The Time Value of Money

Test ID: 7658669

Question #1 of 87

Question ID: 412807

You borrow $15,000 to buy a car. The loan is to be paid off in monthly payments over 5 years at 12% annual interest. What is the amount of each payment?

✗ **A) $456.**

✗ **B)** $546.

✓ **C)** $334.

Explanation

I = 12 / 12 = 1; N = 5 × 12 = 60; PV = 15,000; CPT → PMT = 333.67.

Question #2 of 87

Question ID: 412753

Wei Zhang has funds on deposit with Iron Range bank. The funds are currently earning 6% interest. If he withdraws $15,000 to purchase an automobile, the 6% interest rate can be best thought of as a(n):

✗ **A) discount rate.**

✓ **B)** opportunity cost.

✗ **C)** financing cost.

Explanation

Since Wei will be foregoing interest on the withdrawn funds, the 6% interest can be best characterized as an opportunity cost - the return he could earn by postponing his auto purchase until the future.

Question #3 of 87

Question ID: 412768

A local bank offers an account that pays 8%, compounded quarterly, for any deposits of $10,000 or more that are left in the account for a period of 5 years. The effective annual rate of interest on this account is:

✓ **A) 8.24%.**

✗ **B)** 4.65%.

✗ **C)** 9.01%.

Explanation

$(1 + \text{periodic rate})^m - 1 = (1.02)^4 - 1 = 8.24\%$.

Question #4 of 87

Question ID: 412759

As the number of compounding periods increases, what is the effect on the EAR? EAR:

- ✓ **A) increases at a decreasing rate.**
- ✗ **B)** increases at an increasing rate.
- ✗ **C)** does not increase.

Explanation

There is an upper limit to the EAR as the frequency of compounding increases. In the limit, with continuous compounding the EAR = e^{APR} -1. Hence, the EAR increases at a decreasing rate.

Question #5 of 87

Question ID: 412810

An investor deposits $4,000 in an account that pays 7.5%, compounded annually. How much will this investment be worth after 12 years?

- ✗ **A) $5,850.**
- ✗ **B)** $9,358.
- ✓ **C)** $9,527.

Explanation

N = 12; I/Y = 7.5; PV = -4,000; PMT = 0; CPT → FV = $9,527.

Question #6 of 87

Question ID: 412802

Consider a 10-year annuity that promises to pay out $10,000 per year; given this is an ordinary annuity and that an investor can earn 10% on her money, the future value of this annuity, at the end of 10 years, would be:

- ✓ **A) $159,374.**
- ✗ **B)** $175,312.
- ✗ **C)** $110.000.

Explanation

N = 10; I/Y = 10; PMT = -10,000; PV = 0; CPT → FV = $159,374.

Question #7 of 87

Question ID: 412814

If 10 equal annual deposits of $1,000 are made into an investment account earning 9% starting today, how much will you have in 20 years?

- ✓ **A) $39,204.**
- ✗ **B)** $42,165.
- ✗ **C)** $35,967.

Explanation

Switch to BGN mode. PMT = -1,000; N = 10, I/Y = 9, PV = 0; CPT → FV = 16,560.29. Remember the answer will be one year after the last payment in annuity due FV problems. Now PV_{10} = 16,560.29; N = 10; I/Y = 9; PMT = 0; CPT → FV = 39,204.23. Switch back to END mode.

Question #8 of 87

Question ID: 412790

An investor purchases a 10-year, $1,000 par value bond that pays annual coupons of $100. If the market rate of interest is 12%, what is the current market value of the bond?

✗ **A) $1,124.**

✓ **B)** $887.

✗ **C)** $950.

Explanation

Note that bond problems are just mixed annuity problems. You can solve bond problems directly with your financial calculator using all five of the main TVM keys at once. For bond-types of problems the bond's price (PV) will be negative, while the coupon payment (PMT) and par value (FV) will be positive. N = 10; I/Y = 12; FV = 1,000; PMT = 100; CPT → PV = -886.99.

Question #9 of 87

Question ID: 412773

Given: $1,000 investment, compounded monthly at 12% find the future value after one year.

✗ **A) $1,121.35.**

✓ **B)** $1,126.83.

✗ **C)** $1,120.00.

Explanation

Divide the interest rate by the number of compound periods and multiply the number of years by the number of compound periods. I = 12 / 12 = 1; N = (1)(12) = 12; PV = 1,000.

Question #10 of 87

Question ID: 412785

An investor deposits $10,000 in a bank account paying 5% interest compounded annually. Rounded to the nearest dollar, in 5 years the investor will have:

✗ **A) $12,500.**

✓ **B)** $12,763.

✗ **C)** $10,210.

Explanation

PV = 10,000; I/Y = 5; N = 5; CPT → FV = 12,763.

or: $10,000(1.05)^5 = 12,763$.

Question #11 of 87

Question ID: 412809

Given the following cash flow stream:

End of Year	*Annual Cash Flow*
1	$4,000
2	$2,000
3	-0-
4	-$1,000

Using a 10% discount rate, the present value of this cash flow stream is:

✓ **A) $4,606.**

✗ **B)** $3,415.

✗ **C)** $3,636.

Explanation

PV(1): N = 1; I/Y = 10; FV = -4,000; PMT = 0; CPT → PV = 3,636
PV(2): N = 2; I/Y = 10; FV = -2,000; PMT = 0; CPT → PV = 1,653
PV(3): 0
PV(4): N = 4; I/Y = 10; FV = 1,000; PMT = 0; CPT → PV = -683
Total PV = 3,636 + 1,653 + 0 − 683 = 4,606

Question #12 of 87

Question ID: 412769

If a $45,000 car loan is financed at 12% over 4 years, what is the monthly car payment?

✓ **A) $1,185.**

✗ **B)** $985.

✗ **C)** $1,565.

Explanation

N = 4 × 12 = 48; I/Y = 12/12 = 1; PV = -45,000; FV = 0; CPT → PMT = 1,185.02

Question #13 of 87

Question ID: 412786

Find the future value of the following uneven cash flow stream. Assume end of the year payments. The discount rate is 12%.

Year 1	-2,000
Year 2	-3,000

Year 3	6,000
Year 4	25,000
Year 5	30,000

✗ **A) $33,004.15.**

✓ **B)** $58,164.58.

✗ **C)** $65,144.33.

