

**AFM391 Intermediate Accounting 2
Sample Midterm Exam**

NAME _____

ID # _____

DIRECTIONS:

- This exam has 8 numbered pages including this cover page. Please make sure your exam is complete.
- All solutions shall be prepared based on IFRS unless it is stated otherwise.
- Questions on examination are **not** permitted during the exam. If you believe an exam question requires clarifying, please include your assumptions as part of your answer.
- The fiscal year end of all the companies mentioned in the exam is December 31 unless stated otherwise.
- Please round your answers **to the nearest dollar** unless stated otherwise.
- If a question requires a journal entry, and you are uncertain about a specific account name, please indicate in your account titles the nature of the account as to whether it is an asset, liability stockholders' equity, revenue, expense, gain, or loss.
- Show your work as partial credit may be awarded.
- Present value tables including formulae are attached.

GRADING SUMMARY:

Multiple Choices (10 marks)	
Problem 1 (10 marks)	
Problem 2 (14 marks)	
Problem 3 (14 marks)	
Problem 4 (12 marks)	
TOTAL (60 marks)	

MULTIPLE CHOICES:

1.	2.	3.	4.	5.
6.	7.	8.	9.	10.

MULTIPLE CHOICES (1 point each for each question): Choose the best answer and write down the corresponding letter in the designated table on the first page. There is only **one** best answer to each multiple choice problem. A multiple choice problem will **not** be graded if no answer is transferred to the table on the first page.

1. A liability for compensated absences such as vacations, for which it is expected that employees will be paid, should
 - a. be accrued during the period when the compensated time is expected to be used by employees.
 - b. be accrued during the period following vesting.
 - c. be accrued during the period when earned.
 - d. not be accrued unless a written contractual obligation exists.

2. Which of the following sets of conditions would give rise to the accrual of a contingency under current generally accepted accounting principles for private enterprises?
 - a. Amount of loss is reasonably estimable and event occurs infrequently.
 - b. Amount of loss is reasonably estimable and occurrence of event is likely.
 - c. Amount of gain is reasonably estimable and occurrence of event is likely.
 - d. Event is unusual in nature and occurrence of event is likely.

3. Declaration and issuance of a stock dividend
 - a. increases the current ratio.
 - b. decreases the amount of working capital.
 - c. decreases total shareholders' equity.
 - d. has no effect on total assets, liabilities, or shareholders' equity.

4. Which of the following is a current liability?
 - a. Preferred cash dividends payable.
 - b. Stock dividends distributable.
 - c. Preferred dividends in arrears.
 - d. Stock splits.

5. Using the revenue approach to account for product guarantees and warranty obligations
 - a. there is no effect on future income.
 - b. the liability is measured at the value of the services to be provided but there is no effect on future income.
 - c. the liability is measured at the estimated cost of meeting the obligation.
 - d. the liability is measured at the value of the services to be provided.

6. If bonds are initially sold at a discount and the straight-line method of amortization is used, interest expense in the *earlier years* will be
- higher than it would have been had the effective interest method of amortization been used.
 - less than the stated rate of interest.
 - less than it would have been had the effective interest method of amortization been used.
 - the same as it would have been had the effective interest method of amortization been used.
7. If a debt refunding is viewed as a modification or renegotiation, then
- a new effective interest rate is calculated.
 - a gain or loss is recorded.
 - there is no change in the accounting for the debt.
 - the old debt is derecognized.
8. Direct incremental costs incurred to sell shares such as underwriting costs should be accounted for as
- a reduction of retained earnings.
 - a reduction of share capital.
 - an expense of the period in which the shares are issued.
 - an intangible asset.
9. When shares are reacquired at a cost less than the average per share value, the difference is credited to
- Contributed Surplus.
 - the appropriate share capital account.
 - Retained Earnings.
 - Gain on Reacquisition of Shares.
10. Pryor Corporation issued a 2-for-1 common stock split. The shares had been originally issued at \$10 per share. At what amount should retained earnings be capitalized for the additional shares issued?
- There should be no capitalization of retained earnings.
 - \$10 per share.
 - Market value on the declaration date.
 - Market value on the payment date.

Problem 1—Estimated Liability (10 points)

Veni Corp. sold 500,000 boxes of spaghetti at \$1.1 per box under a new sales promotion program in 2011. Each box contains one coupon, which when submitted entitles the customers to a \$0.2 discount for their next purchase of Veni's products. Veni estimates that 50% of the coupons will be redeemed. By the end of 2011, 100,000 coupons have been redeemed.

