

ADM 2342
MID TERM EXAM
Intermediate Financial Accounting 1
Fall 2013

SOLUTIONS

2½ hours

Student Name: _____

Student #: _____

Section: ADM 2342A (Professor Robert Collier)

Instructions:

1. This examination comprises 5 questions over 16 pages. The last two pages (pages 15 and 16) contain present value tables. Page 14 is a page for rough work. Answer all questions directly in on this exam. The exam is not to be removed from the examination room. You may separate the pages but ensure that you put them back together and that you staple them before handing in.
2. Limit your answer to the space provided. Blank sheets for rough work and supporting calculations are given at the end of each question. You must show, where appropriate, supporting calculations.
3. This exam is out of 80 marks and is 2½ hours long. You should budget approximately 1.8 minutes per mark.
4. 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.
5. Language dictionaries (non-electronic) are allowed if approved by the professor.
6. The use of electronic communication devices such as cell phones is strictly prohibited during the exam.
7. You **must** sign the Statement of Academic integrity on page 2 of this exam.

Question	Topic	Marks
1	Income Statement	/20
2	Cash Flow Statement	/16
3	Financial Environment	/10
4	Revenue Recognition	/16
5	Receivables	/18
TOTAL		<u>/80</u>

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 a final exam grade of zero.

Question No. 1 (20 marks)

The following pre-tax items were taken from the December 31, 2012 adjusted trial balance of Voegel Corporation, a public company which follows IFRS. Voegel's accounting period ends December 31. All accounts have normal balances. Assume a 20% tax rate on all items, where appropriate.

Sales revenue	\$745,200
Unearned revenue	40,000
Rent revenue	2,400
Interest revenue	900
Gain on sale of capital assets	2,000
Distribution expenses	136,000
General and administrative expenses.....	110,000
Interest expense.....	1,500
Depreciation expense	6,000
Prepaid expense	3,200
Loss from hurricane.....	19,000
Loss on re-measurement of defined benefit pension plan	28,000
Loss on re-measurement of FV-OCI investments	36,250
Correction for understatement of net income in prior period due to error in recording depreciation expense.....	44,000
Cost of goods sold	330,000
Operating loss of discontinued operations to disposal date.....	38,000
Gain on sale of net assets of discontinued operations	8,000
Average common shares issued and outstanding during the year	120,000 shares
Average preferred shares issued and outstanding during the year.....	30,000 shares

Voegel Corporation presents its expenses by function. Dividends declared during the year were as follows: (i) common shares: \$24,000 in total; (ii) preferred shares: \$0.75 per share

Required:

Prepare a properly formatted multiple-step Statement of Comprehensive Income for Voegel Corporation for the year ended December 31, 2012.

Note:

Use the next page of the exam (page 4) to present your formal Statement of Comprehensive Income. Use page 5 of the exam for any supporting calculations (rough work).

Question No. 1 (20 marks) (continued)

Answer:

Voegel Corporation
Statement of Comprehensive Income (multiple-step)
For the Year Ended 31 December 2013

Sales revenue		\$745,200
Cost of goods sold.....		<u>330,000</u>
Gross margin on sales		415,200
<i>Operating expenses:</i>		
Distribution expenses	\$136,000	
General and administrative expenses.....	110,000	
Depreciation expense	<u>6,000</u>	<u>252,000</u>
Income from operations (operating income)		163,200
<i>Other revenues and gains:</i>		
Rent revenue	\$2,400	
Interest revenue	900	
Gain on sale of operational assets	<u>2,000</u>	5,300
<i>Other expenses and losses:</i>		
Interest expense	1,500	
Loss from hurricane.....	<u>19,000</u>	<u>20,500</u>
Income from continuing operations before income taxes		148,000
Income tax expense (20%).....		<u>29,600</u>
Income from continuing operations (i.e. before discontinued operations)		118,400
<i>Discontinued operations:</i>		
Operating loss of discontinued operations to disposal date (net of tax savings of \$7,600).....	30,400	
Gain on sale of net assets of discontinued operations (net of tax expense of \$1,600)	<u>6,400</u>	<u>24,000</u>
Net income		\$ 94,400
<i>Other Comprehensive Income:</i>		
Loss on re-measurement of defined benefit pension plan (net of tax savings of \$5,600).....	22,400	
Loss on re-measurement of FV-OCI investments (net of tax savings of \$7,250).....	<u>29,000</u>	<u>51,400</u>
Comprehensive Income		\$ <u>43,000</u>
<i>Earnings per share:</i>		
Income from continuing operations (\$118,400 – \$22,500)/120,000		\$0.80
Discontinued operations (\$24,000/120,000)		<u>0.20</u>
Net income (\$94,400 – \$22,500)/120,000.....		<u>\$0.60</u>

