &= (\text{Taxable income})(\text{marginal tax rate}) \\ &= (R_n - E_n - I_n - CCA_n)t \\ &= (R_n - E_n)t - (I_n + CCA_n)t. \end{aligned} \qquad (10.2)$$

$$\begin{aligned} A_n = \ &(R_n - E_n - I_n)(1 - t) + t \times CCA, \\ &- P_n + (S_n + G_n) - W_n + W_n' \\ &+ L_n - PP_n. \end{aligned} \qquad (10.3)$$

Cash Flow Present Worth Calculation with tax consideration, but no debt financing considered:

$$\begin{aligned} PW = \ &-P + (1 - t)\sum_{n=1}^{N} R_n(P/F, i, n) \\ &- (1 - t)\sum_{n=1}^{N} E_n(P/F, i, n) \\ &+ t\sum_{n=1}^{N} CCA_n(P/F, i, n) \\ &+ (S + G)(P/F, i, N). \end{aligned} \qquad (10.6)$$

$$PW_{t \times CCA_n} = tPd\, \frac{1 - \dfrac{d}{2}}{1 - d}\, (P/A_1, -d, i, N) - \frac{tPd}{2(1 - d)}(P/F, i, 1), \qquad (10.7)$$

where d is the CCA rate.
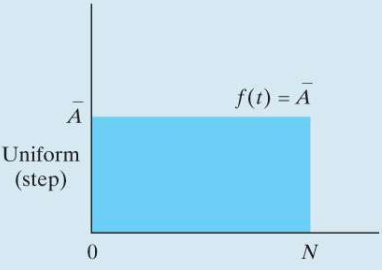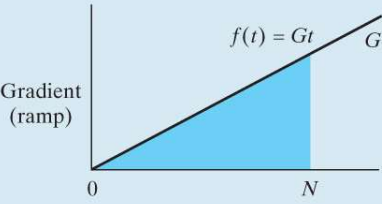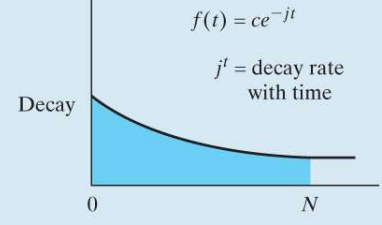
For example, if $R_n = R$ and $E_n = E$ are both constant, equation (10.6) can be written as:

$$PW = -P + (1 - t)R(P/A, i, N) - (1 - t)E(P/A, i, N)$$

$$+ (S + G)(P/F, i, N)$$

$$+ tPd\, \frac{1 - \dfrac{d}{2}}{1 - d}\, (P/A_1, -d, i, N)$$

$$- \frac{tPd}{2(1 - d)}(P/F, i, 1). \qquad (10.8)$$

Cash Flow Tabular Form

Cash Flow Elements	End of Period			
	0	1	2	...N
Operating activities:				
$+(1 - t)(R_n)$				
$-(1 - t)(E_n)$				
$-(1 - t)(I_n)$				
$+t \times CCA_n$				
Investment activities:				
$-P_n$				
$+(S_n + G_n)$				
$-W_n$				
$+W_n'$				
Financing activities:				
$+L_n$				
$-PP_n$				
Net cash flow				
A_n				

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TABLE 4.2 Summary of Interest Factors for Typical Continuous Cash Flows With Continuous Compounding

Type of Cash Flow	Cash Flow Function	Parameters Find	Parameters Given	Algebraic Notation	Factor Notation
Uniform (step)	$f(t) = \overline{A}$	P	$\overline{A}$	$\overline{A}\left[\dfrac{e^{rN} - 1}{re^{rN}}\right]$	$(P/\overline{A}, r, N)$
		$\overline{A}$	P	$P\left[\dfrac{re^{rN}}{e^{rN} - 1}\right]$	$(\overline{A}/P, r, N)$
		F	$\overline{A}$	$\overline{A}\left[\dfrac{e^{rN} - 1}{r}\right]$	$(F/\overline{A}, r, N)$
		$\overline{A}$	F	$F\left[\dfrac{r}{e^{rN} - 1}\right]$	$(\overline{A}/P, r, N)$
Gradient (ramp)	$f(t) = Gt$	P	G	$\dfrac{G}{r^2}(1 - e^{-rN}) - \dfrac{G}{r}(Ne^{-rN})$	
Decay	$f(t) = ce^{-jt}$ $\quad j^t = $ decay rate with time	P	c, j	$\dfrac{c}{r + j}(1 - e^{-(r+j)N})$	

