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Mid Term Exam (SUGGESTED SOLUTIONS)
Intermediate Financial Accounting II
Winter 2017
ADM3340 Section M

Name: _____ **ID#:** _____

INSTRUCTIONS

- Write your name and student ID number above and indicate your section.
- Display your student ID on your desk during the exam.
- Reminder: it is an offence to have a cell phone or any other communication device in your possession during this exam's 2½ hours. (see the Statement of Academic integrity on page 2 of this exam).
- This examination "SUGGESTED SOLUTION" comprises 3 multi-part questions over 20 numbered pages.
- Answer all questions in this booklet.
- Booklet is **not** to be removed from the examination room. You may not separate the pages.
- Do not answer questions using a pencil or erasable pen: if you do you will forfeit the right to ask that your exam be remarked.
- Limit your answer to the space provided. Blank sheets for rough work and supporting calculations are given at the end of each question.
- This exam will be marked out of 100 marks (for convenience) and is 2½ hours long. You should budget approximately 1.5 minutes per mark. The exam is worth 35% of the overall course mark.
- Please do not ask the invigilator or the professor any questions, as they will not be answered. State reasonable assumptions, if you feel they are necessary.
- This exam paper must remain stapled: do not take this exam paper apart.
- Present value tables are provided on pages 18 and 19.
- Language (non-electronic) dictionaries are allowed with the proctor's permission.
- You must provide an audit trail for any answers you generate with an electronic calculator.
- You ***must*** sign the Statement of Academic integrity on page 2 of this exam.

	Question		Marks
Ch 12	1: part 1	Goodwill; acquisition.	/11
	1: part 2	Intangibles & Goodwill: impairment under IFRS.	/10
	1: part 3	Definition: intangible asset.	/3
Ch 13	2: part 1	ARO.	/6
	2: part 2	Premiums.	/11
	2: part 3	Liability: definition.	/3
	2: part 4	Contingencies.	/7
	2: part 5	Non-accumulating compensated absence.	/7
Ch 14	3: part 1	Bond liabilities: issuance.	/10
	3: part 2	Bond liabilities: retirement.	/14
	3: part 3	Bond liabilities: exchange.	/12
	3: part 4	Note issued for cash and other rights.	/6
	TOTAL		/100

Statement of Academic Integrity
The Telfer School of Management does not condone academic fraud, an act by a student that may result in a false academic evaluation of that student or of another student. Without limiting the generality of this definition, academic fraud occurs when a student commits any of the following offences: plagiarism or cheating of any kind, use of books, notes, mathematical tables, dictionaries or other study aid unless an explicit written note to the contrary appears on the exam, to have in his/her possession cameras, radios (radios with head-sets), tape recorders, pagers, cell phones, or any other communication device which has not been previously authorized in writing.

Statement to be signed by the student:
I have read the text on academic integrity and I pledge not to have committed or attempted to commit academic fraud in this examination.

Signed:_____

Note: an examination copy or booklet without that signed statement will not be graded and will receive an exam grade of zero.

QUESTION 1 (24 marks)
Answer ALL parts to this question. Each part is independent.

PART 1: (11 marks)

On July 31, 2017, Rockland Corporation purchased the net assets of Orleans Company by paying $254,000 cash to Orleans Company's shareholders. At July 31, 2017, the statement of financial position of Orleans Company was as follows:

Cash	$ 75,000	Accounts payable	$210,000
Accounts receivable	102,000	3%, $100,000 Bond Liability, due 1/1/2022	90,000
Inventory	98,000	Shareholders' Equity	239,000
Land	50,000		
Buildings (net)	75,000		
Equipment (net)	90,000		
Trademarks (net)	49,000		
	$539,000		$539,000

The recorded amounts all approximate current values except for land (worth $60,000), inventory (worth $125,000), trademarks (worthless), and the bond liability (fair value $85,000). The receivables are shown net of an allowance for doubtful accounts of $12,000. The amounts for buildings, equipment, and trademarks are shown net of accumulated amortization of $14,000, $23,000, and $47,000, respectively.

Required (Show all supporting calculations)

Prepare the July 31, 2017 journal entry for Rockland Corporation to record the purchase.

	Cash	**75,000**	
	Accounts Receivable	**114,000**	
	Inventory	**125,000**	
	Land	**60,000**	
	Buildings	**75,000**	
	Equipment	**90,000**	
	Goodwill	**22,000**	
	Allowance for Doubtful Accounts		**12,000**
	Accounts Payable		**210,000**
	Bond Liability		**85,000**
	Cash		**254,000**

QUESTION 1 (24 marks) (continued)
Answer ALL parts to this question. Each part is independent.

PART 2: (10 marks)

	Limited-Life Intangible Assets.	Indefinite-Life Intangible Assets.	Goodwill [the values below pertain to the Cash-Generating-Unit, including its Goodwill].
Carrying amount	$8,000,000	$8,000,000	$32,000,000
Fair value	$7,210,000	$7,210,000	$32,300,000
Undiscounted future cash flows from use and eventual sale	$9,000,000	$8,200,000	$40,000,000
Present value of the future cash flows from use and eventual sale	$6,000,000	$7,200,000	$31,500,000
Costs to sell	$40,000	$40,000	$500,000

Required:
Using the above data complete the following grid, applying IFRS:

	Under IFRS		
	Limited-Life Intangible Assets.	Indefinite-Life Intangible Assets	Goodwill [the values below pertain to the Cash-Generating-Unit, including its Goodwill].
Is the asset impaired? Show supporting calculations.	Yes, because the carrying amount of **$8,000,000 exceeds** the recoverable amount (defined by IAS 36.6) of **$7,170,000** [which is the higher of the fair value $7,210,000 less the costs to sell of $40,000, and the present value of the future cash flows from use and eventual sale $6,000,000].	Yes, because the carrying amount of **$8,000,000 exceeds** the recoverable amount (defined by IAS 36.6) of **$7,200,000** [which is the higher of the fair value $7,210,000 less the costs to sell of $40,000, and the present value of the future cash flows from use and eventual sale $7,200,000].	Yes, because the carrying amount of **$32,000,000 exceeds** the recoverable amount (defined by IAS 36.6) of **$31,800,000** [which is the higher of the fair value $32,300,000 less the costs to sell of $500,000, and the present value of the future cash flows from use and eventual sale $31,500,000].
If the asset is deemed to be impaired, what is the amount of the impairment loss to be recognized in the income statement? Show supporting calculations.	**$830,,000** [= the carrying amount of $8,000,000 less the recoverable amount of $7,170,000].	**$800,000** [= the carrying amount of $8,000,000 less the recoverable amount of $7,200,000.	**$200,000** [= the carrying amount of $32,000,000 less the recoverable amount of **$31,800,000** . The $200,000 loss is allocated to the assets in accordance with IAS 36.104 and IAS 36.105.
(a) Can an impairment loss reversal be recognized in a subsequent period, and if so, (b) what is the limit, if any, to the reversal? Assume the company uses the cost model (i.e., not the revaluation model) subsequent to acquisition.	(a) Yes, under both the cost and revaluation models. (b) IAS 36.117: The increased carrying amount of an asset other than goodwill attributable to a reversal of an impairment loss shall not exceed the carrying amount that would have been determined less the amortisation or depreciation) had no impairment loss been recognised for the asset in prior years.	(a) Yes, under both the cost and revaluation models. (b) IAS 36.117: The increased carrying amount of an asset other than goodwill attributable to a reversal of an impairment loss shall not exceed the carrying amount that would have been determined less the amortisation or depreciation) had no impairment loss been recognised for the asset in prior years. [Comment: remember that an indefinite-life asset would have $0 accumulated amortization].	(a) No: IAS 36.124: An impairment loss recognised for goodwill shall not be reversed in a subsequent period. IAS 36.125: IAS 38 Intangible Assets prohibits the recognition of internally generated goodwill. Any increase in the recoverable amount of goodwill in the periods following the recognition of an impairment loss for that goodwill is likely to be an increase in internally generated goodwill, rather than a reversal of the impairment loss recognised for the acquired goodwill. (b) Not applicable

Comments in red not required in students' answers.