- (a) What amount of liability should Veni report for unredeemed coupons at Dec. 31, 2011?
- (b) What amount of expense should Veni report on its 2011 income statement as a result of the promotional program?
- (c) Prepare all necessary journal entries to record transactions related to the sales promotion program for Veni in 2011.

Problem 2—Long-term Bonds (14 points)

Pine Inc. issued 10-year, 8% bonds of \$500,000 on January 1, 2010. The bonds will be due by December 31, 2019. The bonds' interests are paid annually on each January 1. The market rate was 7% for equivalent bonds on the issuance date. Prepare journal entries to record:

- (a) The issuance of the bonds.
- (b) All necessary adjusting entries on December 31, 2010 related to the bonds transaction. Assume that Pine Inc. uses the effective interest method for bonds premium/discount amortization.
- (c) On July 1, 2012, Pine Inc. retired \$200,000 of the bonds at 102 plus accrued interest. Assume that Pine Inc. uses the straight line method for bonds premium/discount amortization.

Problem 3—Stockholders' Equity (14 points)

Stan Inc. had the following shareholders' equity at December 31, 2010:

Preferred Shares, \$8, no par, <i>cumulative, participating</i> , 500,000 shares authorized, 100,000 shares issued	\$10,000,000
Common shares, no par, 1,000,000 shares issued (authorized, unlimited authorization)	40,000,000
Contributed Surplus - Common Shares	100,000
Retained Earnings	10,000,000

Stan Inc. declared a cash dividend of \$5,100,000 on December 31, 2010. No preferred dividends are in arrears. Calculate the total dividends that each class of shares should receive.

Preferred shareholders should receive: _____

Common shareholders should receive: _____

Stan Inc. reacquired and retired 50,000 common shares for \$58 per share on January 1, 2011. Prepare journal entries to record the share reacquisition transaction.

Stan Inc. issued 20,000 common shares for cash at \$55 per share on March 1, 2011. A total direct cost of \$15,000 occurred for issuing these shares. Prepare journal entries to record the share issuance.

Problem 4 Non-Financial and Current Liabilities (12 marks)

1. Upland Limited borrowed \$40,000 on November 1, 2011, by signing a \$40,000, three-month, 9% note. Prepare Upland's November 1, 2011 entry; the December 31, 2011 adjusting entry; and the February 1, 2012 entry. Upland Limited's fiscal year end is December 31.

2. Whirled Corporation's weekly payroll of \$23,000 included employee income taxes withheld of \$3,426, CPP withheld of \$990, EI withheld of \$920, and health insurance premiums withheld of \$250. Prepare the journal entries to record Whirled's payroll.

3. Lu Corp. erects and places into service an offshore oil platform on January 1, 2011, at a cost of \$8 million. Lu is legally required to dismantle and remove the platform at the end of its 8-year useful life. Lu estimates that it will cost \$0.8 million to dismantle and remove the platform at the end of its useful life and that the discount rate to be used should be 7%. Prepare the entry to record the asset retirement obligation.

Present Value Tables and Formulae

Present Value of \$1 = $(1 + i)^{-n} = \frac{1}{(1 + i)^n}$

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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

Present Value of an Ordinary Annuity of \$1 = $[1 - (1+i)^{-n}] / i = \frac{1 - \frac{1}{(1+i)^n}}{i}$

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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

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NAME **SOLUTION**

ID # _____

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Multiple Choices (10 marks)	
Problem 1 (10 marks)	
Problem 2 (14 marks)	
Problem 3 (14 marks)	
Problem 4 (12 marks)	
TOTAL (60 marks)	

MULTIPLE CHOICES:

1. C	2. B	3. D	4. A	5. D
6. A	7. A	8. B	9. A	10. A

MULTIPLE CHOICES (1 point each for each question): Choose the best answer and write down the corresponding letter in the designated table on the first page. There is only **one** best answer to each multiple choice problem. A multiple choice problem will **not** be graded if no answer is transferred to the table on the first page.

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 - a. be accrued during the period when the compensated time is expected to be used by employees.
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3. Declaration and issuance of a stock dividend
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4. Which of the following is a current liability?
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5. Using the revenue approach to account for product guarantees and warranty obligations
 - a. there is no effect on future income.
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- higher than it would have been had the effective interest method of amortization been used.
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 - less than it would have been had the effective interest method of amortization been used.
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- a new effective interest rate is calculated.
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8. Direct incremental costs incurred to sell shares such as underwriting costs should be accounted for as
- a reduction of retained earnings.
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 - an expense of the period in which the shares are issued.
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9. When shares are reacquired at a cost less than the average per share value, the difference is credited to
- Contributed Surplus.
 - the appropriate share capital account.
 - Retained Earnings.
 - Gain on Reacquisition of Shares.
10. Pryor Corporation issued a 2-for-1 common stock split. The shares had been originally issued at \$10 per share. At what amount should retained earnings be capitalized for the additional shares issued?
- There should be no capitalization of retained earnings.
 - \$10 per share.
 - Market value on the declaration date.
 - Market value on the payment date.

