

Level I of the CFA® Exam

Questions with Answers - Quantitative Methods

Offered by AnalystPrep

Last Updated: Oct 9, 2026

Table of Contents

1	- Returns of Financial Assets and Instruments	3
2	- Types of Financial Returns	21
3	- Benchmarking Returns	40
4	- The Time Value of Money in Finance	66
5	- Statistical Characteristics of Asset Returns	130
6	- Statistical Distributions for Financial Asset Prices and Returns	214
7	- Estimation and Hypothesis Testing	309
8	- The Return and Risk of a Financial Portfolio	350
9	- Simulation of Financial Asset Prices and Returns	387
10	- Applications of Simple Linear Regression in Finance	425
11	- Introduction to Financial Data Science	475

Learning Module 1: Returns of Financial Assets and Instruments

Q.26 An investor wants to invest \$600,000 in an asset paying a 5% interest compounded continuously for four years. The value of the investment in 4 years is *closest to*:

A. \$729,303.75

B. \$732,831.62

C. \$732,841.65

The correct answer is **C**.

The question requires the calculation of the Future Value of a lump sum with continuous compounding as follows;

$$FV_N = PV e^{r_s N}$$

Where;

PV = Initial investment.

e = Transcendental number $e \approx 2.7182818$

r_s = Interest rate.

N = Investment period.

Therefore;

$$FV_N = \$600,000 \times e^{(0.05 \times 4)} = \$732,841.65$$

Note that the Plus Pro Calculator is not applicable when calculating continuously compounded interest.

A is incorrect. The amount represents the Future Value after four years, assuming annual and not continuous compounding as follows;

$$FV = \$600,000(1 + 0.05)^4 = \$600,000 \times 1.216 = \$729,303.75$$

B is incorrect. The amount represents the Future Value after four years, assuming daily and not continuous compounding as follows;

$$FV = \$600,000 \left[1 + \frac{0.05}{365} \right]^{(365 \times 4)} = \$600,000 \times 1.221 = \$732,831.62$$

CFA Level 1, Quantitative Methods, Learning Module 1: Returns of Financial Assets and Instruments, LOS (d) Calculate and interpret annualized return measures and continuously compounded returns, and describe their appropriate uses

Q.45 An analyst is evaluating the annualized performance of three securities in her portfolio, each held for varying timeframes:

- Security A has earned a return of 6.2 percent over the last 120 days.
- Security B has earned 2 percent over the past six weeks.
- Security C has earned a return of 5 percent over the past two months.

Which of the following securities has the highest annualized return?

- A. Security A.
- B. Security B.
- C. Security C.

The correct answer is **C**.

To compare the relative performance of the three securities, their returns need to be annualized. Recall the general formula for annualizing returns:

$$R_{\text{annual}} = (1 + R_{\text{period}})^c - 1$$

Where:

c = number of periods in a year.

As such,

Annualized return for Security A: $R_A = (1 + 0.062)^{\frac{365}{120}} - 1 = 20.21\%$

Annualized return for Security B: $R_B = (1 + 0.02)^{\frac{52}{6}} - 1 = 18.72\%$

Annualized return for Security C: $R_C = (1 + 0.05)^{\frac{12}{2}} - 1 = 34.01\%$

Security C has the highest annualized return at 34.01%.

CFA Level I, Quantitative Methods, Learning Module 1: Returns of Financial Assets and Instruments. LOS 1d: Calculate and interpret annualized return measures and continuously compounded returns and describe their appropriate uses.

Q.219 You expect XYZ's stock to have a price of USD 142 at the end of the year. Also, you expect to receive a dividend of USD 4. How much will you pay for a stock today in order to realize a return on investment of 11%?

A. USD 144.60

B. USD 122.80

C. USD 131.50

The correct answer is **C**.

Let P be the price you are willing to pay today.

$$\text{HPR} = \frac{(142 - P + 4)}{P} = 0.11$$

$$142 - P + 4 = 0.11P$$

$$146 = 1.11P$$

$$P = 131.5$$

A is incorrect. The calculation for option A does not correctly apply the formula for determining the price to pay today to achieve the desired return on investment. It seems to ignore the dividend and does not correctly account for the 11% desired return.

B is incorrect. The calculation for option B likely results from a misunderstanding of the relationship between the future price, the dividend, and the desired return on investment.

