Name: ....

Address: ....

....

....

Kaplan Student Number: ....

Your email address:

KAPLAN

PUBLISHING

ACCA – Paper P4
Advanced Financial Management
December 2015
Revision Mock

Instructions

- Please complete your personal details above.
- All scripts should ideally be submitted to your Kaplan centre for marking via email to help speed up the marking process. Please scan this form and your answer script in a single PDF and email it to your Kaplan centre.
- Alternatively you may post your script to us. If so, please use the correct Royal Mail tariff (large letter).
- Classroom students may submit scripts to their local centre in person.
  You will be provided with the dated receipt below which you should retain as proof of submission.

  Note: If you are a sponsored student, your result will form part of the report to your employer.

Office use

Centre	
Date received	
Marker's initials	

Date sent to marker	
Date received from marker	
Date returned to student	
Student's overall mark	

Receipt – only issued if script submitted by classroom student in person to Kaplan centre:

✂ --

Name: ....

Received by: ....

Script: ....

Date: ....

KAPLAN

PUBLISHING

Marking Report

Notice to Markers

1   When commenting about the script performance, please ensure on individual questions and on overall assessment your comments cover areas of examination technique including:

• Time management	• Handwriting	• Presentation and layout	• Use of English
• Points clearly and concisely made	• Relevance of answers to question	• Coverage and depth of answer	• Accuracy of calculations
• Calculations cross-referenced to workings	• All parts of the requirement attempted	• Length of answers equates to marks available	• Read the question carefully

2   For each question, please provide suitable constructive comments

Question Number	General Comments	Exam Technique Comments

Advanced Financial Management

December 2015

Paper P4

Time allowed

Reading time: **15 minutes**

Writing time: **3 hours**

This paper is divided into two sections

Section A	This ONE question is compulsory and MUST be attempted
Section B	TWO questions ONLY to be attempted

Formulae and Tables are on pages 10-14

Do NOT open this paper until instructed by the supervisor. During reading and planning time only the question paper may be annotated. You must NOT write in your answer booklet until instructed by the supervisor

SECTION A

This ONE question is compulsory and MUST be attempted

1 Bugg Co is a listed company based in Europe that manufactures heating elements for ovens. One of its products, the BBB, is produced exclusively for the European market.

Countries across Europe have been suffering from recession since the 2007 credit crunch, but despite the severe austerity measures introduced by most governments across Europe since 2007, Bugg Co's sales and profits have grown slightly over this period.

However, the oven heating industry has changed dramatically over the last few years as new technology has emerged. Consequently, Bugg Co is considering ceasing the production of the BBB gradually over a period of five years because it needs the manufacturing facilities currently used to make the BBB for other products.

The directors of Bugg Co have held several meetings with representatives of the government of Runa, an African country. The government of Runa is keen to develop its manufacturing industry and has offered Bugg Co an opportunity to produce the BBB in Runa and sell it to the European market for a period of five years.

At the end of the five-year period, the full production rights will be sold to a Runan public sector company for 140 million Runan Rands (RR) (in nominal terms, after tax).

Bugg Co has to decide whether to continue production of the BBB in Europe for the next five years or to move the production to Runa immediately.

The new project in Runa

The Runan project will require an initial investment of RR 115 million, to pay for the cost of land and buildings (RR 40 million) and machinery (RR 75 million). The cost of machinery is tax allowable and will be depreciated on a straight-line basis over the next five years, at the end of which it will have a negligible value.

Production and sales of the BBB are expected to be:

	Year 1	Year 2	Year 3	Year 4	Year 5
Sales (000 units)	12	22	47	60	70

In the first year of operation, each unit will be sold for €120, and the variable cost per unit (locally sourced materials and labour) will be RR 800. In addition to these local variable costs, each unit will require a component bought from a European supplier for €5. Total fixed costs for the first year will be RR 15 million.

These fixed and variable costs are expected to increase by their countries' respective rates of inflation, but the selling price will remain fixed at €120 per unit for the five-year period.

Bugg Co will also need RR 20 million for working capital immediately. It is expected that the working capital requirement will increase in line with the annual inflation rate in Runa. When the project is sold, the working capital will not form part of the sale price and will be released back to Bugg Co.

