

Quan Test

1.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)\$33,138. B)\$30,683. C)\$66,243. D)\$80,000.

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

- A)14.34%. B)12.00%. C)12.55% D)13.33%.

3.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)13.31%. B)11.33%. C)21.01%.D) 12.50%.

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

- A)\$751. B)\$683. C)\$909. D)\$1000.

5.Assume that the following returns are a sample of annual returns for firms in the clothing industry. Given the following sample of returns, what are the sample variance and standard deviation?

Firm 1	Firm 2	Firm 3	Firm 4	Firm 5
15%	2%	5%	(7%)	0%

Variance

Standard Deviation

- | | | |
|----|------|-----|
| A) | 32.4 | 5.7 |
| B) | 22.0 | 4.7 |
| C) | 64.5 | 8.0 |
| D) | 51.6 | 7.2 |

6.What is the standard deviation of a portfolio if you invest 30% in stock one (standard deviation of 4.6%) and 70% in stock two (standard deviation of 7.8%) if the correlation coefficient for the two stocks is 0.45?

- A) 0.38%. B)6.20%. C)6.83%. D)5.94%.

7.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 5.72% annual interest rate compounded quarterly.
- Bank C offers 5.75% annual interest rate compounded monthly.
- Bank D offers 5.70% annual interest compounded daily.

Which bank offers the highest effective interest rate and how much? A)Bank D, 5.87%. B) Bank B, 5.88%. C)Bank C, 5.90%. D)Bank A, 5.85%.

8.Which of the following statements concerning a distribution with positive skewness and positive excess kurtosis is *least* accurate?

- A) It has a lower percentage of small deviations from the mean than a normal distribution.

- B) The mean will be greater than the mode.
C) There are a large number of positive outliers.
D) It has fatter tails than a normal distribution.

9.Bonds rated B have a 25% chance of default in five years. Bonds rated CCC have a 40% chance of default in five years. A portfolio consists of 30% B and 70% CCC-rated bonds. If a randomly selected bond defaults in a five-year period, what is the probability that it was a B-rated bond?

- A) 0.625. B)0.429. C)0.211 D) 0.250.

10.Financial managers should always select the project that provides the highest net present value (NPV) whenever NPV and IRR methods conflict, because maximizing:

- A) shareholder wealth is the goal of financial management.
B) revenues is the goal of financial management.
C) earnings per share is the goal of financial management.
D) the shareholders' rate of return is the goal of financial management.

11.Which of the following indicates the frequency of an interval in a frequency distribution histogram?

- A) Horizontal logarithmic scale.
B) Height of the corresponding bar.
C) Width of the corresponding bar.
D) Height multiplied by the width of the corresponding bar.

12.A Treasury bill, with 45 days until maturity, has an effective annual yield of 12.50%. The bill's holding period yield is closest to:

- A) 1.57%. B) 12.50%. C)1.46%. D)1.54%.

13.The probability of a new Wal-Mart being built in town is 64%. If Wal-Mart comes to town, the probability of a new Wendy's restaurant being built is 90%. What is the probability of a new Wal-Mart and a new Wendy's restaurant being built?

- A) 0.675. B) 0.240. C) 0.306. D) 0.576.

14.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) \$1,112.44. B)\$721.32. C)\$810.98. D)\$865.34.

15. 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) \$35,967. C)\$42,165. D)\$23,674.

16.The covariance of the returns on investments X and Y is 18.17. The standard deviation of returns on X is 7. and the

standard deviation of returns on Y is 4. What is the value of the correlation coefficient for returns on investments X and Y?

- A) +0.65. B) +0.32. C) +0.85. D) +2.59.

17. One year ago, an investor made five separate investments with the invested amounts and returns shown below. What is the arithmetic and geometric mean return on all of the investor's investments?

Investment	Invested Amount	Return (%)
A	10,000	12
B	10,000	14
C	10,000	9
D	20,000	13
E	20,000	7

Arithmetic Mean

Geometric Mean

- | | |
|----------|-------|
| A) 11.00 | 10.78 |
| B) 11.64 | 10.97 |
| C) 11.00 | 10.97 |
| D) 11.64 | 10.78 |

18. Which of the following statements about probability is most accurate?

- A) A conditional probability is the probability that two or more events will happen concurrently.
- B) An event is a set of one or more possible values of a random variable.
- C) An outcome is the calculated probability of an event. Out of a sample of 100 widgets 10 were found to be defective, 20 were perfect, and 70 were OK. The probability of picking a perfect widget at random is 29%.
- D) defective, 20 were perfect, and 70 were OK. The probability of picking a perfect widget at random is 29%.

