

# Reading 12: Hypothesis Testing

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## Question #1 of 92

Question ID: 710147

An analyst wants to determine whether the monthly returns on two stocks over the last year were the same or not. What test should she use, assuming returns are normally distributed?

- A) Paired comparisons test.
  - B) Difference in means test.
  - C) Chi-square test.
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## Question #2 of 92

Question ID: 756728

Ron Jacobi, manager with the Toulee Department of Natural Resources, is responsible for setting catch-and-release limits for Lake Norby, a large and popular fishing lake. He takes a sample to determine whether the mean length of Northern Pike in the lake exceeds 18 inches. If the sample t-statistic indicates that the mean length of the fish is significantly greater than 18 inches, when the population mean is actually 17.8 inches, the t-test resulted in:

- A) both a Type I and a Type II error.
  - B) a Type I error only.
  - C) a Type II error only.
- 

## Question #3 of 92

Question ID: 413408

Which of the following statements about parametric and nonparametric tests is *least* accurate?

- A) Parametric tests are most appropriate when a population is heavily skewed.
  - B) Nonparametric tests have fewer assumptions than parametric tests.
  - C) Nonparametric tests are often used in conjunction with parametric tests.
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## Question #4 of 92

Question ID: 413361

A Type I error:

- A) rejects a false null hypothesis.
  - B) rejects a true null hypothesis.
  - C) fails to reject a false null hypothesis.
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## Question #5 of 92

Question ID: 434223

A Type II error:

- A) fails to reject a true null hypothesis.
  - B) rejects a true null hypothesis.
  - C) fails to reject a false null hypothesis.
- 

## Question #6 of 92

Question ID: 413325

James Ambercrombie believes that the average return on equity in the utility industry,  $\mu$ , is greater than 10%. What is null ( $H_0$ ) and alternative ( $H_a$ ) hypothesis for his study?

- A)  $H_0: \mu \geq 0.10$  versus  $H_a: \mu < 0.10$ .
  - B)  $H_0: \mu \leq 0.10$  versus  $H_a: \mu > 0.10$ .
  - C)  $H_0: \mu = 0.10$  versus  $H_a: \mu \neq 0.10$ .
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## Question #7 of 92

Question ID: 413366

Which of the following statements about hypothesis testing is *least* accurate?

- A) A Type II error is the probability of failing to reject a null hypothesis that is not true.
  - B) A Type I error is the probability of rejecting the null hypothesis when the null hypothesis is false.
  - C) The significance level is the probability of making a Type I error.
- 

## Question #8 of 92

Question ID: 413335

If the null hypothesis is  $H_0: \rho \leq 0$ , what is the appropriate alternative hypothesis?

- A)  $H_a: \rho < 0$ .
  - B)  $H_a: \rho \neq 0$ .
  - C)  $H_a: \rho > 0$ .
- 

## Question #9 of 92

Question ID: 485760

A manager wants to test whether two normally distributed and independent populations have equal variances. The appropriate test statistic for this test is a:

- A) chi-square statistic.

- B) t-statistic.
  - C) F-statistic.
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### Question #10 of 92

Question ID: 413384

A hypothesis test has a  $p$ -value of 1.96%. An analyst should reject the null hypothesis at a significance level of:

- A) 3%, but not at a significance level of 1%.
  - B) 6%, but not at a significance level of 4%.
  - C) 4%, but not at a significance level of 2%.
- 

### Question #11 of 92

Question ID: 413341

An analyst conducts a two-tailed test to determine if mean earnings estimates are significantly different from reported earnings. The sample size is greater than 25 and the computed test statistic is 1.25. Using a 5% significance level, which of the following statements is *most* accurate?

- A) To test the null hypothesis, the analyst must determine the exact sample size and calculate the degrees of freedom for the test.
  - B) The analyst should fail to reject the null hypothesis and conclude that the earnings estimates are not significantly different from reported earnings.
  - C) The analyst should reject the null hypothesis and conclude that the earnings estimates are significantly different from reported earnings.
- 

### Question #12 of 92

Question ID: 413328

Which one of the following is the *most* appropriate set of hypotheses to use when a researcher is trying to demonstrate that a return is greater than the risk-free rate? The null hypothesis is framed as a:

- A) greater than statement and the alternative hypothesis is framed as a less than or equal to statement.
  - B) less than or equal to statement and the alternative hypothesis is framed as a greater than statement.
  - C) less than statement and the alternative hypothesis is framed as a greater than or equal to statement.
- 

### Question #13 of 92

Question ID: 710146

Which of the following statements about hypothesis testing is *most* accurate?

- A) A Type I error is rejecting the null hypothesis when it is true, and a Type II error is rejecting the alternative hypothesis when it is true.
  - B) A hypothesis that the population mean is less than or equal to 5 should be rejected when the critical Z-statistic is greater than the sample Z-statistic.
  - C) A hypothesized mean of 3, a sample mean of 6, and a standard error of the sampling means of 2 give a sample Z-statistic of 1.5.
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### Question #14 of 92

Question ID: 413348

Susan Bellows is comparing the return on equity for two industries. She is convinced that the return on equity for the discount retail industry (DR) is greater than that of the luxury retail (LR) industry. What are the hypotheses for a test of her comparison of return on equity?