Q.225 A stock's returns for the past four years are as follows: 12%, 9.5%, 8%, 14.7%. The geometric mean return is *closest to*:

A. 11.02%

B. 11.05%

C. 51.90%

The correct answer is **A**.

$$\text{Geometric return} = (1.12 \times 1.095 \times 1.08 \times 1.147)^{\frac{1}{4}} - 1 = 0.11 \text{ or } 11\%$$

B is incorrect. It denotes the arithmetic mean and not the geometric mean:

$$\text{Arithmetic mean} = \left[\frac{(0.12 + 0.095 + 0.08 + 0.147)}{4} \right] = 0.1105 = 11.05\%$$

C is incorrect. It denotes the geometric mean calculation but without the root sign calculation as follows:

$$\text{Geometric mean} = (1.12 \times 1.095 \times 1.08 \times 1.147) - 1 = 0.519 = 51.90\%$$

CFA Level I, Quantitative Methods, Learning Module 10: Simple Linear Regression. LOS (c): Calculate and interpret measures of fit and formulate and evaluate tests of fit and of regression coefficients in a simple linear regression.

Q.3497 James Calzon currently has \$5,040.11 in his bank account. If he plans to buy a car for \$5,500 next year, the monthly interest rate that a bank must pay so that James receives a sum of \$5,500 next year is *closest* to:

A. 0.73%.

B. 0.76%

C. 9.12%

The correct answer is **A**.

Interest rate can also be considered as the required rate of return. In the above case, James wants his \$5,000 to grow to \$5,500. The rate required to achieve this return can be calculated as under:

Amount deposited today $\times$ (1 + Rate of interest) = Amount next year

$$\text{Rate of interest} = \frac{(\text{Amount next year})}{(\text{Amount deposited})} - 1 = \frac{\$5,500}{\$5,040.11} - 1 = 0.0912 = 9.12\%$$

To turn the annual interest rate into a monthly rate,

$$\text{Monthly rate} = (1 + \text{Annual rate})^{\frac{1}{12}} - 1 = 0.0073 = 0.73\%$$

To obtain the monthly rate directly using the financial calculator: PV = -5040.11, FV = 5500, N=12; CPT 1/Y=> 0.73

B is incorrect. The monthly rate is 0.73%, not 0.76%.

C is incorrect. It is the annual interest rate and not the monthly interest rate as required by the question.

CFA Level 1, Quantitative Methods, Learning Module 1: Rate and Return, LOS (b) Calculate and interpret different approaches to return measurement over time and describe their appropriate uses.

Q.3498 A bank offers an annual interest of 12% with quarterly compounding. If the initial deposited sum is \$1,011, then the sum received at the end of one year is *closest* to:

A. \$1,132.32.

B. \$1,135.96

C. \$1,137.89

The correct answer is **C**.

$$\begin{aligned}\text{Final value} &= \text{Present value} \left(1 + \frac{\text{Annual rate of interest}}{\text{Compounding frequency}} \right)^{(\text{No. of years} \times \text{compounding frequency})} \\ &= \$1,011 * \left(1 + \frac{12}{4} \right)^{(1 \times 4)} \\ &= \$1,137.89\end{aligned}$$

You can also solve the question using the financial calculator with the following inputs:

N = 4; (4 quarters in a year)

I/Y = 12/4 = 3; (12 percent divided by the number of periods)

PV = -\$1,011;

PMT = 0;

CPT => FV = 1,137.89

A is incorrect. It is the future value compounded with yearly and not quarterly compounding.

$$1011(1 + 0.12)^1 = 1,132.32.$$

B is incorrect. It is the future value compounded with half-yearly and not quarterly compounding.

$$1011\left(1 + \frac{0.12}{2}\right)^2 = 1,135.96$$

CFA Level 1, Quantitative Methods, Learning Module 1: Rate and Return, LOS (d)
Calculate and interpret annualized return measures and continuously compounded returns, and describe their appropriate uses.

