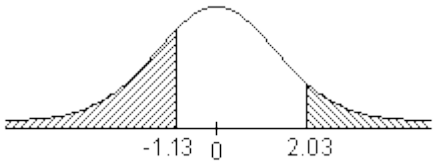
Section 5.1 Classwork

Name_____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Provide an appropriate response.

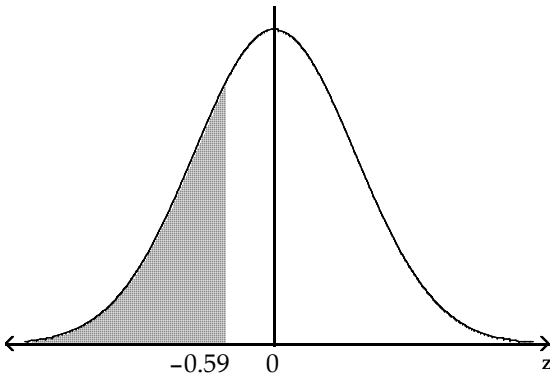
1) Find the area of the indicated region under the standard normal curve. 1) _____



A) 0.1504 B) 0.0212 C) 0.8489 D) 0.1292

Find the probability of z occurring in the indicated region.

2) 2) _____



A) 0.2776 B) 0.1894 C) 0.2224 D) 0.7224

Provide an appropriate response.

3) For the standard normal curve, find the z−score that corresponds to the third quartile. 3) _____

A) 0.67 B) 0.77 C) −0.23 D) −0.67

4) Use the standard normal distribution to find P(z < −2.33 or z > 2.33). 4) _____

A) 0.7888 B) 0.0198 C) 0.0606 D) 0.9802

5) Find the sum of the areas under the standard normal curve to the left of z = −1.25 and to the right of z = 1.25. 5) _____

A) 0.3944 B) 0.1056 C) 0.7888 D) 0.2112

1) A
2) A
3) A
4) B
5) D

Section 5.2 classwork sheet

Name_____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Provide an appropriate response.

1) Assume that the random variable X is normally distributed, with mean $\mu = 90$ and standard deviation $\sigma = 20$. Compute the probability $P(X > 106)$. 1) _____

A) 0.7881 B) 0.2420 C) 0.2119 D) 0.1977

Provide an appropriate response. Use the Standard Normal Table to find the probability.

2) The distribution of cholesterol levels in teenage boys is approximately normal with $\mu = 170$ and $\sigma = 30$ (Source: U.S. National Center for Health Statistics). Levels above 200 warrant attention. Find the probability that a teenage boy has a cholesterol level greater than 225. 2) _____

A) 0.0606 B) 0.0012 C) 0.0336 D) 0.0718

3) An airline knows from experience that the distribution of the number of suitcases that get lost each week on a certain route is approximately normal with $\mu = 15.5$ and $\sigma = 3.6$. What is the probability that during a given week the airline will lose less than 20 suitcases? 3) _____

A) 0.1056 B) 0.4040 C) 0.3944 D) 0.8944

4) Assume that the heights of women are normally distributed with a mean of 63.6 inches and a standard deviation of 2.5 inches. The cheerleaders for a local professional basketball team must be between 65.5 and 68.0 inches. If a woman is randomly selected, what is the probability that her height is between 65.5 and 68.0 inches? 4) _____

A) 0.1844 B) 0.7881 C) 0.3112 D) 0.9608

5) Assume that blood pressure readings are normally distributed with $\mu = 120$ and $\sigma = 8$. A blood pressure reading of 145 or more may require medical attention. What percent of people have a blood pressure reading greater than 145? 5) _____

A) 99.91% B) 11.09% C) 6.06% D) 0.09%

6) The lengths of pregnancies of humans are normally distributed with a mean of 268 days and a standard deviation of 15 days. A baby is premature if it is born three weeks early. What percent of babies are born prematurely? 6) _____

A) 8.08% B) 10.31% C) 9.21% D) 6.81%

1) C
2) C
3) D
4) A
5) D
6) A

Section 5.3 and 5.4 Classwork sheet

Name_____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Provide an appropriate response.

1) Assume that the heights of women are normally distributed with a mean of 63.6 inches and a standard deviation of 2.5 inches. If 100 women are randomly selected, find the probability that they have a mean height greater than 63.0 inches. 1) _____

A) 0.8989 B) 0.0082 C) 0.2881 D) 0.9918

2) Assume that the heights of women are normally distributed with a mean of 63.6 inches and a standard deviation of 2.5 inches. If 75 women are randomly selected, find the probability that they have a mean height between 63 and 65 inches. 2) _____

A) 0.2119 B) 0.9811 C) 0.0188 D) 0.3071

Use the Central Limit Theorem to find the mean and standard error of the mean of the indicated sampling distribution.