- A)  $H_0: \mu_{DR} \leq \mu_{LR}$  versus  $H_a: \mu_{DR} > \mu_{LR}$ .
  - B)  $H_0: \mu_{DR} = \mu_{LR}$  versus  $H_a: \mu_{DR} < \mu_{LR}$ .
  - C)  $H_0: \mu_{DR} = \mu_{LR}$  versus  $H_a: \mu_{DR} \neq \mu_{LR}$ .
- 

### Question #15 of 92

Question ID: 413383

A p-value of 0.02% means that a researcher:

- A) can reject the null hypothesis at the 5% significance level but cannot reject at the 1% significance level.
  - B) cannot reject the null hypothesis at either the 5% or 1% significance levels.
  - C) can reject the null hypothesis at both the 5% and 1% significance levels.
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### Question #16 of 92

Question ID: 413363

If we fail to reject the null hypothesis when it is false, what type of error has occurred?

- A) Type I.
  - B) Type II.
  - C) Type III.
- 

### Question #17 of 92

Question ID: 413397

A test of a hypothesis that the means of two normally distributed populations are equal based on two independent random samples:

- A) is done with a t-statistic.
  - B) is based on a Chi Square statistic.
  - C) is a paired-comparisons test.
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### Question #18 of 92

Question ID: 413393

Which of the following statements about test statistics is *least* accurate?

- A) In a test of the population mean, if the population variance is unknown, we should use a  $t$ -distributed test statistic.
  - B) In the case of a test of the difference in means of two independent samples, we use a  $t$ -distributed test statistic.
  - C) In a test of the population mean, if the population variance is unknown and the sample is small, we should use a  $z$ -distributed test statistic.
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### Question #19 of 92

Question ID: 413354

If a two-tailed hypothesis test has a 5% probability of rejecting the null hypothesis when the null is true, it is *most likely* that the:

- A) significance level of the test is 5%.
  - B) power of the test is 95%.
  - C) probability of a Type I error is 2.5%.
- 

### Question #20 of 92

Question ID: 413360

Which of the following statements regarding Type I and Type II errors is *most* accurate?

- A) A Type II error is rejecting the alternative hypothesis when it is actually true.
  - B) A Type I error is failing to reject the null hypothesis when it is actually false.
  - C) A Type I error is rejecting the null hypothesis when it is actually true.
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### Question #21 of 92

Question ID: 413405

Which of the following statements about the variance of a normally distributed population is *least* accurate?

- A) The Chi-squared distribution is a symmetric distribution.
- B) The test of whether the population variance equals  $\sigma_0^2$  requires the use of a Chi-squared distributed test statistic,  $[(n - 1)s^2] / \sigma_0^2$ .

- C) A test of whether the variance of a normally distributed population is equal to some value  $\sigma_0^2$ , the hypotheses are:  $H_0: \sigma^2 = \sigma_0^2$ , versus  $H_a: \sigma^2 \neq \sigma_0^2$ .

Question #22 of 92

Question ID: 413385

An analyst is testing the hypothesis that the mean excess return from a trading strategy is less than or equal to zero. The analyst reports that this hypothesis test produces a p-value of 0.034. This result *most likely* suggests that the:

- A) null hypothesis can be rejected at the 5% significance level.
- B) best estimate of the mean excess return produced by the strategy is 3.4%.
- C) smallest significance level at which the null hypothesis can be rejected is 6.8%.

Question #23 of 92

Question ID: 413344

Which of the following is the correct sequence of events for testing a hypothesis?

- A) State the hypothesis, select the level of significance, formulate the decision rule, compute the test statistic, and make a decision.
- B) State the hypothesis, formulate the decision rule, select the level of significance, compute the test statistic, and make a decision.
- C) State the hypothesis, select the level of significance, compute the test statistic, formulate the decision rule, and make a decision.

Question #24 of 92

Question ID: 413409

Which of the following statements about parametric and nonparametric tests is *least* accurate?

- A) The test of the mean of the differences is used when performing a paired comparison.
- B) The test of the difference in means is used when you are comparing means from two independent samples.
- C) Nonparametric tests rely on population parameters.

Question #25 of 92

Question ID: 434226

Student's *t*-Distribution

Level of Significance for One-Tailed Test						
df	0.100	0.050	0.025	0.01	0.005	0.0005
Level of Significance for Two-Tailed Test						
df	0.20	0.10	0.05	0.02	0.01	0.001
18	1.330	1.734	2.101	2.552	2.878	3.922

19	1.328	1.729	2.093	2.539	2.861	3.883
20	1.325	1.725	2.086	2.528	2.845	3.850
21	1.323	1.721	2.080	2.518	2.831	3.819

In a two-tailed hypothesis test, Jack Olson observes a t-statistic of -1.38 based on a sample of 20 observations where the population mean is zero. If you choose a 5% significance level, you should:

- A) fail to reject the null hypothesis that the population mean is not significantly different from zero.
- B) reject the null hypothesis and conclude that the population mean is not significantly different from zero.
- C) reject the null hypothesis and conclude that the population mean is significantly different from zero.

## Question #26 of 92

Question ID: 683837

Kyra Mosby, M.D., has a patient who is complaining of severe abdominal pain. Based on an examination and the results from laboratory tests, Mosby states the following diagnosis hypothesis:  $H_0$ : Appendicitis,  $H_A$ : Not Appendicitis. Dr. Mosby removes the patient's appendix and the patient still complains of pain. Subsequent tests show that the gall bladder was causing the problem. By taking out the patient's appendix, Dr. Mosby:

- A) made a Type II error.
- B) made a Type I error.
- C) is correct.