QUESTION 1 (24 marks) (continued)
Answer ALL parts to this question. Each part is independent.

PART 3: (3 marks)

What are *intangible assets*, according to generally accepted accounting principles?

Solution (see also page 695 in Kieso et al, 11th Can Ed.)
Intangible assets are assets that are:

1. individually identifiable (results from contractual or other legal rights, or can be separated or divided from the entity and sold, transferred, rented, or exchanged);
2. have a non-physical existence; and
3. are non-monetary in nature.

QUESTION 2 (34 marks)
Answer ALL parts to this question. Each part is independent.

PART 1: (6 marks)

Jayapura Mines International Ltd discovered a new copper deposit in North Sulawesi, the Langoan Mine, and began production on January 1, 2017. The state requires mining companies to return the land to its natural state at the end of mining activity. Jayapura Mines International Ltd estimates that it will operate the mine for 20 years, at which time it will cost $20,000,000 for the land reclamation project. Jayapura Mines International Ltd uses a 6% discount rate. The company has adopted IFRS for its financial reporting.

Required (Show all supporting calculations and an audit trail when using a financial calculator)
(a) Record any obligation for land reclamation as at January 1, 2017.
(b) Record any entry required related to this obligation at December 31, 2017.

(a) January 1, 2017

Langoan Mine	**6,236,095**	
Asset Retirement Obligation		**6,236,095**

$6,236,095 is the present value of the $20,000,000 estimated cost discounted for 20 years at 6%.

(b) December 31, 2017

Accretion*/Interest Expense**	**374,165**	
Asset Retirement Obligation		**374,165**

$374,165 is the increase in the present value that occurs because you are one year closer to the expenditure. Present value of $20,000,000 discounted for 19 years at 6% ($6,610,260) less $6,236,095.
OR 6,236,095 x 6% = 374,165

*** ASPE (not asked by the question)**
**** "Interest" or "Financing" under IFRS**

QUESTION 2 (continued) (34 marks)
Answer ALL parts to this question. Each part is independent.

PART 2: (11 marks)

Dhoni Ltd. sells pies in an increasingly competitive market. In January 20XX Dhoni Ltd. commenced a premium promotion program with the objective of increasing its pie sales by providing pie-customers with coupons which can be redeemed along with a cash payment in exchange for baking-pans.

In 20XX Dhoni Ltd. purchased 150,000 baking-pans for $3.00 each for the promotion program. To acquire a baking-pan a customer must submit $2.50 cash and five coupons to Dhoni. Each baking-pan costs the company $3.00, and an additional $1.00 when shipping it to the customer. Each pie sold is accompanied by one coupon. A pie costs Dhoni Ltd. $4.00 and sells for $10.00. Using the relative stand-alone selling price basis, Dhoni Ltd. determines that $1.50 of this $10.00 pertains to the one coupon that accompanies each pie.

In 20XX Dhoni Ltd. sold 1,200,000 pies (with 1,200,000 accompanying coupons) and, based on its experience with similar premium promotion programs, estimates that 60% of these coupons will be redeemed. 504,000 coupons were actually redeemed by the end of 20XX. Dhoni Ltd.'s accounting year-end is 31 December.

Required
Prepare the journal entries that should be recorded in 20XX relative to the premium promotion program, assuming that Dhoni Ltd. follows a policy of charging the full cost of the premium promotion program to expense when the sales are recognized. ['Expense Approach #2'].

41	Premium promotion program - baking-pan inventory	450,000	
42	Cash/payables		450,000
43	*To record purchase of premium promotion program - baking-pan inventory: $450,000 = 150,000 x $3.00.*		
44	Cash	12,000,000	
45	Sales revenue (pies)		12,000,000
46	*To record sale of pies: $12,000,000 = 1,200,000 x $10.00.*		
47	Cost of goods sold (pies)	4,800,000	
48	Inventory (pies)		4,800,000
49	*To record cost of pies sold: $4,800,000 = 1,200,000 x $4.00.*		
50	Premium promotion program expense	216,000	
51	Premium promotion program liability		216,000
52	*To record the estimated expense of the premium promotion program associated with this year's pie sales. The total estimated premium promotion program liability associated with the sale of 1,200,000 pies is $216,000 = [1,200,000 x 1 coupons issued]/[5 coupons required per baking-pan] x 60.00% estimated to be redeemed x [$3.00 + $1.00 - $2.50].*		
53	Premium promotion program liability	302,400	
54	Premium promotion program - baking-pan inventory		302,400
55	*The 504,000 coupons actually redeemed this year resulted in 100,800 (504,000/5 coupons) baking-pans being sent to customers. $302,400 = 100,800 baking-pans x $3.00 purchase price per baking-pan.*		
56	Cash	151,200	
57	Premium promotion program liability		151,200
58	*$151,200 = 100,800 baking-pans x $1.50: $1.50 = $2.50 cash paid by a customer for each baking-pan redeemed less $1.00 cash cost of shipping a baking-pan to the customer.*		
59			
60	This journal entry can be used instead of the two preceding journal entries:		
61	Premium promotion program liability	151,200	
62	Cash	151,200	
63	Premium promotion program - baking-pan inventory		302,400
64	*The 504,000 coupons actually redeemed this year resulted in 100,800 (504,000/5 coupons) baking-pans being sent to customers. $302,400 = 100,800 baking-pans x $3.00 purchase price per baking-pan. $151,200 = 100,800 baking-pans x $1.50: $1.50 = $2.50 cash paid by a customer for each baking-pan redeemed less $1.00 cash cost of shipping a baking-pan to the customer.*		

QUESTION 2 (continued) (34 marks)
Answer ALL parts to this question. Each part is independent.

PART 2: (11 marks) (continued)

Prepare the journal entries that should be recorded in 20XX relative to the premium promotion program, assuming that Dhoni Ltd. follows IFRS 15's contract-based approach [sometimes called the 'revenue approach'] when accounting for premium promotion programs.