Question No. 2 (16 marks)

Mead Corporation is a public Company and follows IFRS. The differences between Mead's Statement of Financial Position accounts at December 31, 2011 and 2012 are presented below:

<u>Assets</u>	<u>Increase (decrease)</u>
Cash	\$ 120,000
Short-term investments (cash equivalents)	300,000
Accounts receivable	0
Inventory	80,000
Long-term investments	(100,000)
Property, plant & equipment	700,000
Accumulated depreciation	<u>0</u>
Total	<u>\$1,100,000</u>

Question No. 2 (continued) (16 marks)

<u>Liabilities and Shareholders' Equity</u>	
Accounts payable and accrued liabilities	(5,000)
Dividend payable	\$ 160,000
Bank overdraft (part of net cash position on SCF)	325,000
Long-term debt	110,000
Common shares, no par, an additional 10,000 shares	220,000
Retained earnings	<u>290,000</u>
Total	<u>\$1,100,000</u>

Additional information for 2012:

1. A building costing \$600,000 and having a carrying amount of \$350,000 was sold for \$350,000.
2. A long-term investment was sold for \$135,000. There were no other transactions affecting long-term investments.
3. Equipment costing \$110,000 was acquired through issuance of long-term debt.
4. Common shares were issued for \$22 per share.
5. Net income was \$790,000.
6. Mead Corporation uses the indirect method to prepare the cash flow statement. Mead follows the IFRS standard (IAS #7) in explaining non-cash transactions in its disclosure notes.

Required:

Prepare the Cash Flow Statement for Mead Corporation for the year ending December 31, 2012.

Answer:

*Mead Corporation
Statement of Cash Flow
Year ended 31 December 2012*

<i>Operating activities</i>		
Net income	\$790,000	
<i>Plus (less): non-cash charges</i>		
Depreciation	250,000 ^a	
Gain on sale of investment	(35,000)	
	<u>1,005,000</u>	
<i>Changes in working capital:</i>		
Inventory increase	(80,000)	
Accounts payable and accrued liabilities decrease	(5,000)	\$920,000
<i>Investing activities</i>		
Sale of building	350,000	
Purchase of plant assets	(1,190,000) ^b	
Sale of long-term investments	<u>135,000</u>	(705,000)
<i>Financing activities</i>		
Dividends paid	(340,000) ^c	
Issuance of common shares	<u>220,000</u>	(120,000)
Net increase in cash and cash equivalents		<u>\$95,000^d</u>

Disclosure Note: *During 2012, equipment costing \$110,000 was acquired through the issuance of long-term debt.*

Question No. 2 (continued) (16 marks)

Computations:

- a Depreciation expense = \$250,000 because accumulated depreciation did not change during the year and the building disposal caused accumulated depreciation to decrease \$250,000.
- b Plant asset increase = \$700,000 = plant asset purchases in 2012 + \$110,000 acquisition through debt - \$600,000 cost of building sold
Plant asset purchases in 2012 = \$1,190,000
- c Retained earnings increase = \$290,000 = \$790,000 earnings - Dividends declared
Dividends declared = \$500,000; Dividends payable increase = \$160,000
Therefore, dividends paid = \$340,000 (\$500,000 - \$160,000)
- d
- | | |
|---------------------------------------|--------------------|
| Change in cash | \$120,000 dr |
| Change in short-term investments..... | 300,000 dr |
| Change in bank overdraft | (325,000) cr |
| | <u>\$95,000 dr</u> |

Question No. 3 (10 marks)

This question has three short parts and covers financial reporting and the Canadian financial environment.

Required: (Each answer must be clear, concise and in a complete sentence.)