Explanation

N = 4; I/Y = 12; PMT = 0; PV = -2,000; CPT → FV = -3,147.04
N = 3; I/Y = 12; PMT = 0; PV = -3,000; CPT → FV = -4,214.78
N = 2; I/Y = 12; PMT = 0; PV = 6,000; CPT → FV = 7,526.40
N = 1; I/Y = 12; PMT = 0; PV = 25,000; CPT → FV = 28,000.00
N = 0; I/Y = 12; PMT = 0; PV = 30,000; CPT → FV = 30,000.00

Sum the cash flows: $58,164.58.

Alternative calculation solution: $-2{,}000 \times 1.12^4 - 3{,}000 \times 1.12^3 + 6{,}000 \times 1.12^2 + 25{,}000 \times 1.12 + 30{,}000 = \$58{,}164.58$.

Question #14 of 87

Question ID: 412782

If $10,000 is invested in a mutual fund that returns 12% per year, after 30 years the investment will be worth:

✗ **A) $300,000.**

✗ **B)** $10,120.

✓ **C)** $299,599.

Explanation

FV = $10{,}000(1.12)^{30} = 299{,}599$

Using TI BAII Plus: N = 30; I/Y = 12; PV = -10,000; CPT → FV = 299,599.

Question #15 of 87

Question ID: 412811

An annuity will pay eight annual payments of $100, with the first payment to be received one year from now. If the interest rate is 12% per year, what is the present value of this annuity?

✗ **A) $1,229.97.**

✗ **B)** $556.38.

✓ **C)** $496.76.

Explanation

N = 8; I/Y = 12%; PMT = -$100; FV = 0; CPT → PV = $496.76.

Question #16 of 87

Question ID: 412794

Assuming a discount rate of 10%, which stream of annual payments has the *highest* present value?

✗ **A)** **$20 -$5 $20 $110**

✗ **B)** -$100 -$100 -$100 $500

✓ **C)** $110 $20 $10 $5

Explanation

This is an intuition question. The two cash flow streams that contain the $110 payment have the same total cash flow but the correct answer is the one where the $110 occurs earlier. The cash flow stream that has the $500 that occurs four years hence is overwhelmed by the large negative flows that precede it.

Question #17 of 87

Question ID: 412756

The real risk-free rate can be thought of as:

✗ **A)** **approximately the nominal risk-free rate plus the expected inflation rate.**

✓ **B)** approximately the nominal risk-free rate reduced by the expected inflation rate.

✗ **C)** exactly the nominal risk-free rate reduced by the expected inflation rate.

Explanation

The approximate relationship between nominal rates, real rates and expected inflation rates can be written as:

> *Nominal risk-free rate = real risk-free rate + expected inflation rate.*

Therefore we can rewrite this equation in terms of the real risk-free rate as:

> *Real risk-free rate = Nominal risk-free rate - expected inflation rate*

The exact relation is: (1 + real)(1 + expected inflation) = (1 + nominal)

Question #18 of 87

Question ID: 412828

An investor who requires an annual return of 12% has the choice of receiving one of the following:

A. 10 annual payments of $1,225.00 to begin at the end of one year.
B. 10 annual payments of $1,097.96 beginning immediately.

Which option has the highest present value (PV) and approximately how much greater is it than the other option?

✗ **A)** **Option B's PV is $114 greater than option A's.**

✓ **B)** Option B's PV is $27 greater than option A's.

✗ **C)** Option A's PV is $42 greater than option B's.

Explanation

Option A: N = 10, PMT = -$1,225, I = 12%, FV = 0, Compute PV = $6,921.52.
Option B: N = 9, PMT = -$1,097.96, I = 12%, FV = 0, Compute PV → $5,850.51 + 1,097.96 = 6,948.17 or put calculator in Begin mode N = 10, PMT = $1,097.96, I = 12%, FV = 0, Compute PV → $6,948.17. Difference between the 2 options = $6,921.52 − $6,948.17 = -$26.65.

Option B's PV is approximately $27 higher than option A's PV.

Question #19 of 87

Question ID: 412778

A local bank offers a certificate of deposit (CD) that earns 5.0% compounded quarterly for three and one half years. If a depositor places $5,000 on deposit, what will be the value of the account at maturity?

✗ **A) $5,931.06.**

✓ **B)** $5,949.77.

✗ **C)** $5,875.00.

Explanation

The value of the account at maturity will be: $5,000 × $(1 + 0.05 / 4)^{(3.5 \times 4)}$ = $5.949.77;
or with a financial calculator: N = 3 years × 4 quarters/year + 2 = 14 periods; I = 5% / 4 quarters/year = 1.25; PV = $5,000; PMT = 0; CPT → FV = $5,949.77.

Question #20 of 87

Question ID: 412803

Justin Banks just won the lottery and is trying to decide between the annual cash flow payment option or the lump sum option. He can earn 8% at the bank and the annual cash flow option is $100,000/year, beginning today for 15 years. What is the annual cash flow option worth to Banks today?

✗ **A) $855,947.87.**

✓ **B)** $924,423.70.

✗ **C)** $1,080,000.00.

Explanation

First put your calculator in the BGN.

N = 15; I/Y = 8; PMT = 100,000; CPT → PV = 924,423.70.

Alternatively, do not set your calculator to BGN, simply multiply the ordinary annuity (end of the period payments) answer by 1 + I/Y. You get the annuity due answer and you don't run the risk of forgetting to reset your calculator back to the end of the period setting.

OR N = 14; I/Y = 8; PMT = 100,000; CPT → PV = 824,423.70 + 100,000 = 924,423.70.

Question #21 of 87

Question ID: 412793

The following stream of cash flows will occur at the end of the next five years.

Yr 1	-2,000
Yr 2	-3,000
Yr 3	6,000
Yr 4	25,000
Yr 5	30,000

At a discount rate of 12%, the present value of this cash flow stream is *closest* to:

✓ **A) $33,004.**

✗ **B)** $58,165.

✗ **C)** $36,965.

Explanation

N = 1; I/Y = 12; PMT = 0; FV = -2,000; CPT → PV = -1,785.71.
N = 2; I/Y = 12; PMT = 0; FV = -3,000; CPT → PV = -2,391.58.
N = 3; I/Y = 12; PMT = 0; FV = 6,000; CPT → PV = 4,270.68.
N = 4; I/Y = 12; PMT = 0; FV = 25,000; CPT → PV = 15,887.95.
N = 5; I/Y = 12; PMT = 0; FV = 30,000; CPT → PV = 17,022.81.
Sum the cash flows: $33,004.15.

Note: If you want to use your calculator's NPV function to solve this problem, you need to enter zero as the initial cash flow (CF_0). If you enter -2,000 as CF_0, all your cash flows will be one period too soon and you will get one of the wrong answers.

