## Question #1 of 44

Question ID: 1572649

Assume an investor makes the following investments:

- Today, she purchases a share of stock in Redwood Alternatives for $50.00.
- After one year, she purchases an additional share for $75.00.
- After one more year, she sells both shares for $100.00 each.

There are no transaction costs or taxes. The investor's required return is 35.0%.

During year one, the stock paid a $5.00 per share dividend. In year two, the stock paid a $7.50 per share dividend.

The time-weighted return is:

**A)** 51.4%.

**B)** 51.7%.

**C)** 23.2%.

**Explanation**

To calculate the *time-weighted* return:

*Step 1: Separate the time periods into holding periods and calculate the return over that period:*

*Holding period 1:* $P_0$ = $50.00

$D_1$ = $5.00

$P_1$ = $75.00 (from information on second stock purchase)

$HPR_1$ = (75 – 50 + 5) / 50 = 0.60, or 60%

*Holding period 2:* $P_1$ = $75.00

$D_2$ = $7.50

$P_2$ = $100.00

$HPR_2$ = (100 – 75 + 7.50) / 75 = 0.433, or 43.3%.

*Step 2: Use the geometric mean to calculate the return over both periods*

Return = $[(1 + HPR_1) \times (1 + HPR_2)]^{1/2} - 1 = [(1.60) \times (1.433)]^{1/2} - 1 = 0.5142$, or **51.4%.**

(Module 1.2, LOS 1.c)

## Question #2 of 44

Question ID: 1572658

If a stock decreases from $90 to $80, the continuously compounded rate of return for the period is:

**A)** -0.1250.

**B)** -0.1000.

**C)** -0.1178.

**Explanation**

This is given by the natural logarithm of the new price divided by the old price; ln(80 / 90) = -0.1178.

(Module 1.3, LOS 1.d)

## Question #3 of 44

Question ID: 1572671

An investor expects a stock currently selling for $20 per share to increase to $25 by year-end. The dividend last year was $1 but he expects this year's dividend to be $1.25. What is the expected holding period return on this stock?

**A)** 24.00%.

**B)** 28.50%.

**C)** 31.25%.

**Explanation**

Return = [dividend + (ending value – beginning value)] / beginning price value

= [1.25 + (25 – 20)] / 20 = 6.25 / 20 = 0.3125

(Module 1.3, LOS 1.e)

## Question #4 of 44

Question ID: 1456147

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

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

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

**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).

(Module 1.1, LOS 1.a)

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## Question #5 of 44

Question ID: 1456149

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)** financing cost. ✗

**C)** opportunity 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.

(Module 1.1, LOS 1.a)

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## Question #6 of 44

Question ID: 1456148

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)** opportunity cost. ✗

**C)** required rate of return. ✗

**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.

(Module 1.1, LOS 1.a)

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## Question #7 of 44

Question ID: 1572651

An investor makes the following investments:

- She purchases a share of stock for $50.00.
- After one year, she purchases an additional share for $75.00.
- After one more year, she sells both shares for $100.00 each.
- There are no transaction costs or taxes.

During year one, the stock paid a $5.00 per share dividend. In year 2, the stock paid a $7.50 per share dividend. The investor's required return is 35%. Her money-weighted return is *closest to*:

**A)** 48.9%. ✓

**B)** 16.1%. ✗

**C)** -7.5%. ✗

**Explanation**

To determine the money weighted rate of return, use your calculator's cash flow and IRR functions. The cash flows are as follows:

CF0: initial cash outflow for purchase = $50

CF1: dividend inflow of $5 - cash outflow for additional purchase of $75 = net cash outflow of -$70

CF2: dividend inflow (2 × $7.50 = $15) + cash inflow from sale (2 × $100 = $200) = net cash inflow of $215

Enter the cash flows and compute IRR:

CF0 = -50; CF1 = -70; CF2 = +215; CPT IRR = 48.8607

(Module 1.2, LOS 1.c)

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## Question #8 of 44

Question ID: 1572672

A 10% coupon bond was purchased for $1,000. One year later the bond was sold for $915 to yield 11%. The investor's holding period yield on this bond is *closest* to:

**A)** 1.5%. ✓

**B)** 9.0%. ✗

**C)** 18.5%. ✗

**Explanation**

HPY = [(interest + ending value) / beginning value] – 1

= [(100 + 915) / 1,000] – 1

= 1.015 – 1 = 1.5%

(Module 1.3, LOS 1.e)

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## Question #9 of 44

Question ID: 1572673

An investor buys a non-dividend paying stock for $100 at the beginning of the year with 50% initial margin. At the end of the year, the stock price is $95. Deflation of 2% occurred during the year. Which of the following return measures for this investment will be greatest?