Current production details in Europe

Currently each BBB unit sold makes a unit contribution of €30. This unit contribution is expected to stay constant for the next five years. Next year's production and sales (estimated at 50,000 units) will fall by 20% each year for the following four years. It is anticipated that after five years the production of the BBB in Europe will stop. It is expected that the financial impact of the gradual closure over the five years will be cost neutral (the revenue from sale of assets will equal the closure costs). If European production is stopped immediately, the excess assets would be sold for €5 million, and the costs of closure (including redundancy costs of excess labour) would be €4 million.

Taxation

The annual corporation tax rate in Runa is 20% and Bugg Co currently pays corporation tax in Europe at a rate of 30% per year. All corporation taxes are payable in the year that the tax liability arises.

A bi-lateral tax treaty exists between Europe and Runa, which permits offset of overseas tax against any European tax liability on overseas earnings.

Financing and cost of capital

Currently, Bugg Co's financing consists of 40 million shares currently trading at €1.32 each and €20 million 7% bonds trading at €122 per €100. Bugg Co's quoted equity beta is 1.40 and its debt beta is 0.20. The current risk free rate of return is estimated at 3% and the market risk premium is 8%.

If the Runan project is undertaken, the cost of capital applicable to the cash flows in Europe is expected to be 9%.

Bugg Co has decided to finance the project by borrowing the funds required in Runa, where the commercial borrowing rate is 15%. However, in exchange for an initial arrangement fee of RR 10 million, the Runan government has offered Bugg Co a 7% subsidised loan for the entire amount of the initial funds required. The Runan government has agreed that it will not ask for the loan to be repaid as long as Bugg Co fulfils its contract to undertake the project for the five years. Bugg Co can borrow euro funds at an interest rate of 6%.

Exchange rates

The spot exchange rate between the euro and the Runan Rand is RR 27.50 per €1.

The annual inflation rates are currently 4% in Europe and 10% in Runa. It can be assumed that these inflation rates will not change for the foreseeable future.

All net cash flows arising from the project will be remitted back to Bugg Co at the end of each year.

Required:

Prepare a report for the Board of Directors of Bugg Co in which you:

(a) Suggest, giving reasons, why the austerity measures imposed by European governments have not adversely affected Bugg Co's financial results. **(4 marks)**

(b) Discuss the merits and potential problems of using each of the weighted average cost of capital and adjusted present value to aid the evaluation of proposed capital investments; **(8 marks)**

(c) Evaluate whether or not Bugg Co should undertake the project to produce the BBB in Runa and cease its production in Europe immediately.

In the evaluation, include all relevant calculations in the form of a financial assessment and explain any assumptions made;

Note: it is suggested that the financial assessment should be based on present value of the operating cash flows from the Runan project, discounted by Bugg Co's current all-equity rate, and adjusted by the present value of all other relevant cash flows. **(25 marks)**

(d) Discuss the other factors that Bugg Co should consider before making a final decision. **(9 marks)**

Professional marks will be awarded in this question for the appropriateness and format of the report. **(4 marks)**

(Total: 50 marks)

SECTION B

TWO questions ONLY to be attempted

2   The directors of Mac Co have identified that the firm has a surplus of cash. In these recessionary times, they have decided to follow a cautious investment strategy, and are considering investing the cash surplus in corporate bonds.

The directors have identified two potential investments.

Company	Term of bond	Par value	Coupon	Redemption
Echo Co	4 years	$100	5%	At par
Bunnymen Co	4 years	$100	2%	At a 10% premium

The Echo Co bonds are currently trading at $105.10 on the market, whereas the Bunnymen Co bonds are just about to be issued.

Both Echo Co and Bunnymen Co have an A credit rating according to the main credit rating agencies.

Required:

(a)   Calculate the gross redemption yield (yield to maturity) for the Echo Co bonds, and (on the assumption that the Bunnymen Co bonds will have the same yield) the theoretical value of the Bunnymen Co bonds.   (4 marks)

(b)   Estimate the Macaulay duration of the two bonds Mac Co is considering for investment.   (5 marks)

(c)   Advise the directors what factors should be considered by Mac Co when evaluating which bonds to invest in. Support the advice by referring to your calculations in parts (a) and (b) above, along with any other important factors.   (8 marks)

(d)   Among the criteria used by credit agencies for establishing a company's credit rating are the following: industry risk, earnings protection, financial flexibility and evaluation of the company's management.

