Reading 8: Statistical Concepts and Market Returns

Question #1 of 123

Which of the following statements concerning kurtosis is *least* accurate?

A) A leptokurtic distribution has excess kurtosis less than zero.

B) A distribution that is more peaked than a normal distribution is leptokurtic.

C) A leptokurtic distribution has fatter tails than a normal distribution.

Question #2 of 123

According to Chebyshev's Inequality, for any distribution, what is the minimum percentage of observations that lie within three standard deviations of the mean?

A) 75%.

B) 89%.

C) 94%.

Question #3 of 123

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 width of each interval (class) for this frequency table is:

A) 101.

B) 100.

C) 50.

The respective arithmetic mean and geometric mean returns of the following series of stock market returns are:

Year 1	14%
Year 2	6%
Year 3	−5%
Year 4	20%

A) 8.75%; 8.34%.

B) 8.75%; 8.62%.

C) 8.90%; 8.62%.

Which of the following sets of data is *most accurately* described as a sample?

A) Year-end assets under management for each mutual fund registered with a securities regulator.

B) Years of higher education of the portfolio managers at a mutual fund.

C) Annual returns on a mutual fund since its inception.

If the historical mean return on an investment is 2.0% and the standard deviation is 8.8%, what is the coefficient of variation (CV)?

A) 4.40.

B) 1.76.

C) 6.80.

The returns for individual assets in a portfolio are shown below:

Assets	Return (%)
A	1.3
B	1.4
C	2.2

D	3.4
E	1.7

What is the population standard deviation of the returns?

A) 0.56%.

B) 1.71%.

C) 0.77%.

Question #8 of 123

Which one of the following alternatives *best* describes the primary use of inferential statistics? Inferential statistics are used to:

A) summarize the important characteristics of a large data set based on statistical characteristics of a smaller sample.

B) make forecasts, estimates or judgments about a large set of data based on statistical characteristics of a smaller sample.

C) make forecasts based on large data sets.

Question #9 of 123

Annual Returns on ABC Mutual Fund									
Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8	Yr 9	Yr 10
11.0%	12.5%	8.0%	9.0%	13.0%	7.0%	15.0%	2.0%	-16.5%	11.0%

Assuming a mean of 7.2%, what is the sample standard deviation of the returns for ABC Mutual Fund for the period from Year 1 to Year 10?

A) 7.8%.

B) 9.1%.

C) 9.8%.

Question #10 of 123

What is the seventh decile of the following data points?

81	84	91	97	102	108	110	112	115	121
128	135	138	141	142	147	153	155	159	162

A) 141.0.

B) 141.7.

C) 142.0.

Question #11 of 123

How is the relative frequency of an interval computed?

A) Dividing the sum of the two interval limits by 2.

B) Subtracting the lower limit of the interval by the upper limit.

C) Dividing the frequency of that interval by the sum of all frequencies.

Question #12 of 123

Which of the following statements about kurtosis is *least* accurate? Kurtosis:

A) measures the peakedness of a distribution reflecting a greater or lesser concentration of returns around the mean.

B) is used to reflect the probability of extreme outcomes for a return distribution.

C) describes the degree to which a distribution is not symmetric about its mean.

Question #13 of 123

A distribution that is more peaked than normal is:

A) leptokurtic.

B) skewed.

C) platykurtic.

Question #14 of 123

The weights and returns for individual positions in a portfolio are shown below:

Position	Mkt. Value at 1/1/05($MM)	Return for 2005(%)
A	1.3	-2.0
B	1.4	-4.2
C	2.2	+6.4
D	3.9	+2.1

| E | 1.7 | -0.8 |

What is the return on the portfolio?

A) +1.50%.

B) +1.18%.

C) -1.20%.

Question #15 of 123

Based on the annual returns on a stock index over the last ten years, the arithmetic mean return is calculated as zero percent. It is *most likely* that the average compound rate of return for an investment in the index over that period is:

A) positive.

B) zero.

C) negative.

Question #16 of 123

In a negatively skewed distribution, what is the order (from lowest value to highest) for the distribution's mode, mean, and median values?

A) Median, mode, mean.

B) Mode, mean, median.

C) Mean, median, mode.

Question #17 of 123

Cameron Ryan wants to make an offer on the condominium he is renting. He takes a sample of prices of condominiums in his development that closed in the last five months. Sample prices are as follows (amounts are in thousands of dollars): $125, $175, $150, $155 and $135. The sample standard deviation is *closest* to:

A) 38.47.