Problem 1—Estimated Liability (10 points)

Veni Corp. sold 500,000 boxes of spaghetti at \$1.1 per box under a new sales promotion program in 2011. Each box contains one coupon, which when submitted entitles the customers to a \$0.2 discount for their next purchase of Veni's products. Veni estimates that 50% of the coupons will be redeemed. By the end of 2011, 100,000 coupons have been redeemed.

- (a) What amount of liability should Veni report for unredeemed coupons at Dec. 31, 2011?

Total estimated liability accrued:	500,000 x 50% x \$0.2	=	\$50,000
Less: redeemed coupons	100,000 x \$0.2	=	<u>20,000</u>
	Unredeemed coupons	=	\$30,000

- (b) What amount of expense should Veni report on its 2011 income statement as a result of the promotional program?

Promotion expense: 500,000 x 50% x \$0.2 = \$50,000

- (c) Prepare all necessary journal entries to record transactions related to the sales promotion program for Veni in 2011.

Either of 2 alternative sets of journal entries could be used:

Answer A

Promotion Expense	20,000	
Sales		20,000

Promotion Expense	30,000	
Estimated Promotion Liability		30,000

Answer B

Promotion Expense	50,000	
Estimated Promotion Liability		50,000

Estimated Promotion Liability	20,000	
Sales		20,000

Problem 2—Long-term Bonds (14 points)

Pine Inc. issued 10-year, 8% bonds of \$500,000 on January 1, 2010. The bonds will be due by December 31, 2019. The bonds' interests are paid annually on each January 1. The market rate was 7% for equivalent bonds on the issuance date. Prepare journal entries to record:

Note that the solution on the next page uses a separate premium account.

- (a) The issuance of the bonds.

Cash	\$535,118	
Bonds Payable		\$535,118

	<u>Tables</u>	<u>Formula</u>
PV of Principle: \$500,000 * PV(10,7%) = \$500,000 * 0.508 =	\$254,000	\$254,175
PV of Interest: \$40,000 * PVA(10,7%) = \$40,000 * 7.024 =	\$280,960	\$280,943
PV of Bond	\$534,960	\$535,118

- (b) All necessary adjusting entries on December 31, 2010 related to the bonds transaction. Assume that Pine Inc. uses the effective interest method for bonds premium/discount amortization.

Interest Expense \$535,118 * 7%	\$37,458	
Bonds Payable	2,542	
Interest Payable \$500,000 * 8%		\$40,000

- (c) On July 1, 2012, Pine Inc. retired \$200,000 of the bonds at 102 plus accrued interest. Assume that Pine Inc. uses the straight line method for bonds premium/discount amortization.

Cash paid = \$200,000 * 1.02 + \$8,000 = \$212,000

Premium remaining to be amortized on July 1, 2012 on \$200,000 bonds
= (\$35,118 / 10 years) * 7.5 years * (\$200,000 / \$500,000) = \$10,535

Interest Expense (\$8,000 – 702)	\$7,298	
Bonds Payable (\$35,118 / 10 * (2/5) * 1/2)	702	
Interest Payable (\$200,000 * 8% * 1/2)		\$8,000

Bonds Payable	\$210,535	
Interest Payable	8,000	
Cash		\$212,000
Gain on Redemption of Bonds		6,535

Problem 2—Long-term Bonds (14 points)

Pine Inc. issued 10-year, 8% bonds of \$500,000 on January 1, 2010. The bonds will be due by December 31, 2019. The bonds' interests are paid annually on each January 1. The market rate was 7% for equivalent bonds on the issuance date. Prepare journal entries to record:

- (a) The issuance of the bonds.