19. Tully Advisers, Inc., has determined four possible economic scenarios and has projected the portfolio returns for two portfolios for their client under each scenario. Tully's economist has estimated the probability of each scenario, as shown in the table below. Given this information, what is the standard deviation of returns on portfolio A?

Scenario	Probability	Return on Portfolio A	Return on Portfolio B
A	15%	18%	19%
B	20%	17%	18%
C	25%	11%	10%
D	40%	7%	9%

- A) 4.53%. B) 1.140%. C) 5.992%. D) 8.76%.

20. The following data points are observed returns.?

4.2%, 6.8%, 7.0%, 10.9%, 11.6%, 14.4%, 17.0%, 19.0%, 22.5%, 28.1%

What return lies at the seventh decile (70% of returns lie below this return)? A) 17.0%. B) 19.0%. C) 18.4%. D) 16.8%.

21. An investor buys four shares of stock for \$50 per share. At the end of year one she sells two shares for \$50 per share. At the end of year two she sells the two remaining shares for \$80 each. The stock paid no dividend at the end of year one and a dividend of \$5.00 per share at the end of year two. What is the difference between the time-weighted rate of return and the money-weighted rate of return?

- A) 20.52%. B) 9.86%. C) 30.38%. D) 14.48%.

22. Which of the following is **NOT** a problem with the internal rate of return (IRR)?

- A) Non-normal cash flow patterns may result in multiple IRRs.
- B) For mutually exclusive projects, IRR and net present value (NPV) can give conflicting project rankings.
- C) Sometimes the IRR exceeds the cost of capital.
- D) A higher IRR does not necessarily indicate a more-profitable project.

23. When Annette Famigletti hears that a baseball-loving friend is coming to visit, she purchases two premium-seating tickets for \$45 per ticket for an evening game. As the date of the game approaches, Famigletti's friend telephones and says that his trip has been cancelled. Fortunately for Famigletti, the tickets she holds are in high demand as there is chance that the leading Major League Baseball hitter will break the home run record during the game. Seeing an opportunity to earn a high return, Famigletti puts the tickets up for sale on an internet site. The auction closes at \$150 per ticket. After paying a 10% commission to the site (on the amount of the sale) and paying \$8 total in shipping costs, Famigletti's holding period return is approximately:

- A) 191%. B) 202%. C) 91%. D) 182%.

24. Use the results from the following survey of 500 firms to answer the question.

Number of Employees	Frequency
300 up to 400	40
400 up to 500	62
500 up to 600	78
600 up to 700	101
700 up to 800	131
800 up to 900	88

The number of classes in this frequency table is:

- A) 5. B) 100. C) 600. D) 6.

25. 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) \$905.87. B) \$980.89. C) \$1,047.62. D) \$919.74.

Quan Test Answers:

1. Answer was A) Two steps. 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). $N = 4; I/Y = 8; PMT = 20,000; CPT \rightarrow PV = \$66,242.54$. Second, find the present value of this single sum: $N = 9; I/Y = 8; FV = 66,242.54; PMT = 0; CPT \rightarrow PV = 33,137.76$. This question tested from Session 2, Reading 5, LOS e

2. Answer was C) 12.55%. Answer: $(1 + 0.12 / 4)^4 - 1 = 1.1255 - 1 = 0.1255$. This question tested from Session 2, Reading 5, LOS c, (Part 1)

3. Answer was D) 12.50%. $\ln(18,682/10,000) = 0.6250/5 = 12.50\%$ Or: $(18,682/10,000)^{1/5} = 1.133143, \ln(1.133143) = 12.4995\%$ This question tested from Session 2, Reading 5, LOS c, (Part 2)

4. Answer was A) 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 $1,000 / (1.10)^3 = 751$. This question tested from Session 2, Reading 5, LOS d, (Part 3)