Question #22 of 87

Question ID: 485754

Paul Kohler inherits $50,000 and deposits it immediately in a bank account that pays 6% interest. No other deposits or withdrawals are made. In two years, what will be the account balance assuming monthly compounding?

✗ **A) $53,100.**

✗ **B)** $50,500.

✓ **C)** $56,400.

Explanation

To compound monthly, remember to divide the interest rate by 12 (6%/12 = 0.50%) and the number of periods will be 2 years times 12 months (2 × 12 = 24 periods). The value after 24 periods is $50,000 × 1.005^{24} = $56,357.99.

The problem can also be solved using the time value of money functions: N = 24; I/Y = 0.5; PMT = 0; PV = 50,000; CPT FV = $56,357.99.

Question #23 of 87

Question ID: 412812

An annuity will pay eight annual payments of $100, with the first payment to be received three years from now. If the interest

rate is 12% per year, what is the present value of this annuity? The present value of:

- ✓ **A) a lump sum discounted for 2 years, where the lump sum is the present value of an ordinary annuity of 8 periods at 12%.**
- ✗ **B)** a lump sum discounted for 3 years, where the lump sum is the present value of an ordinary annuity of 8 periods at 12%.
- ✗ **C)** an ordinary annuity of 8 periods at 12%.

Explanation

The PV of an ordinary annuity (calculation END mode) gives the value of the payments one period before the first payment, which is a time = 2 value here. To get a time = 0 value, this value must be discounted for two periods (years).

Question #24 of 87

Question ID: 412787

What is the maximum an investor should be willing to pay for an annuity that will pay out $10,000 at the beginning of each of the next 10 years, given the investor wants to earn 12.5%, compounded annually?

- ✓ **A) $62,285.**
- ✗ **B)** $52,285.
- ✗ **C)** $55,364.

Explanation

Using END mode, the PV of this annuity due is $10,000 plus the present value of a 9-year ordinary annuity: N=9; I/Y=12.5; PMT=-10,000; FV=0; CPT PV=$52,285; $52,285 + $10,000 = $62,285.

Or set your calculator to BGN mode then N=10; I/Y=12.5; PMT=-10,000; FV=0; CPT PV= $62,285.

Question #25 of 87

Question ID: 412799

What is the present value of a 10-year, $100 annual annuity due if interest rates are 0%?

- ✗ **A) No solution.**
- ✓ **B)** $1,000.
- ✗ **C)** $900.

Explanation

When I/Y = 0 you just sum up the numbers since there is no interest earned.

Question #26 of 87

Question ID: 412792

If $2,000 a year is invested at the end of each of the next 45 years in a retirement account yielding 8.5%, how much will an investor have at retirement 45 years from today?

✗ **A) $100,135.**

✓ **B)** $901,060.

✗ **C)** $90,106.

Explanation

N = 45; PMT = -2,000; PV = 0; I/Y = 8.5%; CPT → FV = $901,060.79.

Question #27 of 87

Question ID: 412755

Vega research has been conducting investor polls for Third State Bank. They have found the most investors are not willing to tie up their money in a 1-year (2-year) CD unless they receive at least 1.0% (1.5%) more than they would on an ordinary savings account. If the savings account rate is 3%, and the bank wants to raise funds with 2-year CDs, the yield must be at least:

✓ **A) 4.5%, and this represents a required rate of return.**

✗ **B)** 4.0%, and this represents a required rate of return.

✗ **C)** 4.5%, and this represents a discount rate.

Explanation

Since we are taking the view of the minimum amount required to induce investors to lend funds to the bank, this is best described as a required rate of return. Based upon the numerical information, the rate must be 4.5% (= 3.0 + 1.5).

Question #28 of 87

Question ID: 412754

Selmer Jones has just inherited some money and wants to set some of it aside for a vacation in Hawaii one year from today. His bank will pay him 5% interest on any funds he deposits. In order to determine how much of the money must be set aside and held for the trip, he should use the 5% as a:

✓ **A) discount rate.**

✗ **B)** required rate of return.

✗ **C)** opportunity cost.

Explanation

He needs to figure out how much the trip will cost in one year, and use the 5% as a discount rate to convert the future cost to a present value. Thus, in this context the rate is best viewed as a discount rate.

Question #29 of 87

Question ID: 412770

Jamie Morgan needs to accumulate $2,000 in 18 months. If she can earn 6% at the bank, compounded quarterly, how much must she deposit today?

✓ **A) $1,829.08.**

✗ **B)** $1,832.61.

✗ **C)** $1,840.45.

Explanation

Each quarter of a year is comprised of 3 months thus N = 18 / 3 = 6; I/Y = 6 / 4 = 1.5; PMT = 0; FV = 2,000; CPT → PV = $1,829.08.

Question #30 of 87

Question ID: 412816

Renee Fisher invests $2,000 each year, starting one year from now, in a retirement account. If the investments earn 8% or 10% annually over 30 years, the amount Fisher will accumulate is *closest* to:

	8%	10%
✗ **A)**	**$245,000**	**$360,000**
✓ **B)**	$225,000	$330,000
✗ **C)**	$225,000	$360,000

Explanation

N = 30; I/Y = 8; PMT = -2,000; PV = 0; CPT FV = 226,566.42

N = 30; I/Y = 10; PMT = -2,000; PV = 0; CPT FV = 328,988.05

Question #31 of 87

Question ID: 412829

It will cost $20,000 a year for four years when an 8-year old child is ready for college. How much should be invested today if the child will make the first of four annual withdrawals 10-years from today? The expected rate of return is 8%.

✗ **A) $66,243.**

✗ **B)** $30,683.

✓ **C)** $33,138.

Explanation

First, find the present value of the college costs as of the end of year 9. (Remember that the PV of an ordinary annuity is as of time = 0. If the first payment is in year 10, then the present value of the annuity is indexed to the end of year 9). N = 4; I/Y = 8; PMT = 20,000; CPT → PV = $66,242.54. Second, find the present value of this single sum: N = 9; I/Y = 8; FV = 66,242.54; PMT = 0; CPT → PV = 33,137.76.

Question #32 of 87

Question ID: 485755

An investor makes 48 monthly payments of $500 each beginning today into an account that will have a value of $29,000 at the end of four years. The stated annual interest rate is *closest to*:

✗ **A) 9.50%.**

✓ **B)** 9.00%.

✗ **C)** 10.00%.

Explanation

Because this is an annuity due (payments at the start of each period) the calculator must first be set to BGN mode.