9.5000%

n	(F/P,i,n)	(P/F,i,n)	(F/A,i,n)	(A/F,i,n)	(P/A,i,n)	(A/P,i,n)	(A/G,i,n)	(P/G,i,n)	n
1	1.0950	0.9132	1.0000	1.0000	0.9132	1.0950	0.0000	0.0000	1
2	1.1990	0.8340	2.0950	0.4773	1.7473	0.5723	0.4773	0.8340	2
3	1.3129	0.7617	3.2940	0.3036	2.5089	0.3986	0.9396	2.3573	3
4	1.4377	0.6956	4.6070	0.2171	3.2045	0.3121	1.3868	4.4440	4
5	1.5742	0.6352	6.0446	0.1654	3.8397	0.2604	1.8191	6.9850	5
6	1.7238	0.5801	7.6189	0.1313	4.4198	0.2263	2.2366	9.8855	6
7	1.8876	0.5298	9.3426	0.1070	4.9496	0.2020	2.6395	13.0643	7
8	2.0669	0.4838	11.2302	0.0890	5.4334	0.1840	3.0277	16.4510	8
9	2.2632	0.4418	13.2971	0.0752	5.8753	0.1702	3.4017	19.9858	9
10	2.4782	0.4035	15.5603	0.0643	6.2788	0.1593	3.7615	23.6174	10
11	2.7137	0.3685	18.0385	0.0554	6.6473	0.1504	4.1073	27.3025	11
12	2.9715	0.3365	20.7522	0.0482	6.9838	0.1432	4.4394	31.0044	12
13	3.2537	0.3073	23.7236	0.0422	7.2912	0.1372	4.7581	34.6924	13
14	3.5629	0.2807	26.9774	0.0371	7.5719	0.1321	5.0636	38.3412	14
15	3.9013	0.2563	30.5402	0.0327	7.8282	0.1277	5.3563	41.9297	15
16	4.2719	0.2341	34.4416	0.0290	8.0623	0.1240	5.6363	45.4410	16
17	4.6778	0.2138	38.7135	0.0258	8.2760	0.1208	5.9040	48.8614	17
18	5.1222	0.1952	43.3913	0.0230	8.4713	0.1180	6.1597	52.1803	18
19	5.6088	0.1783	48.5135	0.0206	8.6496	0.1156	6.4037	55.3896	19
20	6.1416	0.1628	54.1222	0.0185	8.8124	0.1135	6.6365	58.4832	20
21	6.7251	0.1487	60.2638	0.0166	8.9611	0.1116	6.8582	61.4572	21
22	7.3639	0.1358	66.9889	0.0149	9.0969	0.1099	7.0693	64.3089	22
23	8.0635	0.1240	74.3529	0.0134	9.2209	0.1084	7.2701	67.0373	23
24	8.8296	0.1133	82.4164	0.0121	9.3341	0.1071	7.4610	69.6421	24
25	9.6684	0.1034	91.2459	0.0110	9.4376	0.1060	7.6423	72.1245	25
26	10.5869	0.0945	100.9143	0.0099	9.5320	0.1049	7.8143	74.4859	26
27	11.5926	0.0863	111.5012	0.0090	9.6183	0.1040	7.9774	76.7287	27
28	12.6939	0.0788	123.0938	0.0081	9.6971	0.1031	8.1319	78.8557	28
29	13.8998	0.0719	135.7877	0.0074	9.7690	0.1024	8.2782	80.8701	29
30	15.2203	0.0657	149.6875	0.0067	9.8347	0.1017	8.4167	82.7755	30
31	16.6662	0.0600	164.9078	0.0061	9.8947	0.1011	8.5475	84.5755	31
32	18.2495	0.0548	181.5741	0.0055	9.9495	0.1005	8.6712	86.2742	32
33	19.9832	0.0500	199.8236	0.0050	9.9996	0.1000	8.7879	87.8755	33
34	21.8816	0.0457	219.8068	0.0045	10.0453	0.0995	8.8981	89.3836	34
35	23.9604	0.0417	241.6885	0.0041	10.0870	0.0991	9.0020	90.8026	35
40	37.7194	0.0265	386.5200	0.0026	10.2472	0.0976	9.4370	96.7030	40
45	59.3793	0.0168	614.5194	0.0016	10.3490	0.0966	9.7555	100.9600	45
50	93.4773	0.0107	973.4448	0.0010	10.4137	0.0960	9.9856	103.9876	50
55	147.1555	0.0068	1538.4791	0.0006	10.4548	0.0956	10.1500	106.1161	55
60	231.6579	0.0043	2427.9781	0.0004	10.4809	0.0954	10.2662	107.5987	60
65	364.6849	0.0027	3828.2618	0.0003	10.4975	0.0953	10.3476	108.6233	65
70	574.1011	0.0017	6032.6426	0.0002	10.5080	0.0952	10.4042	109.3268	70
75	903.7721	0.0011	9502.8644	0.0001	10.5147	0.0951	10.4432	109.8072	75
80	1422.7531	0.0007	14965.8219	0.0001	10.5189	0.0951	10.4700	110.1336	80
85	2239.7530	0.0004	23565.8212	0.0000	10.5216	0.0950	10.4883	110.3544	85
90	3525.9060	0.0003	37104.2733	0.0000	10.5233	0.0950	10.5008	110.5032	90
95	5550.6178	0.0002	58417.0292	0.0000	10.5244	0.0950	10.5092	110.6032	95
100	8737.9975	0.0001	91968.3951	0.0000	10.5251	0.0950	10.5149	110.6702	100