74	Premium promotion program - baking-pan inventory	450,000	
75	Cash/payables		450,000
76	*To record purchase of premium promotion program - baking-pan inventory: $450,000 = 150,000 x $3.00.*		
77			
78	Cash	12,000,000	
79	Sales revenue (pies)		10,200,000
80	Unearned revenue (premium promotion program - baking-pans)		1,800,000
81	*To record (a) revenue earned from the sale of pies, and (b) unearned revenue from coupons for baking-pans. Of the $10.00 paid by a customer for each pie, $1.50 (or 15.0000% = $1.50/$10.00) is attributable to the premium promotion program -coupon. Thus, of the $12,000,000 [1,200,000 pies sold this year x $10.00 selling price per pie.], $1,800,000 (= 15.0000% x $12,000,000) is unearned revenue.*		
82			
83	Cost of goods sold (pies)	4,800,000	
84	Inventory (pies)		4,800,000
85	*To record cost of pies sold: $4,800,000 = 1,200,000 x $4.00.*		
86			
87	Unearned revenue (premium promotion program - baking-pans)	1,260,000	
88	Sales revenue (premium promotion program - baking-pans)		1,260,000
89	*To record revenue earned on 100,800 baking-pans exchanged for the 504,000 coupons redeemed this year. $1,260,000 = 70.000000% x $1,800,000. Remember that 100,800 baking-pans is 70.000000% of the estimated total of 144,000 baking-pans = [1,200,000 x 1/5coupons x 60.00%] to be redeemed and arising from this year's pie sales and is the 'pattern of rights exercised by the customer' (see also IFRS 15's paragraph B46 on the IFRS15-excerpt screen).*		
90			
91	Cash	151,200	
92	Cost of goods sold (premium promotion program)		151,200
93	*To record $151,200 = 100,800 baking-pans x $1.50: $1.50 = $2.50 cash paid by a customer for each baking-pan redeemed less $1.00 cash cost of shipping a baking-pan to the customer.*		
94			
95	Cost of goods sold (premium promotion program)	302,400	
96	Premium promotion program - baking-pan inventory		302,400
97	*To record the cost of the baking-pan-inventory redeemed by customers. $302,400 = 100,800 baking-pans x $3.00 purchase price per baking-pan.*		

QUESTION 2 (continued) (34 marks)
Answer ALL parts to this question. Each part is independent.

PART 3: (3 marks)

Define *liability* under IFRS.

IFRS and ASPE *currently* define a liability as

i. **An obligation of an enterprise**
ii. **Arising from past transactions or events**
iii. **The settlement of which may result in the transfer or use of assets, provision of services, or other yielding of economic benefits in the future.**

Excerpt from IAS 37.10: *A liability is (i) a present obligation of the entity (ii) arising from past events, (iii) the settlement of which is expected to result in an outflow from the entity of resources embodying economic benefits.* (numbers, i, ii, iii, added)

Because it explicitly includes item iii. this is a preferable and easier to understand definition (& provided in the "Ch13 in-class slides") than that provided in Kieso et al's 11th edition page 793, Illustration 13-1.

PART 4: (7 marks)

Three independent situations follow.

Situation 1: During 2017, Ratnatunga Inc. became involved in a tax dispute with the Canada Revenue Agency (CRA). Ratnatunga 's tax lawyers have informed management that Ratnatunga will likely lose this dispute. They also believe that Ratnatunga will have to pay the CRA between $800,000 and $1.6 million. After the 2017 financial statements were issued, the case was settled with the CRA for $1.2 million.

Required

What amount, if any, should be reported as a liability for this contingency as at December 31, 2017, assuming that Ratnatunga follows ASPE? Briefly explain your answer.

The *CPA Canada Handbook for Private Enterprises section 3290* requires that, when some amount within the range appears at the time to be a better estimate than any other amount within the range, that amount be accrued. When no amount within the range is a better estimate than any other amount, the dollar amount at the low end of the range is accrued and the range is disclosed. Since the information indicates that it is likely that a liability has been incurred at December 31, 2017, and a range of possible amounts can be reasonably determined, the criteria for recording a liability are met. In this case, therefore, Ratnatunga Inc. would report a liability of $800,000 at December 31, 2017 and disclose the range of $800,000 to $1.6m.

Situation 2: Toward the end of Penguins Corp.'s 2017 fiscal year, employer-union talks broke off, with the wage rates for the upcoming two years still unresolved. Just before the new year, however, a contract was signed that gave employees a 5% increase in their hourly wage effective January 1, 2018. Penguins had spent $1.5 million in wages on this group of workers in 2017.

Required

Prepare the entry, if any, that Penguins Corp. should make at December 31, 2017. Briefly explain your answer.

Penguins Corp. would not be required to make any entry. The wage increase is for the coming two years and does not relate to the current or prior years.

QUESTION 2 (continued) (34 marks)
Answer ALL parts to this question. Each part is independent.

PART 4: (7 marks) (continued)

Situation 3: Orleans Inc. had a manufacturing plant in a foreign country that was destroyed in a civil war. It is not certain who will compensate Orleans for this destruction, but Orleans has been assured by that country's government officials that it will receive a definite amount, at least $25,000,000 for this plant. The compensation amount will be less than the plant's $35,000,000 fair value, but more than its $20,000,000 carrying amount.

Required
How should the contingency be reported in the financial statements of Orleans Inc. under ASPE?

This is a gain contingency because the amount to be received will be in excess of the carrying amount of the plant. Under both ASPE and IFRS [IAS 37.31-35], gain contingencies are not recorded and are disclosed in the notes only when the probabilities are high ["probable" under IAS 37.31-35] that a gain contingency will become a reality.

QUESTION 2 (continued) (34 marks)
Answer ALL parts to this question. Each part is independent.

PART 5: (7 marks)

Goldwing Corporation offers enriched parental benefits to its staff. While the government provides compensation based on Employment Insurance legislation for a period of 12 months, Goldwing increases the amounts received and extends the period of compensation. The benefit program tops up the amount received to 100% of the employee's salary for the first 12 months, and pays the employee 75% of his or her full salary for another six months after the Employment Insurance payments have ceased.

Zeinab Jolan, who earns $54,000 per year, applies for maternity leave on June 15, 2017. On October 29, 2017, nine weeks before the end of the calendar year and Goldwing's fiscal year, Zeinab applied for and began her 18-month maternity leave. Assume that the Employment Insurance program pays her a maximum of $720 per week for 52 weeks.

For the purpose of this question, ignore any income tax, CPP, and EI deductions when making payments to Zeinab.

Required

Prepare all journal entries that Goldwing Corporation must make during its 2017 fiscal year related to the maternity benefits plan in regard to Zeinab Jolan. Include the date of each entry. (Round all answers to the nearest dollar).

June 15, 2017 *:

Employee Benefit Expense	**36,810**	
Parental Leave Benefits Payable		**36,810**

This is an example of a "non-accumulating" compensated absence where the entire expense and liability are recognized when the event that obligates the entity occurs.*

*** See ASPE 3461 & IAS 19.11-16:** ***For maternity/paternity leave & disability leave, the application for leave is the event that obligates the corporation.***

The question explicitly provides June 15, 2017 as the date on which Zeinab applies for the leave. The calculation below of the $36,810 Parental Leave Benefits Payable is independent of the date on which Zeinab applies for the leave.