N = 48; PMT = 500; FV = -29,000; PV = 0; CPT I/Y = 0.7532

This percentage is a monthly rate because the time periods were entered as 48 months. It must be converted to a stated annual percentage rate (APR) by multiplying by the number of compounding periods per year: 0.7532 × 12 = 9.04%.

Question #33 of 87

Question ID: 434184

A stated interest rate of 9% compounded semiannually results in an effective annual rate *closest to*:

✗ **A) 9.3%.**

✗ **B)** 9.1%.

✓ **C)** 9.2%.

Explanation

Semiannual rate = 0.09 / 2 = 0.045.
Effective annual rate = $(1 + 0.045)^2 - 1 = 0.09203$, or 9.203%.

Question #34 of 87

Question ID: 412760

A local bank advertises that it will pay interest at the rate of 4.5%, compounded monthly, on regular savings accounts. What is the effective rate of interest that the bank is paying on these accounts?

✓ **A) 4.59%.**

✗ **B)** 4.50%.

✗ **C)** 4.65%.

Explanation

$(1 + 0.045 / 12)^{12} - 1 = 1.0459 - 1 = 0.0459$.

Question #35 of 87

Question ID: 412822

Sarah Parker is buying a new $25,000 car. Her trade-in is worth $5,000 so she needs to borrow $20,000. The loan will be paid in 48 monthly installments and the annual interest rate on the loan is 7.5%. If the first payment is due at the end of the first month, what is Sarah's monthly car payment?

✗ **A) $480.57.**

✓ **B)** $483.58.

✗ **C)** $416.67.

Explanation

N = 48; I/Y = 7.5 / 12 = 0.625; PV = 20,000; FV = 0; CPT → PMT = 483.58.

Question #36 of 87

Question ID: 412808

An investment offers $100 per year forever. If Peter Wallace's required rate of return on this investment is 10%, how much is this investment worth to him?

✓ **A) $1,000.**

✗ **B)** $10,000.

✗ **C)** $500.

Explanation

For a perpetuity, PV = PMT ÷ I = 100 ÷ 0.10 = 1,000.

Question #37 of 87

Question ID: 412823

How much should an investor have in a retirement account on his 65th birthday if he wishes to withdraw $40,000 on that birthday and each of the following 14 birthdays, assuming his retirement account is expected to earn 14.5%?

✓ **A) $274,422.**

✗ **B)** $272,977.

✗ **C)** $234,422.

Explanation

This is an annuity due so set your calculator to the BGN mode. N = 15; I/Y = 14.5; PMT = -40,000; FV = 0; CPT → PV = 274,422.50. Switch back to END mode.

Question #38 of 87

Question ID: 412806

What is the present value of a 12-year annuity due that pays $5,000 per year, given a discount rate of 7.5%?

✗ **A) $36,577.**

✓ **B)** $41,577.

✗ **C)** $38,676.

Explanation

Using your calculator: N = 11; I/Y = 7.5; PMT = -5,000; FV = 0; CPT → PV = 36,577 + 5,000 = $41,577. Or set your calculator to BGN mode and N = 12; I/Y = 7.5; PMT = -5,000; FV = 0; CPT → PV = $41,577.

Question #39 of 87

Question ID: 412784

If a person needs $20,000 in 5 years from now and interest rates are currently 6% how much do they need to invest today if interest is compounded annually?

✗ **A) $14,683.**

✓ **B)** $14,945.

✗ **C)** $15,301.

Explanation

PV = FV / $(1 + r)^n$ = 20,000 / $(1.06)^5$ = 20,000 / 1.33823 = $14,945

N = 5; I/Y = 6%; PMT = 0; FV = $20,000; CPT → PV = -$14,945.16

Question #40 of 87

Question ID: 412763

A local loan shark offers 4 for 5 on payday. What it involves is that you borrow $4 from him and repay $5 on the next payday (one week later). What would the stated annual interest rate be on this loan, with weekly compounding? Assuming 52 weeks in one year, what is the effective annual interest rate on this loan? Select the respective answer choices closest to your numbers.

✓ **A) 1,300%; 10,947,544%.**

✗ **B)** 25%; 1,300%.

✗ **C)** 25%; 300%.

Explanation

Stated Weekly Rate= 5/4 − 1 = 25%
Stated Annual Rate = 1,300%

Annual Effective Interest Rate = $(1 + 0.25)^{52}$ − 1 = 109,476.44 − 1 = 10,947,544%

Question #41 of 87

Question ID: 412777

The value in 7 years of $500 invested today at an interest rate of 6% compounded monthly is *closest to:*

✓ **A) $760.**

✗ **B)** $750.

✗ **C)** $780.

Explanation

PV = -500; N = 7 × 12 = 84; I/Y = 6/12 = 0.5; compute FV = 760.18

Question #42 of 87

Question ID: 412804

Concerning an ordinary annuity and an annuity due with the same payments and positive interest rate, which of the following statements is *most* accurate?

✗ **A) There is no relationship.**

✓ **B)** The present value of the ordinary annuity is less than an annuity due.

✗ **C)** The present value of the ordinary annuity is greater than an annuity due.

Explanation

With a positive interest rate, the present value of an ordinary annuity is less than the present value of an annuity due. The first cash flow in an annuity due is at the beginning of the period, while in an ordinary annuity, the first cash flow occurs at the end of the period. Therefore, each cash flow of the ordinary annuity is discounted one period more.

Question #43 of 87

Question ID: 412801

If $2,500 were put into an account at the end of each of the next 10 years earning 15% annual interest, how much would be in the account at the end of ten years?

✗ **A) $27,461.**

✗ **B)** $41,965.

✓ **C)** $50,759.

Explanation

N = 10; I = 15; PMT = 2,500; CPT → FV = $50,759.

Question #44 of 87

Question ID: 412825

Elise Corrs, hedge fund manager and avid downhill skier, was recently granted permission to take a 4 month sabbatical. During the sabbatical, (scheduled to start in 11 months), Corrs will ski at approximately 12 resorts located in the Austrian, Italian, and Swiss Alps. Corrs estimates that she will need $6,000 at the beginning of each month for expenses that month. (She has already financed her initial travel and equipment costs.) Her financial planner estimates that she will earn an annual rate of 8.5% during her savings period and an annual rate of return during her sabbatical of 9.5%. How much does she need to put in her savings account at the end of each month for the next 11 months to ensure the cash flow she needs over her sabbatical? Each month, Corrs should save approximately:

✗ **A) $2,070.**

✓ **B)** $2,080.