## Question #27 of 92

Question ID: 413340

Given the following hypothesis:

- The null hypothesis is  $H_0 : \mu = 5$
- The alternative is  $H_1 : \mu \neq 5$
- The mean of a sample of 17 is 7
- The population standard deviation is 2.0

What is the calculated z-statistic?

- A) 8.00.
- B) 4.00.
- C) 4.12.

## Question #28 of 92

Question ID: 413378

A goal of an "innocent until proven guilty" justice system is to place a higher priority on:

- A) avoiding type I errors.
- B) avoiding type II errors.
- C) the null hypothesis.

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### Question #29 of 92

Question ID: 413392

In a test of the mean of a population, if the population variance is:

- A) known, a  $t$ -distributed test statistic is appropriate.
- B) unknown, a  $z$ -distributed test statistic is appropriate.
- C) known, a  $z$ -distributed test statistic is appropriate.

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### Question #30 of 92

Question ID: 457612

#### F-Table, Critical Values, 5 Percent in Upper Tail

Degrees of freedom for the numerator along top row

Degrees of freedom for the denominator along side row

	10	12	15	20	24	30
25	2.24	2.16	2.09	2.01	1.96	1.92
30	2.16	2.09	2.01	1.93	1.89	1.84
40	2.08	2.00	1.92	1.84	1.79	1.74

Abby Ness is an analyst for a firm that specializes in evaluating firms involved in mineral extraction. Ness believes that the earnings of copper extracting firms are more volatile than those of bauxite extraction firms. In order to test this, Ness examines the volatility of returns for 31 copper firms and 25 bauxite firms. The standard deviation of earnings for copper firms was \$2.69, while the standard deviation of earnings for bauxite firms was \$2.92. Ness's Null Hypothesis is  $\sigma_1^2 = \sigma_2^2$ . Based on the samples, can we reject the null hypothesis at a 90% confidence level using an F-statistic? Null is:

- A) rejected. The F-value exceeds the critical value by 0.849.
- B) rejected. The F-value exceeds the critical value by 0.71.
- C) not rejected.

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### Question #31 of 92

Question ID: 413365

John Jenkins, CFA, is performing a study on the behavior of the mean P/E ratio for a sample of small-cap companies. Which of the following statements is *most* accurate?

- A) The significance level of the test represents the probability of making a Type I error.
- B) A Type I error represents the failure to reject the null hypothesis when it is, in truth, false.



- C) One minus the confidence level of the test represents the probability of making a Type II error.
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### Question #32 of 92

Question ID: 413376

A bottler of iced tea wishes to ensure that an average of 16 ounces of tea is in each bottle. In order to analyze the accuracy of the bottling process, a random sample of 150 bottles is taken. Using a  $t$ -distributed test statistic of -1.09 and a 5% level of significance, the bottler should:

- A) not reject the null hypothesis and conclude that bottles contain an average 16 ounces of tea.
  - B) not reject the null hypothesis and conclude that bottles do not contain an average of 16 ounces of tea.
  - C) reject the null hypothesis and conclude that bottles contain an average 16 ounces of tea.
- 

### Question #33 of 92

Question ID: 413375

The power of the test is:

- A) equal to the level of confidence.
  - B) the probability of rejecting a true null hypothesis.
  - C) the probability of rejecting a false null hypothesis.
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### Question #34 of 92

Question ID: 498737

For a test of the equality of the means of two normally distributed independent populations, the appropriate test statistic follows a:

- A) chi square distribution.
  - B)  $t$ -distribution.
  - C)  $F$ -distribution.
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### Question #35 of 92

Question ID: 413396

Brandee Shoffield is the public relations manager for Night Train Express, a local sports team. Shoffield is trying to sell advertising spots and wants to know if she can say with 90% confidence that average home game attendance is greater than 3,000. Attendance is approximately normally distributed. A sample of the attendance at 15 home games results in a mean of 3,150 and a standard deviation of 450. Which of the following statements is *most* accurate?

- A) The calculated test statistic is 1.291.

- B) With an unknown population variance and a small sample size, no statistic is available to test Shoffield's hypothesis.
- C) Shoffield should use a two-tailed Z-test.

**Question #36 of 92**

Question ID: 413367

Which of the following statements about hypothesis testing is *most* accurate? A Type I error is the probability of:

- A) failing to reject a false hypothesis.
- B) rejecting a true alternative hypothesis.
- C) rejecting a true null hypothesis.

**Question #37 of 92**

Question ID: 413334

Jo Su believes that there should be a negative relation between returns and systematic risk. She intends to collect data on returns and systematic risk to test this theory. What is the appropriate alternative hypothesis?

- A)  $H_a: \rho < 0$ .
- B)  $H_a: \rho \neq 0$ .
- C)  $H_a: \rho > 0$ .

**Question #38 of 92**

Question ID: 498739

An analyst has calculated the sample variances for two random samples from independent normally distributed populations. The test statistic for the hypothesis that the true population variances are equal is a(n):

- A) t-statistic.
- B) *F-statistic*.
- C) chi square statistic.