Q.5251 An analyst gathers the following annual total returns for a stock over five years:

Year	Return (%)
1	18.0
2	-12.0
3	25.0
4	30.0
5	-8.0

The geometric mean annual return for the stock over the five years is *closest* to:

- A. 9.19%
- B. 10.60%
- C. 55.20%

The correct answer is **A**.

$$\begin{aligned}\bar{r}_G &= [(1 + r_{i1})(1 + r_{i2})(1 + r_{i3})(1 + r_{i4})(1 + r_{i5})]^{1/T} - 1 \\&= [(1 + 0.18)(1 - 0.12)(1 + 0.25)(1 + 0.30)(1 - 0.08)]^{1/5} - 1 \\&= (1.18 \times 0.88 \times 1.25 \times 1.30 \times 0.92)^{1/5} - 1 \\&= 1.552^{0.2} - 1 \\&= 1.0919 - 1 \\&= 0.0919 \\&= 9.19\%\end{aligned}$$

B is incorrect. Arithmetic mean:

$$\frac{18\% + (-12\%) + 25\% + 30\% + (-8\%) + 53\%}{5} = \frac{53\%}{5} = 10.6\%$$

C is incorrect. This occurs when we omit $1/T$.

CFA Level I, Quantitative Methods, Learning Module 1: Returns of Financial Assets and Investments, LOS 1(a): Describe, compare, and interpret returns.

Q.5252 A fund manager reports a gross annual return of 12.5% for a portfolio. The fund incurs management fees of 0.80% and administrative expenses of 0.25% of assets under management. The net return to investors is *most likely*:

- A. 11.45%
- B. 11.70%
- C. 12.25%

The correct answer is **A**.

$$\begin{aligned}\text{Net Return} &= \text{Gross Return} - \text{Management Fee} - \text{Administrative Expenses} \\ &= 12.5\% - 0.80\% - 0.25\% = 11.45\%\end{aligned}$$

B is incorrect. Subtracting only the management fee → 11.70%.

C is incorrect. Subtracting only the administrative expenses → 12.25%.

CFA Level I, Quantitative Methods, Learning Module 1: Returns of Financial Assets and Investments, LOS 1(b): describe, compare, and interpret required rates of return, risk-free rates, risk premia, and inflation.

Q.5253 The price of a stock is USD 80.00 at the beginning of six months and USD 84.00 at the end of six months. The six-month continuously compounded return is closest to:

- A. 4.88%
- B. 5.00%
- C. 10.00%

The correct answer is **A**.

$$\begin{aligned}r_{t,t+1} &= \ln\left(\frac{P_T}{P_0}\right) \\&= \ln\left(\frac{84}{80}\right) \\&= \ln(1.05) \\&= 0.04879 \\&\approx 4.88\%\end{aligned}$$

B is incorrect. Holding period return = 5.00%.

C is incorrect. Annualizing simple return → 10.00%.

CFA Level I, Quantitative Methods, Learning Module 1: Returns of Financial Assets and Investments, LOS 1(a): Describe, compare, and interpret returns.

Q.5254 An investor buys a stock for CAD 75.00, receives a dividend of CAD 1.80 during the year, and sells the stock at the end of the year for CAD 72.00. The holding period return is closest to:

- A. -4.00%
- B. -1.60%
- C. 2.40%

The correct answer is **B**.

$$\begin{aligned} r &= \frac{P_1 - P_0 + \text{Inc}}{P_0} \\ &= \frac{72.00 - 75.00 + 1.80}{75.00} \\ &= \frac{-1.20}{75.00} \\ &= -0.016 \\ &= -1.60\% \end{aligned}$$

A is incorrect. Price return only = -4.00%.

C is incorrect. Dividend yield = 2.40%.

CFA Level I, Quantitative Methods, Learning Module 1: Returns of Financial Assets and Investments, LOS 1(a): Describe, compare, and interpret returns.

Q.5255 A mutual fund reported the following quarterly returns: Q1: 2.0%, Q2: 3.0%, Q3: -1.0%, Q4: 4.0%. The annual return for the fund is *closest* to:

A. 2.00%

B. 8.00%

C. 8.17%

The correct answer is **C**.

$$\text{Annual return} = (1.02)(1.03)(0.99)(1.04) - 1 = 1.08169776 - 1 = 8.17\%$$

A is incorrect. Arithmetic average = 2.00%.

B is incorrect. Sum of quarterly returns = 8.00%.

CFA Level I, Quantitative Methods, Learning Module 1: Returns of Financial Assets and Investments, LOS 1(a): Describe, compare, and interpret returns.