Briefly explain each criterion and suggest factors that could be used to assess it.

(8 marks)

(Total: 25 marks)

3 The monthly cash budget of Perigueux Co, a listed company based in the UK, shows that the company is likely to need to borrow £18 million in two months' time for a period of four months.

Financial markets have recently been volatile. The finance director of Perigueux Co fears that short term interest rates could rise by as much as 150 basis points. If few problems occur then short term rates could fall by 50 basis points. LIBOR is currently 6.50% and Perigueux Co can borrow at LIBOR + 0.75%.

The finance director does not wish to pay more than 7.50% for the borrowing, including option premium costs, but excluding the effect of margin requirements and commissions.

Information from the London International Financial Futures and Options Exchange (LIFFE):

LIFFE £500,000 3 month futures prices. Tick size is 0.01% and tick value is £12.50

December	93.40
March	93.10
June	92.75

LIFFE £500,000 3 months options prices (premiums in annual %). Tick size is 0.01% and tick value is £12.50

Calls			Exercise price	Puts		
December	March	June		December	March	June
0.33	0.88	1.04	**92.50**	–	–	0.08
0.16	0.52	0.76	**93.00**	–	0.20	0.34
0.10	0.24	0.42	**93.50**	0.18	0.60	1.93
–	0.05	0.18	**94.00**	0.36	1.35	1.92

Assume that it is now 1 December and that exchange traded futures and options contracts expire at the end of the month. Margin requirements and default risk may be ignored.

Required:

(a) **Estimate the financial results of undertaking EACH OF an interest rate futures hedge and an interest rate options hedge on the LIFFE exchange, if LIBOR**

 (i) **increases by 150 basis points AND**

 (ii) **decreases by 50 basis points.**

 Advise how successful the hedges would have been.

 State clearly any assumptions that you make. **(16 marks)**

(b) **Discuss the relative advantages of using exchange traded interest rate options and over-the-counter (OTC) interest rate options.** **(4 marks)**

(c) The finance director has received some quotations for over-the-counter (OTC) interest rate options and wonders whether or not they are too expensive.

 List the main determinants of interest rate option prices, and comment upon whether or not the OTC options are likely to be expensive. **(5 marks)**

(Total: 25 marks)

4 Rubidium Co is an unlisted company based in Italy in the Eurozone. It has grown during the last five years into one of Italy's most successful specialist war games manufacturers. The company's success has been largely based on its Actinoid series of games and models, for which it holds patents in many developed countries. The company has attracted the interest of two large listed companies: Caesium Co, a traditional manufacturer of games and toys, and Francium Co, a conglomerate group that has grown rapidly in recent years through the strategy of acquiring what it perceives to be undervalued companies.

Summarised financial details of the three companies are shown below.

Rubidium Co: summarised statement of financial position as at 31 December 20X3

ASSETS	€000
Non current assets (net)	8,400
Current assets (of which inventories are 5,500)	*9,100*
	–––––
Total assets	17,500
	–––––

EQUITY AND LIABILITIES	€000
Ordinary shares (25 cents nominal)	1,000
Reserves	5,500
	–––––
	6,500
Medium and long–term loans	3,800
Current liabilities	*7,200*
	7,200
	–––––
Total equity and liabilities	17,500
	–––––

Summarised statement of profit or loss for the year ended 31 December 20X3

	€000
Turnover	27,000
	–––––
Profit before tax	4,600
Taxation	1,380
	–––––
Profit after tax	3,220
Dividend	1,500
	–––––
Retained earnings	1,720
	–––––

Additional information

- The realisable value of the inventory is believed to be 90 per cent of its book value.
- Land and buildings with a book value of €4 million were last revalued 5 years ago.

- The directors of the company and their families own 25 per cent of the company's shares.

	Rubidium	Caesium	Francium
Turnover (€m)	27	112	256
Profit before tax (€m)	4.6	11	24
Non-current assets (€m net)	8.4	26	123
Current assets (€m)	9.1	41	72
Current liabilities (€m)	7.2	33	91
Overdraft (€m)	1.2	6	30
Medium- and long-term liabilities (€m)	3.8	18	35
Interest payable (€m)	0.5	3	10
Share price (cents)	–	320	780
EPS (cents)	80.5	58	51
Estimated required return on equity	16%	14%	12%
Growth trends per year			
Earnings	12%	6%	13%
Dividends	9%	5%	8%
Turnover	15%	10%	23%

Assume that the following events occurred shortly after the above financial information was produced.