✗ **C)** $2,065.

Explanation

This is a two-step problem. First, we need to calculate the present value of the amount she needs over her sabbatical. (This amount will be in the form of an annuity due since she requires the payment at the beginning of the month.) Then, we will use future value formulas to determine how much she needs to save each month.

Step 1: Calculate present value of amount required during the sabbatical

Using a financial calculator: Set to BEGIN Mode, then N = 4; I/Y = 9.5 / 12 = 0.79167; PMT = 6,000; FV = 0; CPT → PV = -23,719.

Step 2: Calculate amount to save each month

Using a financial calculator: Make sure it is set to END mode, then N = 11; I/Y = 8.5 / 12.0 = 0.70833; PV = 0; FV = 23,719; CPT → PMT= -2,081, or approximately $2,080.

Question #45 of 87

Question ID: 412797

Compute the present value of a perpetuity with $100 payments beginning four years from now. Assume the appropriate annual interest rate is 10%.

✗ **A) $1000.**

✓ **B)** $751.

✗ **C)** $683.

Explanation

Compute the present value of the perpetuity at (t = 3). Recall, the present value of a perpetuity or annuity is valued one period before the first payment. So, the present value at t = 3 is 100 / 0.10 = 1,000. Now it is necessary to discount this lump sum to t = 0. Therefore, present value at t = 0 is $1{,}000 / (1.10)^3 = 751$.

Question #46 of 87

Question ID: 412772

What is the maximum price an investor should be willing to pay (today) for a 10 year annuity that will generate $500 per quarter (such payments to be made at the end of each quarter), given he wants to earn 12%, compounded quarterly?

✓ **A) $11,557.**

✗ **B)** $6,440.

✗ **C)** $11,300.

Explanation

Using a financial calculator: N = 10 × 4 = 40; I/Y = 12 / 4 = 3; PMT = -500; FV = 0; CPT → PV = 11,557.

Question #47 of 87

Question ID: 412757

T-bill yields can be thought of as:

✗ **A) real risk-free rates because they contain an inflation premium.**

✗ **B)** nominal risk-free rates because they do not contain an inflation premium.

✓ **C)** nominal risk-free rates because they contain an inflation premium.

Explanation

T-bills are government issued securities and are therefore considered to be default risk free. More precisely, they are nominal risk-free rates rather than real risk-free rates since they contain a premium for expected inflation.

Question #48 of 87

Question ID: 412780

A certain investment product promises to pay $25,458 at the end of 9 years. If an investor feels this investment should produce a rate of return of 14%, compounded annually, what's the most he should be willing to pay for it?

✓ **A) $7,829.**

✗ **B)** $9,426.

✗ **C)** $7,618.

Explanation

N = 9; I/Y = 14; FV = -25,458; PMT = 0; CPT → PV = $7,828.54.

or: $25{,}458/1.14^9 = 7{,}828.54$

Question #49 of 87

Question ID: 412813

If an investor puts $5,724 per year, starting at the end of the first year, in an account earning 8% and ends up accumulating $500,000, how many years did it take the investor?

✓ **A) 27 years.**

✗ **B)** 87 years.

✗ **C)** 26 years.

Explanation

I/Y = 8; PMT = -5,724; FV = 500,000; CPT → N = 27.

Remember, you must put the pmt in as a negative (cash out) and the FV in as a positive (cash in) to compute either N or I/Y.

Question #50 of 87

Question ID: 412800

An investor will receive an annuity of $5,000 a year for seven years. The first payment is to be received 5 years from today. If the annual interest rate is 11.5%, what is the present value of the annuity?

✗ **A) $13,453.**

✗ **B)** $23,185.

✓ **C)** $15,000.

Explanation

With PMT = 5,000; N = 7; I/Y = 11.5; value (at t = 4) = 23,185.175. Therefore, PV (at t = 0) = $23{,}185.175 / (1.115)^4 =$ $15,000.68.

Question #51 of 87

Question ID: 412765

What's the effective rate of return on an investment that generates a return of 12%, compounded quarterly?

✗ **A) 12.00%.**

✗ **B)** 14.34%.

✓ **C)** 12.55%.

Explanation

$(1 + 0.12 / 4)^4 - 1 = 1.1255 - 1 = 0.1255$.

Question #52 of 87

Question ID: 412776

In 10 years, what is the value of $100 invested today at an interest rate of 8% per year, compounded monthly?

✓ **A) $222.**

✗ **B)** $216.

✗ **C)** $180.

Explanation

N = 10 × 12 = 120; I/Y = 8/12 = 0.666667; PV = -100; PMT = 0; CPT → FV = 221.96.

Question #53 of 87

Question ID: 485753

If an investment has an APR of 18% and is compounded quarterly, its effective annual rate (EAR) is *closest to*:

✗ **A) 18.00%.**

✓ **B)** 19.25%.

✗ **C)** 18.81%.

Explanation

Because this investment is compounded quarterly, we need to divide the APR by four compounding periods: 18 / 4 = 4.5%. EAR = (1.045)4 − 1 = 0.1925, or 19.25%.

Question #54 of 87

Question ID: 412805

How much would the following income stream be worth assuming a 12% discount rate?

- $100 received today.
- $200 received 1 year from today.
- $400 received 2 years from today.
- $300 received 3 years from today.

✗ **A) $721.32.**

✓ **B)** $810.98.

✗ **C)** $1,112.44.

Explanation

N	*i*	*FV*	*PV*
0	12	100	100.00
1	12	200	178.57
2	12	400	318.88
3	12	300	213.53
			810.98

Question #55 of 87

Question ID: 485756

Tom will retire 20 years from today and has $34,346.74 in his retirement account. He believes he will need $40,000 at the beginning of each year for 20 years of retirement, with the first withdrawal on the day he retires. Tom assumes his investment account will return 7%. The amount he needs to deposit at the beginning of this year and each of the next 19 years is *closest to*:

✓ **A) $7,300.**

✗ **B)** $7,800.

✗ **C)** $6,500.

Explanation

Step 1: Calculate the amount needed at retirement at t = 20, with calculator in BGN mode.

N = 20; FV = 0; I/Y = 7; PMT = 40,000; CPT PV = -453,423.81

Step 2: Calculate the required deposits at t = 0 to 19 to result in a time 20 value of 453,423.81. Remain in BGN mode so that the FV is indexed to one period after the final payment.