Q.5256 An investor uses a 50% margin loan to purchase 500 shares of a company for GBP 40 per share. The loan has an annual interest rate of 6%. At the end of one year, the investor sells the shares for GBP 48 per share and repays the loan. The investor's leveraged return is *closest* to:

- A. 10.0%
- B. 17.0%
- C. 34.0%

The correct answer is **C**.

$$\begin{aligned}V_E &= 10,000, & V_D &= 10,000 \\r_P &= \frac{48 - 40}{40} = 20\% \\r_d &= 6\% \\r_{LP} &= r_P + \frac{V_D}{V_E}(r_P - r_d) \\&= 20\% + 1(14\%) \\&= 34\%\end{aligned}$$

A is incorrect. Ignores leverage effect.

B is incorrect. Partial adjustment only.

CFA Level I, Quantitative Methods, Learning Module 1: Returns of Financial Assets and Investments, LOS 1(b): describe, compare, and interpret required rates of return, risk-free rates, risk premia, and inflation.

Q.5257 An analyst observes the following annual total returns for an exchange-traded fund (ETF):

Year	Return (%)
1	50.0
2	-50.0

The difference between the arithmetic mean return and the geometric mean return for the ETF is *closest* to:

- A. 0.00%
- B. 12.50%
- C. 13.40%

The correct answer is **C**.

$$\begin{aligned}\text{Arithmetic mean} &= \frac{50 + (-50)}{2} = 0\% \\ \text{Geometric mean} &= \sqrt{1.50 \cdot 0.50} - 1 \\ &= 0.8660 - 1 \\ &= -13.40\% \\ \text{Difference} &= 0\% - (-13.40\%) = 13.40\%\end{aligned}$$

A is incorrect. This would be true only if returns were constant.

B is incorrect. Confuses holding period return with geometric mean.

CFA Level I, Quantitative Methods, Learning Module 1: Returns of Financial Assets and Investments, LOS 1(a): Describe, compare, and interpret returns.

Q.5258 A stock is purchased for USD 150. At the end of the first year, the stock price appreciates to USD 180. At the end of the second year, the stock price falls back to USD 150. The geometric mean annual return for the two years is *closest* to:

- A. 0.00%
- B. 1.67%
- C. 20.00%

The correct answer is **A**.

$$\begin{aligned}\text{Year 1 return} &= \frac{180 - 150}{150} = 20\% \\ \text{Year 2 return} &= \frac{150 - 180}{180} = -16.67\% \\ \text{Geometric mean} &= \sqrt{(1.20)(0.8333)} - 1 \\ &= 0\%\end{aligned}$$

B is incorrect. Arithmetic mean = 1.67%.

C is incorrect. Ignores second year return.

CFA Level I, Quantitative Methods, Learning Module 1: Returns of Financial Assets and Investments, LOS 1(a): Describe, compare, and interpret returns.

Q.5259 An investor expects a 12% nominal return on a risky asset. The current risk-free rate is 3%, and the expected inflation rate is 2%. The excess return relative to the risk-free rate is *closest* to:

A. 7.0%

B. 8.7%

C. 9.0%

The correct answer is **B**.

$$\begin{aligned}1 + r_{\text{premium}} &= \frac{1.12}{1.03} \\&= 1.08738 \\r_{\text{premium}} &= 1.08738 - 1 \\&= 0.08738 = 8.74\%\end{aligned}$$

A is incorrect. Double-counts inflation: $12\% - 3\% - 2\% = 7\%$.

C is incorrect. Approximation: $12\% - 3\% = 9\%$.

CFA Level I, Quantitative Methods, Learning Module 1: Returns of Financial Assets and Investments, LOS 1(b): Describe, compare, and interpret required rates of return, riskfree rates, risk premia, and inflation.

Q.5260 Over 10 years, the nominal geometric average return for a diversified equity portfolio was 9.0%, and the geometric average inflation rate was 2.5%. The real geometric average return for the portfolio over the period is *closest* to:

- A. 6.34%
- B. 6.50%
- C. 11.50%

The correct answer is **A**.

$$\begin{aligned} r_{\text{real}} &= \frac{1.09}{1.025} - 1 \\ &= 1.06341 - 1 \\ &= 6.34\% \end{aligned}$$

B is incorrect. Ignores compounding: $9.0\% - 2.5\% = 6.5\%$.

C is incorrect. Adds inflation instead of removing: $9.0\% + 2.5\% = 11.5\%$.