n	(F/P,i,n)	(P/F,i,n)	(F/A,i,n)	(A/F,i,n)	(P/A,i,n)	(A/P,i,n)	(A/G,i,n)	(P/G,i,n)	n
1	1.1000	0.9091	1.0000	1.0000	0.9091	1.1000	0.0000	0.0000	1
2	1.2100	0.8264	2.1000	0.4762	1.7355	0.5762	0.4762	0.8264	2
3	1.3310	0.7513	3.3100	0.3021	2.4869	0.4021	0.9366	2.3291	3
4	1.4641	0.6830	4.6410	0.2155	3.1699	0.3155	1.3812	4.3781	4
5	1.6105	0.6209	6.1051	0.1638	3.7908	0.2638	1.8101	6.8618	5
6	1.7716	0.5645	7.7156	0.1296	4.3553	0.2296	2.2236	9.6842	6
7	1.9487	0.5132	9.4872	0.1054	4.8684	0.2054	2.6216	12.7631	7
8	2.1436	0.4665	11.4359	0.0874	5.3349	0.1874	3.0045	16.0287	8
9	2.3579	0.4241	13.5795	0.0736	5.7590	0.1736	3.3724	19.4215	9
10	2.5937	0.3855	15.9374	0.0627	6.1446	0.1627	3.7255	22.8913	10
11	2.8531	0.3505	18.5312	0.0540	6.4951	0.1540	4.0641	26.3963	11
12	3.1384	0.3186	21.3843	0.0468	6.8137	0.1468	4.3884	29.9012	12
13	3.4523	0.2897	24.5227	0.0408	7.1034	0.1408	4.6988	33.3772	13
14	3.7975	0.2633	27.9750	0.0357	7.3667	0.1357	4.9955	36.8005	14
15	4.1772	0.2394	31.7725	0.0315	7.6061	0.1315	5.2789	40.1520	15
16	4.5950	0.2176	35.9497	0.0278	7.8237	0.1278	5.5493	43.4164	16
17	5.0545	0.1978	40.5447	0.0247	8.0216	0.1247	5.8071	46.5819	17
18	5.5599	0.1799	45.5992	0.0219	8.2014	0.1219	6.0526	49.6395	18
19	6.1159	0.1635	51.1591	0.0195	8.3649	0.1195	6.2861	52.5827	19
20	6.7275	0.1486	57.2750	0.0175	8.5136	0.1175	6.5081	55.4069	20
21	7.4002	0.1351	64.0025	0.0156	8.6487	0.1156	6.7189	58.1095	21
22	8.1403	0.1228	71.4027	0.0140	8.7715	0.1140	6.9189	60.6893	22
23	8.9543	0.1117	79.5430	0.0126	8.8832	0.1126	7.1085	63.1462	23
24	9.8497	0.1015	88.4973	0.0113	8.9847	0.1113	7.2881	65.4813	24
25	10.8347	0.0923	98.3471	0.0102	9.0770	0.1102	7.4580	67.6964	25
26	11.9182	0.0839	109.1818	0.0092	9.1609	0.1092	7.6186	69.7940	26
27	13.1100	0.0763	121.0999	0.0083	9.2372	0.1083	7.7704	71.7773	27
28	14.4210	0.0693	134.2099	0.0075	9.3066	0.1075	7.9137	73.6495	28
29	15.8631	0.0630	148.6309	0.0067	9.3696	0.1067	8.0489	75.4146	29
30	17.4494	0.0573	164.4940	0.0061	9.4269	0.1061	8.1762	77.0766	30
31	19.1943	0.0521	181.9434	0.0055	9.4790	0.1055	8.2962	78.6395	31
32	21.1138	0.0474	201.1378	0.0050	9.5264	0.1050	8.4091	80.1078	32
33	23.2252	0.0431	222.2515	0.0045	9.5694	0.1045	8.5152	81.4856	33
34	25.5477	0.0391	245.4767	0.0041	9.6086	0.1041	8.6149	82.7773	34
35	28.1024	0.0356	271.0244	0.0037	9.6442	0.1037	8.7086	83.9872	35
40	45.2593	0.0221	442.5926	0.0023	9.7791	0.1023	9.0962	88.9525	40
45	72.8905	0.0137	718.9048	0.0014	9.8628	0.1014	9.3740	92.4544	45
50	117.3909	0.0085	1163.9085	0.0009	9.9148	0.1009	9.5704	94.8889	50
55	189.0591	0.0053	1880.5914	0.0005	9.9471	0.1005	9.7075	96.5619	55
60	304.4816	0.0033	3034.8164	0.0003	9.9672	0.1003	9.8023	97.7010	60
65	490.3707	0.0020	4893.7073	0.0002	9.9796	0.1002	9.8672	98.4705	65
70	789.7470	0.0013	7887.4696	0.0001	9.9873	0.1001	9.9113	98.9870	70
75	1271.8954	0.0008	12708.9537	0.0001	9.9921	0.1001	9.9410	99.3317	75
80	2048.4002	0.0005	20474.0021	0.0000	9.9951	0.1000	9.9609	99.5606	80
85	3298.9690	0.0003	32979.6903	0.0000	9.9970	0.1000	9.9742	99.7120	85
90	5313.0226	0.0002	53120.2261	0.0000	9.9981	0.1000	9.9831	99.8118	90
95	8556.6760	0.0001	85556.7605	0.0000	9.9988	0.1000	9.9889	99.8773	95
100	13780.6123	0.0001	137796.1234	0.0000	9.9993	0.1000	9.9927	99.9202	100