- 7 September – Francium makes a bid for Rubidium of two ordinary shares for every three shares of Rubidium. The price of Francium's ordinary shares after the announcement of the bid is 710 cents. The directors of Rubidium reject the offer.

- 2 October – Caesium makes a counter bid of 170 cents cash per share plus one €100 10 per cent irredeemable bond, issued at par, for every 25 Rubidium shares. Caesium's share price moves to 335 cents. This offer is rejected by the directors of Rubidium.

- 19 October – Francium offers cash of 600 cents per share. The cash will be raised by a term loan from the company's bank. The board of Rubidium are all offered seats on subsidiary boards within the Francium group. Francium's shares move to 680 cents.

- 20 October – The directors of Rubidium recommend acceptance of the revised offer from Francium.

- 24 October – Francium announces that 53 per cent of shareholders have accepted its offer and makes the offer unconditional.

Required:

(a) **Provide a detailed explanation as to whether you believe that companies should diversify on behalf of their shareholders in order to reduce their risk.** **(6 marks)**

(b) **Given the current value of Rubidium and other considerations, discuss whether or not the bids by Francium and Caesium are financially prudent from the point of view of the companies' shareholders.**

Relevant supporting calculations must be shown. **(19 marks)**

(Total: 25 marks)

FORMULAE SHEET

Modigliani and Miller proposition 2 (with tax)

$$k_e = k_e^i + (1 - T)(k_e^i - k_d)\ \frac{V_d}{V_e}$$

The capital asset pricing model

$$E(r_i) = R_f + \beta_i(E(r_m) - R_f)$$

The asset beta formula

$$\beta_a = \left[\frac{V_e}{V_e + V_d(1-T))}\ \beta_e \right] + \left[\frac{V_d(1-T)}{V_e + V_d(1-T))}\ \beta_d \right]$$

The growth model

$$P_o = \frac{D_o(1+g)}{(r_e - g)}$$

Gordon's growth approximation

$$g = br_e$$

The weighted average cost of capital

$$WACC = \left[\frac{V_e}{V_e + V_d} \right] k_e + \left[\frac{V_d}{V_e + V_d} \right] k_d(1-T)$$

The Fisher formula

$$(1+i) = (1+r)(1+h)$$

Purchasing power parity and interest rate parity

$$S_1 = S_o \times \frac{(1+h_c)}{(1+h_b)} \qquad\qquad F_0 = S_0 \times \frac{(1+i_c)}{(1+i_b)}$$

Modified Internal Rate of Return

$$\text{MIRR} = \left[\frac{PV_R}{PV_1}\right]^{\frac{1}{n}} (1 + r_e) - 1$$

The Black-Scholes option pricing model

$$c = P_a N(d_1) - P_e N(d_2) e^{-rt}$$

Where:

