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| --- | --- | --- | --- | --- | --- |
|  |  | Question Type | Difficulty | LO7: Present value concepts (Appendix 13A) | Professional exam adapted |
|  | 1 | T/F | M | x |  |
|  | 2 | T/F | M | x |  |
|  | 3 | T/F | E | x |  |
|  | 4 | T/F | M | x |  |
|  | 5 | Conceptual M/C | E | x |  |
|  | 6 | Single Part M/C | E | x |  |
|  | 7 | Single Part M/C | H | x |  |
|  | 8 | Single Part M/C | E | x |  |
|  | 9 | Single Part M/C | M | x |  |
|  | 10 | Single Part M/C | E | x |  |
|  | 11 | Single Part M/C | E | x |  |
|  | 12 | Single Part M/C | M | x |  |
|  | 13 | Single Part M/C | M | x |  |

Appendix 13A

The Concept of Present Value

**True / False Questions**

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| 1. | The present value of a given amount increases as the number of years over which it is to be discounted decreases.    True    False |

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| --- | --- |
| 2. | The higher the discount rate, the lower the present value of a given future cash flow.    True    False |

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| --- | --- |
| 3. | The present value of a cash flow will never be less than the future dollar amount of the cash flow.    True    False |

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| --- | --- |
| 4. | The present value of an amount to be received in five years is greater than the present value of the same amount to be received in ten years.    True    False |

**Multiple Choice Questions**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 5. | Computing the present value of future dollars is known as:      |  |  | | --- | --- | | A. | interpolating. |  |  |  | | --- | --- | | B. | compounding. |  |  |  | | --- | --- | | C. | annualizing. |  |  |  | | --- | --- | | D. | discounting. | |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 6. | (Ignore income taxes in this problem.) Latting Corporation has entered into a 7 year lease for a building it will use as a warehouse. The annual payment under the lease will be $4,781. The first payment will be at the end of the current year and all subsequent payments will be made at year-ends. If the discount rate is 6%, the present value of the lease payments is closest to:      |  |  | | --- | --- | | A. | $31,573 |  |  |  | | --- | --- | | B. | $22,257 |  |  |  | | --- | --- | | C. | $33,467 |  |  |  | | --- | --- | | D. | $26,688 | |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 7. | (Ignore income taxes in this problem.) You have deposited $15,584 in a special account that has a guaranteed rate of return. If you withdraw $3,700 at the end of each year for 5 years, you will completely exhaust the balance in the account. The guaranteed rate of return is closest to:      |  |  | | --- | --- | | A. | 6% |  |  |  | | --- | --- | | B. | 19% |  |  |  | | --- | --- | | C. | 24% |  |  |  | | --- | --- | | D. | 4% | |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8. | (Ignore income taxes in this problem.) James just received an $8,000 inheritance check from the estate of his deceased rich uncle. James wants to set aside enough money to pay for a trip in five years. If the trip is expected to cost $5,000, how much of the $8,000 must James deposit now if the rate of return is 12% per year in order to have the $5,000 in five years?      |  |  | | --- | --- | | A. | $2,535 |  |  |  | | --- | --- | | B. | $2,835 |  |  |  | | --- | --- | | C. | $2,000 |  |  |  | | --- | --- | | D. | $5,000 | |

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| 9. | (Ignore income taxes in this problem.) Schaad Corporation has entered into an 8 year lease for a piece of equipment. The annual payment under the lease will be $2,500, with payments being made at the beginning of each year. If the discount rate is 14%, the present value of the lease payments is closest to:      |  |  | | --- | --- | | A. | $20,000 |  |  |  | | --- | --- | | B. | $7,011 |  |  |  | | --- | --- | | C. | $17,544 |  |  |  | | --- | --- | | D. | $14,097 | |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 10. | (Ignore income taxes in this problem.) How much would you have to invest today in the bank at an interest rate of 5% to have an annuity of $1,400 per year for 5 years, with nothing left in the bank at the end of the 5 years? Select the amount below that is closest to your answer.      |  |  | | --- | --- | | A. | $6,667 |  |  |  | | --- | --- | | B. | $6,061 |  |  |  | | --- | --- | | C. | $7,000 |  |  |  | | --- | --- | | D. | $1,098 | |

