

MATH 2300
Homework # 7

Name.....

Provide an appropriate response.

- 1) Many people think that a national lobby's successful fight against gun control legislation is reflecting the will of a minority of Americans. A random sample of 4,000 citizens yielded 2290 who are in favor of gun control legislation. Find the point estimate for estimating the proportion of all Americans who are in favor of gun control legislation. 1) _____
- A) 0.4275 B) 4000 C) 0.5725 D) 2290 E) 0.8588

Select the most appropriate answer.

- 2) In an effort to monitor the level of lead in the air after an explosion at a battery factory, the following lead readings were taken for 6 days following the explosion (in ug/m³). What is the point estimate for the population mean lead level in the air over the 6 days following the explosion? 2) _____

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
5.40	1.10	0.42	0.73	0.48	1.10

- A) 1.54 B) 0.50 C) 2.91 D) 0.73 E) 0.42

Provide an appropriate response.

- 3) In practice a _____ is an estimated standard deviation of a sampling distribution. 3) _____
- A) population standard deviation
B) sample standard deviation
C) none of these
D) margin of error
E) standard error.

Find the standard error

- 4) In a survey of 3200 T.V. viewers, 20% said they watch network news programs. Find the standard error for the sample proportion. 4) _____
- A) 0.0865 B) 0.0071 C) 0.0649 D) 0.0142 E) 0.0721

Use the given degree of confidence and sample data to construct a confidence interval for the population proportion.

- 5) Of 369 randomly selected medical students, 23 said that they planned to work in a rural community. Construct a 95% confidence interval for the percentage of all medical students who plan to work in a rural community. 5) _____
- A) (2.99%, 9.47%) B) (4.16%, 8.30%) C) (3.77%, 8.70%) D) (3.77%, 9.47%)
- 6) Of 346 items tested, 12 are found to be defective. Construct a 98% confidence interval to estimate the proportion of all such items that are defective. 6) _____
- A) (0.015, 0.054) B) (0.093, 0.600) C) (0.012, 0.058) D) (0.014, 0.055)

Provide an appropriate response.

- 7) You are planning to use a sample proportion \hat{p} to estimate a population proportion, p . A sample size of 100 and a confidence level of 95% yielded a margin of error of 0.025. Which of the following will result in a larger margin of error? 7) _____
- I: Increasing the sample size while keeping the same confidence level
II: Decreasing the sample size while keeping the same confidence level
III: Increasing the confidence level while keeping the same sample size
IV: Decreasing the confidence level while keeping the same sample size
- A) IV B) II and III C) II and IV D) I and IV E) I and III

Using the t-tables, report the t-score for the given confidence interval and degrees of freedom.

- 8) A 99% confidence interval from a sample of size 19 8) _____
- 9) 95% confidence interval with $df = 25$ 9) _____
A) 1.960 B) 2.145 C) 2.060 D) 1.753 E) 2.120

Provide an appropriate response.

- 10) In a survey of 1,000 television viewers, 40% said they watch network news programs. For a 99% confidence level, the margin of error for this estimate is 3.99%. If we only want to be 90% confident, how will the margin of error change? 10) _____
A) Since less confidence allows a wider interval, the margin of error will be larger.
B) Since less confidence allows a wider interval, the margin of error will be smaller.
C) the margin of error will remain the same.
D) Since less confidence allows a narrower interval, the margin of error will be smaller.
E) Since less confidence allows a narrower interval, the margin of error will be larger.
- 11) Suppose that you wish to obtain a confidence interval for a population mean. Under the conditions described below, should you use the z-interval, the t-interval, or neither? 11) _____
• The population standard deviation is unknown.
• The population is normally distributed.
• The sample size is small.
A) z-interval B) neither C) t-interval

Find the requested value

- 12) A researcher for a car insurance company wishes to estimate the mean annual premium that women aged 25-30 pay for their car insurance. A random sample of 16 women aged between 25 and 30 yields the following annual premiums, in dollars. 12) _____
582 658 466 941
748 662 777 704
594 723 580 725
856 610 720 985

Use the data to obtain a point estimate of the mean annual premium for all women aged between 25 and 30. Round your answer to the nearest dollar.

- A) \$727 B) \$709 C) \$705 D) \$718 E) \$721

Determine the margin of error in estimating the population parameter.

- 13) How tall is your average English classmate? To determine this, you measure the height of a random sample of 15 of your 100 fellow students, finding a 95% confidence interval for the mean height of 67.25 to 69.75 inches. 13) _____
A) 0.75 inches B) 1.25 inches C) 1.06 inches D) 1.5 inches

Construct the requested confidence interval from the supplied information.

- 14) How tall is your average English classmate? To determine this, you measure the height of a random sample of 15 of your 200 fellow students, finding a mean height of 68 inches and a standard deviation of 2.3 inches. Construct a 90% confidence interval for the mean height of your classmates. 14) _____
A) (67.023, 68.977) B) (66.954, 69.046) C) (67.730, 68.270) D) (65.908, 70.092)
- 15) Among a sample of 65 students selected at random from one high school, the mean number of siblings is 1.3 with a standard deviation of 1.1. Find a 95% confidence interval for the mean number of siblings for all students at this high school. 15) _____
A) (1.16, 1.44) B) (1.03, 1.57) C) (1.27, 1.33) D) (63.07, 66.93)