- (a) State the overall objective of financial reporting. (2 marks)
- (b) As part of the objective of general-purpose financial reporting, an “entity perspective” is adopted. What does the entity perspective mean and how does it differ from the “proprietary perspective”? (4 marks)
- (c) Present two different reasons why providing financial information to users is challenging. (4 marks)

Answer:

1. The overall objective of financial reporting is to provide financial information to present and potential investors and lenders to assist them in making resource allocation decisions.
2. The entity perspective views a legal entity as separate and distinct from its owners. Therefore, assets are viewed as assets of the entity and not of a specific creditor or shareholder. On the other hand, the proprietary perspective holds that no fundamental distinction is drawn between a legal entity and its owners. In other words, the entity does not exist separately from the shareholders for accounting purposes. Financial reporting under the proprietary perspective focuses only on the needs of the shareholders. It is the entity perspective that is adopted as the objective of general purpose financial reporting.
3. First, users have very different knowledge levels. Some users have accounting designations or have worked in the finance industry for several years. Others have limited knowledge of how the information is gathered and reported.

Second, users have very different needs. Some users are institutional investors who hold a large percentage of equity shareholdings and generally devote significant resources to managing their investment portfolios. Others are credit managers at banks or credit unions who deal mainly with small business or personal loans. Still others are labour negotiators whose knowledge of financial reporting is limited to periodic reviews of financial information for the purpose of negotiations.

Question No. 4 (16 marks)

Ricardo Construction Company (RCC), a private company, contracted to build an apartment complex for \$2,800,000. Construction began in July 2013 and was scheduled to be completed in April 2015. RCC follows ASPE and has a December 31 year end. Data related to the contract are as follows (in thousands):

	<u>2013</u>	<u>2014</u>	<u>2015</u>
Costs incurred during the year	\$ 400	\$1,500	\$ 700
Estimated additional costs to complete	2,200	400	--
Billings during year	350	1,450	1,000
Cash collections during the year	325	1,300	1,100

Required:

- Compute the amount of annual gross profit or loss that should be recognized by the Ricardo Construction Company for each year assuming the percentage of completion method is used. Round your calculations for percentage completion to two decimal places. (6 marks)
- Prepare a partial Statement of Financial Position for Ricardo Construction Company for December 31 of each year showing, under the current assets category, accounts receivable balances and inventory balances. (8 marks)
- Under the percentage of completion method, in the event of an unprofitable contract when should the entire loss be recognized? How would you answer change, if any, if the completed contract method were used? (2 marks)

Answer: (percentage completion rates rounded to two decimal places)

(a) *Under the percentage of completion method:*

	<u>2013</u>	<u>2014</u>	<u>2015</u>
<i>Computations:</i>			
Contract price	<u>\$2,800,000</u>	<u>\$2,800,000</u>	<u>\$2,800,000</u>
Actual costs to date	<u>400,000</u>	<u>1,900,000</u>	<u>2,600,000</u>
Estimated costs to complete	<u>2,200,000</u>	<u>400,000</u>	<u>nil</u>
Total	<u>2,600,000</u>	<u>2,300,000</u>	<u>2,600,000</u>
Estimated total margin.....	<u>\$ 200,000</u>	<u>\$ 500,000</u>	<u>\$ 200,000</u>
Percentage complete	15.38%	82.61%	100%

Annual gross profit to be recognized:

2013: $\$2,800,000 - \$2,600,000 \times 15.38\%$	<u>\$ 30,760</u>		
2014: $(\$2,800,000 - \$2,300,000) \times 82.61\%$		<u>\$382,290</u>	
– \$30,760.....			
2015: $\$2,800,000 - \$2,600,000 - \$30,760$			<u>\$ (213,050)</u>
– \$382,290.....			

(b)

*Ricardo Construction Company
Statement of Financial Position
December 31, 2013*

Current assets:

Accounts receivable ($\$350,000 - \$325,000$)	\$ 25,000
<i>Inventories</i>	
Construction in process ($400,000 + \$30,760$).....	\$430,760
Less: Billings ($\$350,000$).....	<u>350,000</u>
CIP (revenues) in excess of billings.....	80,760

Question No. 4 (continued) (16 marks)

*Ricardo Construction Company
Statement of Financial Position
December 31, 2014*

Current assets:

<i>Accounts receivable (\$1,800,000 – \$1,625,000)</i>	<i>\$ 175,000</i>
<i>Inventories</i>	
<i>Construction in process (\$1,900,000 + 30,760 + \$382,290)...</i>	<i>\$2,313,050</i>
<i>Less: Billings (\$350,000 + \$1,450,000)</i>	<i><u>1,800,000</u></i>
<i>CIP (revenues) in excess of billings.....</i>	<i>513,050</i>

*Ricardo Construction Company
Statement of Financial Position
December 31, 2015*

Current assets:

