CERTIFIED PUBLIC ACCOUNTANT

ADVANCED LEVEL 2 EXAMINATIONS

A2.1: STRATEGIC CORPORATE FINANCE

DATE: WEDNEDAY 26, NOVEMBER 2025

INSTRUCTIONS:

1. Time Allowed: **3 hours 45 minutes** (15 minutes reading and 3 hours 30 minutes writing).
2. This examination has **Two** sections**; A & B.**
3. Section **A** has **One** Compulsory Question while Section **B** has **Three Optional questions** to choose any **Two.**
4. In summary attempt **three questions.**
5. Marks allocated to each question are shown at the end of the question.
6. The question paper should not be taken out of the examination room.

SECTION A

QUESTION ONE

MULINDI Ltd

MULINDI Ltd is a Rwandan company that manufactures agricultural tools and machinery. For the past three years, the company has been operating from its base in Rwamagana District, where it has successfully built a strong presence in the manufacturing sector.

Part I: Before Investment

Following a year of strong performance, increased demand for construction materials around the country, along with the Rwandan government's strategic push to diversify the economy, the shareholders of MULINDI Ltd have decided to diversify the company's operation into cement production. This new venture will be based in Muhanga District, where the company plans to launch a new product line in to meet the growing demand for cement both local and across the region.

Rwamagana District, where the company currently operates its manufacturing facilities, has an equity beta of 1.5 this indicating that MULINDI Ltd's stock is more volatile than the overall market, reflecting a higher level of systematic risk such a beta is an important factor in evaluating the risk-adjusted return of its potential new ventures.

Furthermore, the company's debt-to-equity ratio at market values is 25:75, indicating a relatively conservative capital structure, with a greater reliance on equity financing compared to debt. This conservative financing approach provides MULINDI Ltd with a solid foundation for expansion and diversification into the cement production industry in Muhanga District, allowing it to pursue growth opportunities while effectively managing its financial risk.

The investment in Muhanga District facilities will require the acquisition of plant and equipment necessarily needed for manufacturing operations. These assets will have a useful life of 5 years. The total purchase cost of the plant and equipments is estimated at FRW 800 million, with an approved 2% trade discount at the purchase cost offered by the supplier. In addition, these other related costs include the installation costs FRW 5 million; the site preparation FRW 4 million; the delivery and handling costs FRW 7 million; the professional fees FRW6 millions and FRW 3 million for the machine testing.

At the end of the five-year period, the scrap value will be estimated at FRW 373million.The machine will attract the 25% per annum tax allowance on depreciation on reducing balance method with possible balancing allowance and or balancing charge at the end of its useful life to the project. The corporate income tax rate is 30% payable one year in arrears. Additional working capital of Frw 30 million and Frw 2 million will be required in Years 2 and 4, respectively, with the total amount being withdrawn in Year 5.

The project is expected to produce the following inflated cash flows for each of the five years of its life:

Years	2020	2021	2022	2023	2024
	FRW	FRW	FRW	FRW	FRW
Revenues	350,000,000	376,000,000	380,000,000	390,000,000	710,000,000
Operating costs	130,000,000	145,000,000	152,000,000	164,000,000	170,000,000

The investment in Muhanga District base will be structured using a balanced approach that combines both equity and debt financing to fund the project's initial costs. The total capital required for the investment will be split evenly between equity and debt, with 50% of the initial costs being raised through the issuance of new shares to existing shareholders through a right issue. This method of equity financing will come with a 5% issue cost on the amount raised, covering administrative and regulatory expenses tied to issuing the new shares.

The remaining 50% of the financing will be secured through a risk-free debt arrangement, which will be repaid over five equal annual installments. This debt is assumed to be tax-deductible, providing a tax shield and making debt financing more attractive from a cost perspective. However, the debt arrangement also incurs its own issue costs, set at 3% on the amount raised through the bank loan, which will contribute to the overall cost of the financing.

In terms of financial risk, Muhanga District base has an equity beta of 1.598, reflecting the company's lower volatility compared to the broader market with a debt-to-equity ratio of 40:60, indicating a more conservative capital structure with a higher proportion of equity financing relative to debt. The company's cost of capital will be influenced by the market risk premium, which is currently 4%, and the risk-free rate, set at 6%.

Previously, MULINDI Ltd relied on the Net Present Value (NPV) method to evaluate and determine the viability of potential projects, following the recommendation of the Finance Director. In 2025, the company appointed a new Chief Financial Officer (CFO), who was tasked with reviewing and advising on the most appropriate investment appraisal technique to guide future decisions. After careful consideration, the CFO recommended adopting the Adjusted Present Value (APV) approach as a more suitable and comprehensive method for evaluating investment opportunities. Consequently, MULINDI Ltd intends to use the APV method as the primary basis for its investment decision-making, replacing the previously applied NPV approach.

