Spring Final Practice A Financial Functions

Name _____ Period_____

1. You qualify for a home loan of $590,000 at an annual interest rate of 4.2% and a loan term of 30 years. What will be your monthly payment?	**1.**
2. Your client has been offered two options for the settlement of a dispute with his insurance company. You must help him to choose the option with the highest present value. **Option One: $22,000 per year for 16 years** **Option Two: $475,000 paid in one lump sum in 12 years.** **Assume an annual rate of return of 6%.** **2A. Find the Present Value of Option One.** **2B. Find the Present Value of Option Two.** **2C. Which option should the client choose?**	**2A.** **2B.** **2C.**
3. You and your spouse earn $115,000 per year, and want to spend only 34% of your income on a mortgage payment. You qualify for a 15-year loan at an annual interest rate of 5.6%. Find how much you can borrow with these limitations.	**3.**
4. In 1970, the annual Consumer Price Index was reset at 100. In 2010, the index was reported to be 245. What is the compounded annual rate of inflation measured by this index? (Report to nearest tenth %)	**4.** **(Report to nearest tenth %)**
5. Three hundred bonds with a face value of $30,000 pay $1,300 per year and mature in 9 years. How much should an investor pay for this investment if they desire a 6% annual return?	**5.**
6. COMPOSITE FUNCTIONS FOR *RETIREMENT PLANNING:* You are twenty-six years old and currently have no savings or debt. You plan to retire at age 70 years when you will collect social security payments. Once you retire, you plan to live another 20 years to the age of 90 years. **6A. DETERMINE TARGET RETIREMENT INCOME: When you retire, you want annual income of $25,000 in today's dollars to supplement your social security checks. You anticipate that the overall rate of inflation will be 3% per year. Convert a value of $25,000 in today's dollars to an inflation-adjusted value when you reach the age of 70 years.** **6B. DETERMINE TARGET RETIREMENT SAVINGS: Now consider you have reached age 70 years. How much savings is required at that time to support the annual target income calculated in #1A for your anticipated period of retirement? Assume the account earns an annual rate of return of 7%.** **6C. DETERMINE REQUIRED ANNUAL SAVINGS: Beginning today, how much must be saved each year to attain your target retirement savings goal determined in #1B?**	**6A.** **6B.** **6C.**

6D. Assume that you decide to retire at age 76 years instead of 70 years, recalculate the composite of three financial functions to determine how much must be <u>saved each year</u> to meet your retirement goals?	**6D.**

7. *FORECASTING & VALUATION:* Provide an income statement for Year 3 given the information below.

- **18-unit apartment building with twelve one-bedroom units, and six two-bedroom units.**
- **Uncertainty regarding the first year monthly rents requires us to consider the following discrete random variable distributions.**

X = One bedroom rent	$750	$900	$1,000
P (X)	20%	50%	30%

Y = Two bedroom rent	$1,250	$1,400
P (Y)	40%	60%

- **Rents will increase 6% each year.**
- **A laundry room generates annual income of $750 for year one. This income is expected to increase at an annual rate of 4%.**
- **Estimate vacancy and collection loss at 5% of gross income.**
- **Annual expenses for the first year are listed below. A review of historical trends provided the following assumptions for inflation by category.**

	Year One Expense Projection	Annual Rate of Increase
Real Estate Taxes	**$10,000**	**2% per year**
Insurance	**$4,000**	**9% per year**
Utilities	**$30,000**	**3% per year**
Maintenance	**$8,000**	**5% per year**
Reserves/Other	**$4,000**	**4% per year**

For the income statement above, consider the outcome where one-bedroom units rent for $900 per month, and two-bedroom units rent for $1,400 per month.

REPORT ONLY THE YEAR 3 INCOME STATEMENT ON THE ANSWER SHEET PROVIDED.

8. – 9. In Question #10, you calculated annual net incomes for years one, two, three, and four assuming the one-bedroom units rent for $900 per month, and two-bedroom units rent for $1,400 per month. Assume the property will be sold for $1,300,000 at the end of Year Three.

