

ECON 4357

Quiz 3

Fall 2013

90 CORRECT

- 61 1. A survey classified 200 students by gender and by their opinion on a certain issue. The number falling into the different categories are shown in the following table.

Gender	For	Against	Total
Male	30	40	70
Female	50	80	130
Total	80	120	200

75 STUDENTS

The probability that a student is female and is against the issue is

- 45 2. The probability that Mary will play soccer is 0.3, the probability that Wendy will play soccer is 0.4, and they make their decisions independently. The probability that both Mary and Wendy will not play soccer is
- 53 3. The number of adults living in homes on a randomly selected city block is described by the following probability distribution.

Number of adults, x	1	2	3	4
Probability, $P(x)$	0.25	0.15	0.50	0.10

What is the average number of adults living in each home?

- 20 4. A national consumer magazine reported the following correlations.
The correlation between car weight and car reliability is -0.30.
The correlation between car weight and annual maintenance cost is 0.20.

Which of the following statements are true?

- I. Heavier cars tend to be less reliable.
II. Heavier cars tend to cost more to maintain.
III. Car weight is related more strongly to reliability than to maintenance cost.

- a. I only
b. II only
c. III only
d. I and II
e. I, II, and III

- 17 5. In order to estimate the mean diameter of a variety of orange, a sample of 49 oranges were selected and the sample mean was found to be 7.5 cm with a sample standard deviation of 1.5 cm. A 95% confidence interval for the population mean is

- a. (5.54, 9.46)
b. (4.56, 10.44)
c. (7.15, 7.85)
d. (7.08, 7.92)

53

6. After a test, John found out that she scored in the 80th percentile. This means
- a. At least 80% of the students who took the test did better than John.
 - b. John scored as high or higher than 80% of the students who took the test.
 - c. John answered 80% of the questions correctly.
 - d. None of the above
 - e. John scored as high or higher than 20% of the students who took the test.

31

7. Suppose that two variables X and Y have a strong linear relationship. We would therefore expect that the variables would have
- a. means that were about the same
 - b. a coefficient of correlation greater than 0.50
 - c. an R^2 close to -1
 - d. variances that were about the same
 - e. a scatterplot that was nearly horizontal

40

8. Which of the following would be a reason to use a one-sample t-test instead of a one-sample z-test?
- a. The null hypothesis involves a continuous variable.
 - b. The sample size is large (greater than 40).
 - c. The population mean is unknown
 - d. The standard deviation of the population is unknown.

8

9. John was a political science major in college and a member of the Libertarian Club. He often spoke at rallies defending personal freedoms and the right of the individual to live without government interference. Based on this information, John is most likely

- a. a salesman and a gun owner
- b. a salesman
- c. a salesman and a Democrat
- d. a salesman and a baseball fan

57

10. We conduct a regression and find that the least squares line is $y=3+5x$. This indicates that as the value of x increases by 4 the expected value of y would increase by:

- a. 5
- b. 20
- c. 4
- d. 8
- e. 23

23

11. Suppose that the null hypothesis is that the mean age of bus drivers in Chicago is at least 50 years. A sample is constructed to test this hypothesis. Which of the following represents a Type II error?

- a. We use too small a sample to conclude that the actual mean is greater than 50 years
- b. We fail to use a random sample in conducting our test.
- c. We conclude that the actual mean is less than 50 years when it is more
- d. We conclude that the actual mean is greater than 50 years when it is less

25

12. Given the following data: 1 4 6 9, what is the standard deviation?

- a. 2.58
- b. 5
- c. 1.50
- d. 4
- e. 3.37

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1. A survey classified 200 students by gender and by their opinion on a certain issue. The number falling into the different categories are shown in the following table.

Gender	For	Against	Total
Male	30	40	70
Female	50	80	130
Total	80	120	200

The probability that a student is female and is against the issue is

- a. 0.40 = $\frac{80}{200}$ d. 0.667
 b. 0.80 e. none of the above
 c. 0.615

2. The probability that Mary will play soccer is 0.3, the probability that Wendy will play soccer is 0.4, and they make their decisions independently. The probability that both Mary and Wendy will not play soccer is

- a. 0.58 d. 0.82
 b. 0.42 = $.7 \times .6$ e. 0.12
 c. 0.18 = $P(M \text{ NOT PLAY}) \times P(W \text{ NOT PLAY})$

3. The number of adults living in homes on a randomly selected city block is described by the following probability distribution.

Number of adults, x	1	2	3	4
Probability, P(x)	0.25	0.15	0.50	0.10

$$E(X) = .25(1) + .15(2) + .5(3) + .1(4)$$

$$= .25 + .30 + 1.5 + .4$$

$$= 2.45$$

What is the average number of adults living in each home?

- a. 2.10 d. 2.00
 b. 2.50 e. 3.00
 c. 2.45

4. A national consumer magazine reported the following correlations.
 The correlation between car weight and car reliability is -0.30.
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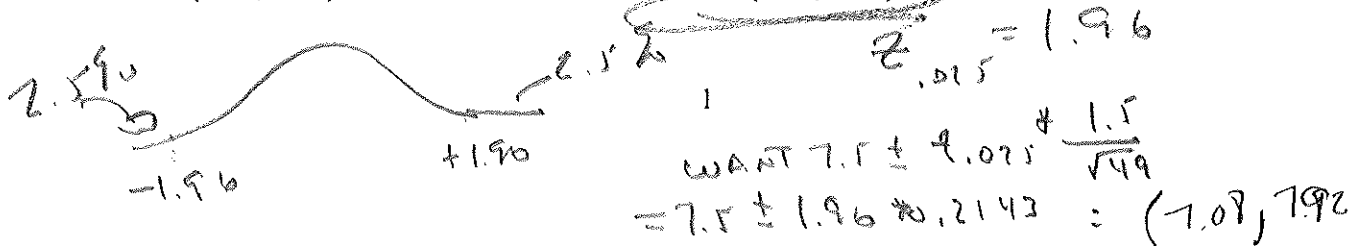
Which of the following statements are true?

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 II. Heavier cars tend to cost more to maintain. ✓ (+.20)
 III. Car weight is related more strongly to reliability than to maintenance cost. $|-.30| > |.20|$

- a. I only d. I and II
 b. II only e. I, II, and III
 c. III only

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 - c. We use too small a sample to conclude that the actual mean is greater than 50 years
 - d. We fail to use a random sample in conducting our test.
12. Given the following data: 1 4 6 9, what is the standard deviation?
- a. 5
 - b. 3.37
 - c. 2.58
 - d. 1.50
 - e. 4

TYPE II
FAIL TO
REJECT
NULL

$$\mu = \frac{1+4+6+9}{4} = 5$$

$$s.d. = \sqrt{\frac{(x_i - \mu)^2}{n-1}}$$

$$= \sqrt{\frac{16+1+1+16}{3}} = \sqrt{\frac{34}{3}} = 3.37$$