Part II: After investment

Following the proposed investment in the Muhanga District project, despite the company's successful diversification into the manufacture of cement and agricultural machinery, recent financial pressures including increased raw material costs, inflationary impacts, and reduced export demand have resulted in lower profit margins than forecasted. Consequently, the company's share price has declined by approximately 15% over the last quarter.

This downturn has intensified differences in strategic priorities between the management team and the shareholders. The shareholders, who include large institutional investors such as pension funds and agricultural cooperatives, have become increasingly vocal about the need for immediate returns through higher dividend payouts. They argue that increased dividends would help restore market confidence and partially offset the decline in share value.

The management team, however, has maintained a focus on long-term investment and reinvestment of profits into expanding production facilities, modernizing machinery, and funding product innovation. Management believes that these measures are essential to enhance competitiveness and safeguard future profitability, even if they limit current distributions to shareholders.

In response to the shareholders' concerns, the board issued a statement outlining the company's strategic direction. However, many shareholders viewed the communication as insufficient and overly optimistic, claiming that management has not been transparent about the underlying financial risks associated with the company's expansion strategy. There are growing suspicions that management's internal forecasts underestimate the short-term financial strain of the Muhanga District investment and related diversification projects.

The issue of managerial incentives has also attracted criticism. Some shareholders believe that the company's executive remuneration structure, which includes significant performance-based bonuses, is misaligned with the company's recent results and encourages risk-taking rather than prudent management. They argue that while management continues to pursue high-cost strategic initiatives, shareholders bear the immediate financial consequences through declining share values and restrained dividends.

Meanwhile, management contends that external pressures for higher dividends are short-sighted and could jeopardize liquidity, debt servicing, and the company's ability to fund strategic investments. Management insists that its compensation and incentive systems are necessary to retain senior technical and financial talent crucial for executing complex long-term projects.

Tensions have further escalated around corporate governance. Institutional investors have demanded increased representation on the company's board of directors, citing the need to strengthen accountability and ensure that management decisions reflect shareholder priorities. The board, however, has been hesitant to expand shareholder influence, warning that excessive external control might restrict managerial flexibility and slow down decision-making processes critical to the success of ongoing projects.

As a result, MULINDI Ltd now faces a widening divide between shareholders focused on short-term performance and management determined to pursue long-term growth. The challenge for the company lies in balancing these competing objectives in a way that sustains investor confidence while preserving strategic continuity.

Required:

a) Based on the information above about MULINDI Ltd**, evaluate the proposed investment in the Muhanga District Base using the Adjusted Present Value (APV) method, and provide a recommendation on whether to proceed with the investment.** (30 Marks)

b) Analyse THREE impacts of the project's financing mix (50% equity and 50% debt) on MULINDI Ltd's financial risk and cost of capital. (6 Marks)

c) Discuss THREE strategic considerations beyond financial evaluation that MULINDI Ltd's management should take into account before proceeding with the Muhanga District investment. (6 Marks)

d) Discuss FOUR agency problems faced by MULINDI Ltd and suggest appropriate measures to minimise them for sustainable long-term growth. (8 Marks)

(Total: 50 Marks)

SECTION B

QUESTION TWO

Pilipili Investment Ltd is a Rwandan multinational company engaged in international trade with Kenyan firms. During the current month, the company entered into several cross-border transactions. Imported goods valued at KSh 232 million from Magad ltd, payable in three months, and exported goods worth KSh 394 million to Kiwanza Ltd, also due for payment in three months. In addition, the company purchased goods from a Kenyan supplier amounting to KSh 894 million, with payment due in six months. While our supplier agreements include an early payment option, our current liquidity requires us to rely on borrowing to settle any invoices ahead of schedule.

Recent developments in regional markets have introduced new layers of uncertainty into Pilipili's operations. Sharp movements in regional currencies, partly influenced by fluctuating oil prices and divergent monetary policies across East Africa, have made it difficult for management to predict the final cost of transactions. At the same time, the firm's reliance on digital payment platforms and electronic documentation has grown, exposing it to vulnerabilities that were once insignificant but now require close monitoring.

Furthermore, shifting political priorities and regulatory realignments within the East African Community have created occasional delays in cross-border payments and customs clearances. Transport bottlenecks at major border points, coupled with increased freight insurance costs, have forced the company to reconsider its logistics strategy. Global supply disruptions and longer shipping times have also raised concerns about timely fulfillment of customer orders.

