

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.**Use the given degree of confidence and sample data to construct a confidence interval for the population proportion.**

- 1) Of 346 items tested, 12 are found to be defective. Construct a 98% confidence interval for the percentage of all such items that are defective. 1) _____
- A) (3.34%, 3.59%)
B) (1.18%, 5.76%)
C) (1.85%, 5.09%)
D) (0.93%, 6.00%)
E) (0.13%, 6.80%)
- 2) Of 81 adults selected randomly from one town, 64 have health insurance. Construct a 90% confidence interval for the percentage of all adults in the town who have health insurance. 2) _____
- A) (71.6%, 86.5%)
B) (67.4%, 90.7%)
C) (70.1%, 87.9%)
D) (73.0%, 85.0%)
E) (68.5%, 89.6%)
- 3) A study involves 634 randomly selected deaths, with 29 of them caused by accidents. Construct a 98% confidence interval for the percentage of all deaths that are caused by accidents. 3) _____
- A) (2.95%, 6.20%)
B) (3.21%, 5.94%)
C) (3.4%, 5.8%)
D) (2.43%, 6.71%)
E) (2.64%, 6.50%)

Find the margin of error for the given confidence interval.

- 4) In a survey of 5100 T.V. viewers, 40% said they watch network news programs. Find the margin of error for this survey if we want 95% confidence in our estimate of the percent of T.V. viewers who watch network news programs. 4) _____
- A) 1.01% B) 1.54% C) 1.76% D) 1.34%

Provide an appropriate response.

- 5) After conducting a survey, a researcher wishes to cut the standard error (and thus the margin of error) to $\frac{1}{3}$ of its original value. How will the necessary sample size change? 5) _____
- A) It will increase by a factor of 3.
B) It will decrease by a factor of 9.
C) It will decrease by a factor of 3.
D) It will increase by a factor of 9.
E) Not enough information is given.

Construct the requested confidence interval from the supplied information.

- 6) Thirty randomly selected students took the calculus final. If the sample mean was 82 and the standard deviation was 12.2, construct a 99% confidence interval for the mean score of all students. 6) _____
- A) (75.86, 88.14)
B) (75.88, 88.12)
C) (78.22, 85.78)
D) (76.52, 87.48)
E) (78.22, 88.12)
- 7) Among a sample of 65 students selected at random from one college, 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 college. 7) _____
- A) (1.16, 1.44)
B) (1.16, 1.33)
C) (63.07, 66.93)
D) (1.27, 1.33)
E) (1.03, 1.57)
- 8) How much fat do reduced fat cookies typically have? You take a random sample of 51 reduced-fat cookies and test them in a lab, finding a mean fat content of 3.2 grams and a standard deviation of 1.1 grams of fat. Create a 99% confidence interval for the mean grams of fat. 8) _____
- A) (2.7875, 3.6125)
B) (2.8032, 3.5968)
C) (2.7810, 3.6169)
D) (3.1422, 3.2577)
E) (2.100, 4.300)

Use the given sample data to construct the indicated confidence interval for the population mean.

- 9) The amounts (in ounces) of juice in eight randomly selected juice bottles are: 9) _____
15.7 15.5 15.2 15.1
15.7 15.2 15.2 15.3
Construct a 98% confidence interval for the mean amount of juice in all such bottles.
- A) (15.56, 15.66)
B) (15.16, 15.56)
C) (15.56, 15.56)
D) (15.06, 15.56)
E) (15.06, 15.66)

Interpret the confidence interval.

- 10) A credit union took a random sample of 40 accounts and obtained the following 90% confidence interval for the mean checking account balance at the institution: $\$2197 < \mu(\text{balance}) < \3846 . 10) _____
- A) If we took random samples of checking accounts at this credit union, about nine out of ten of them would produce this confidence interval.
 - B) We are 90% sure that the mean balance for checking accounts in the sample was between \$2197 and \$3846.
 - C) We are 90% confident that the mean checking account balance in the U.S. is between \$2197 and \$3846.
 - D) We are 90% confident that the mean checking account balance at this credit union is between \$2197 and \$3846, based on this sample.
 - E) About 9 out of 10 people have a checking account balance between \$2197 and \$3846.
- 11) How much fat do reduced fat cookies typically have? You take a random sample of 51 reduced-fat cookies and test them in a lab, finding a mean fat content of 4.2 grams. You calculate a 95% confidence interval and find that the margin of error is ± 0.8 grams. 11) _____
- A) You are 95% confident that the mean fat in reduced fat cookies is between 3.4 and 5 grams of fat.
 - B) We are 95% confident that the mean fat in all cookies is between 3.4 and 5 grams.
 - C) We are 95% sure that the average amount of fat in the cookies in this study was between 3.4 and 5 grams.
 - D) 95% of reduced fat cookies have between 3.4 and 5 grams of fat.
 - E) 95% of the cookies in the sample had between 3.4 and 5 grams of fat.

Determine the margin of error in estimating the population parameter.

- 12) How tall is your average statistics 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. 12) _____
- A) 1.5 inches
 - B) 0.25 inches
 - C) 1.06 inches
 - D) 1.25 inches
 - E) Not enough information is given.

Construct the indicated confidence interval for the difference between the two population means. Assume that the assumptions and conditions for inference have been met.

- 13) The table below gives information concerning the gasoline mileage for random samples of trucks of two different types. Find a 95% confidence interval for the difference in the means $\mu_X - \mu_Y$. 13) _____

	Brand X	Brand Y
Number of Trucks	50	50
Mean mileage	20.1	24.3
Standard Deviation	2.3	1.8

- A) (-4.7, -3.7)
 B) (-5.02, -3.38)
 C) (3.7, 4.7)
 D) (3.38, 5.02)
 E) (20.1, 24.3)
- 14) A researcher was interested in comparing the heights of women in two different countries. Independent random samples of 9 women from country A and 9 women from country B yielded the following heights (in inches). 14) _____

Country A	Country B
64.1	65.3
66.4	60.2
61.7	61.7
62.0	65.8
67.3	61.0
64.9	64.6
64.7	60.0
68.0	65.4
63.6	59.0

Determine a 90% confidence interval for the difference, $\mu_1 - \mu_2$, between the mean height of women in country A and the mean height of women in country B.

- A) (0.17, 4.21)
 B) (0.14, 4.24)
 C) (0.16, 4.22)
 D) (-4.22, -0.16)
 E) (0.15, 4.23)

- 15) A researcher was interested in comparing the number of hours of television watched each day by two-year-olds and three-year-olds. A random sample of 18 two-year-olds and 18 three-year-olds yielded the follow data. 15) _____

2-year-olds		3-year-olds	
0.5	1.5	2.0	3.0
1.5	2.0	1.5	1.5
1.5	0	1.5	2.0
1.0	1.0	1.0	0
1.0	0	0	1.5
2.0	1.5	1.5	2.0
2.5	2.0	2.5	2.0
0.5	0	3.0	1.0
1.5	2.5	1.5	0.5

Find a 90% confidence interval for the difference, $\mu_2 - \mu_3$, between the mean number of hours for two-year-olds and the mean number of hours for three-year-olds.

- A) (-0.77, 0.16)
- B) (-0.77, -0.16)
- C) (1.25, 1.56)
- D) (-1.56, -1.25)
- E) (-0.16, 0.77)

Answer Key

Testname: CONFIDENCE INTERVAL EXERCISES

- 1) B
- 2) A
- 3) E
- 4) D
- 5) D
- 6) A
- 7) E
- 8) A
- 9) B
- 10) D
- 11) A
- 12) D
- 13) B
- 14) C
- 15) A