

UNIVERSITY OF ESWATINI
DEPARTMENT OF BUSINESS ADMINISTRATION
EXAMINATION PAPER NOVEMBER 2019

PROGRAMME : MASTER OF BUSINESS ADMINISTRATION

TITLE OF PAPER : CORPORATE FINANCE AND INVESTMENT

COURSE CODE : ACF603

TOTAL MARKS : 100 MARKS

TIME ALLOWED : THREE (3) HOURS

- INSTRUCTIONS
- 1 This paper consists of **ten (10) numbered pages**, including this page and Appendix A which contains useful formulae.
 - 2 Answer **ALL FIVE (5)** questions of 20 marks each.
 - 3 Begin solutions to each question on a new page.
 - 4 Show all the necessary workings.
 - 5 Tables are attached for your use.
 - 6 Round off all prices to the nearest cent, values to the nearest lilangeni and decimalized interest rates to four decimal places, and decimalized weightings to four decimals.

Note: You are reminded that in assessing your work, account will be taken of accuracy of the language and general quality of expression, together with layout and presentation of your answer.

THIS PAPER MUST NOT BE OPENED UNTIL PERMISSION HAS BEEN GRANTED BY THE INVIGILATOR OR SUPERVISOR.

QUESTION 1 (20 marks)

“In theory shareholders are expected to exercise control over managers through some disciplinary mechanisms...In practice these disciplinary mechanisms might not work”

Adapted from Aswath Damodaran (2006) Applied Corporate Finance p.49

Required:

With reference to the above quote, write an essay on corporate governance.

Your essay must include, amongst other relevant content:

- how the agency problem arises and the agency costs, and
- describe some disciplinary mechanisms shareholders can use to control managers and the limitations of these disciplinary mechanisms.

QUESTION 2 (20 marks)**Part A (6 marks)**

Your son has just won the E15 million lotto. The money is paid in equal annual instalments of E700 000 over 20 years. Your son requires a rate of return of 5% per annum.

Required

- a) Calculate how much the lotto is actually worth today.

(4 marks)

- b) Assuming that the lotto management board advises him of the alternative payment option in which he will receive a lump sum of R10 million today, advise him on which option he should take. Explain your answer.

(2 marks)

Part B (4 marks)

Your marketing manager advises you that the implementation of the electronic purchasing and payment system will cause the company to increase the unit sales of its appliances 10% per year for the next 5 years. Currently (in 2019) the company sells 5 million units in one year.

Required

- a) Calculate how many units you expect to sell in 2024.

(4 marks)

Part C (10 marks)

Scroodge Bank has offered your business a E1 200 000 three-year loan at an annual interest rate of 9%. You will be required to make equal end-of-year instalments (principal and interest) payments on a reducing capital balance.

Required:

Prepare a completed amortization schedule for this loan.

(10 marks)

QUESTION 3 (20 marks)**Part A** (10 marks)

You have been presented with the following information about five different bonds. All have a par value of R1 000.

Bond	Current market price (R)	Coupon rate (%)	YTM (%)
A	1090	10	10
B	950	9	8
C	800	8	12
D	1000	11	11
E	1200	10	12

Your university lecturer taught you bond pricing theorems which are always true.

Required:

Without calculation but rather by applying one of the bond pricing theorems you learnt, state the theorem you will be using, state whether each of the above five bonds are correctly priced or not, and explain your answer in each case.

Part B (10 marks)

You are analysing the shares of Adventure World Limited. The firm has just distributed an annual dividend of R2.50 per share. The required return is 12%. The firm projects that its dividends will grow at 15% and 10% next year and the year after respectively. Thereafter the share will grow at a constant rate of 5% forever.

Required:

Calculate the current share price of Adventure World Limited.

QUESTION 4 (20 marks)

Isolezwe Paper Milling Company (IPMC) has two million shares in issue with a current market price of E60 per share. The company has just paid a dividend of E3.80 per share. The table below shows the dividends paid from 2014 to 2017:

Year	2014	2015	2016	2017
Dividend	1.80	2.50	3.50	3.00

IPMC has fifty thousand 12% coupon bonds which mature in ten years' time. The bonds have a yield to maturity of 11.92%. The par value of each bond is E1000.