3) The monthly rents for studio apartments in a certain city have a mean of $1,030 and a standard deviation of $170. Random samples of size 60 are drawn from the population and the mean of each sample is determined. 3) _____

A) $132.97, $170 B) $132.97, $21.95 C) $1,030, $2.83 D) $1,030, $21.95

4) The amounts of time employees of a telecommunications company have worked for the company are normally distributed with a mean of 5.5 years and a standard deviation of 2.2 years. Random samples of size 19 are drawn from the population and the mean of each sample is determined. 4) _____

A) 1.26 years, 0.5 years B) 1.26 years, 2.2 years
C) 5.5 years, 0.5 years D) 5.5 years, 0.12 years

Provide an appropriate response.

5) For the standard normal curve, find the z-score that corresponds to the 30^{th} percentile. 5) _____

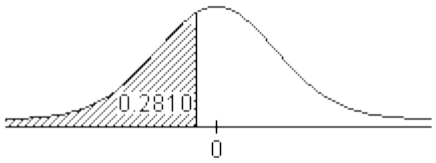
A) –0.47 B) –0.98 C) –0.12 D) –0.53

6) Use a standard normal table to find the z-score that corresponds to the 80^{th} percentile. 6) _____

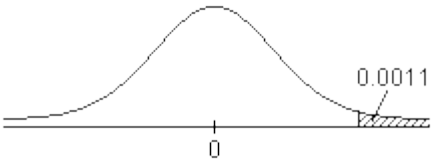
A) 1.405 B) 2.41 C) 0.84 D) 0.2

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

7) Find the z-score that corresponds to the given area under the standard normal curve. 7) _____



8) Find the z–score that corresponds to the given area under the standard normal curve. 8) _____



MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

9) Find the z–scores for which 90% of the distribution's area lies between –z and z. 9) _____
A) (–0.99, 0.99) B) (–1.645, 1.645) C) (–1.96, 1.96) D) (–2.33, 2.33)

10) Find the z–score for which 70% of the distribution's area lies to its right. 10) _____
A) –0.98 B) –0.81 C) –0.47 D) –0.53

11) Find the z–score for which 99% of the distribution's area lies between –z and z. 11) _____
A) (–2.33, 2.33) B) (–1.645, 1.645) C) (–2.575, 2.575) D) (–1.96, 1.96)

Answer Key
Testname: SECTION 5.3 AND 5.4

1) D
2) B
3) D
4) C
5) D
6) C
7) $z = -0.58$
8) $z = 3.07$
9) B
10) D
11) C

Section 6.1 classwork sheet

Name_____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Provide an appropriate response.

1) Find the critical value z_c that corresponds to a 94% confidence level. 1) _____

A) ±2.33 B) ±1.96 C) ±1.88 D) ±1.645

2) Find the margin of error for the given values of c, σ, and n. 2) _____

c = 0.95, σ = 10.4, n = 120

A) 1.86 B) 0.95 C) 0.90 D) 0.17

3) Find the margin of error for the given values of c, σ, and n. 3) _____

c = 0.98, σ = 0.78, n = 150

A) 0.11 B) 0.12 C) 0.15 D) 0.08

4) A random sample of 40 students has a test score with $\bar{x}$ = 81.5. Assume the population standard deviation is 10.2. Construct the confidence interval for the population mean, μ if c = 0.90. 4) _____

A) (71.8, 93.5) B) (51.8, 92.3) C) (78.8, 84.2) D) (66.3, 89.1)

5) In a random sample of 60 computers, the mean repair cost was $150. Assume the population standard deviation is $36. Construct a 90% confidence interval for the population mean. 5) _____

A) ($537, $654) B) ($141, $159) C) ($138, $162) D) ($142, $158)

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

6) The number of wins in a season for 32 randomly selected professional football teams are listed below. Construct a 90% confidence interval for the true mean number of wins in a season. Assume that σ is 2.6. 6) _____

9 9 9 8 10 9 7 2

11 10 6 4 11 9 8 8

12 10 7 5 12 6 4 3

12 9 9 7 10 7 7 5

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

7) The standard IQ test has a mean of 103 and a standard deviation of 15. We want to be 98% certain that we are within 4 IQ points of the true mean. Determine the required sample size. 7) _____

A) 180 B) 9 C) 1 D) 77

8) A nurse at a local hospital is interested in estimating the birth weight of infants. How large a sample must she select if she desires to be 90% confident that the true mean is within 2 ounces of the sample mean? The standard deviation of the birth weights is known to be 7 ounces. 8) _____

A) 6 B) 34 C) 33 D) 5

Answer Key
Testname: UNTITLED4

1) C
2) A
3) C
4) C
5) D
6) (7.2, 8.8)
7) D
8) B

Section 6.2 classwork sheet

Name_____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Provide an appropriate response.

1) In a random sample of 28 families, the average weekly food expense was $95.60 with a standard deviation of $22.50. Determine whether a normal distribution or a t–distribution should be used or whether neither of these can be used to construct a confidence interval. Assume the distribution of weekly food expenses is normally shaped. 1) _____
   A) Cannot use normal distribution or t–distribution.
   B) Use the t–distribution.
   C) Use normal distribution.