PV = -34,346.74; N = 20; I/Y = 7; FV = 453,423.81; CPT PMT = -$7,306.77

Question #56 of 87

Question ID: 412761

As the number of compounding periods increases, what is the effect on the annual percentage rate (APR) and the effective annual rate (EAR)?

✗ **A) APR increases, EAR remains the same.**

✓ **B)** APR remains the same, EAR increases.

✗ **C)** APR increases, EAR increases.

Explanation

The APR remains the same since the APR is computed as (interest per period) × (number of compounding periods in 1 year).

As the frequency of compounding increases, the interest rate per period decreases leaving the original APR unchanged. However, the EAR increases with the frequency of compounding.

Question #57 of 87

Question ID: 412824

Nikki Ali and Donald Ankard borrowed $15,000 to help finance their wedding and reception. The annual payment loan carries a term of seven years and an 11% interest rate. Respectively, the amount of the first payment that is interest and the amount of the second payment that is principal are *approximately*:

✗ **A) $1,650; $1,468.**

✓ **B)** $1,650; $1,702.

✗ **C)** $1,468; $1,702.

Explanation

Step 1: Calculate the annual payment.

> Using a financial calculator (remember to clear your registers): PV = 15,000; FV = 0; I/Y = 11; N = 7; PMT = $3,183

Step 2: Calculate the portion of the first payment that is interest.

> Interest_1 = Principal × Interest rate = (15,000 × 0.11) = 1,650

Step 3: Calculate the portion of the second payment that is principal.

> Principal_1 = Payment − Interest_1 = 3,183 − 1,650 = 1,533 (interest calculation is from Step 2)
>
> Interest_2 = Principal remaining × Interest rate = [(15,000 − 1.533) × 0.11] = 1,481
>
> Principal_2 = Payment − Interest_1 = 3,183 − 1,481 = 1,702

Question #58 of 87

Question ID: 412830

Marc Schmitz borrows $20,000 to be paid back in four equal annual payments at an interest rate of 8%. The interest amount in the second year's payment would be:

✗ **A) $1116.90.**

✗ **B)** $6038.40.

✓ **C)** $1244.90.

Explanation

With PV = 20,000, N = 4, I/Y = 8, computed Pmt = 6,038.42. Interest (Yr1) = 20,000(0.08) = 1600. Interest (Yr2) = (20,000 − (6038.42 − 1600))(0.08) = 1244.93

Question #59 of 87

Question ID: 412796

Suppose you are going to deposit $1,000 at the start of this year, $1,500 at the start of next year, and $2,000 at the start of the following year in an savings account. How much money will you have at the end of three years if the rate of interest is 10% each year?

✗ **A) $5,750.00.**

✓ **B)** $5,346.00.

✗ **C)** $4,000.00.

Explanation

Future value of $1,000 for 3 periods at 10% = 1,331
Future value of $1,500 for 2 periods at 10% = 1,815
Future value of $2,000 for 1 period at 10% = 2,200
Total = $5,346

N = 3; PV = -$1,000; I/Y = 10%; CPT → FV = $1,331
N = 2; PV = -$1,500; I/Y = 10%; CPT → FV = $1,815
N = 1; PV = -$2,000; I/Y = 10%; CPT → FV = $2,200

Question #60 of 87

Question ID: 412826

Which of the following statements about compounding and interest rates is *least* accurate?

✗ **A) Present values and discount rates move in opposite directions.**

✗ **B)** On monthly compounded loans, the effective annual rate (EAR) will exceed the annual percentage rate (APR).

✓ **C)** All else equal, the longer the term of a loan, the lower will be the total interest you pay.

Explanation

Since the proportion of each payment going toward the principal decreases as the original loan maturity increases, the total dollars interest paid over the life of the loan also increases.

Question #61 of 87

Question ID: 412767

Which of the following is the *most* accurate statement about stated and effective annual interest rates?

✗ **A) The stated rate adjusts for the frequency of compounding.**

✓ **B)** The stated annual interest rate is used to find the effective annual rate.

✗ **C)** So long as interest is compounded more than once a year, the stated annual rate will always be more than the effective rate.

Explanation

The effective annual rate, not the stated rate, adjusts for the frequency of compounding. The nominal, stated, and stated annual rates are all the same thing.

Question #62 of 87

Question ID: 412758

Which one of the following statements *best* describes the components of the required interest rate on a security?

✗ **A) The nominal risk-free rate, the expected inflation rate, the default risk premium, a liquidity premium and a premium to reflect the risk associated with the maturity of the security.**

✓ **B)** The real risk-free rate, the expected inflation rate, the default risk premium, a liquidity premium and a premium to reflect the risk associated with the maturity of the security.

✗ **C)** The real risk-free rate, the default risk premium, a liquidity premium and a premium to reflect the risk associated with the maturity of the security.

Explanation

The required interest rate on a security is made up of the nominal rate which is in turn made up of the real risk-free rate plus the expected inflation rate. It should also contain a liquidity premium as well as a premium related to the maturity of the security.

Question #63 of 87

Question ID: 412817

Optimal Insurance is offering a deferred annuity that promises to pay 10% per annum with equal annual payments beginning at the end of 10 years and continuing for a total of 10 annual payments. For an initial investment of $100,000, what will be the amount of the annual payments?

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
$100,000										?	?	?	?	?	?	?	?	?	?

✓ **A) $38,375.**

✗ **B)** $42,212.

✗ **C)** $25,937.

Explanation

At the end of the 10-year deferral period, the value will be: $100,000 × $(1 + 0.10)^{10}$ = $259,374.25. Using a financial calculator: N = 10, I = 10, PV = $100,000, PMT = 0, Compute FV = $259,374.25. Using a financial calculator and solving for a 10-year *annuity due* because the payments are made at the beginning of each period (you need to put your calculator in the "begin" mode), with a present value of $259,374.25, a number of payments equal to 10, an interest rate equal to ten percent, and a future value of $0.00, the resultant payment amount is $38,374.51. Alternately, the same payment amount can be determined by taking the future value after nine years of deferral ($235,794.77), and then solving for the amount of an ordinary (payments at the end of each period) annuity payment over 10 years.

Question #64 of 87

Question ID: 412831

An individual borrows $200,000 to buy a house with a 30-year mortgage requiring payments to be made at the end of each month. The interest rate is 8%, compounded monthly. What is the monthly mortgage payment?

✗ **A) $2,142.39.**

✓ **B)** $1,467.53.

✗ **C)** $1,480.46.

Explanation

With PV = 200,000; N = 30 × 12 = 360; I/Y = 8/12; CPT → PMT = $1,467.53.