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| 11. | (Ignore income taxes in this problem.) Assume you can invest money at a 14% rate of return. How much money must be invested now in order to be able to withdraw $5,000 from this investment at the end of each year for 8 years, the first withdrawal occurring one year from now?      |  |  | | --- | --- | | A. | $24,840 |  |  |  | | --- | --- | | B. | $23,195 |  |  |  | | --- | --- | | C. | $21,440 |  |  |  | | --- | --- | | D. | $1,755 | |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 12. | (Ignore income taxes in this problem.) You have deposited $16,700 in a special account that has a guaranteed rate of return of 11% per year. If you are willing to completely exhaust the account, what is the maximum amount that you could withdraw at the end of each of the next 6 years? Select the amount below that is closest to your answer.      |  |  | | --- | --- | | A. | $3,465 |  |  |  | | --- | --- | | B. | $3,089 |  |  |  | | --- | --- | | C. | $2,783 |  |  |  | | --- | --- | | D. | $3,947 | |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 13. | (Ignore income taxes in this problem.) Harry has just inherited $300,000. Harry has decided to quit his job and go to school full time for the next five years by living off this inheritance. Harry will invest the $300,000 in a money market account that has an 8% interest rate. If Harry's goal is to use up the entire inheritance, approximately what amount can he withdraw from the money market account each year for the next five years? Assume that his first withdrawal will be one year from the day that he sets up the account.      |  |  | | --- | --- | | A. | $64,800 |  |  |  | | --- | --- | | B. | $74,400 |  |  |  | | --- | --- | | C. | $75,131 |  |  |  | | --- | --- | | D. | $84,000 | |

Appendix 13A The Concept of Present Value Answer Key

**True / False Questions**

|  |  |
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| 1. | The present value of a given amount increases as the number of years over which it is to be discounted decreases.    **TRUE** |

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| *AACSB: Reflective Thinking AICPA BB: Critical Thinking AICPA FN: Measurement Blooms: Understand Difficulty: 2 Medium Learning Objective: 13A-07 Understand present value concepts and the use of present value tables.* |

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| --- | --- |
| 2. | The higher the discount rate, the lower the present value of a given future cash flow.    **TRUE** |

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| *AACSB: Reflective Thinking AICPA BB: Critical Thinking AICPA FN: Measurement Blooms: Understand Difficulty: 2 Medium Learning Objective: 13A-07 Understand present value concepts and the use of present value tables.* |

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| 3. | The present value of a cash flow will never be less than the future dollar amount of the cash flow.    **FALSE** |

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| *AACSB: Reflective Thinking AICPA BB: Critical Thinking AICPA FN: Measurement Blooms: Remember Difficulty: 1 Easy Learning Objective: 13A-07 Understand present value concepts and the use of present value tables.* |

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| --- | --- |
| 4. | The present value of an amount to be received in five years is greater than the present value of the same amount to be received in ten years.    **TRUE** |

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| *AACSB: Reflective Thinking AICPA BB: Critical Thinking AICPA FN: Measurement Blooms: Understand Difficulty: 2 Medium Learning Objective: 13A-07 Understand present value concepts and the use of present value tables.* |

**Multiple Choice Questions**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 5. | Computing the present value of future dollars is known as:      |  |  | | --- | --- | | A. | interpolating. |  |  |  | | --- | --- | | B. | compounding. |  |  |  | | --- | --- | | C. | annualizing. |  |  |  | | --- | --- | | **D.** | discounting. | |

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| *AACSB: Reflective Thinking AICPA BB: Critical Thinking AICPA FN: Measurement Blooms: Remember Difficulty: 1 Easy Learning Objective: 13A-07 Understand present value concepts and the use of present value tables.* |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 6. | (Ignore income taxes in this problem.) Latting Corporation has entered into a 7 year lease for a building it will use as a warehouse. The annual payment under the lease will be $4,781. The first payment will be at the end of the current year and all subsequent payments will be made at year-ends. If the discount rate is 6%, the present value of the lease payments is closest to:      |  |  | | --- | --- | | A. | $31,573 |  |  |  | | --- | --- | | B. | $22,257 |  |  |  | | --- | --- | | C. | $33,467 |  |  |  | | --- | --- | | **D.** | $26,688 |   $4,781 × 5.582 = $26,688 (rounded) |

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| *AACSB: Analytic AICPA BB: Critical Thinking AICPA FN: Measurement Blooms: Apply Difficulty: 1 Easy Learning Objective: 13A-07 Understand present value concepts and the use of present value tables.* |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 7. | (Ignore income taxes in this problem.) You have deposited $15,584 in a special account that has a guaranteed rate of return. If you withdraw $3,700 at the end of each year for 5 years, you will completely exhaust the balance in the account. The guaranteed rate of return is closest to:      |  |  | | --- | --- | | **A.** | 6% |  |  |  | | --- | --- | | B. | 19% |  |  |  | | --- | --- | | C. | 24% |  |  |  | | --- | --- | | D. | 4% |   $15,584 = $3,700 × Present value of an annuity for 5 years at X% Present value of an annuity for 5 years at X% = $15,584 ÷ $3,700 = 4.212 This present value factor corresponds to a rate of return of 6%. |