Management has observed that compliance procedures relating to environmental certifications and documentation standards are tightening, potentially affecting export competitiveness if not addressed proactively. In addition, inflationary pressures and periodic adjustments in local tax regulations are influencing both profit margins and the attractiveness of foreign market contracts. The company's finance team remains alert to these emerging developments as they weigh the benefits of expanding regional trade against the growing uncertainty in the global trading environment.

Other financial information related to Pilipili Investment Ltd operations are presented below:

Interest rates

Country	Deposit Rate (p.a.)	Borrowing Rate (p.a.)
Rwanda	6%	8%
Kenya	3%	5%

Exchange Rate Quotations (FRW per 1 KSh)

Period	Bid Rate	Ask Rate
Spot Rate	8.456	8.789
Three-Month Forward Rate	9.125	9.254
Six-Month Forward Rate	9.485	9.765

Currency Option Market (Premiums per KSh)

Option Type	Exercise Rate (FRW/KSh)	Premium (FRW per KSh)	Duration
KSh Put Option	9.1	0.08	3 months
KSh Call Option	9.2	0.09	3 months
KSh Put Option	9.6	0.1	6 months
KSh Call Option	9.7	0.12	6 months

Pilipili Investment expects the spot rate in three months to be approximately 9.00 FRW/KSh, and in six months to be around 9.80 FRW/KSh, based on current inflation differentials and interest rate expectations.

Required:

a) **Discuss FIVE international risks that Pilipili Investment Ltd faced during its operations.** (7.5 Marks)

b) **Using the above information, evaluate at least five possible hedging mechanisms including the use of forwards, money market hedges, currency options, leading/lagging and netting.** (17.5 Marks)

(Total: 25 Marks)

QUESTION THREE

a) Rutsiro Mines Ltd, a mining company that has been operating in Rutsiro District for over a decade, is currently exploring ways to enhance its financial performance and operational efficiency. The Chief Finance Officer (CFO) aims to explain how the company's shareholders can leverage its assets to amplify both asset utilization and earnings.

Additionally, the CFO intends to determine the proportion of fixed financial costs within the company's overall cost structure. This will involve analyzing the relationship between changes in net earnings available to shareholders and fluctuations in sales revenue an approach that will help assess the company's financial leverage and operating sensitivity.

As part of its strategic objectives, the company also plans to increase its production capacity by 20% from its current output level, positioning itself for growth and improved market competitiveness. The management of Rutsiro Mines Ltd is unsure of which source of finance to get the funds to finance the expected 20% growth.

The CFO has tasked the company's management accountant with providing the necessary information to support the calculations for these analyses. Below is the financial data extracted from the company's most recent management accounting system, covering the period ending December 2024

Details	Current Production Level	Expected Production
	Base Case	**20% increase**
	FRW'000	**FRW'000**
Sales	250,000	300,000
Material costs	85,000	102,000
Labour costs	62,500	75,000

Other variable costs	28,900	34,680
Total variable costs	**176,400**	**211,680**
Contribution	**73,600**	**88,320**

Additional information

1. The company's annual fixed costs are 31.6 million,
2. The company has 12% 200 million debts which will be fully repaid in 6 years' time,
3. Applicable tax rate is 30%,
4. Rutsiro Mines Ltd has one million shares in issue.

Required:

i) Calculate and interpret the company's degree of operating leverage (DOL) and degree of financial leverage (DFL). (8 Marks)

ii) Calculate and interpret the sensitivity of EPS to changes in company's sales (the degree of total gearing). (3 Marks)

iii)Briefly discuss and justify on the best order to source the finances to fund the 20% growth optimally. (2 Marks)

b) The Umurenge Pension Fund (UPF) is a private pension fund in Kigali, Rwanda, managing RWF 5 billion in assets on behalf of 1,200 employees. Its objective is to earn a minimum annual return of 12%, ensuring sustainable pension payments while protecting the real value of assets against inflation (currently 6%). And intend to preserve capital, maintain stable income flow, and ensure adequate liquidity (minimum 10% of assets).

Currently, 80% of its funds are in bank fixed deposits earning only 7%, which fails to meet the return target.