CFA Level I, Quantitative Methods, Learning Module 1: Returns of Financial Assets and Investments, LOS 1(b): Describe, compare, and interpret required rates of return, riskfree rates, risk premia, and inflation.

Q.5261 An analyst is calculating the required rate of return for a corporate bond. Which of the following risk premia is *most likely* to be included?

- A. Size risk premium
- B. Value risk premium
- C. Default risk premium

The correct answer is **C**.

Corporate bonds expose investors to the risk that the issuer may default on interest or principal payments. The default risk premium compensates for that possibility and is a standard component of a corporate bond's required return.

A is incorrect. Size premium pertains to equity, not bonds.

B is incorrect. Value premium is equity-specific, not applicable to bonds.

CFA Level I, Quantitative Methods, Learning Module 1: Returns of Financial Assets and Investments, LOS 1(b): Describe, compare, and interpret required rates of return, riskfree rates, risk premia, and inflation.

Q.5262 An investor is considering two investments: a government bond yielding 3.5% and a corporate bond yielding 5.2%. Assuming the bonds have the same maturity, the additional return offered by the corporate bond is *best* described as compensation for:

- A. Credit risk
- B. Expected inflation
- C. The real risk-free rate

The correct answer is **A**.

The yield spread between a corporate bond and a government bond of similar maturity is a credit spread, primarily compensating investors for credit risk.

B is incorrect. Inflation affects both yields similarly.

C is incorrect. Real risk-free rate is common to both yields.

CFA Level I, Quantitative Methods, Learning Module 1: Returns of Financial Assets and Investments, LOS 1(b): Describe, compare, and interpret required rates of return, riskfree rates, risk premia, and inflation.

Q.5263 The nominal riskfree rate is 4%, and expected inflation is 2.5%. The real risk-free rate is *closest* to:

- A. 1.46%
- B. 1.50%
- C. 6.50%

The correct answer is **A**.

$$\begin{aligned} r_{rf} &= \frac{1.04}{1.025} - 1 \\ &= 1.01463 - 1 \\ &= 0.01463 = 1.46\% \end{aligned}$$

B is incorrect. Approximate subtraction: $4.0\% - 2.5\% = 1.5\%$.

C is incorrect. Adds inflation instead of subtracting: $4.0\% + 2.5\% = 6.5\%$.

CFA Level I, Quantitative Methods, Learning Module 1: Returns of Financial Assets and Investments, LOS 1(b): Describe, compare, and interpret required rates of return, riskfree rates, risk premia, and inflation.

Q.5264 A fund's total return for the year was 15.0%. The fund incurred transaction costs of 0.3% and administrative expenses of 0.6%. The gross return for the fund is *closest* to:

A. 14.1%

B. 14.4%

C. 14.7%

The correct answer is **C**.

$$\begin{aligned}\text{Gross Return} &= \text{Total Return} - \text{Transaction Cost} \\ &= 15.0\% - 0.3\% \\ &= 14.7\%\end{aligned}$$

A is incorrect. Net return = $15.0\% - 0.3\% - 0.6\% = 14.1\%$.

B is incorrect. Subtracts administrative expenses instead: $15.0\% - 0.6\% = 14.4\%$.

CFA Level I, Quantitative Methods, Learning Module 1: Returns of Financial Assets and Investments, LOS 1(b): Describe, compare, and interpret required rates of return, riskfree rates, risk premia, and inflation.

Q.5265 An investor buys a stock for EUR 60, receives a dividend of EUR 2, and sells it for EUR 65. The investor's marginal tax rate on capital gains is 25% and on dividend income is 30%. The aftertax nominal return is *closest* to:

- A. 8.33%
- B. 8.58%
- C. 11.67%

The correct answer is **B**.

$$\begin{aligned}\text{Price return} &= \frac{65 - 60}{60} = 0.08333 = 8.3333\% \\ \text{Dividend yield} &= \frac{2}{60} = 0.03333 = 3.3333\% \\ \text{Aftertax return} &= 8.3333\% \times (1 - 0.25) + 3.3333\% \times (1 - 0.30) \\ &= 6.25\% + 2.3333\% \\ &= 8.5833\% \approx 8.58\%\end{aligned}$$

A is incorrect. Before-tax price return only = 8.33%.

C is incorrect. Total return before taxes = 11.67%.