**Question #39 of 92**

Question ID: 434225

Student's *t*-Distribution

Level of Significance for One-Tailed Test						
df	0.100	0.050	0.025	0.01	0.005	0.0005
Level of Significance for Two-Tailed Test						
df	0.20	0.10	0.05	0.02	0.01	0.001
40	1.303	1.684	2.021	2.423	2.704	3.551

Ken Wallace is interested in testing whether the average price to earnings (P/E) of firms in the retail industry is 25. Using a  $t$ -distributed test statistic and a 5% level of significance, the critical values for a sample of 41 firms is (are):

- A) -1.96 and 1.96.
- B) -2.021 and 2.021.
- C) -1.685 and 1.685.

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### Question #40 of 92

Question ID: 413377

If the null hypothesis is innocence, then the statement "It is better that the guilty go free, than the innocent are punished" is an example of preferring a:

- A) type II error over a type I error.
- B) type I error over a type II error.
- C) higher level of significance.

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### Question #41 of 92

Question ID: 413353

Which of the following statements about hypothesis testing is *most* accurate? A Type II error is the probability of:

- A) rejecting a true null hypothesis.
- B) rejecting a true alternative hypothesis.
- C) failing to reject a false null hypothesis.

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### Question #42 of 92

Question ID: 599869

Simone Mak is a television network advertising executive. One of her responsibilities is selling commercial spots for a successful weekly sitcom. If the average share of viewers for this season exceeds 8.5%, she can raise the advertising rates by 50% for the next season. The population of viewer shares is normally distributed. A sample of the past 18 episodes results in a mean share of 9.6% with a standard deviation of 10.0%. If Mak is willing to make a Type 1 error with a 5% probability, which of the following statements is *most* accurate?

- A) The null hypothesis Mak needs to test is that the mean share of viewers is greater than 8.5%.
- B) With an unknown population variance and a small sample size, Mak cannot test a hypothesis based on her sample data.
- C) Mak cannot charge a higher rate next season for advertising spots based on this sample.

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### Question #43 of 92

Question ID: 434230

Student's  $t$ -Distribution

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Level of Significance for One-Tailed Test						
df	0.100	0.050	0.025	0.01	0.005	0.0005
Level of Significance for Two-Tailed Test						
df	0.20	0.10	0.05	0.02	0.01	0.001
10	1.372	1.812	2.228	2.764	3.169	4.587
11	1.363	1.796	2.201	2.718	3.106	4.437
12	1.356	1.782	2.179	2.681	3.055	4.318
22	1.321	1.717	2.074	2.508	2.819	3.792
23	1.319	1.714	2.069	2.500	2.807	3.768
24	1.318	1.711	2.064	2.492	2.797	3.745

Roy Fisher, CFA, wants to determine whether there is a significant difference, at the 5% significance level, between the mean monthly return on Stock GHI and the mean monthly return on Stock JKL. Fisher assumes the variances of the two stocks' returns are equal. Using the last 12 months of returns on each stock, Fisher calculates a  $t$ -statistic of 2.0 for a test of equality of means. Based on this result, Fisher's test:

- A) rejects the null hypothesis, and Fisher can conclude that the means are equal.
- B) fails to reject the null hypothesis.
- C) rejects the null hypothesis, and Fisher can conclude that the means are not equal.

#### Question #44 of 92

Question ID: 498740

A test of whether a mutual fund's performance rank in one period provides information about the fund's performance rank in a subsequent period is *best* described as a:

- A) mean-rank test.
- B) nonparametric test.
- C) parametric test.

#### Question #45 of 92

Question ID: 413395

In order to test if the mean IQ of employees in an organization is greater than 100, a sample of 30 employees is taken. The sample value of the computed  $z$ -statistic = 3.4. The appropriate decision at a 5% significance level is to:

- A) reject the null hypothesis and conclude that the population mean is equal to 100.
- B) reject the null hypotheses and conclude that the population mean is greater than 100.
- C) reject the null hypothesis and conclude that the population mean is not equal to 100.

#### Question #46 of 92

Question ID: 413350

A researcher is testing whether the average age of employees in a large firm is statistically different from 35 years (either above or below). A sample is drawn of 250 employees and the researcher determines that the appropriate critical value for the test

statistic is 1.96. The value of the computed test statistic is 4.35. Given this information, which of the following statements is *least* accurate? The test:

- A) has a significance level of 95%.
- B) indicates that the researcher is 95% confident that the average employee age is different than 35 years.
- C) indicates that the researcher will reject the null hypothesis.

Question #47 of 92

Question ID: 413400

Joe Sutton is evaluating the effects of the 1987 market decline on the volume of trading. Specifically, he wants to test whether the decline affected trading volume. He selected a sample of 500 companies and collected data on the total annual volume for one year prior to the decline and for one year following the decline. What is the set of hypotheses that Sutton is testing?

- A)  $H_0: \mu_d \neq \mu_{d0}$  versus  $H_a: \mu_d = \mu_{d0}$ .
- B)  $H_0: \mu_d = \mu_{d0}$  versus  $H_a: \mu_d \neq \mu_{d0}$ .
- C)  $H_0: \mu_d = \mu_{d0}$  versus  $H_a: \mu_d > \mu_{d0}$ .