Available Investment Options

Asset	**Weight (Wi)**	**Expected Return (E(Ri))**	**Wi × E(Ri)**	**Standard Deviation (σi)**	**Bet a (βi)**	**Correlation with Market (ρi,m)**	**βi**
T-Bonds	25%	10%	3%	5%	0.4	0.5	0.4
Corporate Bonds	20%	12%	2%	7%	0.6	0.65	0.6
RSE Equities	25%	16%	4%	12%	1.1	0.85	1.1
Unit Trusts	20%	13%	3%	9%	0.8	0.75	0.8
Real Estate	10%	14%	1%	10%	0.7	0.6	0.7
Total / Portfolio	**100%**		**12.9%**				**0.77**

Additional Information:

1. Risk-free rate (Rf): 8% (BNR Treasury Bill rate)
2. Market return (Rm): 15%
3. Minimum liquidity requirement: 10% in Treasury Bonds

4. Sharpe Ratio: 0.65
5. Treynor Ratio: 6.36%
6. Jensen's Alpha: -0.49%
7. Time horizon: Over 20 years

The Board has hired Ikirenga Capital Ltd, a licensed portfolio management firm, to design a diversified investment portfolio that maximizes return for an acceptable level of risk.

Required:

As senior Investment analyst at Ikirenga Capital Ltd, Using the Portfolio Management Process, **explain and apply each step of the process to the UPF case.** **(**12 Marks)

No calculations are required and instead focus on explanation and interpretation at each stage.

(Total: 25 Marks)

QUESTION FOUR

NGAHIRO RWANDA Limited (NR Ltd) is a large listed company dealing in super markets with branches across the country.

Table below consists multiple information for NR Ltd and sector (supermarkets) for benchmarking purpose

	NR Ltd		**Sector Ratio**	
Ratios	**2020**	**2021**	**2020**	**2021**
Return on capital employed	9.70%	12%	10.60%	13.70%
Net profit margin	12%	13%	11.10%	12.80%
Asset turnover	1x	1.2x	0.95x	1.07x
Cash conversion cycle	75 days	95 days	69 days	95 days
Interest coverage times	2x	2.5x	2.9x	3.6x

The company has considered diversifying its portfolio and acquire Raisin Ltd a Fintech company dealing in payment integration services.

Raisin Ltd has presented its financial information for analysis purpose and aid in decision-making process. Below are extract financial statements of the target company that will be used in valuation of company.

Extract statement of profit or loss for the year ended 31st December 2021

	FRW (000)
EBIT	**866,526**
Financial expenses	-387,973
Pre-Tax Net Income	**478,553**
Income Tax charge	-61,547
Net Income	**417,006**

Extract statement of financial position as at 31st December 2021

	FRW (000)
Non-Current Assets	**1,406,777**
Current Assets	**3,462,821**
Total Assets	**4,869,598**
Equity and liabilities	
Share Capital (Frw 10,000 par value)	4,083,841
Consolidated Reserves	(3,801,458)
Other Equity	542,194
Net Result - Part of the Group	417,006
Shareholders' Equity	**1,241,584**
Minority Interests	**3,871**
Non-Current Liabilities	**1,315,745**
Current Liabilities	**2,308,398**
Total Liabilities & Shareholder Equity	**4,869,598**

Further to the above financial information, the management has researched from listed companies from the same sector (Fintech) to get their Price to Earnings Ratios (P/E) and the following has been produced in respect to that. It was noted that there will be a need to discount relevant P/E by 30% to cater for the risk embedded in the target company resulting from not being listed and size of company compared to its benchmark.

Companies	P/E Ratio
CNBG Ltd	12
BNG Ltd	8
CMUI Ltd	10
Cardinal Ltd	14

NGAHIRO RWANDA Limited (NR Ltd) is also considering investing in a multicurrency cocktail bond issued by a European Development Bank.

Details of the bond are as follows:

- Nominal value: USD 10,000
- Coupon rate: 6% per annum (paid annually)
- Term: 3 years
- Repayment of principal: At maturity, principal is repaid as a basket of three currencies in the following proportions:

    1. 40% in EUR
    2. 35% in GBP
    3. 25% in JPY

The following are the exchange rates:

Currency	Spot Rate (per 1 USD) at Year 0	Spot Rate (per 1 USD) at Year 3
EUR	0.85	0.9
GBP	0.75	0.72
JPY	110	115

Required:

a) **You have been requested by the CFO to analyse NR Ltd's performance relative to the sector using ratios provided.** (7.5 Marks)

b) **By using earning method to value the company, determine the value at which the company will be bought.** (5 Marks)

c) **Discuss THREE arguments for and TWO arguments against a Listed company going private**. (5 Marks)

d) **Compute the total USD return and annualized return rate from the bond over 3 years.** (7.5 Marks)

(Total: 25 Marks)

End of Question Paper

Present value interest factor of Frw1 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

Present value interest factor of an (ordinary) annuity of Frw1 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

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