5. Answer was C) 64.5 8.0 The sample variance is found by taking the sum of all squared deviations from the mean and dividing by $(n - 1)$. $[(15 - 3)^2 + (2 - 3)^2 + (5 - 3)^2 + (-7 - 3)^2 + (0 - 3)^2] / (5 - 1) = 64.5$ The sample standard deviation is found by taking the square root of the sample variance. $\sqrt{64.5} = 8.03$ This question tested from Session 2, Reading 7, LOS f

6. Answer was B) 6.20%. The standard deviation of the portfolio is found by: $[W_1^2 \sigma_1^2 + W_2^2 \sigma_2^2 + 2W_1W_2\sigma_1\sigma_2r_{1,2}]^{0.5}$, or $[(0.30)^2(0.046)^2 + (0.70)^2(0.078)^2 + (2)(0.30)(0.70)(0.046)(0.078)(0.45)]^{0.5} = 0.0620$, or 6.20%. This question tested from Session 2, Reading 8, LOS k

7. Answer was C) Bank C, 5.90%. Effective interest rates:

Bank A = 5.85 (already annual compounding)

Bank B, nominal = 5.72; $C/Y = 4$; effective = 5.84

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

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

Hence Bank C has the highest effective interest rate.

This question tested from Session 2, Reading 5, LOS c, (Part 1)

8. Answer was A) A distribution with positive excess kurtosis has a higher percentage of small deviations from the mean than normal. So it is more peaked than a normal distribution. A distribution with positive skew has a mean > mode. From Session 2, Reading 7, LOS j

9. Answer was C) 0.211. According to Bayes' formula: $P(B/default) = P(default and B)/P(default)$. $P(default and B) =$

$P(default/B) \times P(B) = 0.250 \times 0.300 = 0.075$ $P(default and CCC) = P(default/CCC) \times P(CCC) = 0.400 \times 0.700 = 0.280$
 $P(default) = P(default and B) + P(default and CCC) = 0.355$
 $P(B/default) = P(default and B)/P(default) = 0.075 / 0.355 = 0.211$ This question tested from Session 2, Reading 8, LOS m

10. Answer was A) Focusing on the maximization of earnings does not consider the differences in risk across projects, while focusing on revenues precludes concern for the expenses incurred. Earning a higher return on a small project provides less of a benefit than earning a slightly lower rate of return on a much larger project. This question tested from Session 2, Reading 6, LOS a, (Part 2)

11. Answer was B) Height of the corresponding bar. In a histogram, intervals are placed on horizontal axis, and frequencies are placed on the vertical axis. The frequency of the particular interval is given by the value on the vertical axis, or the height of the corresponding bar. This question tested from Session 2, Reading 7, LOS c, (Part 2)

12. Answer was C) 1.46%. The effective annual yield (EAY) is equal to the annualized holding period yield (HPY) based on a 365-day year. $EAY = (1 + HPY)^{365/t} - 1$. $HPY = (EAY + 1)^{1/365} - 1 = (1.125)^{45/365} - 1 = 1.46\%$. This question tested from Session 2, Reading 6, LOS d, (Part 2)

13. Answer was D) 0.576. $P(AB) = P(A|B) \times P(B)$ The probability of a new Wal-Mart and a new Wendy's is equal to the probability of a new Wendy's Wal-Mart (0.90) times the probability of a new Wal-Mart (0.64). $(0.90)(0.64) = 0.576$. This question tested from Session 2, Reading 8, LOS e, (Part 1)

14. Answer was C) \$810.98.

<i>N</i>	<i>i</i>	<i>FV</i>	<i>PV</i>
0	12	100	100.00
1	12	200	178.57
2	12	400	318.88
<u>3</u>	<u>12</u>	<u>300</u>	<u>213.53</u>
			810.98

This question tested from Session 2, Reading 5, LOS d, (Part 2)

15. Answer was A) Switch to BGN mode. $PMT = -1,000; N = 10, I/Y = 9, PV = 0; CPT \rightarrow FV = 16,560.29$. Remember the answer will be one year after the last payment in annuity due FV problems. Now $PV_{10} = 16,560.29; N = 10; I/Y = 9; PMT = 0; CPT \rightarrow FV = 39,204.23$. Switch back to END mode. This question tested from Session 2, Reading 5, LOS d, (Part 2)