B) 370.00.

C) 19.24.

Question #18 of 123

What is the compound annual growth rate for stock A which has annual returns of 5.60%, 22.67%, and -5.23%?

A) 6.00%.

B) 7.08%.

C) 8.72%.

Question #19 of 123

Fifty mutual funds are ranked according to performance. The five best performing funds are assigned the number 1, while the five worst performing funds are assigned the number 10. This is an example of a(n):

A) nominal scale.

B) ordinal scale.

C) interval scale.

Question #20 of 123

A portfolio has a return of 14.2% and a Sharpe's measure of 3.52. If the risk-free rate is 4.7%, what is the standard deviation of returns?

A) 2.6%.

B) 2.7%.

C) 3.9%.

Question #21 of 123

Find the respective mean and the mean absolute deviation (MAD) of a series of stock market returns.

Year 1	14%
Year 2	20%
Year 3	24%
Year 4	22%

A) 20%; 3%.

B) 22%; 3%.

C) 20%; 12%.

Question #22 of 123

A distribution with a mean that is less than its median *most likely*:

A) has negative excess kurtosis.

B) is negatively skewed.

C) is positively skewed.

Question #23 of 123

Given rates of return on an index for the past 10 years, the arithmetic mean of these returns is:

A) the compound annual rate of return that would have resulted in the same change in wealth as the actual rates of return in the past years.

B) statistically the best estimator of the compound annual rate of return over multiple periods.

C) statistically the best estimator of the next year's rate of return.

Question #24 of 123

A distribution of returns that has a greater percentage of small deviations from the mean and a greater percentage of large deviations from the mean compared to a normal distribution:

A) has negative excess kurtosis.

B) is positively skewed.

C) has positive excess kurtosis.

Question #25 of 123

Portfolio A earned an annual return of 15% with a standard deviation of 28%. If the mean return on Treasury bills (T-bills) is 4%, the Sharpe ratio for the portfolio is:

A) 0.39.

B) 1.87.

C) 0.54.

Question #26 of 123

Which measure of scale has a true zero point as the origin?

A) Ratio scale.

B) Nominal scale.

C) Ordinal scale.

Given the following sample data, find the sample standard deviation of returns for Stock A and for Stock B.

	Stock A	Stock B
Year 1	16%	20%
Year 2	20%	24%
Year 3	12%	10%

Std. Dev. A	Std. Dev. B

A) 4.0%   7.2%

B) 3.3%   5.9%

C) 4.0%   5.9%

Johnson Inc. manages a growth portfolio of equity securities that has had a mean monthly return of 1.4% and a standard deviation of returns of 10.8%. Smith Inc. manages a blended equity and fixed income portfolio that has had a mean monthly return of 1.2% and a standard deviation of returns of 6.8%. The mean monthly return on Treasury bills has been 0.3%. Based on the Sharpe ratio, the:

A) Johnson and Smith portfolios have exhibited the same risk-adjusted performance.

B) performance of the Smith portfolio is preferable to the performance of the Johnson portfolio.

C) performance of the Johnson portfolio is preferable to the performance of the Smith portfolio.

A portfolio is equally invested in Stock A, with an expected return of 6%, and Stock B, with an expected return of 10%, and a risk-free asset with a return of 5%. The expected return on the portfolio is:

A) 7.0%.

B) 7.4%.

C) 8.0%.

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 respectively?

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

A) 51.6; 7.2.

B) 32.4; 5.7.

C) 64.5; 8.0.

Given the following frequency distribution:

Return	Frequency
-10% up to 0%	5
0% up to 10%	7
10% up to 20%	9
20% up to 30%	6
30% up to 40%	3

What is the cumulative relative frequency of the 20% up to 30% return interval?

A) 70%.

B) 90%.

C) 10%.

A summary measure of a characteristic of an entire population is called a:

A) statistic.

B) census.

C) parameter.

Which of the following statements about a normal distribution is *least* accurate?

A) A normal distribution has excess kurtosis of three.

B) The mean and variance completely define a normal distribution.

C) Approximately 68% of the observations lie within +/- 1 standard deviation of the mean.

Question #34 of 123

Consider the following statements about the geometric and arithmetic means as measures of central tendency. Which statement is *least* accurate?

A) The difference between the geometric mean and the arithmetic mean increases with an increase in variability between period-to-period observations.

B) The geometric mean may be used to estimate the average return over a one-period time horizon because it is the average of one-period returns.