IPMC has five million, 10%, irredeemable preference shares with a par value of E10. These preference shares are currently trading at E12.50.

The corporate tax rate is 30%.

Required:

Calculate the Weighted Average Cost of Capital of IPMC.

(20 marks)

QUESTION 5 (20 marks)

Steelbase Investments (Pty) Limited is an exporter on steel fabricated products to countries in the SADC region. Its management has approached you as a finance expert to help them prepare for the forthcoming financial year. They anticipate that business likely to be good but they worried that if they do not plan the company's finances properly, they might jeopardise the future of the company.

The company has hired you to prepare a cash budget plan for the forthcoming four quarters.

All sales are made on credit and collected as follows:

- 50% in the quarter of the sale;
- 30% in the quarter after the sale;
- 15% in the second quarter after the sale;
- 5% will default on their payments.

Purchases are made on credit and paid as follows:

- 60% in the quarter of the purchase and
- 40% in the quarter after the purchase.

Administration expenses (rent, stationary e.t.c) will be E100 000 per quarter. Major repairs and maintenance will cost E760 000 and will be paid in equal instalments over four quarters from Quarter 1 to Quarter 4. Water and electricity is estimated to be 10% of sales and is paid in the quarter it is incurred. Export licence fees are E50 000 per year and are paid in Quarter 1 and Quarter 3 in equal instalments.

Cash on hand on at the beginning of Quarter 1 is expected to be zero, however the company has agreed to maintain a minimum cash balance of E250 000 at all times with immediate effect.

Sales for last 2 quarters of the previous financial year (Quarter 3 and Quarter 4) were E1 500 000 and E1 200 000 respectively while purchases for Quarter 4 were E850 000. The estimated sales for Quarter 1, Quarter 2, Quarter 3, Quarter 4 and Quarter 5 are shown below.

	Sales (E)
Quarter 1	1 600 000
Quarter 2	1 500 000
Quarter 3	1 100 000
Quarter 4	1 200 000
Quarter 5	1 200 000

Purchases are 50% of next quarter sales.

(20 marks)

APPENDIX A: SELECTED RATIOS AND FORMULAE

$$\begin{aligned}
 \text{ROA} &= \text{NPAT} / \text{Total Assets} \\
 \text{Current Ratio} &= \text{Current Assets} / \text{Current Liabilities} \\
 \text{Equity Multiplier} &= \text{Total Assets} / \text{Equity} \\
 \text{Inventory Turnover} &= \text{Cost of Goods Sold} / \text{Inventory} \\
 \text{Times Interest Earned} &= \text{PBIT} / \text{Interest paid} \\
 \text{Net Profit Margin} &= \text{NPAT} / \text{Sales} \\
 \text{P/E ratio} &= \text{Market price per share} / \text{EPS} \\
 \text{Total Debt ratio} &= \text{Total debt} / \text{Total Assets} \\
 \text{ROE} &= \text{NPAT} / \text{Equity} \\
 \text{Accounts receivable Period} &= \text{Accounts Receivables} / \text{Sales} \times 360 \text{ days} \\
 \text{Inventory period} &= \text{Inventory} / \text{COGS} \times 360 \text{ days} \\
 \text{Debt: Equity ratio} &= \text{Total Debt} / \text{Total Equity} \\
 \text{ROE} &= \text{PM} \times \text{TAT} \times \text{EM} \\
 \text{Market-to-book ratio} &= \text{Market price per share} / \text{book value per share} \\
 \text{FV of a lump sum} &= \text{PV} \times (1 + r)^t \\
 \text{PV of a lump sum} &= \text{FV} / (1 + r)^t \\
 \text{FV of annuity} &= C \times \left(\frac{(1 + r)^t - 1}{r} \right) \\
 \text{PV of annuity} &= C \times \left(\frac{1 - \frac{1}{(1 + r)^t}}{r} \right) \\
 \text{Bond Value} &= C \times [1 - 1 / (1 + r)^t] / r + F / (1 + r)^t \\
 P_0 &= D_1 / (1 + r) + D_2 / (1 + r)^2 + \dots + D_t / (1 + r)^t + P_t / (1 + r)^t \\
 R_E &= D_1 / P_0 + g \\
 R_P &= D / P_0 \\
 P_t &= D_{t+1} / (R - g) \\
 \text{WACC} &= \left(\frac{E}{V} \times R_E \right) + \left(\frac{P}{V} \times R_P \right) + \left(\frac{D}{V} \times R_D \times (1 - T_c) \right) \\
 R_E &= R_F + \beta_E \times (R_M - R_F) \\
 \text{YTM} &= \frac{i + (F_d - V_d)/n}{(F_d + 2V_d)/3}
 \end{aligned}$$