**A)** Leveraged return. ✗

**B)** Real return. ✓

**C)** Nominal return. ✗

**Explanation**

No calculations are needed. The real return is greater than the nominal return because the inflation rate is negative. The leveraged return is more negative than the nominal return because the investment lost value and leverage magnifies the loss.

(Module 1.3, LOS 1.e)

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## Question #10 of 44

Question ID: 1572656

The continuously compounded rate of return that will generate a one-year holding period return of -6.5% is *closest* to:

**A)** -5.7%. ✗

**B)** -6.3%. ✗

**C)** -6.7%. ✓

**Explanation**

Continuously compounded rate of return = ln(1 – 0.065) = -6.72%.

(Module 1.3, LOS 1.d)

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## Question #11 of 44

Question ID: 1572645

Time-weighted returns are used by the investment management industry because they:

**A)** take all cash inflows and outflows into account using the internal rate of return. ✗

**B)** result in higher returns versus the money-weighted return calculation. ✗

**C)** are not affected by the timing of cash flows. ✓

**Explanation**

Time-weighted returns are not affected by the timing of cash flows. Money-weighted returns, by contrast, will be higher when funds are added at a favorable investment period or will be lower when funds are added during an unfavorable period. Thus, time-weighted returns offer a better performance measure because they are not affected by the timing of flows into and out of the account.

(Module 1.2, LOS 1.c)

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## Question #12 of 44

Question ID: 1572647

Which of the following is *most accurate* with respect to the relationship of the money-weighted return to the time-weighted return? If funds are contributed to a portfolio just prior to a period of favorable performance, the:

**A)** money-weighted rate of return will tend to be depressed. ✗

**B)** money-weighted rate of return will tend to be elevated. ✓

**C)** time-weighted rate of return will tend to be elevated. ✗

**Explanation**

The time-weighted returns are what they are and will not be affected by cash inflows or outflows. The money-weighted return is susceptible to distortions resulting from cash inflows and outflows. The money-weighted return will be biased upward if the funds are invested just prior to a period of favorable performance and will be biased downward if funds are invested just prior to a period of relatively unfavorable performance. The opposite will be true for cash outflows.

(Module 1.2, LOS 1.c)

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## Question #13 of 44

Question ID: 1572646

Computing the internal rate of return of the inflows and outflows of a portfolio would give the:

**A)** money-weighted return. ✓

**B)** net present value. ✗

**C)** time-weighted return. ✗

**Explanation**

The money-weighted return is the internal rate of return on a portfolio that equates the present value of inflows and outflows over a period of time.

(Module 1.2, LOS 1.c)

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## Question #14 of 44

Question ID: 1572654

A stock that pays no dividend is currently priced at €42.00. One year ago the stock was €44.23. The continuously compounded rate of return is *closest to*:

**A)** –5.17%.

**B)** –5.04%.

**C)** +5.17%.

**Explanation**

$$\ln\left(\frac{S_1}{S_0}\right) = \ln\left(\frac{42.00}{44.23}\right) = \ln(0.9496) = -0.0517 = -5.17\%$$

(Module 1.3, LOS 1.d)

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## Question #15 of 44

Question ID: 1572659

Over a period of one year, an investor's portfolio has declined in value from 127,350 to 108,427. What is the continuously compounded rate of return?

**A)** -14.86%.

**B)** -13.84%.

**C)** -16.09%.

**Explanation**

The continuously compounded rate of return = $\ln(S_1 / S_0)$ = ln(108,427 / 127,350) = –16.09%.

(Module 1.3, LOS 1.d)

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## Question #16 of 44

Question ID: 1572637

An investor buys a stock on March 24 for $63.25. The stock pays quarterly dividends of $0.54 on May 1 and August 1. On September 27, the investor sells the stock for $62.80. The investor's holding period return is *closest* to:

**A)** 2.5%.

**B)** 1.0%.

**C)** 2.0%.

**Explanation**

$\frac{62.80+0.54+0.54}{63.25} - 1 = 0.01 = 1\%$. Because we are asked for the HPR, the beginning and ending dates are irrelevant. If we had been asked to annualize the return, we would need to know the length of the holding period.