$$d_1 = \frac{\ln(P_a/P_e) + (r + 0.5s^2)t}{s\sqrt{t}}$$

$$d_2 = d_1 - s\sqrt{t}$$

The put call parity relationship

$$p = c - P_a + P_e e^{-rt}$$

MATHEMATICAL TABLES

Standard normal distribution table

	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.0	.0000	.0040	.0080	.0120	.0159	.0199	.0239	.0279	.0319	.0359
0.1	.0398	.0438	.0478	.0517	.0557	.0596	.0636	.0675	.0714	.0753
0.2	.0793	.0832	.0871	.0910	.0948	.0987	.1026	.1064	.1103	.1141
0.3	.1179	.1217	.1255	.1293	.1331	.1368	.1406	.1443	.1480	.1517
0.4	.1554	.1591	.1628	.1664	.1700	.1736	.1772	.1808	.1844	.1879
0.5	.1915	.1950	.1985	.2019	.2054	.2088	.2123	.2157	.2190	.2224
0.6	.2257	.2291	.2324	.2357	.2389	.2422	.2454	.2486	.2518	.2549
0.7	.2580	.2611	.2642	.2673	.2704	.2734	.2764	.2794	.2823	.2852
0.8	.2881	.2910	.2939	.2967	.2995	.3023	.3051	.3078	.3106	.3133
0.9	.3159	.3186	.3212	.3238	.3264	.3289	.3315	.3340	.3365	.3389
1.0	.3413	.3438	.3461	.3485	.3508	.3531	.3554	.3577	.3599	.3621
1.1	.3643	.3665	.3686	.3708	.3729	.3749	.3770	.3790	.3810	.3830
1.2	.3849	.3869	.3888	.3907	.3925	.3944	.3962	.3980	.3997	.4015
1.3	.4032	.4049	.4066	.4082	.4099	.4115	.4131	.4147	.4162	.4177
1.4	.4192	.4207	.4222	.4236	.4251	.4265	.4279	.4292	.4306	.4319
1.5	.4332	.4345	.4357	.4370	.4382	.4394	.4406	.4418	.4430	.4441
1.6	.4452	.4463	.4474	.4485	.4495	.4505	.4515	.4525	.4535	.4545
1.7	.4554	.4564	.4573	.4582	.4591	.4599	.4608	.4616	.4625	.4633
1.8	.4641	.4649	.4656	.4664	.4671	.4678	.4686	.4693	.4699	.4706
1.9	.4713	.4719	.4726	.4732	.4738	.4744	.4750	.4756	.4762	.4767
2.0	.4772	.4778	.4783	.4788	.4793	.4798	.4803	.4808	.4812	.4817
2.1	.4821	.4826	.4830	.4834	.4838	.4842	.4846	.4850	.4854	.4857
2.2	.4861	.4865	.4868	.4871	.4875	.4878	.4881	.4884	.4887	.4890
2.3	.4893	.4896	.4898	.4901	.4904	.4906	.4909	.4911	.4913	.4916
2.4	.4918	.4920	.4922	.4925	.4927	.4929	.4931	.4932	.4934	.4936
2.5	.4938	.4940	.4941	.4943	.4945	.4946	.4948	.4949	.4951	.4952
2.6	.4953	.4955	.4956	.4957	.4959	.4960	.4961	.4962	.4963	.4964
2.7	.4965	.4966	.4967	.4968	.4969	.4970	.4971	.4972	.4973	.4974
2.8	.4974	.4975	.4976	.4977	.4977	.4978	.4979	.4980	.4980	.4981
2.9	.4981	.4982	.4983	.4983	.4984	.4984	.4985	.4985	.4986	.4986
3.0	.4987	.4987	.4987	.4988	.4988	.4989	.4989	.4989	.4990	.4990

This table can be used to calculate N (d), the cumulative normal distribution function needed for the Black-Scholes model of option pricing. If $d_i > 0$, add 0.5 to the relevant number above. If $d_i < 0$, subtract the relevant number above from 0.5.

Present value table

Present value of 1, i.e. $(1 + r)^{-n}$

where   r = discount rate

n = number of periods until payment

Periods (n)	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	0.980	0.961	0.943	0.925	0.907	0.890	0.873	0.857	0.842	0.826
3	0.971	0.942	0.915	0.889	0.864	0.840	0.816	0.794	0.772	0.751
4	0.961	0.924	0.888	0.855	0.823	0.792	0.763	0.735	0.708	0.683
5	0.951	0.906	0.863	0.822	0.784	0.747	0.713	0.681	0.650	0.621
6	0.942	0.888	0.837	0.790	0.746	0.705	0.666	0.630	0.596	0.564
7	0.933	0.871	0.813	0.760	0.711	0.665	0.623	0.583	0.547	0.513
8	0.923	0.853	0.789	0.731	0.677	0.627	0.582	0.540	0.502	0.467
9	0.914	0.837	0.766	0.703	0.645	0.592	0.544	0.500	0.460	0.424
10	0.905	0.820	0.744	0.676	0.614	0.558	0.508	0.463	0.422	0.386
11	0.896	0.804	0.722	0.650	0.585	0.527	0.475	0.429	0.388	0.350
12	0.887	0.788	0.701	0.625	0.557	0.497	0.444	0.397	0.356	0.319
13	0.879	0.773	0.681	0.601	0.530	0.469	0.415	0.368	0.326	0.290
14	0.870	0.758	0.661	0.577	0.505	0.442	0.388	0.340	0.299	0.263
15	0.861	0.743	0.642	0.555	0.481	0.417	0.362	0.315	0.275	0.239