C) The geometric mean calculates the rate of return that would have to be earned each year to match the actual, cumulative investment performance.

Question #35 of 123

Which of the following statements regarding frequency distributions is *least* accurate? Frequency distributions:

A) organize data into overlapping groups.

B) summarize data into a relatively small number of intervals.

C) work with all types of measurement scales.

Question #36 of 123

Which of the following *best* describes a frequency distribution? A frequency distribution is a grouping of:

A) data into groups, the numerical order of which does not matter

B) data into non-overlapping intervals

C) measures used to describe a population

Question #37 of 123

Given the following annual returns, what are the median and mode returns, respectively?

1995	1996	1997	1998	1999
15%	2%	5%	-7%	0%

A) 2.00%; no mode exists.

B) no median exists; no mode exists.

C) 2.00%; 3.00%.

Question #38 of 123

For the past three years, Acme Corp. has generated the following sample returns on equity (ROE): 4%, 10%, and 1%. What is the sample variance of the ROE over the last three years?

A) 21.0%.

B) 4.6%.

C) 21.0(%^{2}).

Question #39 of 123

Which of the following is an example of a parameter?

A) Population variance.

B) Sample standard deviation.

C) Sample mean.

Question #40 of 123

An investor has a portfolio with 10% cash, 30% bonds, and 60% stock. If last year's return on cash was 2.0%, the return on bonds was 9.5%, and the return on stock was 25%, what was the return on the investor's portfolio?

A) 36.50%.

B) 22.30%.

C) 18.05%.

Question #41 of 123

An investor has a portfolio with 10% cash, 30% bonds, and 60% stock. Last year, the cash returns was 2.0%, the bonds' return was 9.5%, and the stocks' return was -32.5%. What was the return on the investor's portfolio?

A) -16.45%.

B) -33.33%.

C) -7.00%.

Which one of the following alternatives *best* describes the primary use of descriptive statistics? Descriptive statistics are used to:

A) obtain data about the characteristics of any data set that can be used to assess the likelihood of the occurrence of future events.

B) summarize important characteristics of large data sets.

C) arrive at estimates regarding a large set of data regarding the statistical characteristics of a smaller sample.

In a skewed distribution, what is the minimum proportion of observations between +/- two standard deviations from the mean?

A) 95%.

B) 84%.

C) 75%.

What does it mean to say that an observation is at the sixty-fifth percentile?

A) The observation falls within the 65th of 100 intervals.

B) 65% of all the observations are above that observation.

C) 65% of all the observations are below that observation.

Claude Bellow, CFA, is an analyst with a real estate focused investment firm. He asks his assistant to gather annual return information on a large office building and on a (REIT) real estate investment trust with diverse holdings. The following tables summarize the information.

Table 1: Annual returns (in %)					
Asset	Year 1	Year 2	Year 3	Year 4	Year 5
REIT	25.0	20.0	5.0	-5.0	13.0
Office Building	15.0	5.0	-5.0	-2.0	13.0

Table 2: Mean and Dispersion Information		
Asset	Mean Return*	Variance
REIT	11.6%	114.24

Office Building	5.2%	62.56

* Calculated using the arithmetic mean.

Which of the following statements about the coefficient of variation of the two assets is *least* accurate?

A) The coefficient of variation of the office building returns is approximately 1.52.

B) There is more dispersion relative to the mean in the distribution of the REIT returns when compared to the distribution of the returns for the office building.

C) The mean of the squared deviations from the arithmetic mean of the office building is less than that of the REIT.

Question #46 of 123

The following table provides average return and variance of returns for portfolio managers Bob, Mark, and Rick:

	Bob	Mark	Rick
Average Return (%)	15	13	9
Variance	81	49	36

Which of these managers has the best risk-adjusted return, as measured by the Sharpe Ratio, if the risk-free rate is 4%?

A) Mark.

B) Rick.

C) Bob.

Question #47 of 123

Given the following annual returns, what are the geometric and arithmetic mean returns, respectively?

2002	2003	2004	2005	2006
15%	2%	5%	-7%	0%

A) 2.75%; 3.00%.

B) 2.75%; 5.80%.

C) 1.45%; 3.00%.

Question #48 of 123

In a frequency distribution histogram, the frequency of an interval is given by the:

A) height of the corresponding bar.

B) width of the corresponding bar.

C) height multiplied by the width of the corresponding bar.