Present value interest factor of an (ordinary) annuity of \$1 per period at i% for n periods, PVIFA(i,n).																				
Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%
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	0,862	0,855	0,847	0,840	0,833
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	1,605	1,585	1,566	1,547	1,528
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	2,246	2,210	2,174	2,140	2,106
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	2,798	2,743	2,690	2,639	2,589
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	3,274	3,199	3,127	3,058	2,991
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	3,685	3,589	3,498	3,410	3,326
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	4,039	3,922	3,812	3,706	3,605
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	4,344	4,207	4,078	3,954	3,837
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	4,607	4,451	4,303	4,163	4,031
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	4,833	4,659	4,494	4,339	4,192
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	5,029	4,836	4,656	4,486	4,327
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	5,197	4,988	4,793	4,611	4,439
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	5,342	5,118	4,910	4,715	4,533
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	5,468	5,229	5,008	4,802	4,611
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	5,575	5,324	5,092	4,876	4,675
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	5,668	5,405	5,162	4,938	4,730
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	5,749	5,475	5,222	4,990	4,775
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	5,818	5,534	5,273	5,033	4,812
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	5,877	5,584	5,316	5,070	4,843
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	5,929	5,628	5,353	5,101	4,870
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	6,097	5,766	5,467	5,195	4,948
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	6,177	5,829	5,517	5,235	4,979
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	6,215	5,858	5,539	5,251	4,992
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	6,233	5,871	5,548	5,258	4,997
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	6,246	5,880	5,554	5,262	4,999

Present value interest factor of \$1 per period at i% for n periods, PVIF(i,n).

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%
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	0.862	0.855	0.847	0.840	0.833
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	0.743	0.731	0.718	0.706	0.694
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	0.641	0.624	0.609	0.593	0.579
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	0.552	0.534	0.516	0.499	0.482
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	0.476	0.456	0.437	0.419	0.402
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	0.410	0.390	0.370	0.352	0.335
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	0.354	0.333	0.314	0.296	0.279
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	0.305	0.285	0.266	0.249	0.233
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	0.263	0.243	0.225	0.209	0.194
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	0.227	0.208	0.191	0.176	0.162
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	0.195	0.178	0.162	0.148	0.135
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	0.168	0.152	0.137	0.124	0.112
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	0.145	0.130	0.116	0.104	0.093
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	0.125	0.111	0.099	0.088	0.078
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	0.108	0.095	0.084	0.074	0.065
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	0.093	0.081	0.071	0.062	0.054
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	0.080	0.069	0.060	0.052	0.045
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	0.069	0.059	0.051	0.044	0.038
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	0.060	0.051	0.043	0.037	0.031
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	0.051	0.043	0.037	0.031	0.026
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	0.024	0.020	0.016	0.013	0.010
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	0.012	0.009	0.007	0.005	0.004
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	0.006	0.004	0.003	0.002	0.002
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	0.003	0.002	0.001	0.001	0.001
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	0.001	0.000	0.000	0.000	0.000