<i>Accounts receivable (\$2,800,000 – \$2,725,000)</i>	<i>\$ 75,000</i>
<i>Inventories*</i>	
<i>Construction in process (\$2,600,000 + 200,000)</i>	<i>\$2,800,000</i>
<i>Less: Billings (\$350,000 + \$1,450,000 + 1,000,000)</i>	<i><u>2,800,000</u></i>
<i>Revenues in excess of billings.....</i>	<i>0</i>

* *Technically, there would be nothing reported under inventories because the balance in the CIP account (costs incurred and recognized gross profit) exactly equals the balance in the billings account. Therefore, students' answers are correct IF there is nothing reported under inventories on the December 31, 2015 SFP.*

(c) *Under the POC method, in the event of an unprofitable contract, the entire loss should be recognized in the current period when the loss is forecast. This also applies to the completed contract method, so the answer would not change. (2 marks)*

Question No. 5 (18 marks)

Terrace Exteriors Limited provides landscaping services to residential customers in the Ottawa area. Terrace has a December 31 year-end and follows IFRS. The company had the following account balances on January 1, 2012:

Accounts receivable	\$ 613,000
Allowance for Doubtful Accounts (credit balance)	14,500

Transactions during 2012:

Sales on account	\$ 1,447,000
Collections on account	1,633,000
Accounts receivable written off as uncollectible	19,000

Terrace Exteriors estimates its allowance for doubtful accounts at 2% of the December 31 balance of accounts receivables.

On May 1, 2013, Terrace Exteriors provided landscaping services to a new customer who had asked for an extension of the normal payment period to pay his account. Because this was a new customer, the company accepted a three-year, \$12,500 zero-interest bearing note from the customer. The implicit rate of interest is 9% and approximates the market rate for notes of equivalent duration and risk. Terrace uses the net method of recording notes receivables.

Question No. 5 (continued) (18 marks)

Required:

- (a) Prepare the journal entry for the bad debts expense for 2012. (5 marks)
- (b) Prepare the December 31, 2012 Statement of Financial Position presentation for accounts receivable. (3 marks)
- (c) Prepare the journal entry to record the provision of landscaping services on May 1, 2013. (4 marks)
- (d) Prepare any required journal entry for the notes receivable on December 31, 2013 and December 31, 2014. (4 marks)
- (e) What is the carrying value of the note receivable on the maturity date? (2 marks)

Answer:

- (a) *Bad debts expense journal entry:*

Bad debts expense.....	12,660	
Allowance for doubtful accounts.....		12,660
<i>[(613,000 + 1,447,000 – 1,633,000 – 19,000) = 408,000 x 0.02] = 8,160 + 19,000 – 14,500 = \$12,660</i>		

- (b) *December 31, 2012 SFP presentation:*

Accounts receivable	\$ 408,000	
Allowance for Doubtful Accounts (credit balance)	<u>(8,160)</u>	\$399,840

- (c) *Journal entry – May 1, 2013:*

PV \$12,500 due in 3 years at 9% = \$12,500 / (1.09)³ = \$9,652.29

Note receivable	9,652	
Sales revenue.....		9,652

- (d) *Journal entries – December 31, 2013 and December 31, 2014*

December 31, 2013

Note receivable (\$869 x 8/12).....	579	
Interest income (revenue).....		579

December 31, 2014

Note receivable [(\$869 x 4/12) + (\$947 x 8/12)]	921*	
Interest income (revenue)		921

* *Alternatively: \$9,652 + \$579 x .09 = \$921*

	<u>Cash Received</u>	<u>Interest Income</u>	<u>Discount Amortized</u>	<u>Carrying Value of N/R</u>
01/05/13	—	—	—	\$9,652
01/05/14	\$0	\$869	\$869	10,521
01/05/15	0	947	947	11,468
01/05/16	0	1,032	1,032	12,500

- (e) *The carrying value of the note receivable on the maturity date (May 1, 2016) is \$12,500 as shown in the amortization schedule above. (2 marks)*

Financial Tables

Table 2: PRESENT VALUE of \$1.00 that is received in the future.												
Period/Per	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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

Table	4: PRESENT VALUE of Annuity of \$1.00 in arrears.											
Period/Per	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
29	25.065795	21.844385	19.188455	16.983715	15.141074	13.590721	12.277674	11.158406	10.198283	9.369606	8.650110	8.021806
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
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
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
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
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
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
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
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
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
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
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