2) For a sample of 20 IQ scores the mean score is 105.8. The standard deviation, σ, is 15. Determine whether a normal distribution or a t–distribution should be used or whether neither of these can be used to construct a confidence interval. Assume that IQ scores are normally distributed. 2) _____
   A) Use normal distribution.
   B) Cannot use normal distribution or t–distribution.
   C) Use the t–distribution.

3) A random sample of 40 college students has a mean earnings of $3120 over the summer months. Assume the population standard deviation of earnings over the summer months for college students is $677 and that the distribution of earnings over the summer months for college students is normally distributed. Determine whether a normal distribution or a t–distribution should be used or whether neither of these can be used to construct a confidence interval. 3) _____
   A) Cannot use normal distribution or t–distribution.
   B) Use a t–distribution.
   C) Use normal distribution.

4) A random sample of 15 statistics textbooks has a mean price of $105 with a standard deviation of $30.25. Determine whether a normal distribution or a t–distribution should be used or whether neither of these can be used to construct a confidence interval. Assume the distribution of statistics textbook prices is not normally distributed. 4) _____
   A) Cannot use normal distribution or t–distribution.
   B) Use the t–distribution.
   C) Use normal distribution.

5) Construct a 90% confidence interval for the population mean, μ. Assume the population has a normal distribution. A sample of 15 randomly selected students has a grade point average of 2.86 with a standard deviation of 0.78. 5) _____
   A) (2.28, 3.66) B) (2.41, 3.42) C) (2.51, 3.21) D) (2.37, 3.56)

6) Construct a 99% confidence interval for the population mean, μ. Assume the population has a normal distribution. A group of 19 randomly selected students has a mean age of 22.4 years with a standard deviation of 3.8 years. 6) _____
   A) (18.7, 24.1) B) (19.9, 24.9) C) (17.2, 23.6) D) (16.3, 26.9)

7) Construct a 98% confidence interval for the population mean, μ. Assume the population has a normal distribution. A study of 14 bowlers showed that their average score was 192 with a standard deviation of 8. 7) _____

A) (328.3, 386.9) B) (222.3, 256.1) C) (115.4, 158.8) D) (186.3, 197.7)

8) A random sample of 10 parking meters in a beach community showed the following incomes for a day. Assume the incomes are normally distributed. 8) _____

$3.60 $4.50 $2.80 $6.30 $2.60 $5.20 $6.75 $4.25 $8.00 $3.00

Find the 95% confidence interval for the true mean.

A) ($3.39, $6.01) B) ($1.35, $2.85) C) ($4.81, $6.31) D) ($2.11, $5.34)

9) The grade point averages for 10 randomly selected high school students are listed below. Assume the grade point averages are normally distributed. 9) _____

2.0 3.2 1.8 2.9 0.9 4.0 3.3 2.9 3.6 0.8

Find a 98% confidence interval for the true mean.

A) (2.12, 3.14) B) (3.11, 4.35) C) (1.55, 3.53) D) (0.67, 1.81)

Answer Key
Testname: UNTITLED5

1) B
2) A
3) C
4) A
5) C
6) B
7) D
8) A
9) C

Section 6.3 classwork sheet

Name_____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Provide an appropriate response.

1) A survey of 250 homeless persons showed that 36 were veterans. Find a point estimate p, for the population proportion of homeless persons who are veterans. 1) _____
   A) 0.168 B) 0.856 C) 0.144 D) 0.126

2) A survey of 100 fatal accidents showed that 23 were alcohol related. Find a point estimate for p, the population proportion of accidents that were alcohol related. 2) _____
   A) 0.187 B) 0.77 C) 0.299 D) 0.23

3) In a survey of 2480 golfers, 15% said they were left–handed. The survey's margin of error was 3%. Construct a confidence interval for the proportion of left–handed golfers. 3) _____
   A) (0.11, 0.19) B) (0.18, 0.21) C) (0.12, 0.18) D) (0.12, 0.15)

4) A survey of 2450 golfers showed that 281 of them are left–handed. Construct a 98% confidence interval for the proportion of golfers that are left–handed. 4) _____
   A) (0.683, 0.712) B) (0.100, 0.130) C) (0.203, 0.293) D) (0.369, 0.451)

5) A pollster wishes to estimate the proportion of United States voters who favor capital punishment. How large a sample is needed in order to be 90% confident that the sample proportion will not differ from the true proportion by more than 6%? 5) _____
   A) 114 B) 7 C) 376 D) 188

6) A manufacturer of golf equipment wishes to estimate the number of left–handed golfers. How large a sample is needed in order to be 98% confident that the sample proportion will not differ from the true proportion by more than 3%? A previous study indicates that the proportion of left–handed golfers is 10%. 6) _____
   A) 604 B) 543 C) 385 D) 16

Answer Key
Testname: UNTITLED6

1) C
2) D
3) C
4) B
5) D
6) B