(Module 1.1, LOS 1.b)

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## Question #17 of 44

Question ID: 1572655

For a given stated annual rate of return, compared to the effective rate of return with discrete compounding, the effective rate of return with continuous compounding will be:

**A)** the same. ✗

**B)** higher. ✓

**C)** lower. ✗

**Explanation**

A higher frequency of compounding leads to a higher effective rate of return. The effective rate of return with continuous compounding will, therefore, be greater than any effective rate of return with discrete compounding.

(Module 1.3, LOS 1.d)

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## Question #18 of 44

Question ID: 1572640

Stock XYZ is purchased on January 2 at a price of $12 per share. The investor receives a quarterly dividend of $0.60 per share on April 1, and the stock closes on June 30 at $13 per share. The holding period return is *closest* to:

**A)** 13.33%. ✓

**B)** 8.33%. ✗

**C)** 18.33%. ✗

**Explanation**

The holding period return is equal to the change in value from the beginning to the end of the holding period, which will include not only the change in price but also any dividends received over the period. For each share, the price increased by $1, and the dividend received was $0.60. The calculation is equal to:

$$\frac{P_t - P_0 + Div_t}{P_0} = \frac{13 - 12 + 0.60}{12} = 13.33\%$$

Ignoring the dividend produces an 8.33% return, and doubling the dividend produces an 18.33% return. It is important to note that only one dividend was received in the six-month period, and that was on April 1.

(Module 1.1, LOS 1.b)

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## Question #19 of 44

Question ID: 1572635

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)

(Module 1.1, LOS 1.a)

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## Question #20 of 44

Question ID: 1572665

An investor begins with a $100,000 portfolio. At the end of the first period, it generates $5,000 of income, which he does not reinvest. At the end of the second period, he contributes $25,000 to the portfolio. At the end of the third period, the portfolio is valued at $123,000. The portfolio's money-weighted return per period is *closest to*:

**A)** 1.20%.

**B)** –0.50%.

**C)** 0.94%.

**Explanation**

Using the financial calculator, the initial investment ($CF_0$) is –100,000. The income is +5,000 ($CF_1$), and the contribution is –25,000 (CF2). Finally, the ending value is +123,000 ($CF_3$) available to the investor. Compute IRR = 0.94

(Module 1.3, LOS 1.e)

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## Question #21 of 44

Question ID: 1572662

An asset manager's portfolio had the following annual rates of return:

| Year | Return |
|---|---|
| 20X7 | +6% |
| 20X8 | -37% |
| 20X9 | +27% |

The manager states that the return for the period is −5.34%. The manager has reported the:

**A)** arithmetic mean return.

**B)** geometric mean return.

**C)** holding period return.

**Explanation**

Geometric Mean Return = $\sqrt[3]{(1+0.06)(1-0.37)(1+0.27)}$ – 1 = –5.34%

Holding period return = (1 + 0.06)(1 − 0.37)(1 + 0.27) − 1 = −15.2%

Arithmetic mean return = (6% − 37% + 27%) / 3 = −1.33%.

(Module 1.3, LOS 1.e)

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## Question #22 of 44

Question ID: 1572652

An investor buys one share of stock for $100. At the end of year one she buys three more shares at $89 per share. At the end of year two she sells all four shares for $98 each. The stock paid a dividend of $1.00 per share at the end of year one and year two. What is the investor's money-weighted rate of return?

**A)** 0.06%.

**B)** 5.29%.

**C)** 6.35%.

**Explanation**

T = 0: Purchase of first share = -$100.00

T = 1: Dividend from first share = +$1.00

Purchase of 3 more shares = -$267.00

T = 2: Dividend from four shares = +4.00

Proceeds from selling shares = +$392.00

The money-weighted return is the rate that solves the equation:

$100.00 = -$266.00 / (1 + r) + 396.00 / $(1 + r)^2$.

CFO = -100; CF1 = -266; CF2 = 396; CPT → IRR = 6.35%.