Question #48 of 92

Question ID: 434222

Student's *t*-Distribution

Level of Significance for One-Tailed Test						
df	0.100	0.050	0.025	0.01	0.005	0.0005
Level of Significance for Two-Tailed Test						
df	0.20	0.10	0.05	0.02	0.01	0.001
18	1.330	1.734	2.101	2.552	2.878	3.922
19	1.328	1.729	2.093	2.539	2.861	3.883
20	1.325	1.725	2.086	2.528	2.845	3.850
21	1.323	1.721	2.080	2.518	2.831	3.819

In a two-tailed test of a hypothesis concerning whether a population mean is zero, Jack Olson computes a *t*-statistic of 2.7 based on a sample of 20 observations where the distribution is normal. If a 5% significance level is chosen, Olson should:

- A) reject the null hypothesis and conclude that the population mean is not significantly different from zero.
- B) fail to reject the null hypothesis that the population mean is not significantly different from zero.
- C) reject the null hypothesis and conclude that the population mean is significantly different from zero.

Question #49 of 92

Question ID: 434228

### Cumulative Z-Table

z	0.04	0.05	0.06	0.07	0.08	0.09
1.2	0.8925	0.8944	0.8962	0.8980	0.8997	0.9015
1.3	0.9099	0.9115	0.9131	0.9147	0.9162	0.9177
1.4	0.9251	0.9265	0.9279	0.9292	0.9306	0.9319
1.5	0.9382	0.9394	0.9406	0.9418	0.9429	0.9441
1.6	0.9495	0.9505	0.9515	0.9525	0.9535	0.9545

Maria Huffman is the Vice President of Human Resources for a large regional car rental company. Last year, she hired Graham Brickley as Manager of Employee Retention. Part of the compensation package was the chance to earn one of the following two bonuses: if Brickley can reduce turnover to less than 30%, he will receive a 25% bonus. If he can reduce turnover to less than 25%, he will receive a 50% bonus (using a significance level of 10%). The population of turnover rates is normally distributed. The population standard deviation of turnover rates is 1.5%. A recent sample of 100 branch offices resulted in an average turnover rate of 24.2%. Which of the following statements is *most* accurate?

- A) Brickley should not receive either bonus.
- B) For the 50% bonus level, the critical value is -1.65 and Huffman should give Brickley a 50% bonus.
- C) For the 50% bonus level, the test statistic is -5.33 and Huffman should give Brickley a 50% bonus.

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### Question #50 of 92

Question ID: 498736

A researcher determines that the mean annual return over the last 10 years for an investment strategy was greater than that of an index portfolio of equal risk with a statistical significance level of 1%. To determine whether the abnormal portfolio returns to the strategy are economically meaningful, it would be *most appropriate* to additionally account for:

- A) only the transaction costs of the strategy.
- B) the transaction costs, tax effects, and risk of the strategy.
- C) only the transaction costs and tax effects of the strategy.

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### Question #51 of 92

Question ID: 413352

If the probability of a Type I error decreases, then the probability of:

- A) incorrectly accepting the null decreases.
- B) incorrectly rejecting the null increases.
- C) a Type II error increases.

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### Question #52 of 92

Question ID: 413404

A test of the population variance is equal to a hypothesized value requires the use of a test statistic that is:

- A) Chi-squared distributed.
  - B)  $t$ -distributed.
  - C) F-distributed.
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### Question #53 of 92

Question ID: 413362

Which of the following statements regarding hypothesis testing is *least* accurate?

- A) The significance level is the risk of making a type I error.
  - B) A type I error is acceptance of a hypothesis that is actually false.
  - C) A type II error is the acceptance of a hypothesis that is actually false.
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### Question #54 of 92

Question ID: 498738

For a test of the equality of the mean returns of two non-independent populations based on a sample, the numerator of the appropriate test statistic is the:

- A) larger of the two sample means.
  - B) difference between the sample means for each population.
  - C) average difference between pairs of returns.
- 

### Question #55 of 92

Question ID: 413372

For a two-tailed test of hypothesis involving a z-distributed test statistic and a 5% level of significance, a calculated z-statistic of 1.5 indicates that:

- A) the null hypothesis cannot be rejected.
  - B) the null hypothesis is rejected.
  - C) the test is inconclusive.
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### Question #56 of 92

Question ID: 413381

Which of the following statements about statistical results is *most* accurate?

- A) If a result is statistically significant, it must also be economically meaningful.
  - B) A result may be statistically significant, but may not be economically meaningful.
  - C) If a result is statistically significant and economically meaningful, the relationship will continue into the future.
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**Question #57 of 92**

Question ID: 413403

The test of the equality of the variances of two normally distributed populations requires the use of a test statistic that is:

- A)** Chi-squared distributed.
- B)** z-distributed.
- C)** F-distributed.

**Question #58 of 92**

Question ID: 413356

Identify the error type associated with the level of significance and the meaning of a 5 percent significance level.

$\alpha = 0.05$  means there is

Error type            a 5 percent probability  
of

- A)** Type I error failing to reject a true null hypothesis
- B)** Type II error rejecting a true null hypothesis
- C)** Type I error rejecting a true null hypothesis

### Question #59 of 92

Question ID: 434224

## Student's $t$ -Distribution

Level of Significance for One-Tailed Test						
df	0.100	0.050	0.025	0.01	0.005	0.0005
Level of Significance for Two-Tailed Test						
df	0.20	0.10	0.05	0.02	0.01	0.001
24	1.318	1.711	2.064	2.492	2.797	3.745
25	1.316	1.708	2.060	2.485	2.787	3.725

A pitching machine is calibrated to deliver a fastball at a speed of 98 miles per hour. Every day, a technician samples the speed of twenty-five fastballs in order to determine if the machine needs adjustment. Today, the sample showed a mean speed of 99 miles per hour with a standard deviation of 1.75 miles per hour. Assume the population is normally distributed. At a 95% confidence level, what is the  $t$ -value in relation to the critical value?

