# MATH 1280 Introduction to Statistics – Final Exam 9

** WARNING No Answers Provided Below **

## Information

Information text

There are 20 questions on this exam. You will see approximately four to six items on each screen.

## Question 1

Not yet answered
Marked out of 1.00

Question text

You are interested in the number of English-speaking people on the planet who want to play a new kind of online video game. You asked 300 college students if they were interested in playing video games, 100 said yes, and of them 20 preferred your game to an existing game that is widely used.
How many people were in the sample?

Select one:

- a. The number of English-speaking people on the planet who want to play a new kind of online video game.
- b. 300
- c. 200
- d. 100
- e. 20

## Question 2

Not yet answered
Marked out of 1.00

Question text

What is the mean of x?

x <- c(12, 14, 11, 14, 13, 15, 12, 16, 10)

Select one:

- a. 12
- b. 13
- c. 14
- d. 15
- e. 16

## Question 3

Not yet answered
Marked out of 1.00

Question text

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** WARNING No Answers Provided Below **

Using the value of x from the prior question, what is the standard deviation of x?

Select one:

- a. 1
- b. 3.75
- c. 9
- d. sqrt(13)
- e. 1.94

## Question 4

Not yet answered
Marked out of 1.00

Question text

There was a very short quiz with five questions. The following table shows the number of correct answers and the cumulative relative frequency for those scores in the class.

| **value:** | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| **cumulative relative frequency:** | .13 | .55 | .925 | 1 |

What is the probability that a randomly selected student from the class scored a 3 on the short quiz?

Select one:

- a. .13
- b. .42
- c. .55
- d. .375
- e. .925

## Information

Information text

Use this information for the next three questions.

A random variable called L is defined by the following table, but one of the relative frequencies is missing:

| **value:** | -5 | 0 | 1 | 3 | 8 |
|---|---|---|---|---|---|
| **relative frequency:** | .17 | .11 | .23 | | .15 |

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## Question 5

Not yet answered
Marked out of 1.00

Question text

What is the missing value in the list of relative frequencies for random variable L?

Select one:

- a. .34
- b. .23
- c. .19
- d. .17
- e. .11

## Question 6

Not yet answered
Marked out of 1.00

Question text

What is the probability that a randomly selected item from random variable L will be greater than 0 and less than or equal to 3?

Select one:

- a. .00
- b. .57
- c. .23
- d. .85
- e. 1

## Question 7

Not yet answered
Marked out of 1.00

Question text

What is the expectation of random variable L?

Select one:

- a. .00
- b. .23
- c. 1.14
- d. 1.60
- e. 1.83

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## Question 8

Not yet answered
Marked out of 1.00

Question text

What is the variance of random variable L?

Select one:

- a. 1.60
- b. 2.30
- c. 3.46
- d. 7.23
- e. 14.58

## Question 9

Not yet answered
Marked out of 1.00

Question text

Which distributions are discrete?

Select one:

- a. the normal distribution and the Poisson distribution.
- b. the Poisson distribution, the binomial distribution, and the uniform distribution.
- c. the binomial distribution and the exponential distribution.
- d. the Poisson distribution, the binomial distribution, and the normal distribution.
- e. none of the answers above are accurate

## Information

Information text

**Note:** There are 20 items on this exam. You are at the half-way point.

Use this information for the next three questions.

You operate a game at an amusement park where people throw darts at balloons and try to win prizes. Players get to throw 5 darts. From prior experience, you know that the probability of success (popping a balloon) for each dart is .15.

## Question 10

Not yet answered
Marked out of 1.00

Question text

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**** WARNING No Answers Provided Below ****

What is the expected number of successes (balloons popped) when throwing 5 darts (rounded to two decimal places)?

Select one:

- a. 1.41
- b. 1.00
- c. 2.50
- d. 0.75
- e. 0.50

## Question 11

Not yet answered
Marked out of 1.00

Question text

What is the probability of getting 4 or more successes (popped balloons) in 5 throws (rounded to two decimal places)?