Question #49 of 123

An investor has the following assets:

- $5,000 in bonds with an expected return of 8%.
- $10,000 in equities with an expected return of 12%.
- $5,000 in real estate with an expected return of 10%.

What is the portfolio's expected return?

A) 11.00%.

B) 10.00%.

C) 10.50%.

Question #50 of 123

Consider the following set of stock returns: 12%, 23%, 27%, 10%, 7%, 20%,15%. The third quartile is:

A) 21.5%.

B) 20.0%.

C) 23%.

Question #51 of 123

In a positively skewed distribution, the:

A) mean is greater than the median.

B) median equals the mean.

C) mean is less than the median.

Question #52 of 123

A portfolio of options had a return of 22% with a standard deviation of 20%. If the risk-free rate is 7.5%, what is the Sharpe ratio for the portfolio?

A) 0.725.

B) 0.147.

C) 0.568.

If stock X's expected return is 30% and its expected standard deviation is 5%, Stock X's expected coefficient of variation is:

A) 0.167.

B) 1.20.

C) 6.0.

What is the coefficient of variation for a distribution with a mean of 10 and a variance of 4?

A) 40%.

B) 20%.

C) 25%.

For the investments shown in the table below:

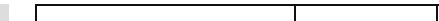| Investment	Return (%)
A	12
B	14
C	9
D	13
E	7
F	8
G	12

Which of the following statements is *most accurate*?

A) The median is equal to the mode.

B) The mean is equal to the mode.

C) The mean is equal to the median.

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) 600.

C) 6.

Question #57 of 123

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) It has fatter tails than a normal distribution.

C) The mean will be greater than the mode.

Question #58 of 123

Claude Bellow, CFA, is an analyst with a real-estate focused investment firm. Today, one of the partners e-mails Bellow the following table and requests that he "run some numbers." The table below gives five years of annual returns for Marley REIT (real estate investment trust) and a large urban apartment building. Marley REIT invests in commercial properties. (*Note:* For this question, calculate the mean returns using the *arithmetic mean*.)

Table 1: Annual returns (in %)					
Asset	Year 1	Year 2	Year 3	Year 4	Year 5
Marley REIT	15.0	8.0	13.0	9.0	13.0
Apartment Bldg	10.0	-1.0	8.0	8.0	9.0

One of the office assistants begins to "run some numbers," but is then called away to an important meeting. So far, the assistant calculated the variance of the apartment building returns at 15.76%. (He assumed that the returns given represent the entire population of returns.) Now, Bellow must finish the work.

Bellow should conclude that the standard deviation of the:

A) apartment building, if the given returns represent a sample of returns, is 4.44%.

B) apartment building, if the given returns represent a sample of returns, is 19.70%.

C) REIT, assuming the given returns represent the entire population, is 2.97%.

Question #59 of 123

Given the following frequency distribution:

Return	Frequency
-10% up to 0%	5
0% up to 10%	7
10% up to 20%	9
20% up to 30%	6
30% up to 40%	3

What is the relative frequency of the 0% to 10% interval?

A) 33.3%.

B) 40.0%.

C) 23.3%.

Question #60 of 123

An investor has a $15,000 portfolio consisting of $10,000 in stock A with an expected return of 20% and $5,000 in stock B with an expected return of 10%. What is the investor's expected return on the portfolio?

A) 12.2%.

B) 7.9%.

C) 16.7%.

Question #61 of 123

Which of the following statements regarding skewness is *least* accurate?

A) A distribution that is not symmetrical has skew not equal to zero.

B) A positively skewed distribution is characterized by many small losses and a few extreme gains.

C) In a skewed distribution, 95% of all values will lie within plus or minus two standard deviations of the mean.

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%

What return lies at the 70th percentile (70% of returns lie below this return)?

A) 17.0%.

B) 19.0%.

C) 14.4%.

A summary measure that is computed to describe a population characteristic from a sample is called a:

A) statistic.

B) census.

C) parameter.

An investor has a $12,000 portfolio consisting of $7,000 in stock A with an expected return of 20% and $5,000 in stock B with an expected return of 10%. What is the investor's expected return on the portfolio?

A) 15.8%.

B) 12.2%.

C) 15.0%.

Returns for a portfolio over the last four years are shown below. Treating these returns as a sample, what is their coefficient of variation (CV)?

Year	Return
1	17.0%
2	12.2%
3	3.9%

4	-8.4%

A) 1.80.

B) 0.55.

C) 1.56.