- A)** The  $t$ -value exceeds the critical value by 1.5 standard deviations.  
**B)** The  $t$ -value exceeds the critical value by 0.8 standard deviations.  
**C)** The critical value exceeds the  $t$ -value by 1.3 standard deviations.



## Question #60 of 92

Question ID: 413379

An analyst calculates that the mean of a sample of 200 observations is 5. The analyst wants to determine whether the calculated mean, which has a standard error of the sample statistic of 1, is significantly different from 7 at the 5% level of significance.

Which of the following statements is *least* accurate?:

- A) The mean observation is significantly different from 7, because the calculated Z-statistic is less than the critical Z-statistic.
- B) The null hypothesis would be:  $H_0$ : mean = 7.
- C) The alternative hypothesis would be  $H_a$ : mean > 7.

## Question #61 of 92

Question ID: 413346

The first step in the process of hypothesis testing is:

- A) the collection of the sample.
- B) to state the hypotheses.
- C) selecting the test statistic.

## Question #62 of 92

Question ID: 434227

### Student's *t*-Distribution

Level of Significance for One-Tailed Test						
df	0.100	0.050	0.025	0.01	0.005	0.0005
Level of Significance for Two-Tailed Test						
df	0.20	0.10	0.05	0.02	0.01	0.001
28	1.313	1.701	2.048	2.467	2.763	3.674
29	1.311	1.699	2.045	2.462	2.756	3.659
30	1.310	1.697	2.042	2.457	2.750	3.646

In order to test whether the mean IQ of employees in an organization is greater than 100, a sample of 30 employees is taken and the sample value of the computed test statistic,  $t_{n-1} = 3.4$ . If you choose a 5% significance level you should:

- A) fail to reject the null hypothesis and conclude that the population mean is less than or equal to 100.
- B) reject the null hypothesis and conclude that the population mean is greater than 100.
- C) fail to reject the null hypothesis and conclude that the population mean is greater than 100.

## Question #63 of 92

Question ID: 413407

The use of the F-distributed test statistic,  $F = s_1^2 / s_2^2$ , to compare the variances of two populations does NOT require which of the following?

- A) two samples are of the same size.
  - B) populations are normally distributed.
  - C) samples are independent of one another.
- 

### Question #64 of 92

Question ID: 413359

A survey is taken to determine whether the average starting salaries of CFA charterholders is equal to or greater than \$59,000 per year. What is the test statistic given a sample of 135 newly acquired CFA charterholders with a mean starting salary of \$64,000 and a standard deviation of \$5,500?

- A) 10.56.
  - B) -10.56.
  - C) 0.91.
- 

### Question #65 of 92

Question ID: 413347

In the process of hypothesis testing, what is the proper order for these steps?

- A) Specify the level of significance. State the hypotheses. Make a decision. Collect the sample and calculate the sample statistics.
  - B) State the hypotheses. Specify the level of significance. Collect the sample and calculate the test statistics. Make a decision.
  - C) Collect the sample and calculate the sample statistics. State the hypotheses. Specify the level of significance. Make a decision.
- 

### Question #66 of 92

Question ID: 413401

In order to test if Stock A is more volatile than Stock B, prices of both stocks are observed to construct the sample variance of the two stocks. The appropriate test statistics to carry out the test is the:

- A) F test.
  - B) Chi-square test.
  - C) t test.
- 

### Question #67 of 92

Question ID: 413331

George Appleton believes that the average return on equity in the amusement industry,  $\mu$ , is greater than 10%. What is the null ( $H_0$ ) and alternative ( $H_a$ ) hypothesis for his study?

- A)  $H_0: > 0.10$  versus  $H_a: < 0.10$ .
  - B)  $H_0: \leq 0.10$  versus  $H_a: > 0.10$ .
  - C)  $H_0: > 0.10$  versus  $H_a: \leq 0.10$ .
- 

### Question #68 of 92

Question ID: 413373

Ryan McKeeler and Howard Hu, two junior statisticians, were discussing the relation between confidence intervals and hypothesis tests. During their discussion each of them made the following statement:

McKeeler: A confidence interval for a two-tailed hypothesis test is calculated as adding and subtracting the product of the standard error and the critical value from the sample statistic. For example, for a level of confidence of 68%, there is a 32% probability that the true population parameter is contained in the interval.

Hu: A 99% confidence interval uses a critical value associated with a given distribution at the 1% level of significance. A hypothesis test would compare a calculated test statistic to that critical value. As such, the confidence interval is the range for the test statistic within which a researcher would not reject the null hypothesis for a two-tailed hypothesis test about the value of the population mean of the random variable.

With respect to the statements made by McKeeler and Hu:

- A) both are correct.
  - B) both are incorrect.
  - C) only one is correct.
- 

### Question #69 of 92

Question ID: 413339

What kind of test is being used for the following hypothesis and what would a z-statistic of 1.68 tell us about a hypothesis with the appropriate test and a level of significance of 5%, respectively?