CFA Level I, Quantitative Methods, Learning Module 1: Returns of Financial Assets and Investments, LOS 1(b): Describe, compare, and interpret required rates of return, riskfree rates, risk premia, and inflation.

Q.5266 The risk-free rate is a component of the required rate of return and is *best* described as the:

- A. additional return expected for bearing extra risk
- B. return on an investment without any default or reinvestment risk
- C. return on an investment with no default risk but with significant reinvestment risk

The correct answer is **B**.

The risk-free rate is the theoretical return on an investment with no default risk and no reinvestment risk. Short-term government bonds are commonly used as a proxy.

A is incorrect. Describes a risk premium, not the risk-free rate.

C is incorrect. A truly risk-free investment has neither default nor reinvestment risk.

CFA Level I, Quantitative Methods, Learning Module 1: Returns of Financial Assets and Investments, LOS 1(b): Describe, compare, and interpret required rates of return, risk-free rates, risk premia, and inflation.

Q.5267 An investor purchases a stock for CHF 100 and sells it one year later for CHF 110. During the year, the investor receives a dividend of CHF 3. The inflation rate for the year is 5%. The investor's real total return before taxes is *closest* to:

- A. 8.0%
- B. 7.6%
- C. 13.0%

The correct answer is **B**.

$$\begin{aligned}\text{Total Return} &= \frac{110 - 100 + 3}{100} \\ &= \frac{13}{100} = 0.13 = 13.0\% \\ \text{Real Return} &= \frac{1.13}{1.05} - 1 \\ &= 1.07619 - 1 \\ &= 7.62\% \approx 7.6\%\end{aligned}$$

A is incorrect. Approximate subtraction: $13\% - 5\% = 8.0\%$.

C is incorrect. Total return before inflation = 13.0%.

CFA Level I, Quantitative Methods, Learning Module 1: Returns of Financial Assets and Investments, LOS 1(b): Describe, compare, and interpret required rates of return, riskfree rates, risk premia, and inflation.

Q.5268 Which of the following statements about the relationship between arithmetic and geometric returns is *most* accurate?

- A. The two means are equal when returns are positive
- B. The arithmetic mean is always greater than the geometric mean
- C. The difference between the two means increases with the variability of returns

The correct answer is **C**.

The arithmetic mean is greater than or equal to the geometric mean; the difference grows as return volatility increases.

A is incorrect. Equality requires constant returns, not merely positive returns.

B is incorrect. The word “always” makes the statement false; equality occurs when returns are constant.

CFA Level I, Quantitative Methods, Learning Module 1: Returns of Financial Assets and Investments, LOS 1(b): Describe, compare, and interpret required rates of return, riskfree rates, risk premia, and inflation.

Q.5269 For an investment to be attractive, its expected return must at least equal the:

- A. Required rate of return
- B. Historical geometric mean return
- C. Risk-free rate plus expected inflation

The correct answer is **A**.

The required rate of return is the minimum return an investor demands to compensate for risk and delayed consumption. An investment is attractive only if its expected return meets or exceeds this threshold.

B is incorrect. Historical geometric mean is a past statistic, not relevant to current attractiveness.

C is incorrect. Risk-free rate plus inflation approximates the nominal risk-free rate, not the required return for a risky asset.

CFA Level I, Quantitative Methods, Learning Module 1: Returns of Financial Assets and Investments, LOS 1(b): Describe, compare, and interpret required rates of return, riskfree rates, risk premia, and inflation.

Q.5270 An investor buys a share of a stock for \$50 at the beginning of Year 1. At the end of Year 1, the stock price is \$60, and the investor buys an additional share. At the end of Year 2, the stock price is \$55, and the investor sells both shares. No dividends are paid. The time-weighted annual return for the two-year period is *closest* to:

- A. -0.50%
- B. 4.88%
- C. 5.84%

The correct answer is **B**.

$$\text{Year 1 return} = \frac{60 - 50}{50} = 0.20 = 20.0\%$$

Year 2 return : At start of Year 2, 2 shares at 60 each = 120.

End of Year 2 value = $2 \times 55 = 110$

$$\text{Return} = \frac{110 - 120}{120} = -0.08333 = -8.333\%$$

$$\text{Compound returns} = (1.20)(0.91667) = 1.10$$

$$\begin{aligned} \text{Annualized time-weighted return} &= \sqrt{1.10} - 1 \\ &= 1.04881 - 1 \\ &= 0.04881 \approx 4.88\% \end{aligned}$$

A is incorrect. Might arise from computing the money-weighted (IRR) return, which is negative here.