16. Answer was A) The correlation coefficient = $Cov(X, Y) / [(Std. Dev. X)(Std. Dev. Y)] = 18.17 / 28 = 0.65$ This question tested from Session 2, Reading 8, LOS j

17. Answer was C) 11.00 10.97 Arithmetic Mean: $12 + 14 + 9 + 13 + 7 = 55; 55 / 5 = 11$ Geometric Mean: $[(1.12 \times 1.14 \times 1.09 \times 1.13 \times 1.07)^{1/5}] - 1 = 10.97\%$ This question tested from Session 2, Reading 7, LOS e

18. Answer was B) An event is a set of one or more possible values of a random variable. Conditional probability is the probability of one event happening given that another event has happened. An outcome is the numerical result associated with a random variable. The probability of picking a perfect widget is $20 / 100 = 0.20$ or 20%. This question tested from Session 2, Reading 8, LOS a

24. Answer was D) $6. 300 - 400 = 1, 400 - 500 = 2, 500 - 600 = 3, 600 - 700 = 4, 700 - 800 = 5, 800 - 900 = 6, \text{Total} = 6$ This question tested from Session 2, Reading 7, LOS b

25. Answer was D) \$919.74. $200 / (1.05) + 300 / (1.05)^3 + 600 / (1.05)^5 = 919.74$. This question tested from Session 2, Reading 5, LOS d, (Part 4)

19. Answer was A) $E(R_A) = 11.65\%$

$$\sigma^2 = 0.0020506 = 0.15(0.18 - 0.1165)^2 + 0.2(0.17 - 0.1165)^2 + 0.25(0.11 - 0.1165)^2 + 0.4(0.07 - 0.1165)^2 \quad \sigma = 0.0452836$$

This question tested from Session 2, Reading 8, LOS k

20. Answer was C) 18.4%.

The formula for the seventh decile is $L_7 = (n + 1)(7 / 10) = 7.70$ or between the seventh and eighth return from the left. The seventh return is 17%, while the eighth return is 19%. Interpolating, we find that the seventh decile is $17\% + 0.7(19\% - 17\%) = 18.4\%$. This question tested from Session 2, Reading 7, LOS e

21. Answer was B) 9.86%.

T = 0: Purchase of four shares = -\$200.00;

T = 1: Dividend from four shares = +\$0.00;

Sale of two shares = +\$100.00

T = 2: Dividend from two shares = +\$10.00

Proceeds from selling shares = +\$160.00

The money-weighted return is the rate that solves the equation: $\$200.00 = \$100.00 / (1 + r) + \$170.00 / (1 + r)^2$.

$C_0 = -200, C_1 = 100, C_2 = 170, CPT \rightarrow IRR = 20.52\%$.

The holding period return in year one is $(\$50.00 - \$50.00 + \$0.00) / \$50.00 = 0.00\%$. The holding period return in year two is $(\$80.00 - \$50.00 + \$5.00) / \$50 = 70.00\%$. The time-weighted return is $[(1 + 0.00)(1 + 0.70)]^{1/2} - 1 = 30.38\%$. The difference between the two is $30.38\% - 20.52\% = 9.86\%$.

This question tested from Session 2, Reading 6, LOS c, (Part 2)

22. Answer was C) Sometimes the IRR exceeds the cost of capital.

If the IRR exceeds the cost of capital, that merely indicates that the project is acceptable. This is not a problem associated with IRR. Non-normal cash flow patterns such as cash outflows during the project's life can result in multiple IRRs, leaving open the question as to which one is valid. For mutually exclusive projects, the IRR and NPV can disagree. A higher IRR will only be realized if the project's cash flows can be reinvested at the IRR, and the true profitability of a project also depends on project size, not just IRR. This question tested from Session 2, Reading 6, LOS a, (Part 3)

23. Answer was A) The holding period return is calculated as: $(\text{ending price} - \text{beginning price} + \text{any cash flows}) / \text{beginning price}$. Here, the beginning and ending prices are given. The other cash flows consist of the commission of \$30 ($0.10 \times 150 \times 2$ tickets) and the shipping cost of \$8 (total for both tickets). Thus, her holding period return is: $(2 \times 150 - 2 \times 45 - 30 - 8) / (2 \times 45) = 1.91$, or approximately **191%**. This question tested from Session 2, Reading 6, LOS b