n	(F/P,i,n)	(P/F,i,n)	(F/A,i,n)	(A/F,i,n)	(P/A,i,n)	(A/P,i,n)	(A/G,i,n)	(P/G,i,n)	n
1	1.1500	0.8696	1.0000	1.0000	0.8696	1.1500	0.0000	0.0000	1
2	1.3225	0.7561	2.1500	0.4651	1.6257	0.6151	0.4651	0.7561	2
3	1.5209	0.6575	3.4725	0.2880	2.2832	0.4380	0.9071	2.0712	3
4	1.7490	0.5718	4.9934	0.2003	2.8550	0.3503	1.3263	3.7864	4
5	2.0114	0.4972	6.7424	0.1483	3.3522	0.2983	1.7228	5.7751	5
6	2.3131	0.4323	8.7537	0.1142	3.7845	0.2642	2.0972	7.9368	6
7	2.6600	0.3759	11.0668	0.0904	4.1604	0.2404	2.4498	10.1924	7
8	3.0590	0.3269	13.7268	0.0729	4.4873	0.2229	2.7813	12.4807	8
9	3.5179	0.2843	16.7858	0.0596	4.7716	0.2096	3.0922	14.7548	9
10	4.0456	0.2472	20.3037	0.0493	5.0188	0.1993	3.3832	16.9795	10
11	4.6524	0.2149	24.3493	0.0411	5.2337	0.1911	3.6549	19.1289	11
12	5.3503	0.1869	29.0017	0.0345	5.4206	0.1845	3.9082	21.1849	12
13	6.1528	0.1625	34.3519	0.0291	5.5831	0.1791	4.1438	23.1352	13
14	7.0757	0.1413	40.5047	0.0247	5.7245	0.1747	4.3624	24.9725	14
15	8.1371	0.1229	47.5804	0.0210	5.8474	0.1710	4.5650	26.6930	15
16	9.3576	0.1069	55.7175	0.0179	5.9542	0.1679	4.7522	28.2960	16
17	10.7613	0.0929	65.0751	0.0154	6.0472	0.1654	4.9251	29.7828	17
18	12.3755	0.0808	75.8364	0.0132	6.1280	0.1632	5.0843	31.1565	18
19	14.2318	0.0703	88.2118	0.0113	6.1982	0.1613	5.2307	32.4213	19
20	16.3665	0.0611	102.4436	0.0098	6.2593	0.1598	5.3651	33.5822	20
21	18.8215	0.0531	118.8101	0.0084	6.3125	0.1584	5.4883	34.6448	21
22	21.6447	0.0462	137.6316	0.0073	6.3587	0.1573	5.6010	35.6150	22
23	24.8915	0.0402	159.2764	0.0063	6.3988	0.1563	5.7040	36.4988	23
24	28.6252	0.0349	184.1678	0.0054	6.4338	0.1554	5.7979	37.3023	24