Question #66 of 123

Twenty Level I CFA candidates in a study group took a practice exam and want to determine the distribution of their scores. When they grade their exams they discover that one of them skipped an ethics question and subsequently filled in the rest of his answers in the wrong places, leaving him with a much lower score than the rest of the group. If they include this candidate's score, their distribution will *most likely*:

A) have a mode that is less than its median.

B) have a mean that is less than its median.

C) be positively skewed.

Question #67 of 123

Annual Returns on ABC Mutual Fund									
1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
11.0%	12.5%	8.0%	9.0%	13.0%	7.0%	15.0%	2.0%	-16.5%	11.0%

If the risk-free rate was 4.0% during the period 1991-2000, what is the Sharpe ratio for ABC Mutual Fund for the period 1991-2000?

A) 0.52.

B) 0.35.

C) 0.68.

Question #68 of 123

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

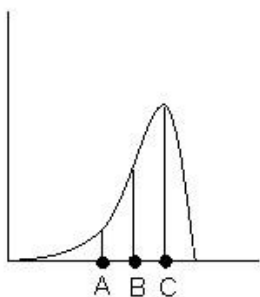|	
600 up to 700	101
700 up to 800	131
800 up to 900	88

The lower boundary of the fifth interval (class) is:

A) 800.

B) 701.

C) 700.

Question #69 of 123

Consider the following graph of a distribution for the prices of various bottles of champagne.

Which of the following statements regarding the distribution is *least* accurate?

A) Point A represents the mode.

B) The mean value will be less than the mode.

C) The distribution is negatively skewed.

Question #70 of 123

Monthly returns for a set of small cap stocks are 1.3%, 0.8%, 0.5%, 3.4%, -3.5%, -1.2%, 1.8%, 2.1%, and 1.5%. An analyst constructs a frequency distribution and a frequency polygon using the following intervals: -4.0% to -2.0%, -2.0% to 0.0%, 0.0% to 2.0%, and 2.0% to 4.0%. Which of the following statements about these data presentations is *least* accurate?

A) The absolute frequency of the interval 0.0% to 2.0% is 5.

B) A frequency polygon plots the midpoint of each interval on the horizontal axis and the absolute frequency of that interval on the vertical axis.

C) The relative frequency of the interval -2.0% to 0.0% equals the relative frequency of the interval 2.0% to 4.0%.

Question #71 of 123

Which measure of central tendency can be used for both numerical and categorical variables?

A) Median.

B) Mode.

C) Mean.

Question #72 of 123

A distribution with a mode of 10 and a range of 2 to 25 would *most likely* be:

A) negatively skewed.

B) positively skewed.

C) normally distributed.

Question #73 of 123

There is a 40% chance that an investment will earn 10%, a 40% chance that the investment will earn 12.5%, and a 20% chance that the investment will earn 30%. What is the mean expected return and the standard deviation of expected returns, respectively?

A) 15.0%; 7.58%.

B) 17.5%; 5.75%.

C) 15.0%; 5.75%.

Question #74 of 123

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 frequency of the third class is:

A) 180.

B) 156.

C) 78.

Question #75 of 123

A distribution that has positive excess kurtosis is:

A) more peaked than a normal distribution.

B) more skewed than a normal distribution.

C) less peaked than a normal distribution.

Question #76 of 123

The mean monthly return on U.S. Treasury bills (T-bills) is 0.42%. The mean monthly return for an index of small stocks is 4.56%, with a standard deviation of 3.56%. What is the Sharpe measure for the index of small stocks?

A) 1.16%.

B) 16.56%.

C) 10.60%.

Question #77 of 123

What are the median and the third quintile of the following data points, respectively?

> 9.2%, 10.1%, 11.5%, 11.9%, 12.2%, 12.8%, 13.1%, 13.6%, 13.9%, 14.2%, 14.8%, 14.9%, 15.4%

A) 13.1%; 13.7%.

B) 12.8%; 13.6%.

C) 13.1%; 13.6%.

Question #78 of 123

If a distribution is positively skewed, then generally:

A) mean > median < mode.

B) mean < median < mode.

C) mean > median > mode.

Given the following frequency distribution:

Interval	Frequency
10 up to 30	5
30 up to 50	10
50 up to 70	15
70 up to 90	5

Which of the following statements is *least* accurate?

A) The relative frequency of the second interval is less than 15%.

B) The absolute frequency of the third interval is 15.

C) The number of observations is greater than 30.