Question #65 of 87

Question ID: 434185

A stated interest rate of 9% compounded quarterly results in an effective annual rate *closest to*:

✗ **A) 9.4%.**

✓ **B)** 9.3%.

✗ **C)** 9.2%.

Explanation

Quarterly rate = 0.09 / 4 = 0.0225.
Effective annual rate = $(1 + 0.0225)^4 - 1 = 0.09308$, or 9.308%.

Question #66 of 87

Question ID: 412815

Bill Jones is creating a charitable trust to provide six annual payments of $20,000 each, beginning next year. How much must Jones set aside now at 10% interest compounded annually to meet the required disbursements?

✓ **A) $87,105.21.**

✗ **B)** $95,815.74.

✗ **C)** $154,312.20.

Explanation

N = 6, PMT = -$20,000, I/Y = 10%, FV = 0, Compute PV → $87,105.21.

Question #67 of 87

Question ID: 412781

A $500 investment offers a 7.5% annual rate of return. How much will it be worth in four years?

✗ **A) $650.**

✗ **B)** $892.

✓ **C)** $668.

Explanation

N = 4; I/Y = 7.5; PV = -500; PMT = 0; CPT → FV = 667.73.

or: $500(1.075)^4 = 667.73$

Question #68 of 87

Question ID: 412788

What is the total present value of $200 to be received one year from now, $300 to be received 3 years from now, and $600 to be received 5 years from now assuming an interest rate of 5%?

✓ **A) $919.74.**

✗ **B)** $905.87.

✗ **C)** $980.89.

Explanation

$200 / (1.05) + 300 / (1.05)^3 + 600 / (1.05)^5 = 919.74$.

Question #69 of 87

Question ID: 412821

The First State Bank is willing to lend $100,000 for 4 years at a 12% rate of interest, with the loan to be repaid in equal semi-annual payments. Given the payments are to be made at the end of each 6-month period, how much will each loan payment be?

✓ **A) $16,104.**

✗ **B)** $25,450.

✗ **C)** $32,925.

Explanation

N = 4 × 2 = 8; I/Y = 12/2 = 6; PV = -100,000; FV = 0; CPT → PMT = 16,103.59.

Question #70 of 87

Question ID: 412771

An investor invested $10,000 into an account five years ago. Today, the account value is $18,682. What is the investor's annual rate of return on a continuously compounded basis?

✓ **A) 12.50%.**

✗ **B)** 13.31%.

✗ **C)** 11.33%.

Explanation

ln(18,682/10,000) = 0.6250/5 = 12.50%

or

$(18,682/10,000)^{1/5} = 1.133143$
ln(1.133143) = 12.4995%

Question #71 of 87

Question ID: 412827

A recent ad for a Roth IRA includes the statement that if a person invests $500 at the beginning of each month for 35 years, they could have $1,000,000 for retirement. Assuming monthly compounding, what annual interest rate is implied in this statement?

✓ **A) 7.411%.**

✗ **B)** 6.988%.

✗ **C)** 7.625%.

Explanation

Solve for an annuity due with a future value of $1,000,000, a number of periods equal to (35 × 12) = 420, payments = -500, and present value = 0. Solve for i. i = 0.61761 × 12 = 7.411% stated annually. Don't forget to set your calculator for payments at the beginning of the periods. If you don't, you'll get 7.437%.

Question #72 of 87

Question ID: 412798

A firm is evaluating an investment that promises to generate the following annual cash flows:

End of Year	*Cash Flows*
1	$5,000
2	$5,000
3	$5,000
4	$5,000
5	$5,000
6	-0-
7	-0-
8	$2,000
9	$2,000

Given BBC uses an 8% discount rate, this investment should be valued at:

✓ **A) $22,043.**

✗ **B)** $19,963.

✗ **C)** $23,529.

Explanation

PV(1 - 5): N = 5; I/Y = 8; PMT = -5,000; FV = 0; CPT → PV = 19,963

PV(6 - 7): 0

PV(8): N = 8; I/Y = 8; FV = -2,000; PMT = 0; CPT → PV = 1,080

PV(9): N = 9; I/Y = 8; FV = -2,000; PMT = 0; CPT → PV = 1,000

Total PV = 19,963 + 0 + 1,080 + 1,000 = 22,043.

Question #73 of 87

Question ID: 412833

Natalie Brunswick, neurosurgeon at a large U.S. university, was recently granted permission to take an 18-month sabbatical that will begin one year from today. During the sabbatical, Brunswick will need $2,500 at the beginning of each month for living expenses that month. Her financial planner estimates that she will earn an annual rate of 9% over the next year on any money she saves. The annual rate of return during her sabbatical term will likely increase to 10%. At the end of each month during the year before the sabbatical, Brunswick should save approximately:

✓ **A) $3,356.**

✗ **B)** $3,330.

✗ **C)** $3,505.

Explanation

This is a two-step problem. First, we need to calculate the present value of the amount she needs over her sabbatical. (This amount will be in the form of an annuity due since she requires the payment at the beginning of the month.) Then, we will use future value formulas to determine how much she needs to save each month (ordinary annuity).

Step 1: Calculate present value of amount required during the sabbatical

Using a financial calculator: **Set to BEGIN Mode**, then N = 12 × 1.5 = 18; I/Y = 10 / 12 = 0.8333; PMT = 2,500; FV = 0; CPT → PV = 41,974

Step 2: Calculate amount to save each month

Make sure the calculator is set to END mode, then N = 12; I/Y = 9 / 12 = 0.75; PV = 0; FV = 41,974; CPT → PMT = -3,356

Question #74 of 87

Question ID: 412832

John is getting a $25,000 loan, with an 8% annual interest rate to be paid in 48 equal monthly installments. If the first payment is due at the end of the first month, the principal and interest values for the first payment are *closest* to:

		Principal	Interest
✗	**A)**	**$410.32**	**$200.00**
✗	**B)**	$443.65	$200.00
✓	**C)**	$443.65	$166.67

Explanation

Calculate the payment first:

N = 48; I/Y = 8/12 = 0.667; PV = 25,000; FV = 0; CPT PMT = 610.32.

Interest = 0.006667 × 25,000 = $166.67; Principal = 610.32 - 166.67 = $443.65 .

Question #75 of 87

Question ID: 412818

Lois Weaver wants to have $1.5 million in a retirement fund when she retires in 30 years. If Weaver can earn a 9% rate of return on her investments, approximately how much money must she invest at the end of each of the next 30 years in order to reach her goal?