(Module 1.2, LOS 1.c)

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## Question #23 of 44

Question ID: 1572661

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

**A)** 9.42%.

**B)** 9.20%.

**C)** 9.67%.

**Explanation**

The effective annual rate with continuous compounding = $e^r - 1 = e^{0.09} - 1 = 0.09417$, or 9.42%.

(Module 1.3, LOS 1.d)

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## Question #24 of 44

Question ID: 1572664

A security portfolio earns a gross return of 7.0% and a net return of 6.5%. The difference of 0.5% *most likely* results from:

**A)** inflation.

**B)** fees.

**C)** taxes.

**Explanation**

The net return on a portfolio is its gross return minus management and administrative fees. A return adjusted for taxes is called an after-tax return. A return adjusted for inflation is called a real return.

(Module 1.3, LOS 1.e)

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## Question #25 of 44

Question ID: 1572660

A stock increased in value last year. Which will be greater, its continuously compounded or its holding period return?

**A)** Its continuously compounded return.

**B)** Its holding period return.

**C)** Neither, they will be equal.

**Explanation**

When a stock increases in value, the holding period return is always greater than the continuously compounded return that would be required to generate that holding period return. For example, if a stock increases from $1 to $1.10 in a year, the holding period return is 10%. The continuously compounded rate needed to increase a stock's value by 10% is Ln(1.10) = 9.53%.

(Module 1.3, LOS 1.d)

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## Question #26 of 44

Question ID: 1572633

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

**A)** 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. ✓

**B)** 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. ✗

**C)** 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. ✗

**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.

(Module 1.1, LOS 1.a)

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## Question #27 of 44

Question ID: 1572653

An investor buys one share of stock for $100. At the end of year one she buys three more shares at $89 per share. At the end of year two she sells all four shares for $98 each. The stock paid a dividend of $1.00 per share at the end of year one and year two. What is the investor's time-weighted rate of return?

**A)** 0.06%. ✓

**B)** 11.24%. ✗

**C)** 6.35%. ✗

**Explanation**

The holding period return in year one is ($89.00 – $100.00 + $1.00) / $100.00 = -10.00%.

The holding period return in year two is ($98.00 – $89.00 + $1.00) / $89 = 11.24%.

The time-weighted return is $[\{1 + (-0.1000)\}\{1 + 0.1124\}]^{1/2} - 1 = 0.06\%$.

(Module 1.2, LOS 1.c)

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## Question #28 of 44

Question ID: 1572642

Based on the advice of his financial advisor regarding dollar cost averaging, a client invests $2,000 each month into a blue-chip stock. The stock price on the date of purchase each month over a four-month stretch was $12, $14, $11, and $9. Using the harmonic mean, the average cost per share of the stock is *closest* to:

**A)** $11.50.

**B)** $11.75.

**C)** $11.20.

**Explanation**

The formula to calculate the harmonic mean is equal to:

$$\overline{X_H} = \frac{4}{\frac{1}{12}+\frac{1}{14}+\frac{1}{11}+\frac{1}{9}} = 11.2113$$

Note that the arithmetic mean stock price is $11.50, and because the harmonic mean will always be less than the arithmetic mean for any dataset with unequal values, $11.75 would never be possible.

(Module 1.1, LOS 1.b)

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## Question #29 of 44

Question ID: 1577767

Over the last four years, an investor's portfolio has the following returns: 5.26%, –2.10%, 3.86%, and 8.18%. The arithmetic mean return is *closest* to:

**A)** 3.73%.

**B)** 3.80%.

**C)** 3.76%.

**Explanation**

The arithmetic mean is equal to the average of the four data points, calculated by summing all four returns and dividing by the number of returns:

$$\frac{(R_1+R_2+R_3+R_4)}{4} = \frac{(0.0526 - 0.0210 + 0.0386 + 0.0818)}{4} = 0.0380, \text{ or } 3.80\%$$

(Module 1.1, LOS 1.b)

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## Question #30 of 44

Question ID: 1572644

A dataset contains six values, none of which are equal. The arithmetic mean of the data is 13.25, and the geometric mean of the data is 12.75. The harmonic mean will be:

**A)** less than 12.75. ✓

**B)** between 12.75 and 13.25. ✗

**C)** greater than 13.25. ✗

**Explanation**

For any dataset where the values are not equal, the harmonic mean will be less than the geometric mean (which, in turn, will be less than the arithmetic mean). Here, the arithmetic mean is 13.25, and the geometric mean is 12.75—so the harmonic mean must be less than 12.75. It is worth noting that all three means are equal if every value in the dataset is the same.

