Exam

Name_____

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

1) Use the Central Limit Theorem to find the indicated probability. The sample size is n, the population proportion is p, and the sample proportion is $\hat{p}$.

$n = 160, p = 0.29; \ P(\hat{p} > 0.3)$

A) 0.3897 B) 0.3483 C) 0.3300 D) 0.6103

1) _____

2) Find the z-scores that bound the middle 74% of the area under the standard normal curve.

A) -1.24, 1.24 B) -1.07, 1.07 C) -1.13, 1.13 D) -0.99, 0.99

2) _____

3) A normal population has a mean $\mu = 34$ and standard deviation $\sigma = 11$. What proportion of the population is less than 41?

A) 0.8106 B) 0.7389 C) 1.0000 D) 0.2611

3) _____

Find the specified probability, from a table of Normal probabilities.

4) Based on past experience, a bank believes that 4% of the people who receive loans will not make payments on time. The bank has recently approved 300 loans. What is the probability that over 6% of these clients will not make timely payments?

A) 0.096 B) 0.962 C) 0.904 D) 0.038 E) 0.017

4) _____

5) The weight of crackers in a box is stated to be 16 ounces. The amount that the packaging machine puts in the boxes is believed to have a Normal model with mean 16.15 ounces and standard deviation 0.3 ounces. What is the probability that the mean weight of a 50–box case of crackers is above 16 ounces?

A) 0.0002 B) 0.9998 C) 0.0004 D) 0.9994 E) 0.9996

5) _____

6) A restaurant's receipts show that the cost of customers' dinners has a skewed distribution with a mean of $54 and a standard deviation of $18. What is the probability that the next 100 customers will spend an average of at least $58 on dinner?

A) 0.9868 B) 0.0132 C) 0.0562 D) 0.4121 E) 0.5879

6) _____

7) A candy company claims that its jelly bean mix contains 15% blue jelly beans. Suppose that the candies are packaged at random in small bags containing about 200 jelly beans. What is the probability that a bag will contain more than 20% blue jelly beans?

A) 0.0422 B) 0.0478 C) 0.9578 D) 0.0239 E) 0.9761

7) _____

8) When a truckload of oranges arrives at a packing plant, a random sample of 125 is selected and examined. The whole truckload will be rejected if more than 8% of the sample is unsatisfactory. Suppose that in fact 11% of the oranges on the truck do not meet the desired standard. What's the probability that the shipment will be accepted anyway?

8) _____

    A) 0.9173   B) 0.0827   C) 0.8577   D) 0.2846   E) 0.1423

9) A sample of size 40 will be drawn from a population with mean 98 and standard deviation 24. Find the 21st percentile of $\bar{x}$.

9) _____

    A) 94.9   B) 90.8   C) 91.4   D) 93.8

10) Find the area under the standard normal curve to the right of $z = 1.6$.

10) _____

    A) 0.4452   B) 0.0274   C) 0.0548   D) 0.9452

Solve the problem.

11) The volumes of soda in quart soda bottles can be described by a Normal model with a mean of 32.3 oz and a standard deviation of 1.2 oz. What percentage of bottles can we expect to have a volume less than 32 oz?

11) _____

    A) 47.15%   B) 40.13%   C) 9.87%   D) 38.21%   E) 59.87%

12) The lengths of human pregnancies can be described by a Normal model with a mean of 268 days and a standard deviation of 15 days. What percentage can we expect for a pregnancy that will last at least 300 days?

12) _____

    A) 1.99%   B) 1.66%   C) 48.34%   D) 98.34%   E) 1.79%

13) A normal population has a mean $\mu = 27$ and standard deviation $\sigma = 9$. What proportion of the population is between 26 and 31?

13) _____

    A) 0.4562   B) 0.7862   C) 0.6700   D) 0.2138

14) Find the area under the standard normal curve to the left of $z = -0.7$.

14) _____

    A) 0.1210   B) 0.2420   C) 0.2580   D) 0.7580

Describe the indicated sampling distribution model.

15) Based on past experience, a bank believes that 8% of the people who receive loans will not make payments on time. The bank has recently approved 600 loans. Describe the sampling distribution model of the proportion of clients in this group who may not make timely payments.

15) _____

    A) There is not enough information to describe the distribution.

    B) N(92%, 1.1%)

    C) N(8%, 0.3%)

    D) N(8%, 1.1%)

    E) Binom(600, 8%)

16) Some real estate specialists estimate that the length of time people live in a house has a mean of   16) _____
10 years and a standard deviation of 3 years. A random sample of 200 families was chosen and
surveyed. Let $\overline{y}$ represent the mean number of years that those families had lived in their house.
Describe the sampling distribution model of this mean.

    A) N(10, 0.2)

    B) There is not enough information to describe the distribution.

    C) N(10, 1.5)

    D) Binom(10, 3)

    E) N(10, 3)

17) A candy company claims that its jelly bean mix contains 21% blue jelly beans. Suppose that the   17) _____
candies are packaged at random in small bags containing about 400 jelly beans. Describe the
sampling distribution model of the proportion of blue jelly beans in a bag.

    A) N(21%, 0.8%)

    B) There is not enough information to describe the distribution.

    C) N(79%, 2.0%)

    D) Binom(400, 21%)

    E) N(21%, 2.0%)

18) Find the z-score for which the area to the right is 0.07.   18) _____

    A) 1.74   B) 1.48   C) 1.59   D) 1.35

19) For a particular diamond mine, 77% of the diamonds fail to qualify as "gemstone   19) _____
grade". A random sample of 112 diamonds is analysed. Find the probability that more
than 81% of the sample diamonds fail to qualify as gemstone grade.

    A) 0.1271   B) 0.8438   C) 0.1562   D) 0.8729

20) Find the area under the standard normal curve that lies between $z = 1.8$ and $z = 2$.   20) _____

    A) 0.5228   B) 0.9868   C) 0.0132   D) 0.4772

21) A sample of size 70 will be drawn from a population with mean 24 and standard   21) _____
deviation 10. Find the probability that $\overline{x}$ will be between 22 and 25.

    A) 0.7326   B) 0.2005   C) 0.7521   D) 0.0475

22) A certain car model has a mean gas mileage of 31 miles per gallon (mpg) with a   22) _____
standard deviation 3 mpg. A pizza delivery company buys 35 of these cars. What is the
probability that the average mileage of the fleet is between 30.9 and 31.2 mpg?

    A) 0.4207   B) 0.7690   C) 0.2310   D) 0.6517

23) The weights of 6-week-old poults (juvenile turkeys) are normally distributed with a   23) _____
    mean 9.1 pounds and standard deviation 2.4 pound(s). Find the 13th percentile of the
    weights.
    A) 6.39 lb   B) 5.75 lb   C) 7.03 lb   D) 7.67 lb

24) Use the Central Limit Theorem to find the indicated probability. The sample size is n,   24) _____
    the population proportion is p, and the sample proportion is $\hat{p}$.
    $n = 180, p = 0.29; \ P(\hat{p} < 0.34)$
    A) 0.9463   B) 0.9525   C) 0.9306   D) 0.9474

1) A
2) C
3) B
4) D
5) B
6) B
7) D
8) E
9) A
10) C
11) B
12) B
13) D
14) B
15) D
16) A
17) E
18) B
19) C
20) C
21) C
22) C
23) A
24) C