Which of the following statements concerning skewness is *least* accurate? A distribution with:

A) a distribution with skew equal to 1 is not symmetrical.

B) negative skewness has a large number of outliers on its left side.

C) positive skewness has a long left tail.

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

A) Width of the corresponding bar.

B) Height of the corresponding bar.

C) Horizontal logarithmic scale.

A stock had the following quarterly holding period returns over the last six quarters: 1.5%, 2.0%, -0.9%, 4.4%, 2.3%, and -1.7%. The effective annual rate of return over this period is *closest* to:

A) 5.14%.

B) 5.08%.

C) 5.06%.

The mean monthly return on (U.S. Treasury bills) T-bills is 0.42% with a standard deviation of 0.25%. What is the coefficient of variation?

A) 84%.

B) 60%.

C) 168%.

Trina Romel, mutual fund manager, is taking over a poor-performing fund from a colleague. Romel wants to calculate the return on the portfolio. Over the last five years, the fund's annual percentage returns were: 25, 15, 12, -8, and -14. Determine if the geometric return of the fund will be less than or greater than the arithmetic return and calculate the fund's geometric return:

	Geometric Return	Geometric compared to Arithmetic
A)	4.96%	less than
B)	12.86%	greater than
C)	4.96%	greater than

Which of the following statements regarding the Sharpe ratio is *most* accurate? The Sharpe ratio measures:

A) excess return per unit of risk.

B) peakedness of a return distrubtion.

C) total return per unit of risk.

Which of the following statements about statistical concepts is *least* accurate?

A) For a normal distribution, only 95% of the observations lie within ±3 standard deviations from the mean.

B) For any distribution, based on Chebyshev's Inequality, 75% of the observations lie within ±2 standard deviations from the mean.

C) The coefficient of variation is useful when comparing dispersion of data measured in different units or having large differences in their means.

Which of the following statements about interpreting skewness and kurtosis is *least* accurate?

A) A distribution that is skewed left has more frequent occurrences of large negative outcomes compared to a normal distribution.

B) Positive values of kurtosis indicate a distribution that has fatter tails than a normal distribution.

C) Values of relative skewness in excess of 0.5 in absolute value are interpreted as indicating that a distribution is significantly skewed.

A higher Sharpe ratio indicates:

A) a lower risk per unit of return.

B) lower volatility of returns.

C) a higher excess return per unit of risk.

What is the main difference between descriptive statistics and inferential statistics? Descriptive statistics are:

A) used to summarize a large data set while inferential statistics involves procedures used to make forecasts or judgments about a large data set by examining a smaller sample.

B) used to summarize data while inferential statistics are used to obtain precise information about a large data set.

C) used to make forecasts about the likelihood of upcoming events while inferential statistics are used to summarize any data set.

When creating intervals around the mean to indicate the dispersion of outcomes, which of the following measures is the *most* useful? The:

A) variance.

B) median.

C) standard deviation.

In the most recent four years, an investment has produced annual returns of 4%, -1%, 6%, and 3%. The *most* appropriate estimate of the next year's return, based on these historical returns, is the:

A) geometric mean.

B) arithmetic mean.

C) harmonic mean.

The owner of a company has recently decided to raise the salary of one employee, who was already making the highest salary in the company, by 40%. Which of the following value(s) is (are) expected to be affected by this raise?

A) mean and median only.

B) mean only.

C) median only.

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 cumulative relative frequency of the second interval (400 to 500) is:

A) 20.4%.

B) 10.2%.

C) 12.4%.

Portfolio A earned a return of 10.23% and had a standard deviation of returns of 6.22%. If the return over the same period on Treasury bills (T-bills) was 0.52% and the return to Treasury bonds (T-bonds) was 4.56%, what is the Sharpe ratio of the portfolio?

A) 0.91.

B) 1.56.

C) 0.56.

Question #95 of 123

Which of the following is *least likely* a measure of dispersion?

A) Variance.

B) Range.

C) Percentile.

Question #96 of 123

Claude Bellow, CFA, is an analyst with a real estate focused investment firm. He asks his assistant to gather annual return information on a large office building and on a (REIT) real estate investment trust with diverse holdings. The following tables summarize the information.

Table 1: Annual returns (in %)					
Asset	Year 1	Year 2	Year 3	Year 4	Year 5
REIT	25.0	20.0	5.0	-5.0	13.0
Office Building	15.0	5.0	-5.0	-2.0	13.0

Table 2: Mean and Dispersion Information		
Asset	Mean Return*	Variance
REIT	11.6%	114.24
Office Building	5.2%	62.56

* Calculated using the arithmetic mean.