****Salary for 12 months**	**$54,000**
Less: employment insurance payments ($720/week X 52 weeks)	**(37,440)**
Subtotal	**16,560**
Salary for 6 months at 75% ($54,000 X 6/12 X 75%)	**20,250**
Employee Benefit Expense	**$36,810**

Zainab's parental leave commences on October 29, 2017. For each of the 9 weeks from October 29, 2017 to December 31, 2017, Goldwing Corporation will pay Zeinab Jolan a top up amount and record the payments as follows:

Parental Leave Benefits Payable	**319**	
Cash		**319**

($54,000 – $37,440) ÷ 52 weeks = $318.46

QUESTION 3 (42 marks)
Answer ALL parts to this question. Each part is independent.

PART 1: (10 marks)
On December 1, 2017 BondBeagle Inc. issues $2,000,000 face value bonds. The bond date is August 1, 2017, and the bonds carry a coupon rate of 4% per year, payable semi-annually on January 31 and July 31. The bonds' maturity date is July 31, 2027. The bonds provide an annual yield of 6%.

BondBeagle Inc. uses the effective interest rate method to amortize any bond premium or discount. BondBeagle Inc.'s accounting year-end is August 31.

Required (you must show all supporting calculations, including an audit trail if using a financial calculator)
Prepare all of the relevant journal entries to record the bond issuance.

This "date table' is not required in students' answers. Source: www.bondbeagle.com

BondBeagle: Accounting for the Life-Cycle Events of Non-Convertible Bond Liabilities

Reset Recalculate

Intro | INPUT | Text | Date_Tables | Issuance_Calc | Issuance | I1 | I2 | I3 | I4 | I5 | Retirement | R1 | R2 | R3 | R4 | R5 | M

	A	B	C	D
2		TABLE 1 ISSUANCE		
3		Screen		
4			July 31, 2017	The closest preceding interest payment date to the issuance date
5			4	Number of months (rounded to the nearest whole month) between the issuance date and its closest preceding interest payment date.
6		Issuance	December 1, 2017	Date of issuance
7			2	Number of months (rounded to the nearest month) between the date of issuance and its first following interest payment date
8		I1	January 31, 2018	The first interest payment date after the issuance date

This table is not required in students' answers.

Intro | INPUT | Text | Date_Tables | Issuance_Calc | Issuance | I1 | I2 | I3 | I4 | I5 | Retirement | R1 | R2 | R3 | R4

	B	C	D	E	F	G	H
2							
3	Face value		$2,000,000				
4	Stated interest rate		4.00%	per year = 2.0000% semi-annually.			
5	Effective interest rate (Yield)		3.00%	semi-annually.			
6	Issue date		December 1, 2017, 4 months after July 31, 2017, the closest preceding interest payment date.				
7	Maturity date		July 31, 2027, 6 months after January 31, 2027, the closest preceding interest payment date.				
8							
9	Accrued interest payable on the issuance date					26,666.67	= $2,000,000 x 4.0000% x 4/12 months
10	Bond proceeds, excluding any accrued interest and issuance costs (see detailed calculation below)					1,709,832.85	= $1,702,451 + [($1,713,524 - $1,702,451) x 4/6 months]
11	Face value of bonds					2,000,000.00	
12	Bond discount					-290,167.15	= $1,709,833 - $2,000,000
13							
14	Total proceeds on issuance, including accrued interest payable					1,736,499.51	= $1,709,833 + $26,667
15							
16	The closest preceding interest payment date to the issuance date is					July 31, 2017	(4 months before December 1, 2017)
17	Issuance date					December 1, 2017	
18	The first interest payment date after the issuance date is					January 31, 2018	(2 months after December 1, 2017)

QUESTION 3 (42 marks) (continued)
Answer ALL parts to this question. Each part is independent.

PART 1: (10 marks) (continued)

This table is not required in students' answers.

		If the bonds were issued on:	
		July 31, 2017	January 31, 2018
		There would be 20 semi-annual interest payments (120 months) between July 31, 2017 and the maturity date, July 31, 2027	There would be 19 semi-annual interest payments (114 months) between January 31, 2018 and the maturity date, July 31, 2027
23	Present value of the bond's 20.00 semi-annual interest payments of $40,000 (= $2,000,000 x 4.0000%/2) at 3.0000% effective interest rate [$595,099 = 14.87747486 x $40,000]	595,098.99	
24	Present value of the maturity value of $2,000,000 at the end of 20.00 periods at 3.0000% effective interest rate [$1,107,352 = 0.55367575 x $2,000,000]	1,107,351.51	
25	Present value of the bond's 19.00 semi-annual interest payments of $40,000 (= $2,000,000 x 4.0000%/2) at 3.0000% effective interest rate [$572,952 = 14.32379911 x $40,000]		572,951.96
26	Present value of the maturity value of $2,000,000 at the end of 19.00 periods at 3.0000% effective interest rate [$1,140,572 = 0.57028603 x $2,000,000]		1,140,572.05
27	Total	1,702,450.50	1,713,524.02
28	Bond proceeds, excluding any accrued interest and issuance cost, on December 01, 2017 (which lies between July 31, 2017 and January 31, 2018). $1,709,833 = $1,702,451 + {[($1,713,524 - $1,702,451)/6months] x 4months}	1,709,832.85	

Intro | INPUT | Text | Date_Tables | Issuance_Calc | **Issuance** | I1 | I2 | I3 | I4 | I5 | Retirem

	B	C	D	E
2	December 01, 2017	Date of issuance	Dr	Cr
3				
4	Bond discount		290,167.15	
5	Cash		1,736,499.51	
6		Interest payable		26,666.67
7		Bonds payable		2,000,000.00
8				
9				

To record the issuance of 10.00-year bonds, face value $2,000,000, stated interest rate 4.0000% per annum.
The bond date is August 01, 2017 with interest paid semi-annually.
There are 116 months (including 20 interest payments) between the bond's issuance and maturity dates.
For details of how this journal entry's amounts are determined, please refer to the ISSUANCE_CALC sheet.

QUESTION 3 (42 marks) (continued)
Answer ALL parts to this question. Each part is independent.

PART 2: (14 marks)

On December 1, 2017 BondBeagle Inc. issues $1,000,000 face value bonds. The bond date is August 1, 2017, and the bonds carry a coupon rate of 4% per year, payable semi-annually on January 31 and July 31. The bonds' maturity date is July 31, 2037. Proceeds upon issuance, excluding accrued interest, were $770,896, and the bonds provide an annual yield of 6%.

BondBeagle Inc. uses the effective interest rate method to amortize any bond premium or discount. On September 30, 2027 BondBeagle Inc. retires 60% ($600,000 face value) of the bonds at 102.50%, excluding accrued interest. BondBeagle Inc.'s accounting year-end is August 31.

Required (you must show all supporting calculations, including an audit trail if using a financial calculator)
Present all necessary journal entries on the date of retirement.

This "date table" is not required in students' answers.

