

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.**Find the indicated probability.**

- 1) You are dealt two cards successively (without replacement) from a shuffled deck of 52 playing cards. Find the probability that the first card is a King and the second card is a queen. 1) _____
 A) $\frac{2}{13}$ B) $\frac{13}{102}$ C) $\frac{1}{663}$ D) $\frac{4}{663}$
- 2) Among the contestants in a competition are 49 women and 29 men. If 5 winners are randomly selected, what is the probability that they are all men? 2) _____
 A) 0.06228 B) 0.09784 C) 0.07261 D) 0.00563
- 3) A study conducted at a certain college shows that 62% 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. 3) _____
 A) 0.992 B) 0.620 C) 0.200 D) 0.908

Identify the given random variable as being discrete or continuous.

- 4) The number of oil spills occurring off the Alaskan coast 4) _____
 A) Discrete B) Continuous
- 5) The height of a randomly selected student 5) _____
 A) Continuous B) Discrete

Solve the problem.

- 6) A contractor is considering a sale that promises a profit of \$31,000 with a probability of 0.7 or a loss (due to bad weather, strikes, and such) of \$12,000 with a probability of 0.3. What is the expected profit? 6) _____
 A) \$30,100 B) \$21,700 C) \$19,000 D) \$18,100
- 7) Suppose you pay \$2.00 to roll a fair die with the understanding that you will get back \$4.00 for rolling a 3 or a 6, nothing otherwise. What is your expected value? 7) _____
 A) \$2.00 B) \$4.00 C) -\$0.67 D) -\$2.00

Determine whether the given procedure results in a binomial distribution. If not, state the reason why.

- 8) Rolling a single die 26 times, keeping track of the "fives" rolled. 8) _____
 A) Not binomial: there are too many trials.
 B) Not binomial: there are more than two outcomes for each trial.
 C) Procedure results in a binomial distribution.
 D) Not binomial: the trials are not independent.

- 9) Choosing 5 marbles from a box of 40 marbles (20 purple, 12 red, and 8 green) one at a time without replacement, keeping track of the number of red marbles chosen. 9) _____
- A) Not binomial: there are too many trials.
 B) Not binomial: the trials are not independent.
 C) Procedure results in a binomial distribution.
 D) Not binomial: there are more than two outcomes for each trial.

Assume that a procedure yields a binomial distribution with a trial repeated n times. Use the binomial probability formula to find the probability of x successes given the probability p of success on a single trial.

- 10) $n = 30, x = 5, p = \frac{1}{5}$ 10) _____
- A) 0.198 B) 0.421 C) 0.172 D) 0.067

Find the indicated probability.

- 11) A company purchases shipments of machine components and uses this acceptance sampling plan: Randomly select and test 29 components and accept the whole batch if there are fewer than 3 defectives. If a particular shipment of thousands of components actually has a 6% rate of defects, what is the probability that this whole shipment will be accepted? 11) _____
- A) 0.7489 B) 0.1580 C) 0.2750 D) 0.5827

Solve the problem.

- 12) The probability that a radish seed will germinate is 0.7. A gardener plants seeds in batches of 19. Find the mean for the number of seeds germinating in each batch. 12) _____
- A) 13.3 B) 13.49 C) 17.1 D) 5.7
- 13) A company manufactures batteries in batches of 27 and there is a 3% rate of defects. Find the standard deviation for the number of defects per batch. 13) _____
- A) 0.87 B) 0.883 C) 0.886 D) 0.9

Determine if the outcome is unusual. Consider as unusual any result that differs from the mean by more than 2 standard deviations. That is, unusual values are either less than $\mu - 2\sigma$ or greater than $\mu + 2\sigma$.

- 14) According to AccuData Media Research, 36% of televisions within the Chicago city limits are tuned to "Eyewitness News" at 5:00 pm on Sunday nights. At 5:00 pm on a given Sunday, 2500 such televisions are randomly selected and checked to determine what is being watched. Would it be unusual to find that 921 of the 2500 televisions are tuned to "Eyewitness News"? 14) _____
- A) Yes B) No

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

- 15) The probability that Z lies between -1.10 and -0.36 15) _____
- A) 0.2237 B) 0.4951 C) 0.2239 D) -0.2237
- 16) The probability that Z lies between 0 and 3.01 16) _____
- A) 0.9987 B) 0.4987 C) 0.5013 D) 0.1217

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.

- 17) Find Q_3 , the third quartile. 17) _____
 A) 0.53° B) 0.82° C) -1.3° D) 0.67°

Solve the problem.

- 18) Assume that z scores are normally distributed with a mean of 0 and a standard deviation of 1. If $P(0 < z < a) = 0.4608$, find a. 18) _____
 A) 0.1772 B) 1.76 C) -0.10 D) 0.61

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

- 19) The mean is $\mu = 15.2$ and the standard deviation is $\sigma = 0.9$. 19) _____
 Find the probability that X is greater than 16.1.
 A) 0.1357 B) 0.8413 C) 0.1550 D) 0.1587

Find the indicated probability.

- 20) The diameters of pencils produced by a certain machine are normally distributed with a mean of 0.30 inches and a standard deviation of 0.01 inches. What is the probability that the diameter of a randomly selected pencil will be less than 0.285 inches? 20) _____
 A) 0.4332 B) 0.0596 C) 0.9332 D) 0.0668
- 21) 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. 21) _____
 A) 0.2881 B) 0.3791 C) 0.1971 D) 0.0910

Solve the problem.

- 22) Scores on an English test are normally distributed with a mean of 31.5 and a standard deviation of 7.3. Find the score that separates the top 59% from the bottom 41%. 22) _____
 A) 35.8 B) 27.2 C) 33.2 D) 29.8
- 23) Human body temperatures are normally distributed with a mean of 98.20°F and a standard deviation of 0.62°F . Find the temperature that separates the top 7% from the bottom 93%. 23) _____
 A) 98.40°F B) 99.12°F C) 97.28°F D) 98.78°F

Answer Key

Testname: SAMPLE TEST2

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