Name: _____ Class: _____ Date: _____ ID: B

ECON 4357 **Quiz 3** **Fall 2013**

9 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

15 STUDENTS

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

a. 0.80
b. 0.40
c. 0.667
d. none of the above
e. 0.615

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

a. 0.58
b. 0.12
c. 0.18
d. 0.42
e. 0.82

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?

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

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

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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)

Name: _____ Class: _____ Date: _____ ID: A

ECON 4357 **Quiz 3** **Fall 2013**

____ 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 isse is

a. 0.40 = 80/200
b. 0.80
c. 0.615
d. 0.667
e. none of the above

____ 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
b. 0.42 = .7 × .6
c. 0.18 = P(M not play) × P(W not play)
d. 0.82
e. 0.12

____ 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

$E(N) = .25(1) + .15(2) + .5(3) + .1(4)$
$= .25 + .30 + 1.5 + .4$
$= 2.45$

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

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

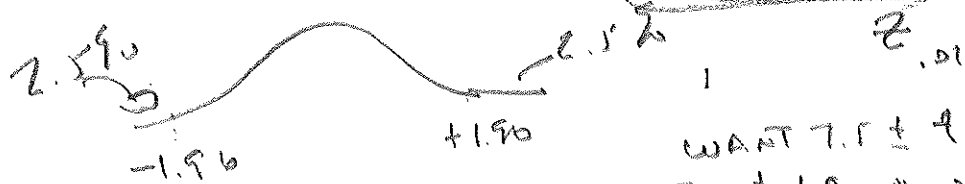
____ 4. A national consumer magazine reported the following correlations.
The correlation between car weight and car reliability is -0.30.
The correlation between car weight and annual maintenance cost is 0.20.

Which of the following statements are true?
I. Heavier cars tend to be less reliable. (−.30)
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
b. II only
c. III only
d. I and II
e. I, II, and III

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



$z_{.025} = 1.96$

WANT $7.5 \pm z_{.025} * \frac{1.5}{\sqrt{49}}$

$= 7.5 \pm 1.96 * .2143 : (7.08, 7.92)$

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

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. variances that were about the same
   c. a coefficient of correlation greater than 0.50
   d. an R^2 close to -1
   e. a scatterplot that was nearly horizontal

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 standard deviation of the population is unknown.
   b. The null hypothesis involves a continuous variable.
   c. The sample size is large (greater than 40).
   d. The population mean is unknown

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

   IF ANY IS TRUE, THEN IS TRUE.

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. 8
    c. 23
    d. 20
    e. 4

    $= 5 \times 4$

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 conclude that the actual mean is greater than 50 years when it is less
    b. We conclude that the actual mean is less than 50 years when it is more
    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.

    TYPE II FAIL TO REJECT NULL

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

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

$$STD = \sqrt{\frac{(x_i - M)^2}{N-1}}$$

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