TABLE 2 RETIREMENT

Screen		
	July 31, 2027	The closest preceding interest payment date to the retirement date
	1	Number of months (rounded to the nearest month) between (a) the closest preceding interest payment date to the retirement date and (b) the closest preceding accounting year-end date to the retirement date
	August 31, 2027	The closest preceding accounting year-end date to the retirement date
	1	Number of months (rounded to the nearest month) between (a) the closest preceding accounting year-end date to the retirement date and (b) the date of retirement
Retirement	**September 30, 2027**	**Date of retirement**
	4	Number of months (rounded to the nearest whole month) between the retirement date and the first interest payment date after the retirement date
R1	January 31, 2028	The first interest payment date after the retirement date

Intro | INPUT | Text | Date_Tables | Issuance_Calc | Issuance | I1 | I2 | I3 | I4 | I5 | Retirement | R1 | R2 | R3 | R4 | R5 | Maturity | Amort

Carrying amount at August 1, 2027 = $851,225 = $297,549 [PVA, 20 periods, 3%, $20k] + $553,676 [PV, 20 periods, 3% $1m]

Instructions:
Enter your data in the INPUT screen: all other screens are "Output screens".

	Date of retirement	Dr	Cr	
3	September 30, 2027			
4	Interest expense	2,553.68		= $851,225 (net bond liability at beginning of August 01, 2027) x 3.000000% (semi-annual yield) x 1/6 months x 60.0000% retired.
5	Bond discount		553.68	= $2,554 - $2,000
6	Interest payable		2,000.00	= $1,000,000 x 60.0000% retired x 1/12 months x 4.0000%
7				
	To record interest expense incurred on 60.0000% of the bonds between August 31, 2027 (the closest preceding accounting year-end date to the retirement date) and September 30, 2027. Effective interest rate method. [Note: September 30, 2027 is neither an accounting year-end or a bond interest payment anniversary date.]			
9				
10				
11				
12	Loss on retirement	103,157.50		= ($619,000 - $4,000 + $88,157) - ($600,000)
13	Interest payable	4,000.00		= $2,000 (see above journal entry) + $2,000 (= $1,000,000 x 60.0000% retired x 1/12 months x 4.0000% accrued at August 31, 2027) July 31, 2027 is the closest preceding interest payment date to the date of retirement.
14	Bond payable	600,000.00		= $1,000,000 x 60.0000% retired
15	Bond discount		88,157.50	= $148,775 x 60.00% (unamortized at beginning of August 01, 2027) - $1,107 [$1,107 = ($851,225 x 3.000000% yield x 2/6 x 60.00%) - ($1,000,000 x 2.0000% interest paid x 2/6 x 60.00%) amortization, July 31, 2027 to September 30, 2027 on the 60.00% retired)]. July 31, 2027 is the closest preceding interest payment date to the date of retirement.
16				
17	Cash		619,000.00	= $615,000 (=$1,000,000 x 60.0000% x 102.5000%) + $2,000 accrued (as appears in the journal entry above) + $2,000 accrued at August 31, 2027
18				
19	To record the retirement at 102.5000% of 20.00 year 4.0000% bonds, issued December 01, 2017, face value $600,000.			

Use Ctrl+ and Ctrl- to zoom in and out.

QUESTION 3 (42 marks) (continued)
Answer ALL parts to this question. Each part is independent.

PART 3: (12 marks)

On January 1, 2015 Debtor Limited issued a 2 year 8% $1,000,000 bond payable to Creditor Bank. Interest payment dates are June 30 and December 31 and the bonds were issued to provide an annual yield of 6%. By December 2016 Debtor Limited is in financial difficulties and is about to miss the December 31, 2016 interest payment. Debtor Limited negotiates an arrangement with Creditor Bank whereby Creditor Bank agrees to waive the December 31, 2016 interest payment and to replace, effective December 31, 2016, the above bond with a 2 year $850,000 face value bond bearing 10% annual interest, payable semi-annually. Due to Debtor Limited's precarious situation, lenders would normally seek an annual return of 14% on this 'bail-out' financing.

Required (you must show all supporting calculations, including an audit trail when using a financial calculator)

(a) Is this troubled debt restructuring/exchange a *settlement* (substantially different in accordance with IFRS 9.3.3.2 and ASPE 3856.27) or a *modification* (not substantially different in accordance with IFRS 9.3.3.2 and ASPE 3856.27)? Support your answer with all necessary calculations. (6 marks)

(b) Assume this troubled debt restructuring is a *settlement*. Provide any journal entries for the *settlement* on Debtor Limited's books that may be necessary on December 31, 2016. Support your answer with all necessary calculations. (3 marks)

(c) Assume this troubled debt restructuring is a *modification* and that **-0.516292829%** is the effective semi-annual interest rate (yield, discount rate, market-rate, IRR) implicit in the terms of the new financial arrangement. Prepare Debtor Limited's journal entry necessary on June 30, 2017 for its liability to Creditor Bank. Support your answer with all necessary calculations. (3 marks)

(a)

Derecognition of financial liabilities through (i) an exchange with an existing lender or (ii) modification of terms, in accordance with IFRS 9 and Canadian ASPE.

Reset Recalculate

TDR | Steps1and2 | Step3_Substantial | Step3_NotSubstantial | IRR | IFRS_9 | ASPE_3856 | OtherApps

	A	B	C	D	E	F	G
1	Step 1:	Compare the new financing arrangement and the old financial liability using the old financial liability's original effective interest rate.					
2	Step 1(a):	Calculate the PV of the old 2 year bond at December 31, 2016, using the old bond's historic 3.00% semi-annual yield:					
3	PV Annuity, 0 semi-annual periods, 3.00%, $40,000:		$40,000	3.00%	0	0.000000000	$0
4	PV, 0 semi-annual periods, 3.00%, $1,000,000:		$1,000,000	3.00%	0	1.000000000	1,000,000
5							1,000,000
6	December 31, 2016 interest payable:						40,000
7	PV of the old financial liability owed at December 31, 2016, using its 3.00% original effective interest rate:						$1,040,000
8	The unamortized premium on the old financial liability:						$0
9							
10	Step 1(b)	Calculate the PV of the new 2 year financing arrangement at December 31, 2016, using the old bond's historic 3.00% semi-annual yield:					
11	PV Annuity, 4 semi-annual periods, 3.00%, $42,500:		$42,500	3.00%	4	3.717098403	$157,977
12	PV, 4 semi-annual periods, 3.00%, $850,000:		$850,000	3.00%	4	0.888487048	755,214
13	PV of the new financiing arrangement at December 31, 2016, using the old financial liability's 3.00% original effective interest rate:						$913,191
14							
15	Step 2:	Apply the '10%' test to determine if the old financial liability and the new financial arrangement differ SUBSTANTIALLY from one another.					
16	Difference ($1,040,000 - $913,191):						$126,809
17	Difference as a percentage of $1,040,000:						12.19%
18							
19	Conclusion: in accordance with IFRS 9.3.3.2, IFRS 9.B3.3.6, ASPE 3856.27, and ASPE 3856.A52 because the difference as a percentage of $1,040,000 is at least 10% (i) the old financial liability must be derecognized, (ii) a new financial liability recognized, and (iii) a gain/loss recorded.						