(Module 1.1, LOS 1.b)

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## Question #31 of 44

Question ID: 1572638

The product of the arithmetic mean and the harmonic mean is the:

**A)** square root of the geometric mean. ✗

**B)** square of the geometric mean. ✓

**C)** geometric mean. ✗

**Explanation**

The mathematical relationship among arithmetic, geometric, and harmonic means is as follows: arithmetic mean × harmonic mean = $(\text{geometric mean})^2$.

(Module 1.1, LOS 1.b)

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## Question #32 of 44

Question ID: 1572636

Which of the following return measures is *best* described as purely representing time preference?

**A)** Real risk-free interest rate. ✓

**B)** Total rate of return. ✗

**C)** Nominal risk-free interest rate. ✗

**Explanation**

The real risk-free interest rate represents time preference, or the degree to which consumers prefer consumption in the present to an equal amount of consumption in the future. Other measures of return include time preference, but it also reflect other factors, such as risk or expected inflation.

(Module 1.1, LOS 1.a)

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## Question #33 of 44

Question ID: 1572667

A bond was purchased exactly one year ago for $910 and was sold today for $1,020. During the year, the bond made two semi-annual coupon payments of $30. What is the holding period return?

**A)** 12.1%. ✗

**B)** 18.7%. ✓

**C)** 6.0%. ✗

**Explanation**

HPY = (1,020 + 30 + 30 – 910) / 910 = 0.1868 or 18.7%.

(Module 1.3, LOS 1.e)

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## Question #34 of 44

Question ID: 1572670

An investor sold a 30-year bond at a price of $850 after he purchased it at $800 a year ago. He received $50 of interest at the time of the sale. The annualized holding period return is:

**A)** 12.5%. ✓

**B)** 15.0%. ✗

**C)** 6.25%. ✗

**Explanation**

The holding period return (HPR) is calculated as follows:

$$HPR = (P_t - P_{t-1} + D_t) / P_t$$

where:

$P_t$ = price per share at the end of time period t

$D_t$ = cash distributions received during time period t.

**Here,** HPR = (850 – 800 + 50) / 800 = 0.1250, or **12.50%.**

(Module 1.3, LOS 1.e)

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## Question #35 of 44

Question ID: 1572669

A stock is currently worth $75. If the stock was purchased one year ago for $60, and the stock paid a $1.50 dividend during the year, what is the holding period return?

**A)** 24.0%.

**B)** 22.0%.

**C)** 27.5%.

**Explanation**

HPR = [ending value – beginning value] / beginning value

= (75 + 1.50 – 60) / 60 = 27.5%.

(Module 1.3, LOS 1.e)

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## Question #36 of 44

Question ID: 1572634

T-bill yields can be thought of as:

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

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

**C)** real 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.

(Module 1.1, LOS 1.a)

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## Question #37 of 44

Question ID: 1572657

Given a holding period return of R, the continuously compounded rate of return is:

**A)** $e^R - 1$.

**B)** ln(1 + R).

**C)** ln(1 + R) – 1.

**Explanation**

This is the formula for the continuously compounded rate of return.

(Module 1.3, LOS 1.d)

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## Question #38 of 44

Question ID: 1572668

If an investor bought a stock for $32 and sold it nine months later for $37.50 after receiving $2 in dividends, what was the holding period return on this investment?

**A)** 23.44%.

**B)** 17.19%.

**C)** 32.42%.

**Explanation**

HPR = [ending value – beginning value] / beginning value

HPR = [(2 + 37.50) – 32] / 32 = 0.2344.

(Module 1.3, LOS 1.e)

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## Question #39 of 44

Question ID: 1572639

Assuming at least some variations in a set of data, the:

**A)** arithmetic mean is greater than geometric mean, which is greater than the harmonic mean. ✓

**B)** geometric mean is greater than the arithmetic mean, which is greater than the harmonic mean. ✗

**C)** harmonic mean is greater than the geometric mean, which is greater than the arithmetic mean. ✗

**Explanation**

As long as there is variability in the data, the arithmetic mean is greater than geometric mean, which is greater than the harmonic mean.