A partner in the firm asks Bellow to calculate the Sharpe ratio for the REIT. If the risk-free rate is 5.0%, the Sharpe ratio is *closest* to:

A) 0.06.

B) 0.62.

C) 1.62.

Which of the following statements about the arithmetic mean is *least* accurate?

A) The arithmetic mean is the only measure of central tendency where the sum of the deviations of each observation from the mean is always zero.

B) If the distribution is skewed to the left then the mean will be greater than the median.

C) The arithmetic mean of a frequency distribution is equal to the sum of the class frequency times the midpoint of the frequency class all divided by the number of observations.

In a skewed distribution, what is the minimum amount of observations that will fall between +/- 1.5 standard deviations from the mean?

A) 95%.

B) 44%.

C) 56%.

An investor is considering two investments. Stock A has a mean annual return of 16% and a standard deviation of 14%. Stock B has a mean annual return of 20% and a standard deviation of 30%. Calculate the coefficient of variation (CV) of each stock and determine if Stock A has less dispersion or more dispersion relative to B. Stock A's CV is:

A) 1.14, and thus has more dispersion relative to the mean than Stock B.

B) 0.875, and thus has less dispersion relative to the mean than Stock B.

C) 1.14, and thus has less dispersion relative to the mean than Stock B.

The mean and standard deviation of returns for Stock A is represented below.

	Arithmetic Mean	*Standard Deviation*
Stock A	20%	8%

The coefficient of variation of Stock A is:

A) 2.50

B) 0.40

C) 3.00

Question #101 of 123

Annual Returns on ABC Mutual Fund									
Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8	Yr 9	Yr 10
11.0%	12.5%	8.0%	9.0%	13.0%	7.0%	15.0%	2.0%	-16.5%	11.0%

What are the arithmetic mean return and the geometric mean return, respectively, for ABC Mutual Fund for the period Year 1 to Year 10?

A) 7.2%; 6.8%.

B) 7.2%; 5.6%.

C) 8.2%; 6.8%.

Question #102 of 123

Michael Philizaire is studying for the Level I CFA examination. During his review of measures of central tendency, he decides to calculate the geometric average of the appreciation/deprecation of his home over the last five years. Using comparable sales and market data he obtains from a local real estate appraiser, Philizaire calculates the year-to-year percentage change in the value of his home as follows: 20, 15, 0, -5, -5. The geometric return is *closest* to:

A) 11.60%.

B) 4.49%.

C) 0.00%.

Question #103 of 123

Distribution X has a mean of 10 and a standard deviation of 20. Distribution Y is identical to Distribution X in all respects except that each observation in Distribution Y is three times the value of a corresponding observation in Distribution X. The mean and standard deviation of Distribution Y are *closest* to:

	Mean	Standard deviation
A)	30	60
B)	30	20
C)	10	60

Question #104 of 123

To compare the returns over the past three years on a mutual fund to the returns on a certificate of deposit with annual compounding over the same period, an analyst is least likely to use the mutual fund's annual:

A) geometric mean return.

B) arithmetic mean return.

C) time-weighted return.

Question #105 of 123

Given the following annual returns, what are the population variance and standard deviation, respectively?

2000	2001	2002	2003	2004
15%	2%	5%	-7%	0%.

A) 51.6; 7.2.

B) 64.5; 8.0.

C) 32.4; 5.7.

Question #106 of 123

Given the following annual returns, what is the mean absolute deviation?

2000	2001	2002	2003	2004
15%	2%	5%	-7%	0%

A) 5.6%.

B) 3.0%.

C) 22.0%.

Question #107 of 123

Twenty students take an exam. The percentages of questions they answer correctly are ranked from lowest to highest as follows:

32 49 57 58 61

62 64 66 67 67

68 69 71 72 72

74 76 80 82 83

In a frequency distribution from 30% to 90% that is divided into six equal-sized intervals, the absolute frequency of the sixth interval is:

A) 3.

B) 4.

C) 2.

Question #108 of 123

The mean monthly return on a sample of small stocks is 4.56% with a standard deviation of 3.56%. What is the coefficient of variation?

A) 84%.

B) 78%.

C) 128%.

Question #109 of 123

Assume a sample of beer prices is negatively skewed. Approximately what percentage of the distribution lies within plus or minus 2.40 standard deviations of the mean?