8. Find the net present value of this investment if you want to earn an 8.0% annual rate of return.	**8.**
9. What is the internal rate of return if you pay $1,500,000 for this investment today? (Report to nearest tenth %)	**9.** **(Report to nearest tenth %)**
BONUS QUESTION: Using the information in question #10, find the <u>Expected Value</u> for this property. Summarize the value of the outcomes and the probabilities of each outcome on the back of this test. Place the expected value in the answer box to the right. **(MR. NELSON WILL CHECK YOUR SPREADSHEET BEFORE YOU CLOSE EXCEL.)**	**BONUS: Expected Value =**

Spring Final Practice B Financial Functions

Name _____ Period____

1. You qualify for a home loan of $475,000 at an annual interest rate of 4.9% and a loan term of 15 years. What will be your monthly payment?	**1.**
2. Your client has been offered two options for the settlement of a dispute with his insurance company. You must help him to choose the option with the highest present value. **Option One: $20,000 per year for 22 years** **Option Two: $700,000 paid in one lump sum in 15 years.** **Assume an annual rate of return of 8%.** **2A. Find the Present Value of Option One.** **2B. Find the Present Value of Option Two.** **2C. Which option should the client choose?**	**2A.** **2B.** **2C.**
3. Six hundred bonds with a face value of $60,000 pay $3,500 per year and mature in 16 years. How much should an investor pay for this investment if they desire a 6.5% annual return?	**3.**
4. In 1970, the annual Consumer Price Index was reset at 100. In 2000, the index was reported to be 215. What is the compounded annual rate of inflation measured by this index? (Report to nearest tenth %)	**4.** **(Report to nearest tenth %)**
5. You and your spouse earn $95,000 per year, and want to spend only 35% of your income on a mortgage payment. You qualify for a 30-year loan at an annual interest rate of 4.4%. Find how much you can borrow with these limitations.	**5.**
6. COMPOSITE FUNCTIONS FOR *RETIREMENT PLANNING:* You are thirty-five years old and currently have no savings or debt. You plan to retire at age 60 years when you will collect social security payments. Once you retire, you plan to live another 30 years to the age of 90 years. **6A. DETERMINE TARGET RETIREMENT INCOME: When you retire, you want annual income of $25,000 in today's dollars to supplement your social security checks. You anticipate that the overall rate of inflation will be 3% per year. Convert a value of $25,000 in today's dollars to an inflation-adjusted value when you reach the age of 60 years.** **6B. DETERMINE TARGET RETIREMENT SAVINGS: Now consider you have reached age 60 years. How much savings is required at that time to support the annual target income calculated in #1A for your anticipated period of retirement? Assume the account earns an annual rate of return of 8%.** **6C. DETERMINE REQUIRED ANNUAL SAVINGS: Beginning today, how much must be saved each year to attain your target retirement savings goal determined in #1B?**	**6A.** **6B.** **6C.**

6D. Assume that you decide to retire at age 70 years instead of 60 years, recalculate the composite of three financial functions to determine how much must be <u>saved each year</u> to meet your retirement goals?	**6D.**

7. Provide an income statement for Year 3 given the information below.

- **14-unit apartment building with five one-bedroom units, and nine two-bedroom units.**
- **Uncertainty regarding the first year monthly rents requires us to consider the following discrete random variable distributions.**

X = One bedroom rent	$750	$900	$1,000
P (X)	20%	50%	30%

Y = Two bedroom rent	$1,250	$1,400
P (Y)	40%	60%

- **Rents will increase 9% each year.**
- **A laundry room generates annual income of $500 for year one. This income is expected to increase at an annual rate of 5%.**
- **Estimate vacancy and collection loss at 6% of gross income.**
- **Annual expenses for the first year are listed below. A review of historical trends provided the following assumptions for inflation by category.**

	Year One Expense Projection	Annual Rate of Increase
Real Estate Taxes	**$8,000**	**2% per year**
Insurance	**$5,000**	**4% per year**
Utilities	**$15,000**	**10% per year**
Maintenance	**$6,000**	**5% per year**
Reserves/Other	**$8,000**	**3% per year**

For the income statement above, consider the outcome where one-bedroom units rent for $750 per month, and two-bedroom units rent for $1,250 per month.

REPORT ONLY THE YEAR 3 INCOME STATEMENT ON THE ANSWER SHEET PROVIDED.

8. – 9. In Question #7, you calculated annual net incomes for years one, two, three, and four assuming the one-bedroom units rent for $750 per month, and two-bedroom units rent for $1,250 per month. Assume the property will be sold for $1,200,000 at the end of Year Three.