25	32.9190	0.0304	212.7930	0.0047	6.4641	0.1547	5.8834	38.0314	25
26	37.8568	0.0264	245.7120	0.0041	6.4906	0.1541	5.9612	38.6918	26
27	43.5353	0.0230	283.5688	0.0035	6.5135	0.1535	6.0319	39.2890	27
28	50.0656	0.0200	327.1041	0.0031	6.5335	0.1531	6.0960	39.8283	28
29	57.5755	0.0174	377.1697	0.0027	6.5509	0.1527	6.1541	40.3146	29
30	66.2118	0.0151	434.7451	0.0023	6.5660	0.1523	6.2066	40.7526	30
31	76.1435	0.0131	500.9569	0.0020	6.5791	0.1520	6.2541	41.1466	31
32	87.5651	0.0114	577.1005	0.0017	6.5905	0.1517	6.2970	41.5006	32
33	100.6998	0.0099	664.6655	0.0015	6.6005	0.1515	6.3357	41.8184	33
34	115.8048	0.0086	765.3654	0.0013	6.6091	0.1513	6.3705	42.1033	34
35	133.1755	0.0075	881.1702	0.0011	6.6166	0.1511	6.4019	42.3586	35
40	267.8635	0.0037	1779.0903	0.0006	6.6418	0.1506	6.5168	43.2830	40
45	538.7693	0.0019	3585.1285	0.0003	6.6543	0.1503	6.5830	43.8051	45
50	1083.6574	0.0009	7217.7163	0.0001	6.6605	0.1501	6.6205	44.0958	50
55	2179.6222	0.0005	14524.1479	0.0001	6.6636	0.1501	6.6414	44.2558	55
60	4383.9987	0.0002	29219.9916	0.0000	6.6651	0.1500	6.6530	44.3431	60
65	8817.7874	0.0001	58778.5826	0.0000	6.6659	0.1500	6.6593	44.3903	65
70	17735.7200	0.0001	118231.4669	0.0000	6.6663	0.1500	6.6627	44.4156	70
75	35672.8680	0.0000	237812.4532	0.0000	6.6665	0.1500	6.6646	44.4292	75
80	71750.8794	0.0000	478332.5293	0.0000	6.6666	0.1500	6.6656	44.4364	80
85	144316.6470	0.0000	962104.3133	0.0000	6.6666	0.1500	6.6661	44.4402	85
90	290272.3252	0.0000	1935142.1680	0.0000	6.6666	0.1500	6.6664	44.4422	90
95	583841.3276	0.0000	3892268.8510	0.0000	6.6667	0.1500	6.6665	44.4433	95
100	1174313.4507	0.0000	7828749.6701	0.0000	6.6667	0.1500	6.6666	44.4438	100