

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

Assume that X has a normal distribution, and find the indicated probability.

1) The mean is $\mu = 22.0$ and the standard deviation is $\sigma = 2.4$. $P(19.7 < X < 25.3)$.
A) 1.0847 B) 0.4107 C) 0.7477 D) 0.3370

2) The mean is $\mu = 40.0$ and the standard deviation $\sigma = 12.0$. $P(X < 46.0)$.
A) 0.6170 B) 0.3085 C) 0.6915 D) 0.3830

Describe the complement of the given event.

- 3) When five athletes compete in the Olympics, at least one of them wins a medal.
A) When five athletes compete in the Olympics, all of them win a medal.
B) When four athletes compete in the Olympics, none of them wins a medal.
C) When five athletes compete in the Olympics, no more than four of them win a medal.
D) When five athletes compete in the Olympics, none of them wins a medal.

Find the indicated probability.

4) Find the probability of correctly answering the first 3 questions on a multiple choice test if random guesses are made and each question has 6 possible answers.
A) $1/18$ B) $1/729$ C) $3/18$ D) $1/216$

5) A sample of 4 different calculators is randomly selected from a group containing 36 that are defective and 21 that have no defects. What is the probability that all four of the calculators selected are defective?
A) 9.8421 B) 0.1491 C) 0.1591 D) 0.1158

6) A study conducted at a certain college shows that 58% of the school's graduates find a job in their chosen field within a year after graduation. Find the probability that among 5 randomly selected graduates, at least one finds a job in his or her chosen field within a year of graduating.
A) 0.200 B) 0.934 C) 0.987 D) 0.580

7) In one region, the September energy consumption levels for single-family homes are found to be normally distributed with a mean of 1050 kWh and a standard deviation of 218 kWh. For a randomly selected home, find the probability that the September energy consumption level is between 1100 kWh and 1225 kWh.
A) 0.1971 B) 0.3791 C) 0.0910 D) 0.2881

8) A study conducted at a certain college shows that 69% of the school's graduates find a job in their chosen field within a year after graduation. Find the probability that 10 randomly selected graduates all find jobs in their chosen field within a year of graduating.
A) 0.035 B) 0.024 C) 6.900 D) 0.145

9) The weekly salaries of teachers in one state are normally distributed with a mean of \$490 and a standard deviation of \$45. What is the probability that a randomly selected teacher earns more than \$525 a week?
A) 0.2823 B) 0.1003 C) 0.7823 D) 0.2177

Identify the given random variable as being discrete or continuous.

10) The number of freshmen in the required course, English 101
A) Continuous B) Discrete

If Z is a standard normal variable, find the probability.

11) $P(-0.73 < Z < 2.27)$
A) 0.2211 B) 0.4884 C) 1.54 D) 0.7557

12) $P(Z > 0.59)$

A) 0.2776 B) 0.7224 C) 0.2190 D) 0.2224

13) The probability that Z is less than 1.13

A) 0.8708 B) 0.8485 C) 0.1292 D) 0.8907

Is Event B dependent or independent of Event A?

14) A: A mosquito lands on your arm.: You get a mosquito bite.

A) Independent B) Dependent

Solve the problem.

15) For a standard normal distribution, find the percentage of data that are more than 1 standard deviation away from the mean.

A) 31.74% B) 34.13% C) 15.87% D) 68.26%

16) Assume that z scores are normally distributed with a mean of 0 and a standard deviation of 1. If $P(z > c) = 0.1093$, find c.

A) 0.4562 B) 1.23 C) 0.27 D) -1.23

17)

A contractor is considering a sale that promises a profit of \$ 23,000 with a probability of 0.7 or a loss (due to bad weather, strikes, and such) of \$ 5000 with a probability of 0.3. What is the expected profit?

A) \$ 16,100 B) \$ 18,000 C) \$ 14,600 D) \$ 19,600

18) Scores on a test are normally distributed with a mean of 68.4 and a standard deviation of 9.6. Find the value of P_{81} .

A) 71.2 B) 76.8 C) 0.88 D) 0.291

The Precision Scientific Instrument Company manufactures thermometers that are supposed to give readings of 0°C at the freezing point of water. Tests on a large sample of these thermometers reveal that at the freezing point of water, some give readings below 0°C (denoted by negative numbers) and some give readings above 0°C (denoted by positive numbers). Assume that the mean reading is 0°C and the standard deviation of the readings is 1.00°C . Also assume that the frequency distribution of errors closely resembles the normal distribution. A thermometer is randomly selected and tested. Find the temperature reading corresponding to the given information.

19) If 9% of the thermometers are rejected because they have readings that are too low, but all other thermometers are acceptable, find the temperature that separates the rejected thermometers from the others.

A) -1.26° B) -1.45° C) -1.39° D) -1.34°

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

1) C

2) C

3) D

4) D

5) B

6) C

7) A

8) B

9) D

10) B

11) D

12) A

13) A

14) B

15) A

16) B

17) C

18) B

19) D