Cash	\$535,118	
Bonds Payable		\$500,000
Premium on Bonds Payable		35,118

	<u>Tables</u>	<u>Formula</u>
PV of Principle: \$500,000 * PV(10,7%) = \$500,000 * 0.508 =	\$254,000	\$254,175
PV of Interest: \$40,000 * PVA(10,7%) = \$40,000 * 7.024 =	\$280,960	\$280,943
PV of Bond	\$534,960	\$535,118

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Premium on Bonds Payable	2,542	
Interest Payable \$500,000 * 8%		\$40,000

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Cash paid = \$200,000 * 1.02 + \$8,000 = \$212,000
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= (\$35,118 / 10 years) * 7.5 years * (\$200,000 / \$500,000) = \$10,535

Interest Expense (\$8,000 – 702)	\$7,298	
Premium on Bonds Payable (\$35,118 / 10 * (2/5) * 1/2)	702	
Interest Payable (\$200,000 * 8% * 1/2)		\$8,000

Bonds Payable	\$200,000	
Premium on Bonds Payable	10,535	
Interest Payable	8,000	
Cash		\$212,000
Gain on Redemption of Bonds		6,535

Problem 3—Stockholders' Equity (14 points)

Stan Inc. had the following shareholders' equity at December 31, 2010:

Preferred Shares, \$8, no par, <i>cumulative, participating</i> , 500,000 shares authorized, 100,000 shares issued	\$10,000,000
Common shares, no par, 1,000,000 shares issued (authorized, unlimited authorization)	40,000,000
Contributed Surplus - Common Shares	100,000
Retained Earnings	10,000,000

Stan Inc. declared a cash dividend of \$5,100,000 on December 31, 2010. No preferred dividends are in arrears. Calculate the total dividends that each class of shares should receive.

Preferred shareholders should receive: \$1,020,000

Common shareholders should receive: \$4,080,000

	<u>Preferred</u>	<u>Common</u>	<u>Total</u>
Current year's dividend:			
Preferred \$8 * 100,000 shares	\$800,000		
Common 8% \$40,000,000		\$3,200,000	\$4,000,000
Participating dividend:			
Preferred \$10,000,000 * 2.2%	<u>220,000</u>		
Common \$40,000,000 * 2.2%		<u>880,000</u>	<u>1,100,000</u>
Totals	\$1,020,000	\$4,080,000	\$5,100,000

Dividend rate = (\$5,100,000 - 4,000,000) / \$50,000,000 = 2.20%

Stan Inc. reacquired and retired 50,000 common shares for \$58 per share on January 1, 2011. Prepare journal entries to record the share reacquisition transaction.

Common Shares (50,000 * \$40)	\$2,000,000	
Contributed Surplus	100,000	
Retained Earnings	800,000	
Cash (50,000 * \$58)		\$2,900,000

Stan Inc. issued 20,000 common shares for cash at \$55 per share on March 1, 2011. A total direct cost of \$15,000 occurred for issuing these shares. Prepare journal entries to record the share issuance.

Cash (20,000 * \$55 - \$15,000)	\$1,085,000	
Common Shares		\$1,085,000

Problem 4 Non-Financial and Current Liabilities (12 marks)

1. Upland Limited borrowed \$40,000 on November 1, 2011, by signing a \$40,000, three-month, 9% note. Prepare Upland's November 1, 2011 entry; the December 31, 2011 adjusting entry; and the February 1, 2012 entry. Upland Limited's fiscal year end is December 31.

Nov 1	Cash	\$40,000	
	Notes Payable		\$40,000
Dec 31	Interest Expense	\$600	
	Interest Payable		\$600
	(\$40,000 * 9% * 2/12)		
Feb 1	Notes Payable	\$40,000	
	Interest Payable	600	
	Interest Expense	300	
	Cash		\$40,900

2. Whirled Corporation's weekly payroll of \$23,000 included employee income taxes withheld of \$3,426, CPP withheld of \$990, EI withheld of \$920, and health insurance premiums withheld of \$250. Prepare the journal entries to record Whirled's payroll.

Wages Expense	\$23,000	
Employee Income Tax Deductions Payable		\$3,426
CPP Contributions Payable		990
EI Premiums Payable		920
Health Insurance Premiums Payable		250
Cash		17,414

3. Lu Corp. erects and places into service an offshore oil platform on January 1, 2011, at a cost of \$8 million. Lu is legally required to dismantle and remove the platform at the end of its 8-year useful life. Lu estimates that it will cost \$0.8 million to dismantle and remove the platform at the end of its useful life and that the discount rate to be used should be 7%. Prepare the entry to record the asset retirement obligation.

Off-Shore Platform	\$465,607	
Asset Retirement Obligation		\$465,607
\$800,000 * PV(8years,7%) = \$800,000 * 0.58201		

Present Value Tables and Formulae

Present Value of \$1 = $(1 + i)^{-n} = \frac{1}{(1 + i)^n}$

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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

Present Value of an Ordinary Annuity of \$1 = $[1 - (1+i)^{-n}] / i = \frac{1 - \frac{1}{(1+i)^n}}{i}$

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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