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| *AACSB: Analytic AICPA BB: Critical Thinking AICPA FN: Measurement Blooms: Apply Difficulty: 3 Hard Learning Objective: 13A-07 Understand present value concepts and the use of present value tables.* |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8. | (Ignore income taxes in this problem.) James just received an $8,000 inheritance check from the estate of his deceased rich uncle. James wants to set aside enough money to pay for a trip in five years. If the trip is expected to cost $5,000, how much of the $8,000 must James deposit now if the rate of return is 12% per year in order to have the $5,000 in five years?      |  |  | | --- | --- | | A. | $2,535 |  |  |  | | --- | --- | | **B.** | $2,835 |  |  |  | | --- | --- | | C. | $2,000 |  |  |  | | --- | --- | | D. | $5,000 |   PV = $5,000 × 0.567 = $2,835 |

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| *AACSB: Analytic AICPA BB: Critical Thinking AICPA FN: Measurement Blooms: Apply Difficulty: 1 Easy Learning Objective: 13A-07 Understand present value concepts and the use of present value tables.* |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 9. | (Ignore income taxes in this problem.) Schaad Corporation has entered into an 8 year lease for a piece of equipment. The annual payment under the lease will be $2,500, with payments being made at the beginning of each year. If the discount rate is 14%, the present value of the lease payments is closest to:      |  |  | | --- | --- | | A. | $20,000 |  |  |  | | --- | --- | | B. | $7,011 |  |  |  | | --- | --- | | C. | $17,544 |  |  |  | | --- | --- | | **D.** | $14,097 |   $2,500 × 1.000 + $2,500 × 4.639 = $14,097.50 |

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| *AACSB: Analytic AICPA BB: Critical Thinking AICPA FN: Measurement Blooms: Apply Difficulty: 2 Medium Learning Objective: 13A-07 Understand present value concepts and the use of present value tables.* |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 10. | (Ignore income taxes in this problem.) How much would you have to invest today in the bank at an interest rate of 5% to have an annuity of $1,400 per year for 5 years, with nothing left in the bank at the end of the 5 years? Select the amount below that is closest to your answer.      |  |  | | --- | --- | | A. | $6,667 |  |  |  | | --- | --- | | **B.** | $6,061 |  |  |  | | --- | --- | | C. | $7,000 |  |  |  | | --- | --- | | D. | $1,098 |   $1,400 × 4.329 = $6,060.60 |

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| *AACSB: Analytic AICPA BB: Critical Thinking AICPA FN: Measurement Blooms: Apply Difficulty: 1 Easy Learning Objective: 13A-07 Understand present value concepts and the use of present value tables.* |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 11. | (Ignore income taxes in this problem.) Assume you can invest money at a 14% rate of return. How much money must be invested now in order to be able to withdraw $5,000 from this investment at the end of each year for 8 years, the first withdrawal occurring one year from now?      |  |  | | --- | --- | | A. | $24,840 |  |  |  | | --- | --- | | **B.** | $23,195 |  |  |  | | --- | --- | | C. | $21,440 |  |  |  | | --- | --- | | D. | $1,755 |   PV = $5,000 × Present value of an annuity of $1 over 8 years at 14% = $5,000 × 4.639 = $23,195 |

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| *AACSB: Analytic AICPA BB: Critical Thinking AICPA FN: Measurement Blooms: Apply Difficulty: 1 Easy Learning Objective: 13A-07 Understand present value concepts and the use of present value tables.* |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 12. | (Ignore income taxes in this problem.) You have deposited $16,700 in a special account that has a guaranteed rate of return of 11% per year. If you are willing to completely exhaust the account, what is the maximum amount that you could withdraw at the end of each of the next 6 years? Select the amount below that is closest to your answer.      |  |  | | --- | --- | | A. | $3,465 |  |  |  | | --- | --- | | B. | $3,089 |  |  |  | | --- | --- | | C. | $2,783 |  |  |  | | --- | --- | | **D.** | $3,947 |   $16,700 = X × 4.231 X = $16,700 ÷ 4.231 = $3,947 (rounded) |

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| *AACSB: Analytic AICPA BB: Critical Thinking AICPA FN: Measurement Blooms: Apply Difficulty: 2 Medium Learning Objective: 13A-07 Understand present value concepts and the use of present value tables.* |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 13. | (Ignore income taxes in this problem.) Harry has just inherited $300,000. Harry has decided to quit his job and go to school full time for the next five years by living off this inheritance. Harry will invest the $300,000 in a money market account that has an 8% interest rate. If Harry's goal is to use up the entire inheritance, approximately what amount can he withdraw from the money market account each year for the next five years? Assume that his first withdrawal will be one year from the day that he sets up the account.      |  |  | | --- | --- | | A. | $64,800 |  |  |  | | --- | --- | | B. | $74,400 |  |  |  | | --- | --- | | **C.** | $75,131 |  |  |  | | --- | --- | | D. | $84,000 |   $300,000 = X × 3.993 X = $300,000 ÷ 3.993 = $75,131 (rounded) |

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| *AACSB: Analytic AICPA BB: Critical Thinking AICPA FN: Measurement Blooms: Apply Difficulty: 2 Medium Learning Objective: 13A-07 Understand present value concepts and the use of present value tables.* |