✓ **A) $11,005.**

✗ **B)** $28,725.

✗ **C)** $50,000.

Explanation

Using a financial calculator: N = 30; I/Y = 9; FV = -1,500,000; PV = 0; CPT → PMT = 11,004.52.

Question #76 of 87

Question ID: 412783

What will $10,000 become in 5 years if the annual interest rate is 8%, compounded monthly?

✓ **A) $14,898.46.**

✗ **B)** $14,802.44.

✗ **C)** $14,693.28.

Explanation

$FV_{(t=5)} = \$10{,}000 \times (1 + 0.08 / 12)^{60} = \$14{,}898.46$

N = 60 (12 × 5); PV = -$10,000; I/Y = 0.66667 (8% / 12months); CPT → FV = $14,898.46

Question #77 of 87

Question ID: 412762

What is the effective annual rate if the stated rate is 12% compounded quarterly?

✗ **A) 57.35%.**

✓ **B)** 12.55%.

✗ **C)** 12.00%.

Explanation

$EAR = (1 + 0.12 / 4)^4 - 1 = 12.55\%$

Question #78 of 87

Question ID: 412764

Peter Wallace wants to deposit $10,000 in a bank certificate of deposit (CD). Wallace is considering the following banks:

- Bank A offers 5.85% annual interest compounded annually.
- Bank B offers 5.75% annual interest rate compounded monthly.
- Bank C offers 5.70% annual interest compounded daily.

Which bank offers the highest effective interest rate and how much?

✗ **A) Bank C, 5.87%.**

✓ **B)** Bank B, 5.90%.

✗ **C)** Bank A, 5.85%.

Explanation

Effective interest rates:

Bank A = 5.85 (already annual compounding)

Bank B, nominal = 5.75; C/Y = 12; effective = 5.90

Bank C, nominal = 5.70, C/Y = 365; effective = 5.87

Hence Bank B has the highest effective interest rate.

Question #79 of 87

Question ID: 412779

Given a 5% discount rate, the present value of $500 to be received three years from today is:

✗ **A) $578.**

✗ **B)** $400.

✓ **C)** $432.

Explanation

N = 3; I/Y = 5; FV = 500; PMT = 0; CPT → PV = 431.92.

or: $500/1.05^3 = 431.92$.

Question #80 of 87

Question ID: 412820

An investor has the choice of two investments. Investment A offers interest at 7.25% compounded quarterly. Investment B offers interest at the annual rate of 7.40%. Which investment offers the *higher* dollar return on an investment of $50,000 for two years, and by how much?

✗ **A) Investment A offers a $122.18 greater return.**

✗ **B)** Investment B offers a $36.92 greater return.

✓ **C)** Investment A offers a $53.18 greater return.

Explanation

Investment A: I = 7.25 / 4; N = 2 × 4 = 8; PV = $50,000; PMT = 0; CPT → FV = $57,726.98
Investment B: I = 7.40; N = 2; PV = $50,000; PMT = 0; CPT → FV = $57,673.80
Difference = investment A offers a $53.18 greater dollar return.

Question #81 of 87

Question ID: 412795

Nortel Industries has a preferred stock outstanding that pays (fixed) annual dividends of $3.75 a share. If an investor wants to earn a rate of return of 8.5%, how much should he be willing to pay for a share of Nortel preferred stock?

✗ **A) $31.88.**

✗ **B)** $42.10.

✓ **C)** $44.12.

Explanation

PV = 3.75 ÷ 0.085 = $44.12.

Question #82 of 87

Question ID: 412774

Given: an 11% annual rate compounded quarterly for 2 years; compute the future value of $8,000 today.

✗ **A) $8,962.**

✓ **B)** $9,939.

✗ **C)** $9,857.

Explanation

Divide the interest rate by the number of compound periods and multiply the number of years by the number of compound periods. I = 11 / 4 = 2.75; N = (2)(4) = 8; PV = 8,000.

Question #83 of 87

Question ID: 412819

Steve Hall wants to give his son a new car for his graduation. If the cost of the car is $15,000 and Hall finances 80% of the value of the car for 36 months at 8% annual interest, his monthly payments will be:

✓ **A) $376.**

✗ **B)** $289.

✗ **C)** $413.

Explanation

PV = 0.8 × 15,000 = -12,000; N = 36; I = 8/12 = 0.667; CPT → PMT = 376.

Question #84 of 87

Question ID: 412775

If $1,000 is invested at the beginning of the year at an annual rate of 48%, compounded quarterly, what would that investment be worth at the end of the year?

✗ **A) $4,798.**

✗ **B)** $1,048.

✓ **C)** $1,574.

Explanation

N = 1 × 4 = 4; I/Y = 48/4 = 12; PMT = 0; PV = -1,000; CPT → FV = 1,573.52.

Question #85 of 87

Question ID: 412766

A major brokerage house is currently selling an investment product that offers an 8% rate of return, compounded monthly. Based on this information, it follows that this investment has:

✓ **A) a periodic interest rate of 0.667%.**

✗ **B)** an effective annual rate of 8.00%.

✗ **C)** a stated rate of 0.830%.

Explanation

Periodic rate = 8.0 / 12 = 0.667. Stated rate is 8.0% and effective rate is 8.30%.

Question #86 of 87

Question ID: 412791

An investor wants to receive $1,000 at the beginning of each of the next ten years with the first payment starting today. If the investor can earn 10 percent interest, what must the investor put into the account today in order to receive this $1,000 cash flow stream?

✗ **A) $7,145.**

✗ **B)** $6,145.

✓ **C)** $6,759.

Explanation

This is an annuity due problem. There are several ways to solve this problem.

Method 1:

> PV of first $1,000 = $1,000
> PV of next 9 payments at 10% = 5,759.02
> Sum of payments = $6,759.02

Method 2:

> Put calculator in BGN mode.
> N = 10; I = 10; PMT = -1,000; CPT → PV = 6,759.02
> *Note*: make PMT negative to get a positive PV. Don't forget to take your calculator out of BGN mode.

Method 3:

> You can also find the present value of the ordinary annuity $6,144.57 and multiply by 1 + k to add one year of interest to each cash flow. $6,144.57 × 1.1 = $6,759.02.

Question #87 of 87

Question ID: 412789

Given investors require an annual return of 12.5%, a perpetual bond (i.e., a bond with no maturity/due date) that pays $87.50 a year in interest should be valued at:

✗ **A) $70.**

✓ **B)** $700.

✗ **C)** $1,093.

Explanation

87.50 ÷ 0.125 = $700.