8. Find the net present value of this investment if you want to earn a 9.0% annual rate of return.	**8.**
9. What is the internal rate of return if you pay $1,350,000 for this investment today? (Report to nearest tenth %)	**9.** **(Report to nearest tenth %)**
BONUS QUESTION: Using the information in question #10, find the <u>Expected Value</u> for this property. Summarize the value of the outcomes and the probabilities of each outcome on the back of this test. Place the expected value in the answer box to the right. **(MR. NELSON WILL CHECK YOUR SPREADSHEET BEFORE YOU CLOSE EXCEL.)**	**BONUS: Expected Value =**

Spring Final Practice C Financial Functions

Name _____ Period____

1. In 1980, the annual Consumer Price Index was reset at 100. In 2000, the index was reported to be 145. What is the compounded annual rate of inflation measured by this index? (Report to nearest tenth %)	**1.** **(Report to nearest tenth %)**
2. Your client has been offered two options for the settlement of a dispute with his insurance company. You must help him to choose the option with the highest present value. **Option One: $18,000 per year for 8 years** **Option Two: $150,000 paid in one lump sum in 6 years.** **Assume an annual rate of return of 10%.** **2A. Find the Present Value of Option One.** **2B. Find the Present Value of Option Two.** **2C. Which option should the client choose?**	**2A.** **2B.** **2C.**
3. Two hundred bonds with a face value of $20,000 pay $1,400 per year and mature in 11 years. How much should an investor pay for this investment if they desire a 7% annual return?	**3.**
4. You and your spouse earn $100,000 per year, and want to spend only 33% of your income on a mortgage payment. You qualify for a 30-year loan at an annual interest rate of 5.1%. Find how much you can borrow with these limitations.	**4.**
5. You qualify for a home loan of $250,000 at an annual interest rate of 4.9% and a loan term of 15 years. What will be your monthly payment?	**5.**
6. COMPOSITE FUNCTIONS FOR RETIREMENT PLANNING: You are thirty years old and currently have no savings or debt. You plan to retire at age 65 years when you will collect social security payments. Once you retire, you plan to live another 20 years to the age of 85 years. **6A. DETERMINE TARGET RETIREMENT INCOME: When you retire, you want annual income of $25,000 in today's dollars to supplement your social security checks. You anticipate that the overall rate of inflation will be 4% per year. Convert a value of $25,000 in today's dollars to an inflation-adjusted value when you reach the age of 65 years.** **6B. DETERMINE TARGET RETIREMENT SAVINGS: Now consider you have reached age 65 years. How much savings is required at that time to support the annual target income calculated in #1A for your anticipated period of retirement? Assume the account earns an annual rate of return of 6%.** **6C. DETERMINE REQUIRED ANNUAL SAVINGS: Beginning today, how much must be saved each year to attain your target retirement savings goal determined in #1B?**	**6A.** **6B.** **6C.**

6D. Assume that you decide to retire at age 70 years instead of 65 years, recalculate the composite of three financial functions to determine how much must be <u>saved each year</u> to meet your retirement goals?	**6D.**

7. Provide an income statement for Year 4 given the information below.

- **17-unit apartment building with ten one-bedroom units, and seven two-bedroom units.**
- **Uncertainty regarding the first year monthly rents requires us to consider the following discrete random variable distributions.**

X = One bedroom rent	$750	$900	$1,000
P (X)	20%	50%	30%

Y = Two bedroom rent	$1,250	$1,400
P (Y)	40%	60%

- **Rents will increase 7% each year.**
- **A laundry room generates annual income of $750 for year one. This income is expected to increase at an annual rate of 8%.**
- **Estimate vacancy and collection loss at 5% of gross income.**
- **Annual expenses for the first year are listed below. A review of historical trends provided the following assumptions for inflation by category.**

	Year One Expense Projection	Annual Rate of Increase
Real Estate Taxes	**$12,000**	**2% per year**
Insurance	**$3,000**	**6% per year**
Utilities	**$14,000**	**7% per year**
Maintenance	**$5,000**	**5% per year**
Reserves/Other	**$3,000**	**4% per year**

For the income statement above, consider the outcome where one-bedroom units rent for $900 per month, and two-bedroom units rent for $1,400 per month.

REPORT ONLY THE YEAR 3 INCOME STATEMENT ON THE ANSWER SHEET PROVIDED.

8. – 9. In Question #10, you calculated annual net incomes for years one, two, three, and four assuming the one-bedroom units rent for $900 per month, and two-bedroom units rent for $1,400 per month. Assume the property will be sold for $1,600,000 at the end of Year Four.