Future value interest factor of an ordinary annuity of \$1 per period at i% for n periods, FVIFA(i,n).																				
Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%
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	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	2,160	2,170	2,180	2,190	2,200
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	3,506	3,539	3,572	3,606	3,640
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	5,066	5,141	5,215	5,291	5,368
5	5,101	5,204	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	6,877	7,014	7,154	7,297	7,442
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	8,977	9,207	9,442	9,683	9,930
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	11,414	11,772	12,142	12,523	12,916
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	14,240	14,773	15,327	15,902	16,499
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	17,519	18,285	19,086	19,923	20,799
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	21,321	22,393	23,521	24,709	25,959
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	25,733	27,200	28,755	30,404	32,150
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	30,850	32,824	34,931	37,180	39,581
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	36,786	39,404	42,219	45,244	48,497
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	43,672	47,103	50,818	54,841	59,196
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	51,660	56,110	60,965	66,261	72,035
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	60,925	66,649	72,939	79,850	87,442
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	71,673	78,979	87,068	96,022	105,93
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	84,141	93,406	103,74	115,27	128,12
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	98,603	110,28	123,41	138,17	154,74
20	22,019	24,297	26,870	29,778	33,086	36,786	40,995	45,762	51,160	57,275	64,203	72,052	80,947	91,025	102,44	115,38	130,03	146,63	165,42	186,69
25	28,243	32,030	36,459	41,646	47,727	54,865	63,249	73,106	84,701	98,347	114,41	133,33	155,62	181,87	212,79	249,21	292,10	342,60	402,04	471,98
30	34,785	40,568	47,575	56,085	66,439	79,058	94,461	113,28	136,31	164,49	199,02	241,33	293,20	356,79	434,75	530,31	647,44	790,95	966,71	1,182
35	41,660	49,994	60,462	73,652	90,320	111,443	138,24	172,32	215,71	271,02	341,59	431,66	546,68	693,57	881,17	1,121	1,427	1,817	2,314	2,948
40	48,886	60,402	75,401	95,026	120,80	154,76	199,64	259,06	337,88	442,59	581,83	767,09	1,013,	1,342,	1,779,	2,361	3,135	4,163	5,529	7,344
50	64,463	84,579	112,80	152,67	209,35	290,34	406,53	573,77	815,08	1,163,	1,668,	2,400,	3,459,	4,995	7,218	10,436	15,090	21,813	31,515	45,497

Future value interest factor of \$1 per period at i% for n periods, FVIF(i,n).

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%
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	1,160	1,170	1,180	1,190	1,200
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	1,346	1,369	1,392	1,416	1,440
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	1,561	1,602	1,643	1,685	1,721
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	1,811	1,874	1,939	2,005	2,071
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	2,100	2,192	2,288	2,386	2,481
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	2,436	2,565	2,700	2,840	2,981
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	2,826	3,001	3,185	3,379	3,581
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	3,278	3,511	3,759	4,021	4,301
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	3,803	4,108	4,435	4,785	5,161
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	4,411	4,807	5,234	5,695	6,191
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	5,117	5,624	6,176	6,777	7,431
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	5,936	6,580	7,288	8,064	8,911
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	6,886	7,699	8,599	9,596	10,691
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	7,988	9,007	10,147	11,420	12,831
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	9,266	10,539	11,974	13,590	15,401
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	10,748	12,330	14,129	16,172	18,481
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	12,468	14,426	16,672	19,244	22,181
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	14,463	16,879	19,673	22,901	26,621
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	16,777	19,748	23,214	27,252	31,941
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	19,461	23,106	27,393	32,429	38,331
25	1,282	1,641	2,094	2,666	3,386	4,3	5,4	6,8	8,6	10,8	13,6	17,0	21,2	26,5	32,9	40,9	50,7	62,7	77,4	95,1
30	1,348	1,811	2,427	3,243	4,322	5,7	7,6	10,1	13,3	17,4	22,9	30,0	39,1	51,0	66,2	85,8	111,1	143,4	184,7	237,1
35	1,417	2,000	2,814	3,946	5,516	7,7	10,7	14,8	20,4	28,1	38,6	52,8	72,1	98,1	133,2	180,3	243,5	328,0	440,7	590,1
40	1,489	2,208	3,262	4,801	7,040	10,3	15,0	21,7	31,4	45,3	65,0	93,1	132,8	188,9	267,9	378,7	533,9	750,4	1,051,7	1,469,1
50	1,645	2,692	4,384	7,107	11,467	18,4	29,5	46,9	74,4	117,4	184,6	289,0	450,7	700,2	1,083,7	1,670,7	2,566,2	3,927,4	5,988,9	9,100,1