(b)

TDR | Steps1and2 | Step3_Substantial | Step3_NotSubstantial | IRR | IFRS_9 | ASPE_3856 | OtherApps

	A	B	C	D	E	F	G
1	Step 3: when Step 2's 'difference' is SUBSTANTIAL [i.e., is at least 10% (this type of financial arrangement is called a 'settlement' by some textbooks)] and therefore, in accordance with IFRS 9.3.3.2 and ASPE 3856.27, requires (i) derecognition of the old financial liability, (ii) recognition of a new financial liability, and (iii) recognition of any gain/loss on the transaction.						
2	Step 3(a): calculate the PV of the new 2 year financial arrangement at 31/12/2016, using the prevailing 7.00% semi-annual effective interest rate for financial liabilities with similar risk & maturity.						
3	PV Annuity, 4 semi-annual periods, 7.00%, $42,500:		$42,500	7.00%	4	3.387211256	$143,956
4	PV, 4 semi-annual periods, 7.00%, $850,000:		$850,000	7.00%	4	0.762895212	648,461
5	PV of the new bond:						$792,417
6	Face value of the new 2 year bond:						850,000
7	Therefore, the discount on the (new) bond is:						$57,583
8							
9	Step 3(b): record the 31/12/2016 journal entry required to (i) derecognize the old financial liability, (ii) recognize a new financial liability, and (iii) recognize any gain/loss on the transaction:						
10				Dr	Cr		
11	(Old) Bond payable			1,000,000			
12						[=$1,000,000 - $1,000,000].	
13	Interest payable (on Old Bond)			40,000			
14	(New) Bond discount			57,583			
15		(New) Bond payable			850,000		
16		Gain on bond restructuring			247,583	[= $1,040,000 - $792,417].	

QUESTION 3 (42 marks) (continued)
Answer ALL parts to this question. Each part is independent.

PART 3: (12 marks) (continued)

(c)

TDR | Steps1and2 | Step3_Substantial | **Step3_NotSubstantial** | IRR | IFRS_9 | ASPE_3856 | OtherApps

	A	B	C	D	E	F	G
1	Step 3: when Step 2's 'difference' is NOT-SUBSTANTIAL [i.e., is less than 10% (this type of financial arrangement is called a 'modification' by some textbooks)] and therefore, in accordance with IFRS 9.3.3.2 and ASPE 3856.27, does not result in the derecognition of the old financial liability or recognition of a new financial liability.						
2	Step 3(a): calculate the effective interest rate (yield, discount rate, market-rate, IRR) implicit in the terms of the new financial arrangement, taking into consideration the $1,040,000 pre-restructuring carrying amount (book value) of the old financial liability:						
3	Find the semi-annual rate which equates the PV of the new financial arrangement with the the above-calculated $1,040,000 PV of the old financial liability.						
4	PVA, 4 semi-annual periods, ?%, $42,500:		$42,500	4	-0.516292829%		$172,217
5	PV, 4 semi-annual periods, ?%, $850,000:		$850,000	4	-0.516292829%		867,783
6	PV of the new bond:						$1,040,000
7	Thus, ?% = -0.516292829%: this is the effective interest rate and is calculated using (i) 'interpolation', (ii) a spreadsheet's functionality such as MS Excel's (a) GOAL SEEK or (b) the '=IRR(values,guess)' function (see the IRR sheet in this application), or (iii) a financial calculator.						

30/06/2017

Bond payable…… 47,869

Cash…… 42,500

Interest expense…… 5,369

The following table is not required in your solution.

9	Step 3(b): using this effective interest rate, prepare a table that amortizes the pre-restructuring unamortized cost of the existing financial liability to the maturity value of the new financial arrangement:									
10	The amortization table below proves that the above calculation of -0.516292829% per 6-months is correct (see also the IRR sheet in this application). Use this table to assist you when recording interest expense during the new financial arrangement's life.									
11	Beginning of period	Face value of the financial liability	Unamortized premium (discount) on the financial liability	Beginning of period amortized cost of the financial liability	CREDIT: 5.00% interest paid per 6 months.	CREDIT: -0.516292829% interest expense per 6 months.	DEBIT: amortized cost of the financial liability	End of period amortized cost of the financial liability	End of period	
12	31-Dec-16	1,040,000	0	1,040,000	42,500	-5,369	47,869	992,131	30-Jun-17	1
13	30-Jun-17	1,040,000	-47,869	992,131	42,500	-5,122	47,622	944,508	31-Dec-17	2
14	31-Dec-17	1,040,000	-95,492	944,508	42,500	-4,876	47,376	897,132	30-Jun-18	3
15	30-Jun-18	1,040,000	-142,868	897,132	42,500	-4,632	47,132	850,000	31-Dec-18	4

QUESTION 3 (42 marks) (continued)
Answer ALL parts to this question. Each part is independent.

PART 4: (6 marks)

Monique Land Corp. issued a 5-year, zero-interest-bearing note with a $1,000,000 face value to Jason Inc. in exchange for $1,000,000 cash and the right to use a parcel of Monique Land Corp.'s land for equipment storage for 5 years. Interest rates for notes of this type were 8% at issue.

Required **(you must show all supporting calculations, including an audit trail when using a financial calculator)**
(a) Prepare the journal entries to record the issuance of the note by Monique.
(b) Prepare the journal entries to record the acceptance of the note by Jason.

Monique

Cash	**1,000,000**	
Notes Payable		***680,583**
Unearned Revenue (Rent)**		**319,417**

Jason

Notes Receivable	***680,583**	
Prepaid Rent***	**319,417**	
Cash		**1,000,000**

*** N = 5; I = 8%; 1,000,000 = FV; PV => 680,583**

**** Under IFRS 15 this could be called a *Contract liability*.**

***** Under IFRS 15 this could be called a *Contract asset*: a conditional contract asset.**

Financial Tables

Table 2: PRESENT VALUE of $1.00 that is received in the future.