Select one:

- a. .00
- b. .98
- c. .07
- d. .33
- e. .12

## Question 12

Not yet answered
Marked out of 1.00

Question text

A Poisson distribution called Q has an expectation of 4. Which of the following R commands would tell you the probability that a randomly selected value from Q is less than 6 and greater than or equal to 4 (read the question carefully):

Select one:

- a. ppois(6, 4) - ppois(3, 4)
- b. ppois(6, lambda=4) - ppois(4, lambda=4)
- c. ppois(5, 4) - ppois(3, 4)
- d. ppois(5, 4) - ppois(4, 4)
- e. ppois(6 - 4, lambda=4)

## Question 13

Not yet answered

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**** WARNING No Answers Provided Below ****

Marked out of 1.00

Question text

At a small store, a customer enters the front door on average every 8 minutes. A prior study indicated that the time between customers entering the front door during weekdays follows an exponential distribution. What is the probability that the time between customers entering the store on a weekday will be less than or equal to 7?

Select one:

- a. .62
- b. .43
- c. 1/8
- d. 7/8
- e. .58

## Question 14

Not yet answered
Marked out of 1.00

Question text

You read a research paper that applies to your industry, and it says that when people are given a list of facts about your product, they are more likely to buy your product and that the difference between the regular amount of sales and the sales when people read the list of facts is 3 standard deviations. How would you describe the difference of 3 standard deviations (select the best answer)?

Select one:

- a. Can not tell because the units are not specified.
- b. It is a small difference because 3 is a small number.
- c. It is an important difference because a 3 standard deviation difference would be expected due to random chance in less than 1% of the cases.
- d. It is NOT an important difference because with each sample there is variation and the difference could be due to chance.
- e. Can not tell because the sample size is not given.

## Information

Information text

Use the following information for the next three questions.

At a medium sized airport, mechanics need to replace tires on some of the airplanes each week because the tread on the tires is below the safe limit. You collected 36 weeks of data and observed that the numbers followed a Poisson distribution and that there was an average of 2 tires replaced per week.

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** WARNING No Answers Provided Below **

## Question 15

Not yet answered
Marked out of 1.00

Question text

What is the lambda value for the Poisson distribution?

Select one:

- a. 0
- b. 1/2
- c. 1
- d. 2
- e. sqrt(1/2)

## Question 16

Not yet answered
Marked out of 1.00

Question text

If we know that the expectation is 2, what is the standard deviation of the Poisson distribution?

Select one:

- a. 1/2
- b. sqrt(2)
- c. 1 / sqrt(2)
- d. 2
- e. 2 / sqrt(n)

## Question 17

Not yet answered
Marked out of 1.00

Question text

Traffic at the airport changed recently, and you collected 36 weeks of data in an effort to estimate the new rate of tire replacements. You found that the average tire replacements per week was 2 and the numbers followed a Poisson distribution, but you realize that your sample might not be 100% accurate. What is the 99th percentile of sampling distribution of the mean of tires replaced per week (based on the observed mean of 2 and the sample size of 36)?

Select one:

- a. qnorm(.99, mean=2, sd=sqrt(1/2))
- b. pnorm(.99, mean=2, sd=2)

c. pnorm(.99, mean=2, sd=1/sqrt(2))

d. qnorm(.99, mean=2, sd=sqrt(2)/6)

e. qnorm(.99, mean=2, sd=1/2

## Question 18

Not yet answered
Marked out of 1.00

Question text

The mean weekly sales per employee at a nationwide store is normally distributed with a mean of $7,300 per week and a standard deviation of $700. What is the probability that a randomly selected employee will have sales less than $6,500?

Select one:

a. .03

b. .13

c. .23

d. .33

e. .43

## Question 19

Not yet answered
Marked out of 1.00

Question text

The the time between incoming customer service calls to a computer-repair hotline follows an exponential distribution with an expectation of 2 minutes between calls. What is the probability that the time between calls will be less than 1 minute for a randomly selected period?

Select one:

a. .44

b. .31

c. .39

d. .61

e. .07

## Question 20

Not yet answered
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Question text

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**** WARNING No Answers Provided Below ****

The time between customer service calls to a computer-repair hotline follows an exponential distribution with an expectation of 2 minutes between calls. We collect calls for 40 minutes at random times during the month (a sample of size n=40). What is the probability that the mean of our sampling distribution will be greater than 2.2 minutes?

Select one:

- a. .17
- b. .26
- c. .37
- d. .68
- e. .78