8. Find the net present value of this investment if you want to earn an 12.0% annual rate of return.	**8.**
9. What is the internal rate of return if you pay $1,550,000 for this investment today? (Report to nearest tenth %)	**9.** **(Report to nearest tenth %)**
BONUS QUESTION: Using the information in question #10, find the <u>Expected Value</u> for this property. Summarize the value of the outcomes and the probabilities of each outcome on the back of this test. Place the expected value in the answer box to the right. **(MR. NELSON WILL CHECK YOUR SPREADSHEET BEFORE YOU CLOSE EXCEL.)**	**BONUS: Expected Value =**

Spring Final Practice D Financial Functions

Name _____ Period____

1. Four hundred bonds with a face value of $40,000 pay $1,900 per year and mature in 18 years. How much should an investor pay for this investment if they desire a 7% annual return?	**1.**
2. Your client has been offered two options for the settlement of a dispute with his insurance company. You must help him to choose the option with the highest present value. **Option One: $15,000 per year for 15 years** **Option Two: $270,000 paid in one lump sum in 10 years.** **Assume an annual rate of return of 8.5%.** **2A. Find the Present Value of Option One.** **2B. Find the Present Value of Option Two.** **2C. Which option should the client choose?**	**2A.** **2B.** **2C.**
3. In 1960, the annual Consumer Price Index was reset at 100. In 2010, the index was reported to be 385. What is the compounded annual rate of inflation measured by this index? (Report to nearest tenth %)	**3.** **(Report to nearest tenth %)**
4. You and your spouse earn $140,000 per year, and want to spend only 36% of your income on a mortgage payment. You qualify for a 30-year loan at an annual interest rate of 3.7%. Find how much you can borrow with these limitations.	**4.**
5. You qualify for a home loan of $380,000 at an annual interest rate of 4.1% and a loan term of 15 years. What will be your monthly payment?	**5.**
6. *RETIREMENT SAVINGS PLANNING:* You are thirty years old and currently have no savings or debt. You plan to retire at age 65 years when you will collect social security payments. Once you retire, you plan to live another 25 years to 90 years. **6A. DETERMINE TARGET RETIREMENT INCOME: When you retire, you want annual income of $12,000 in today's dollars to supplement your social security checks. You anticipate that the overall rate of inflation will be 4% per year. Convert a value of $12,000 in today's dollars to an inflation-adjusted value when you reach the age of 65 years.** **6B. DETERMINE TARGET RETIREMENT SAVINGS: Now consider you have reached age 65 years. How much savings is required at that time to support the annual target income calculated in #1A for your anticipated period of retirement? Assume the account earns an annual rate of return of 6%.** **6C. DETERMINE REQUIRED ANNUAL SAVINGS: Beginning today, how much must be saved each year to attain your target retirement savings goal determined in #1B?**	**6A.** **6B.** **6C.**

6D. Assume that you decide to retire at age 75 years instead of 65 years, recalculate the composite of three financial functions to determine how much must be <u>saved each year</u> to meet your retirement goals?	**6D.**

7. Provide an income statement for Year 4 given the information below.

- **15-unit apartment building with ten one-bedroom units, and five two-bedroom units.**
- **Uncertainty regarding the first year monthly rents requires us to consider the following discrete random variable distributions.**

X = One bedroom rent	$750	$900	$1,000
P (X)	20%	50%	30%

Y = Two bedroom rent	$1,250	$1,400
P (Y)	40%	60%

- **Rents will increase 6% each year.**
- **A laundry room generates annual income of $900 for year one. This income is expected to increase at an annual rate of 3%.**
- **Estimate vacancy and collection loss at 7% of gross income.**
- **Annual expenses for the first year are listed below. A review of historical trends provided the following assumptions for inflation by category.**

	Year One Expense Projection	Annual Rate of Increase
Real Estate Taxes	**$10,000**	**2% per year**
Insurance	**$4,000**	**6% per year**
Utilities	**$25,000**	**5% per year**
Maintenance	**$8,000**	**3% per year**
Reserves/Other	**$4,000**	**4% per year**

For the income statement above, consider the outcome where one-bedroom units rent for $750 per month, and two-bedroom units rent for $1,400 per month.

REPORT ONLY THE YEAR 3 INCOME STATEMENT ON THE ANSWER SHEET PROVIDED.

8. – 9. In Question #10, you calculated annual net incomes for years one, two, three, and four assuming the one-bedroom units rent for $750 per month, and two-bedroom units rent for $1,250 per month. Assume the property will be sold for $1,250,000 at the end of Year Four.

8. Find the net present value of this investment if you want to earn an 10.5% annual rate of return.	**8.**
9. What is the internal rate of return if you pay $1,150,000 for this investment today? (Report to nearest tenth %)	**9.** **(Report to nearest tenth %)**
BONUS QUESTION: Using the information in question #10, find the <u>Expected Value</u> for this property. Summarize the value of the outcomes and the probabilities of each outcome on the back of this test. Place the expected value in the answer box to the right. **MR. NELSON WILL CHECK YOUR SPREADSHEET BEFORE YOU CLOSE EXCEL**	**BONUS: Expected Value =**