Period /Percent	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%
1	0.9900990	0.9803922	0.9708738	0.9615385	0.9523810	0.9433962	0.9345794	0.9259259	0.9174312	0.9090909	0.9009009	0.8928571	0.8849558	0.8771930
2	0.9802960	0.9611688	0.9425959	0.9245562	0.9070295	0.8899964	0.8734387	0.8573388	0.8416800	0.8264463	0.8116224	0.7971939	0.7831467	0.7694675
3	0.9705901	0.9423223	0.9151417	0.8889964	0.8638376	0.8396193	0.8162979	0.7938322	0.7721835	0.7513148	0.7311914	0.7117802	0.6930502	0.6749715
4	0.9609803	0.9238454	0.8884870	0.8548042	0.8227025	0.7920937	0.7628952	0.7350299	0.7084252	0.6830135	0.6587310	0.6355181	0.6133187	0.5920803
5	0.9514657	0.9057308	0.8626088	0.8219271	0.7835262	0.7472582	0.7129862	0.6805832	0.6499314	0.6209213	0.5934513	0.5674269	0.5427599	0.5193687
6	0.9420452	0.8879714	0.8374843	0.7903145	0.7462154	0.7049605	0.6663422	0.6301696	0.5962673	0.5644739	0.5346408	0.5066311	0.4803185	0.4555865
7	0.9327181	0.8705602	0.8130915	0.7599178	0.7106813	0.6650571	0.6227497	0.5834904	0.5470342	0.5131581	0.4816584	0.4523492	0.4250606	0.3996373
8	0.9234832	0.8534904	0.7894092	0.7306902	0.6768394	0.6274124	0.5820091	0.5402689	0.5018663	0.4665074	0.4339265	0.4038832	0.3761599	0.3505591
9	0.9143398	0.8367553	0.7664167	0.7025867	0.6446089	0.5918985	0.5439337	0.5002490	0.4604278	0.4240976	0.3909248	0.3606100	0.3328848	0.3075079
10	0.9052870	0.8203483	0.7440939	0.6755642	0.6139133	0.5583948	0.5083493	0.4631935	0.4224108	0.3855433	0.3521845	0.3219732	0.2945883	0.2697438
11	0.8963237	0.8042630	0.7224213	0.6495809	0.5846793	0.5267875	0.4750928	0.4288829	0.3875329	0.3504939	0.3172833	0.2874761	0.2606977	0.2366174
12	0.8874492	0.7884932	0.7013799	0.6245970	0.5568374	0.4969694	0.4440120	0.3971138	0.3555347	0.3186308	0.2858408	0.2566751	0.2307059	0.2075591
13	0.8786626	0.7730325	0.6809513	0.6005741	0.5303214	0.4688390	0.4149644	0.3676979	0.3261786	0.2896644	0.2575143	0.2291742	0.2041645	0.1820694
14	0.8699630	0.7578750	0.6611178	0.5774751	0.5050680	0.4423010	0.3878172	0.3404610	0.2992465	0.2633313	0.2319948	0.2046198	0.1806766	0.1597100
15	0.8613495	0.7430147	0.6418619	0.5552645	0.4810171	0.4172651	0.3624460	0.3152417	0.2745380	0.2393920	0.2090043	0.1826963	0.1598908	0.1400965
16	0.8528213	0.7284458	0.6231669	0.5339082	0.4581115	0.3936463	0.3387346	0.2918905	0.2518698	0.2176291	0.1882922	0.1631217	0.1414962	0.1228917
17	0.8443775	0.7141626	0.6050164	0.5133732	0.4362967	0.3713644	0.3165744	0.2702690	0.2310732	0.1978447	0.1696326	0.1456443	0.1252179	0.1077997
18	0.8360173	0.7001594	0.5873946	0.4936281	0.4155207	0.3503438	0.2958639	0.2502490	0.2119937	0.1798588	0.1528222	0.1300396	0.1108123	0.0945611
19	0.8277399	0.6864308	0.5702860	0.4746424	0.3957340	0.3305130	0.2765083	0.2317121	0.1944897	0.1635080	0.1376776	0.1161068	0.0980640	0.0829484
20	0.8195445	0.6729713	0.5536758	0.4563869	0.3768895	0.3118047	0.2584190	0.2145482	0.1784309	0.1486436	0.1240339	0.1036668	0.0867823	0.0727617
21	0.8114302	0.6597758	0.5375493	0.4388336	0.3589424	0.2941554	0.2415131	0.1986557	0.1636981	0.1351306	0.1117423	0.0925596	0.0767985	0.0638261
22	0.8033962	0.6468390	0.5218925	0.4219554	0.3418499	0.2775051	0.2257132	0.1839405	0.1501817	0.1228460	0.1006687	0.0826425	0.0679633	0.0559878
23	0.7954418	0.6341559	0.5066917	0.4057263	0.3255713	0.2617973	0.2109469	0.1703153	0.1377814	0.1116782	0.0906925	0.0737880	0.0601445	0.0491121
24	0.7875661	0.6217215	0.4919337	0.3901215	0.3100679	0.2469785	0.1971466	0.1576993	0.1264049	0.1015256	0.0817050	0.0658821	0.0532252	0.0430808
25	0.7797684	0.6095309	0.4776056	0.3751168	0.2953028	0.2329986	0.1842492	0.1460179	0.1159678	0.0922960	0.0736081	0.0588233	0.0471020	0.0377902
26	0.7720480	0.5975793	0.4636947	0.3606892	0.2812407	0.2198100	0.1721955	0.1352018	0.1063925	0.0839055	0.0663136	0.0525208	0.0416831	0.0331493
27	0.7644039	0.5858620	0.4501891	0.3468166	0.2678483	0.2073680	0.1609304	0.1251868	0.0976078	0.0762777	0.0597420	0.0468936	0.0368877	0.0290783
28	0.7568356	0.5743746	0.4370768	0.3334775	0.2550936	0.1956301	0.1504022	0.1159137	0.0895484	0.0693433	0.0538216	0.0418693	0.0326440	0.0255073
29	0.7493421	0.5631123	0.4243464	0.3206514	0.2429463	0.1845567	0.1405628	0.1073275	0.0821545	0.0630394	0.0484879	0.0373833	0.0288885	0.0223748
30	0.7419229	0.5520709	0.4119868	0.3083187	0.2313774	0.1741101	0.1313671	0.0993773	0.0753711	0.0573086	0.0436828	0.0333779	0.0255651	0.0196270
31	0.7345771	0.5412460	0.3999871	0.2964603	0.2203595	0.1642548	0.1227730	0.0920160	0.0691478	0.0520987	0.0393539	0.0298017	0.0226239	0.0172167
32	0.7273041	0.5306333	0.3883370	0.2850579	0.2098662	0.1549574	0.1147411	0.0852000	0.0634384	0.0473624	0.0354540	0.0266087	0.0200212	0.0151024
33	0.7201031	0.5202287	0.3770262	0.2740942	0.1998725	0.1461862	0.1072347	0.0788889	0.0582003	0.0430568	0.0319405	0.0237577	0.0177179	0.0132477
34	0.7129733	0.5100282	0.3660449	0.2635521	0.1903548	0.1379115	0.1002193	0.0730453	0.0533948	0.0391425	0.0287752	0.0212123	0.0156795	0.0116208
35	0.7059142	0.5000276	0.3553834	0.2534155	0.1812903	0.1301052	0.0936629	0.0676345	0.0489861	0.0355841	0.0259236	0.0189395	0.0138757	0.0101937
36	0.6989249	0.4902232	0.3450324	0.2436687	0.1726574	0.1227408	0.0875355	0.0626246	0.0449413	0.0323492	0.0233546	0.0169103	0.0122794	0.0089418
37	0.6920049	0.4806109	0.3349829	0.2342968	0.1644356	0.1157932	0.0818088	0.0579857	0.0412306	0.0294083	0.0210402	0.0150985	0.0108667	0.0078437
38	0.6851534	0.4711872	0.3252262	0.2252854	0.1566054	0.1092389	0.0764569	0.0536905	0.0378262	0.0267349	0.0189551	0.0134808	0.0096165	0.0068804
39	0.6783697	0.4619482	0.3157535	0.2166206	0.1491480	0.1030555	0.0714550	0.0497134	0.0347030	0.0243044	0.0170767	0.0120364	0.0085102	0.0060355
40	0.6716531	0.4528904	0.3065568	0.2082890	0.1420457	0.0972222	0.0667804	0.0460309	0.0318376	0.0220949	0.0153844	0.0107468	0.0075312	0.0052943

Table 4: PRESENT VALUE of Annuity of $1.00 in arrears.

