Practice 04

1) A sample of size $n = 10$ is drawn from an approximately normal population whose   1) _____
   standard deviation is $\sigma = 12.5$. The sample mean is $\bar{x} = 50.9$. Construct a 99%
   confidence interval for μ.
   A) $50.90 < \mu < 61.08$ B) $48.02 < \mu < 53.78$
   C) $40.72 < \mu < 61.08$ D) $43.61 < \mu < 58.19$

2) A sample of 35 different payroll departments found that employees worked an average   2) _____
   of 240.6 days a year. If the population standard deviation is 18.8 days, find the 90%
   confidence interval for the average number of days μ worked by all employees who are
   paid through payroll departments.
   A) $232.4 < \mu < 248.8$ B) $236.8 < \mu < 244.4$
   C) $235.4 < \mu < 245.8$ D) $230.9 < \mu < 250.3$

3) A sample of size $n = 14$ has a sample mean $\bar{x} = 11.9$ and sample standard deviation   3) _____
   $s = 2.1$. Construct a 99% confidence interval for the population mean μ.
   A) $11.4 < \mu < 12.4$ B) $10.2 < \mu < 13.6$
   C) $10.4 < \mu < 13.4$ D) $10.7 < \mu < 13.1$

4) A state representative wishes to estimate the mean number of women representatives   4) _____
   per state legislature. A random sample of 17 states is selected, and the number of
   women representatives is shown. Based on the sample, what is the point estimate of the
   mean? Find the 90% confidence interval of the mean population. (*Note* : The population
   mean is actually 32.2.)

4	32	33	34	24
27	15	48	25	16
19	31	18	39	21
58	130			

   A) Point Estimate : 32.2   B) Point Estimate : 33.8
      CI : $21.99 < \mu < 45.54$ CI : $21.99 < \mu < 45.58$
   C) Point Estimate : 33.8   D) Point Estimate : 32.2
      CI : $21.93 < \mu < 45.60$ CI : $21.95 < \mu < 45.58$

5) Use the given data to construct a confidence interval of the requested level.   5) _____
      $x = 80$, $n = 198$, confidence level 99%
   A) $0.369 < p < 0.439$ B) $0.323 < p < 0.485$
   C) $0.314 < p < 0.494$ D) $0.173 < p < 0.635$

6) A recent study of 750 internet users in Europe found that 35% of internet users were   6) _____
women. What is the 95% confidence interval of the true proportion of women in
Europe who use the internet?
    A) $0.349 < p < 0.351$ B) $0.309 < p < 0.391$
    C) $0.316 < p < 0.384$ D) $0.321 < p < 0.379$

7) The Pizza Shop wanted to determine what proportion of its customers ordered only   7) _____
cheese pizza. Out of 80 customers surveyed, 15 ordered only cheese pizza. What is the
99% confidence interval of the true proportion of customers who order only cheese
pizza?
    A) $0.102 < p < 0.273$ B) $0.075 < p < 0.300$
    C) $0.086 < p < 0.289$ D) $0.115 < p < 0.260$

8) If a population has a standard deviation of 10, what is the minimum number of samples   8) _____
that need to be averaged in order to be 95% confident that the average of the means is
within 2 of the true mean?
    A) 191   B) 10   C) 97   D) 20

9) The Academy of Orthopedic Surgeons states that 80% of women wear shoes that are   9) _____
too small for their feet. A researcher wants to be 98% confident that this proportion is
within 3 percentage points of the true proportion. How large a sample is necessary?
    A) 683   B) 1183   C) 966   D) 484

10) A recent survey of gasoline prices indicated that the national average was $4.098 per   10) _____
gallon. The Dallas Automobile Club claimed that gasoline in Texas was significantly
lower than the national average. A survey covering 10 different suburbs in Dallas found
the average price of gasoline to be $3.924 per gallon with a population standard
deviation of $0.53. What critical value should be used to test the claim using $\alpha = 0.01$?
    A) -2.33   B) 2.33

11) A test is made of $H_0: \mu = 47$ versus $H_1: \mu > 47$. A sample of size $n = 69$ is drawn, and   11) _____
$\bar{x} = 48$. The population standard deviation is $\sigma = 27$. $\alpha = 0.05$. Compute the value of the
test statistic z.
    A) 0.31   B) 0.62   C) 0.04   D) 1.60

12) According to *Beautiful Bride* magazine, the average age of a groom is now 26.2 years.   12) _____
A sample of 16 prospective grooms in Chicago revealed that their average age was 29.5
years with a standard deviation of 5.3 years. What is the value for a t test of the claim?
$\alpha = 0.05$
    A) 1.81   B) 2.49   C) 2.13   D) 0.59

13) Sam Ying, a career counselor, claims the average number of years of schooling for an engineer is 15.8 years. A sample of 20 engineers had a mean of 15.0 years and a standard deviation of 1.5 years. $\alpha = 0.05$ The test value used in evaluating the claim would be:

   A) -8.53   B) -2.39   C) 2.68   D) -2.68

13) _____

14) A machine that fills beverage cans is supposed to put 24 ounces of beverage in each can. Following are the amounts measured in a simple random sample of eight cans.

24.00	23.94	23.96	23.98
23.91	23.90	23.83	23.95

Assume that the sample is approximately normal. Can you conclude that the mean volume differs from 24 ounces? Use the $\alpha = 0.01$ level of significance.

   A) Yes. The mean fill volume appears to differ from 24 ounces.

   B) There is not enough information to draw a conclusion.

   C) No. There is insufficient evidence to conclude that the mean fill volume differs from 24 ounces.

14) _____

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