A) 82.6%.

B) 58.3%.

C) 95.5%.

Question #110 of 123

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 respectively?

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

A) 11.00; 10.78.

B) 11.64; 10.97.

C) 11.00; 10.97.

Question #111 of 123

Which of the following statements regarding the terms population and sample is *least* accurate?

A) A sample includes all members of a specified group.

B) A descriptive measure of a sample is called a statistic.

C) A sample's characteristics are attributed to the population as a whole.

Question #112 of 123

If a distribution is positively skewed:

A) the mode is greater than the median.

B) the mean is greater than the median.

C) the mode is greater than the mean.

Question #113 of 123

A sample of returns for four randomly selected assets in a portfolio is shown below:

Asset	Return (%)
A	1.3
B	1.4
C	2.2
D	3.4

What is the sample standard deviation of asset returns?

A) 1.13%.

B) 0.97%.

C) 0.88%.

Question #114 of 123

Which of the following statements about histograms and frequency polygons is *least* accurate?

A) A histogram and a frequency polygon both plot the absolute frequency on the vertical axis.

B) A frequency polygon is constructed by plotting the midpoint of each interval on the horizontal axis.

C) A histogram connects points with a straight line.

Question #115 of 123

Following is the population of temperatures (in degrees Celsius) observed during a ten-day period of January taken in San Francisco at the Ferry Building.

Day/ºC	1	2	3	4	5	6	7	8	9	10
High	9	11	13	14	13	13	11	14	15	17
Low	3	6	6	7	10	10	9	6	8	4

- The population of high temperatures is normally distributed with a mode of 13ºC and a coefficient of variation (CV) of 0.165.
- The population of low temperatures is positively skewed with a mean of 6.9ºC and a CV of 0.328.
- A sample of high temperatures taken on odd days (5 data points) has a mean of 12.2ºC and a variance of 5.20.
- A sample of low temperatures taken on odd days (5 data points) has a mean of 7.2ºC.

Which of the following statements about the temperatures in San Francisco is *least* accurate?

A) For the high temperatures, the population variance is greater than the sample variance.

B) For the low temperatures, the population standard deviation is less than the sample standard deviation.

C) For the low temperatures, the mode is less than 6.9ºC.

Question #116 of 123

Given the following set of data:

17, 3, 13 , 3, 5, 9, 8

The value 8 is *most accurately* described as the:

A) mode.

B) mean.

C) median.

Question #117 of 123

If a distribution is skewed:

A) each side of a return distribution is the mirror image of the other.

B) it will be more or less peaked reflecting a greater or lesser concentration of returns around the mean.

C) the magnitude of positive deviations from the mean is different from the magnitude of negative deviations from the mean.

Question #118 of 123

For the last four years, the returns for XYZ Corporation's stock have been 10.4%, 8.1%, 3.2%, and 15.0%. The equivalent compound annual rate is:

A) 9.1%.

B) 8.9%.

C) 9.2%.

Question #119 of 123

Regardless of the shape of a distribution, according to Chebyshev's Inequality, what is the minimum percentage of observations that will lie within +/- two standard deviations of the mean?

A) 75%.
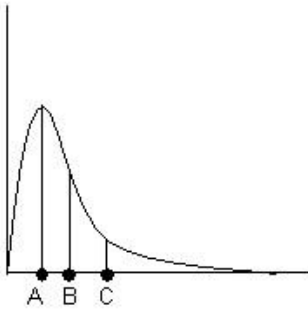
B) 89%.

C) 68%.

Question #120 of 123

Given a population of 200, 100, and 300, the coefficient of variation is *closest to:*

A) 40%.

B) 100%.

C) 30%.

Question #121 of 123

Consider the following graph of a distribution for the prices for various bottles of California-produced wine.

Which of the following statements about this distribution is *least* accurate?

A) The distribution is positively skewed.

B) Approximately 68% of observations fall within one standard deviation of the mean.

C) The graph could be of the sample $16, $12, $15, $12, $17, $30 (*ignore graph scale*).

Question #122 of 123

Which of the following statements about the median is *least* accurate? It is:

A) equal to the 50th percentile.

B) more affected by extreme values than the mean.

C) equal to the mode in a normal distribution.

Question #123 of 123

In a positively skewed distribution, what is the order (from lowest value to highest) for the distribution's mode, mean, and median values?

A) Mode, mean, median.

B) Mean, median, mode.

C) Mode, median, mean.