Periods (n)	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%
1	0.901	0.893	0.885	0.877	0.870	0.862	0.855	0.847	0.840	0.833
2	0.812	0.797	0.783	0.769	0.756	0.743	0.731	0.718	0.706	0.694
3	0.731	0.712	0.693	0.675	0.658	0.641	0.624	0.609	0.593	0.579
4	0.659	0.636	0.613	0.592	0.572	0.552	0.534	0.516	0.499	0.482
5	0.593	0.567	0.543	0.519	0.497	0.476	0.456	0.437	0.419	0.402
6	0.535	0.507	0.480	0.456	0.432	0.410	0.390	0.370	0.352	0.335
7	0.482	0.452	0.425	0.400	0.376	0.354	0.333	0.314	0.296	0.279
8	0.434	0.404	0.376	0.351	0.327	0.305	0.285	0.266	0.249	0.233
9	0.391	0.361	0.333	0.308	0.284	0.263	0.243	0.225	0.206	0.194
10	0.352	0.322	0.295	0.270	0.247	0.227	0.208	0.191	0.176	0.162
11	0.317	0.287	0.261	0.237	0.215	0.195	0.178	0.162	0.148	0.135
12	0.286	0.257	0.231	0.208	0.187	0.168	0.152	0.137	0.124	0.112
13	0.258	0.229	0.204	0.182	0.163	0.145	0.130	0.116	0.104	0.933
14	0.232	0.205	0.181	0.160	0.141	0.125	0.111	0.099	0.088	0.078
15	0.209	0.183	0.160	0.140	0.123	0.108	0.095	0.084	0.074	0.065

Annuity table

Present value of an annuity of 1, i.e. $\dfrac{1-(1+r)^{-n}}{r}$

where   r = interest rate

n = number of periods

Periods (n)	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	1.808	.1783	1.759	1.736
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	3.993	3.890	3.791
6	5.795	5.601	5.417	5.242	5.076	4.917	4.767	4.623	4.486	4.355
7	6.728	6.472	6.230	6.002	5.786	5.582	5.389	5.206	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	8.566	8.162	7.786	7.435	7.108	6.802	6.515	6.247	5.995	5.759
10	9.471	8.893	8.530	8.111	7.722	7.360	7.024	6.710	6.418	6.145
11	10.37	9.787	9.253	8.760	8.306	7.887	7.499	7.139	6.805	6.495
12	11.26	10.58	9.954	9.385	8.863	8.384	7.943	7.536	7.161	6.814
13	12.13	11.35	10.63	9.986	9.394	8.853	8.358	7.904	7.487	7.103
14	13.00	12.11	11.30	10.56	9.899	9.295	8.745	8.244	7.786	7.367
15	13.87	12.85	11.94	11.12	10.38	9.712	9.108	8.559	8.061	7.606

Periods (n)	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%
1	0.901	0.893	0.885	0.877	0.870	0.862	0.855	0.847	0.840	0.833
2	1.713	1.690	1.668	1.647	1.626	1.605	1.585	1.566	1.547	1.528
3	2.444	2.402	2.361	2.322	2.283	2.246	2.210	2.174	2.140	2.106
4	3.102	3.037	2.974	2.914	2.855	2.798	2.743	2.690	2.639	2.589
5	3.696	3.605	3.517	3.433	3.352	3.274	3.199	3.127	3.058	2.991
6	4.231	4.111	3.998	3.889	3.784	3.685	3.589	3.496	3.410	3.326
7	4.712	4.564	4.423	4.288	4.160	4.039	3.922	3.812	3.706	3.605
8	5.146	4.968	4.799	4.639	4.487	4.344	4.207	4.078	3.954	3.837
9	5.537	5.328	5.132	4.946	4.772	4.607	4.451	4.303	4.163	4.031
10	5.889	5.650	5.426	5.216	5.019	4.833	4.659	4.494	4.339	4.192
11	6.207	5.938	5.687	5.453	5.234	5.029	4.836	4.656	4.586	4.327
12	6.492	6.194	5.918	5.660	5.421	5.197	4.988	4.793	4.611	4.439
13	6.750	6.424	6.122	5.842	5.583	5.342	5.118	4.910	4.715	4.533
14	6.982	6.628	6.302	6.002	5.724	5.468	5.229	5.008	4.802	4.611
15	7.191	6.811	6.462	6.142	5.847	5.575	5.324	5.092	4.876	4.675