Period/ Percent	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%
1	0.990099	0.980392	0.970874	0.961538	0.952381	0.943396	0.934579	0.925926	0.917431	0.909091	0.900901	0.892857	0.884956	0.877193
2	1.970395	1.941561	1.913470	1.886095	1.859410	1.833393	1.808018	1.783265	1.759111	1.735537	1.712523	1.690051	1.668102	1.646661
3	2.940985	2.883883	2.828611	2.775091	2.723248	2.673012	2.624316	2.577097	2.531295	2.486852	2.443715	2.401831	2.361153	2.321632
4	3.901966	3.807729	3.717098	3.629895	3.545951	3.465106	3.387211	3.312127	3.239720	3.169865	3.102446	3.037349	2.974471	2.913712
5	4.853431	4.713460	4.579707	4.451822	4.329477	4.212364	4.100197	3.992710	3.889651	3.790787	3.695897	3.604776	3.517231	3.433081
6	5.795476	5.601431	5.417191	5.242137	5.075692	4.917324	4.766540	4.622880	4.485919	4.355261	4.230538	4.111407	3.997550	3.888668
7	6.728195	6.471991	6.230283	6.002055	5.786373	5.582381	5.389289	5.206370	5.032953	4.868419	4.712196	4.563757	4.422610	4.288305
8	7.651678	7.325481	7.019692	6.732745	6.463213	6.209794	5.971299	5.746639	5.534819	5.334926	5.146123	4.967640	4.798770	4.638864
9	8.566018	8.162237	7.786109	7.435332	7.107822	6.801692	6.515232	6.246888	5.995247	5.759024	5.537048	5.328250	5.131655	4.946372
10	9.471305	8.982585	8.530203	8.110896	7.721735	7.360087	7.023582	6.710081	6.417658	6.144567	5.889232	5.650223	5.426243	5.216116
11	10.367628	9.786848	9.252624	8.760477	8.306414	7.886875	7.498674	7.138964	6.805191	6.495061	6.206515	5.937699	5.686941	5.452733
12	11.255077	10.575341	9.954004	9.385074	8.863252	8.383844	7.942686	7.536078	7.160725	6.813692	6.492356	6.194374	5.917647	5.660292
13	12.133740	11.348374	10.634955	9.985648	9.393573	8.852683	8.357651	7.903776	7.486904	7.103356	6.749870	6.423548	6.121812	5.842362
14	13.003703	12.106249	11.296073	10.563123	9.898641	9.294984	8.745468	8.244237	7.786150	7.366687	6.981865	6.628168	6.302488	6.002072
15	13.865053	12.849264	11.937935	11.118387	10.379658	9.712249	9.107914	8.559479	8.060688	7.606080	7.190870	6.810864	6.462379	6.142168
16	14.717874	13.577709	12.561102	11.652296	10.837770	10.105895	9.446649	8.851369	8.312558	7.823709	7.379162	6.973986	6.603875	6.265060
17	15.562251	14.291872	13.166118	12.165669	11.274066	10.477260	9.763223	9.121638	8.543631	8.021553	7.548794	7.119630	6.729093	6.372859
18	16.398269	14.992031	13.753513	12.659297	11.689587	10.827603	10.059087	9.371887	8.755625	8.201412	7.701617	7.249670	6.839905	6.467420
19	17.226008	15.678462	14.323799	13.133939	12.085321	11.158116	10.335595	9.603599	8.950115	8.364920	7.839294	7.365777	6.937969	6.550369
20	18.045553	16.351433	14.877475	13.590326	12.462210	11.469921	10.594014	9.818147	9.128546	8.513564	7.963328	7.469444	7.024752	6.623131
21	18.856983	17.011209	15.415024	14.029160	12.821153	11.764077	10.835527	10.016803	9.292244	8.648694	8.075070	7.562003	7.101550	6.686957
22	19.660379	17.658048	15.936917	14.451115	13.163003	12.041582	11.061240	10.200744	9.442425	8.771540	8.175739	7.644646	7.169513	6.742944
23	20.455821	18.292204	16.443608	14.856842	13.488574	12.303379	11.272187	10.371059	9.580207	8.883218	8.266432	7.718434	7.229658	6.792056
24	21.243387	18.913926	16.935542	15.246963	13.798642	12.550358	11.469334	10.528758	9.706612	8.984744	8.348137	7.784316	7.282883	6.835137
25	22.023156	19.523456	17.413148	15.622080	14.093945	12.783356	11.653583	10.674776	9.822580	9.077040	8.421745	7.843139	7.329985	6.872927
26	22.795204	20.121036	17.876842	15.982769	14.375185	13.003166	11.825779	10.809978	9.928972	9.160945	8.488058	7.895660	7.371668	6.906077
27	23.559608	20.706898	18.327031	16.329586	14.643034	13.210534	11.986709	10.935165	10.026580	9.237223	8.547800	7.942554	7.408556	6.935155
28	24.316443	21.281272	18.764108	16.663063	14.898127	13.406164	12.137111	11.051078	10.116128	9.306567	8.601622	7.984423	7.441200	6.960662
29	25.065785	21.844385	19.188455	16.983715	15.141074	13.590721	12.277674	11.158406	10.198283	9.369606	8.650110	8.021806	7.470088	6.983037
30	25.807708	22.396456	19.600441	17.292033	15.372451	13.764831	12.409041	11.257783	10.273654	9.426914	8.693793	8.055184	7.495653	7.002664
31	26.542285	22.937702	20.000428	17.588494	15.592811	13.929086	12.531814	11.349799	10.342802	9.479013	8.733146	8.084986	7.518277	7.019881
32	27.269589	23.468335	20.388766	17.873551	15.802677	14.084043	12.646555	11.434999	10.406240	9.526376	8.768600	8.111594	7.538299	7.034983
33	27.989693	23.988564	20.765792	18.147646	16.002549	14.230230	12.753790	11.513888	10.464441	9.569432	8.800541	8.135352	7.556016	7.048231
34	28.702666	24.498592	21.131837	18.411198	16.192904	14.368141	12.854009	11.586934	10.517835	9.608575	8.829316	8.156564	7.571696	7.059852
35	29.408580	24.998619	21.487220	18.664613	16.374194	14.498246	12.947672	11.654568	10.566821	9.644159	8.855240	8.175504	7.585572	7.070045
36	30.107505	25.488842	21.832252	18.908282	16.546852	14.620987	13.035208	11.717193	10.611763	9.676508	8.878594	8.192414	7.597851	7.078987
37	30.799510	25.969453	22.167235	19.142579	16.711287	14.736780	13.117017	11.775179	10.652993	9.705917	8.899635	8.207513	7.608718	7.086831
38	31.484663	26.440641	22.492462	19.367864	16.867893	14.846019	13.193473	11.828869	10.690820	9.732651	8.918590	8.220993	7.618334	7.093711
39	32.163033	26.902589	22.808215	19.584485	17.017041	14.949075	13.264928	11.878582	10.725523	9.756956	8.935666	8.233030	7.626844	7.099747
40	32.834686	27.355479	23.114772	19.792774	17.159086	15.046297	13.331709	11.924613	10.757360	9.779051	8.951051	8.243777	7.634376	7.105041

Rough Work
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