(Module 1.1, LOS 1.b)

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## Question #40 of 44

Question ID: 1572650

An investor buys a share of stock for $200.00 at time t = 0. At time t = 1, the investor buys an additional share for $225.00. At time t = 2 the investor sells both shares for $235.00. During both years, the stock paid a per share dividend of $5.00. What are the *approximate* time-weighted and money-weighted returns respectively?

**A)** 10.8%; 9.4%. ✓

**B)** 7.7%; 7.7%. ✗

**C)** 9.0%; 15.0%. ✗

**Explanation**

*Time-weighted return* = (225 + 5 – 200) / 200 = 15%; (470 + 10 – 450) / 450 = 6.67%; [(1.15)(1.0667)]$^{1/2}$ – 1 = 10.8%

*Money-weighted return*: 200 + [225 / (1 + return)] = [5 / (1 + return)] + [480 / (1 + return)$^2$]; money return = approximately 9.4%

Note that the easiest way to solve for the money-weighted return is to set up the equation and **plug in the answer choices** to find the discount rate that makes outflows equal to inflows.

Using the financial calculators to calculate the money-weighted return: (The following keystrokes assume that the financial memory registers are cleared of prior work.)

TI Business Analyst II Plus®

- Enter $CF_0$: 200, +/-, Enter, down arrow
- Enter $CF_1$: 220, +/-, Enter, down arrow, down arrow
- Enter $CF_2$: 480, Enter, down arrow, down arrow,
- Compute IRR: IRR, CPT
- Result: 9.39

HP 12C®

- Enter $CF_0$: 200, CHS, g, $CF_0$
- Enter $CF_1$: 220, CHS, g, $CF_j$
- Enter $CF_2$: 480, g, $CF_j$
- Compute IRR: f, IRR
- Result: 9.39

(Module 1.2, LOS 1.c)

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## Question #41 of 44

Question ID: 1572643

An analyst evaluates a dataset with eight values. From the dataset, she calculates the geometric mean to be 8.50. If the arithmetic mean is equal to 8.90, the harmonic mean is *closest* to:

**A)** 8.63.

**B)** 8.12.

**C)** 9.30.

**Explanation**

The relationship between the arithmetic, harmonic, and geometric mean is equal to:

arithmetic mean × harmonic mean = (geometric mean)$^2$

8.90 × harmonic mean = (geometric mean)$^2$ = $(8.50)^2$

harmonic mean = $\frac{(8.50)^2}{8.90} = 8.12$

*Note: This could also be answered without performing calculations, knowing that harmonic < geometric < arithmetic, where values are not equal.*

(Module 1.1, LOS 1.b)

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## Question #42 of 44

Question ID: 1572648

On January 1, Jonathan Wood invests $50,000. At the end of March, his investment is worth $51,000. On April 1, Wood deposits $10,000 into his account, and by the end of June, his account is worth $60,000. Wood withdraws $30,000 on July 1 and makes no additional deposits or withdrawals the rest of the year. By the end of the year, his account is worth $33,000. The time-weighted return for the year is *closest to*:

**A)** 7.0%. ✗

**B)** 5.5%. ✗

**C)** 10.4%. ✓

**Explanation**

January – March return = 51,000 / 50,000 − 1 = 2.00%

April – June return = 60,000 / (51,000 + 10,000) − 1 = –1.64%

July – December return = 33,000 / (60,000 − 30,000) − 1 = 10.00%

Time-weighted return = [(1 + 0.02)(1 − 0.0164)(1 + 0.10)] − 1 = 0.1036 or 10.36%

(Module 1.2, LOS 1.c)

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## Question #43 of 44

Question ID: 1572666

An investor with a buy-and-hold strategy who makes quarterly deposits into an account should *most appropriately* evaluate portfolio performance using the portfolio's:

**A)** arithmetic mean return. ✗

**B)** geometric mean return.

**C)** money-weighted return.

**Explanation**

Geometric mean return (time-weighted return) is the most appropriate method for performance measurement as it does not consider additions to or withdrawals from the account.

(Module 1.3, LOS 1.e)

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## Question #44 of 44

Question ID: 1572663

The *most appropriate* measure of the increase in the purchasing power of a portfolio's value over a given span of time is a(n):

**A)** after-tax return.

**B)** real return.

**C)** holding period return.

**Explanation**

A real return is adjusted for the effects of inflation and is used to measure the increase in purchasing power over time.

(Module 1.3, LOS 1.e)