$H_0: B \leq 0$

$H_A: B > 0$

- A) Two-tailed test; fail to reject the null.
  - B) One-tailed test; reject the null.
  - C) One-tailed test; fail to reject the null.
- 

### Question #70 of 92

Question ID: 413333

Jill Woodall believes that the average return on equity in the retail industry,  $\mu$ , is less than 15%. What are the null ( $H_0$ ) and alternative ( $H_a$ ) hypotheses for her study?

- A)  $H_0: \mu \geq 0.15$  versus  $H_a: \mu < 0.15$ .
  - B)  $H_0: \mu \leq 0.15$  versus  $H_a: \mu > 0.15$ .
  - C)  $H_0: \mu < 0.15$  versus  $H_a: \mu \geq 0.15$ .
- 

### Question #71 of 92

Question ID: 413327

Which one of the following *best* characterizes the alternative hypothesis? The alternative hypothesis is usually the:

- A) hypothesis that is accepted after a statistical test is conducted.
  - B) hypothesis to be proved through statistical testing.
  - C) hoped-for outcome.
- 

### Question #72 of 92

Question ID: 413332

Brian Ci believes that the average return on equity in the airline industry,  $\mu$ , is less than 5%. What are the appropriate null ( $H_0$ ) and alternative ( $H_a$ ) hypotheses to test this belief?

- A)  $H_0: \mu < 0.05$  versus  $H_a: \mu > 0.05$ .
  - B)  $H_0: \mu \geq 0.05$  versus  $H_a: \mu < 0.05$ .
  - C)  $H_0: \mu < 0.05$  versus  $H_a: \mu \geq 0.05$ .
- 

### Question #73 of 92

Question ID: 413342

An analyst conducts a two-tailed z-test to determine if small cap returns are significantly different from 10%. The sample size was 200. The computed z-statistic is 2.3. Using a 5% level of significance, which statement is *most* accurate?

- A) Reject the null hypothesis and conclude that small cap returns are significantly different from 10%.
  - B) You cannot determine what to do with the information given.
  - C) Fail to reject the null hypothesis and conclude that small cap returns are close enough to 10% that we cannot say they are significantly different from 10%.
- 

### Question #74 of 92

Question ID: 413337

In order to test whether the mean IQ of employees in an organization is greater than 100, a sample of 30 employees is taken and the sample value of the computed test statistic,  $t_{n-1} = 3.4$ . The null and alternative hypotheses are:

- A)  $H_0: \mu \leq 100$ ;  $H_a: \mu > 100$ .
- B)  $H_0: \mu = 100$ ;  $H_a: \mu \neq 100$ .
- C)  $H_0: X \leq 100$ ;  $H_a: X > 100$ .

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**Question #75 of 92**

Question ID: 434221

**Student's *t*-Distribution**

Level of Significance for One-Tailed Test						
df	0.100	0.050	0.025	0.01	0.005	0.0005
Level of Significance for Two-Tailed Test						
df	0.20	0.10	0.05	0.02	0.01	0.001
28	1.313	1.701	2.048	2.467	2.763	3.674
29	1.311	1.699	2.045	2.462	2.756	3.659
30	1.310	1.697	2.042	2.457	2.750	3.646

In order to test if the mean IQ of employees in an organization is greater than 100, a sample of 30 employees is taken and the sample value of the computed test statistic,  $t_{n-1} = 1.2$ . If you choose a 5% significance level you should:

- A) reject the null hypothesis and conclude that the population mean is greater than 100.
- B) fail to reject the null hypothesis and conclude that the population mean is not greater than 100.
- C) fail to reject the null hypothesis and conclude that the population mean is greater than 100.

---

**Question #76 of 92**

Question ID: 413382

Of the following explanations, which is *least likely* to be a valid explanation for divergence between statistical significance and economic significance?

- A) Transactions costs.
- B) Data errors.
- C) Adjustment for risk.

---

**Question #77 of 92**

Question ID: 413388

A survey is taken to determine whether the average starting salaries of CFA charterholders is equal to or greater than \$62,500 per year. What is the test statistic given a sample of 125 newly acquired CFA charterholders with a mean starting salary of \$65,000 and a standard deviation of \$2,600?

- A) 0.96.
- B) -10.75.
- C) 10.75.

---

**Question #78 of 92**

Question ID: 413323

Robert Patterson, an options trader, believes that the return on options trading is higher on Mondays than on other days. In order to test his theory, he formulates a null hypothesis. Which of the following would be an appropriate null hypothesis? Returns on Mondays are:

- A) less than returns on other days.
  - B) not greater than returns on other days.
  - C) greater than returns on other days.
- 

### Question #79 of 92

Question ID: 413406

The variance of 100 daily stock returns for Stock A is 0.0078. The variance of 90 daily stock returns for Stock B is 0.0083. Using a 5% level of significance, the critical value for this test is 1.61. The *most* appropriate conclusion regarding whether the variance of Stock A is different from the variance of Stock B is that the:

- A) variances are equal.
  - B) variances are not equal.
  - C) variance of Stock B is significantly greater than the variance of Stock A.
- 

### Question #80 of 92

Question ID: 413368

Which of the following statements about hypothesis testing is *least* accurate?