C is incorrect. Averaging annual returns without compounding: $(20\% + (-8.33\%))/2 = 5.835\%$.

CFA Level I, Quantitative Methods, Learning Module 1: Returns of Financial Assets and Investments, LOS 1(b): Describe, compare, and interpret required rates of return, riskfree rates, risk premia, and inflation.

Learning Module 2: Types of Financial Returns

Q.5271 An investor purchases a zero-coupon bond at a deep discount and holds it to maturity. Which of the following *best* describes the source of return for this investment?

- A. Price appreciation only
- B. Fixed capital distribution returns only
- C. Both price appreciation and capital distribution returns

The correct answer is **A**.

A zero-coupon bond purchased at a discount and held to maturity generates return solely through price appreciation. The bond pays no periodic interest (no capital distributions); the investor's return comes entirely from the difference between the purchase price and the face value received at maturity.

B is incorrect. Fixed capital distribution returns refer to contractual interest payments, which zero-coupon bonds do not provide.

C is incorrect. Zero-coupon bonds provide only price appreciation; they make no capital distributions.

CFA Level I, Quantitative Methods, Learning Module 2: Types of Financial Returns, LOS 2(a): Calculate, compare, and interpret different types of returns for financial assets, instruments, and indicators

Q.5272 A company's board of directors declares a quarterly dividend of \$0.75 per share. On the ex-dividend date, the stock price declines by approximately \$0.75. This price adjustment *most likely* occurs because:

- A. the company's future earnings prospects have deteriorated
- B. investors prefer capital gains to dividend income for tax reasons
- C. the company's assets decrease by the total amount of dividends paid

The correct answer is **C**.

On the ex-dividend date, the share no longer carries the right to receive the declared dividend. All else equal, the share price is expected to decline by approximately the dividend amount because that value has been separated from the share and will be paid to shareholders entitled to the dividend.

A is incorrect. The dividend payment itself does not indicate deteriorating earnings prospects; it's a distribution of existing value.

B is incorrect. While tax preferences exist, they are not the primary reason for the ex-dividend price adjustment.

CFA Level I, Quantitative Methods, Learning Module 2: Types of Financial Returns, LOS 2(a): Calculate, compare, and interpret different types of returns for financial assets, instruments, and indicators

Q.5273 An analyst gathers the following information about two investments:

Investment	Purchase Price	Sale Price	Distributions Received
A	100.00	108.00	4.00
B	100.00	104.00	8.00

The total return for Investment A and Investment B, respectively, is *closest* to:

- A. 8.0% and 4.0%
- B. 12.0% and 8.0%
- C. 12.0% and 12.0%

The correct answer is **C**.

$$\begin{aligned}\text{Investment A} &= \frac{108 - 100 + 4}{100} = \frac{12}{100} = 12.0\% \\ \text{Investment B} &= \frac{104 - 100 + 8}{100} = \frac{12}{100} = 12.0\%\end{aligned}$$

A is incorrect. Miscalculates by excluding distributions.

B is incorrect. Misallocates distribution effect.

CFA Level I, Quantitative Methods, Learning Module 2: Types of Financial Returns, LOS 2(a): Calculate, compare, and interpret different types of returns for financial assets, instruments, and indicators

Q.5274 An investor is considering two companies in different industries: Company X is a mature utility with stable cash flows Company Y is a rapidly growing technology firm Based on typical corporate behaviour, Company X is *more likely* to:

- A. reinvest all earnings to fund expansion
- B. distribute a substantial portion of earnings as dividends
- C. repurchase shares exclusively without paying dividends

The correct answer is **B**.

Mature companies with stable cash flows and limited growth opportunities (like utilities) typically distribute a substantial portion of earnings to shareholders as dividends. This attracts income-oriented investors.

A is incorrect. Reinvesting all earnings is characteristic of growth companies, not mature utilities.

C is incorrect. While some mature companies use buybacks, utilities are traditionally associated with regular dividend payments rather than exclusive reliance on repurchases.

CFA Level I, Quantitative Methods, Learning Module 2: Types of Financial Returns, LOS 2(a): Calculate, compare, and interpret different types of returns for financial assets, instruments, and indicators