- A) The null hypothesis is a statement about the value of a population parameter.
  - B) A Type II error is failing to reject a false null hypothesis.
  - C) If the alternative hypothesis is  $H_a: \mu > \mu_0$ , a two-tailed test is appropriate.
- 

### Question #81 of 92

Question ID: 448954

Which of the following is an accurate formulation of null and alternative hypotheses?

- A) Less than for the null and greater than for the alternative.
  - B) Greater than for the null and less than or equal to for the alternative.
  - C) Equal to for the null and not equal to for the alternative.
- 

### Question #82 of 92

Question ID: 413358

A survey is taken to determine whether the average starting salaries of CFA charterholders is equal to or greater than \$58,500 per year. What is the test statistic given a sample of 175 newly acquired CFA charterholders with a mean starting salary of \$67,000 and a standard deviation of \$5,200?

- A) 21.62.

- B) 1.63.
- C) -1.63.

Question #83 of 92

Question ID: 413389

The table below is for five samples drawn from five separate populations. The far left columns give information on the population distribution, population variance, and sample size. The right-hand columns give three choices for the appropriate tests:  $z = z$ -statistic, and  $t = t$ -statistic. "None" means that a test statistic is not available.

Sampling From			Test Statistic Choices		
Distribution	Variance	$n$	One	Two	Three
Non-normal	0.75	100	$z$	$z$	$z$
Normal	5.60	75	$z$	$z$	$z$
Non-normal	n/a	15	$t$	$t$	none
Normal	n/a	18	$t$	$t$	$t$
Non-normal	14.3	15	$z$	$t$	none

Which set of test statistic choices (One, Two, or Three) matches the correct test statistic to the sample for all five samples?

- A) One.
- B) Three.
- C) Two.

Question #84 of 92

Question ID: 529153

Given a normally distributed random variable with a mean of 10% and a standard deviation of 14%, what is a 95% confidence interval for the return next year?

- A) -17.00% to 38.00%.
- B) -4.00% to 24.00%.
- C) -17.44% to 37.44%.

Question #85 of 92

Question ID: 413357

A survey is taken to determine whether the average starting salaries of CFA charterholders is equal to or greater than \$54,000 per year. Assuming a normal distribution, what is the test statistic given a sample of 75 newly acquired CFA charterholders with a mean starting salary of \$57,000 and a standard deviation of \$1,300?

- A) 19.99.
- B) -19.99.

C) 2.31.

---

### Question #86 of 92

Question ID: 413349

Which of the following statements about testing a hypothesis using a Z-test is *least* accurate?

- A) The calculated Z-statistic determines the appropriate significance level to use.
  - B) If the calculated Z-statistic lies outside the critical Z-statistic range, the null hypothesis can be rejected.
  - C) The confidence interval for a two-tailed test of a population mean at the 5% level of significance is that the sample mean falls between  $\pm 1.96 \sigma/\sqrt{n}$  of the null hypothesis value.
- 

### Question #87 of 92

Question ID: 434220

A researcher is testing the hypothesis that a population mean is equal to zero. From a sample with 64 observations, the researcher calculates a sample mean of -2.5 and a sample standard deviation of 8.0. At which levels of significance should the researcher reject the hypothesis?

1% significance    5% significance    10% significance

- |                   |                |                |
|-------------------|----------------|----------------|
| A) Reject         | Fail to reject | Fail to reject |
| B) Fail to reject | Reject         | Reject         |
| C) Fail to reject | Fail to reject | Reject         |
- 

### Question #88 of 92

Question ID: 413326

Jill Woodall believes that the average return on equity in the retail industry,  $\mu$ , is less than 15%. What is null ( $H_0$ ) and alternative ( $H_a$ ) hypothesis for her study?

- A)  $H_0: \mu \geq 0.15$  versus  $H_a: \mu < 0.15$ .
  - B)  $H_0: \mu < 0.15$  versus  $H_a: \mu = 0.15$ .
  - C)  $H_0: \mu = 0.15$  versus  $H_a: \mu \neq 0.15$ .
- 

### Question #89 of 92

Question ID: 413343

Which of the following statements about hypothesis testing is *most* accurate?

- A) The probability of a Type I error is equal to the significance level of the test.



- B) The power of a test is one minus the probability of a Type I error.
  - C) If you can disprove the null hypothesis, then you have proven the alternative hypothesis.
- 

### Question #90 of 92

Question ID: 473662

An analyst is testing to see if the mean of a population is less than 133. A random sample of 50 observations had a mean of 130. Assume a standard deviation of 5. The test is to be made at the 1% level of significance. The analyst should:

- A) reject the null hypothesis.
  - B) fail to reject the null hypothesis.
  - C) accept the null hypothesis.
- 

### Question #91 of 92

Question ID: 413355

A survey is taken to determine whether the average starting salaries of CFA charterholders is equal to or greater than \$57,000 per year. Assuming a normal distribution, what is the test statistic given a sample of 115 newly acquired CFA charterholders with a mean starting salary of \$65,000 and a standard deviation of \$4,500?

- A) -19.06.
  - B) 1.78.
  - C) 19.06.
- 

### Question #92 of 92

Question ID: 448953

Which of the following statements *least accurately* describes the procedure for testing a hypothesis?

- A) Select the level of significance, formulate the decision rule, and make a decision.
- B) Develop a hypothesis, compute the test statistic, and make a decision.
- C) Compute the sample value of the test statistic, set up a rejection (critical) region, and make a decision.