

Name _____

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

- 1) The contingency table below provides a joint frequency distribution for a random sample of patients at a hospital classified by blood type and sex. 1) _____

Sex	Blood Type				Total
	O	A	B	AB	
F	97	96	23	9	225
M	78	67	14	6	165
Total	175	163	37	15	390

If a person is selected at random from the sample, find the probability that the person has blood type A and is female.

- A) 0.427 B) 0.246 C) 0.995 D) 0.589 E) 0.749
- 2) The table below describes the smoking habits of a group of asthma sufferers. 2) _____

	Light Heavy			Total
	Nonsmoker	smoker	smoker	
Men	334	85	71	490
Women	310	66	62	438
Total	644	151	133	928

If one of the 928 subjects is randomly selected, find the probability that the person chosen is a nonsmoker given that it is a woman. Round to the nearest thousandth.

- A) 0.372 B) 0.708 C) 0.481 D) 0.334

3) The table shows the careers of a group of retired people and their ages at retirement.

3) _____

		Age at Retirement				Total
		50-55	56-60	61-65	Over 65	
Career	Attorney	11	41	94	30	176
	College Professor	10	42	80	35	167
	Secretary	21	45	63	49	178
	Store Clerk	18	44	70	50	182
	Total	60	172	307	164	703

What is the probability that a person who retired between the ages of 56 and 60 was a college professor?

- A) 0.238 B) 0.251 C) 0.244 D) 0.060 E) 0.245

Is Event B dependent or independent of Event A?

- 4) A: You cook your chicken improperly.
B: You get salmonella poisoning.

4) _____

- A) Independent B) Dependent

Determine whether the events are independent and give a reason.

- 5) The table shows the political affiliation of voters in one city and their positions on stronger gun control laws. 5) _____

	Stronger Gun Control	
	Favor	Oppose
Republican	0.08	0.33
Democrat	0.22	0.2
Other	0.13	0.04

Are party affiliation and position on gun control laws independent? Explain.

- A) No;
 $P(\text{Democrat and Favor}) = 0.22$
 $P(\text{Republican and Favor}) = 0.08$
 These are not equal
- B) No; 52.4% of Democrats favor stronger gun control laws, but only 19.5% of Republicans favor them
- C) Yes;
 52.4% of Democrats favor stronger gun control laws and
 52.4% of Republicans favor stronger gun control laws
- D) Yes; a voter who favors stronger gun control laws cannot be both a Democrat and a Republican
- E) No; 8% of voters both favor stronger gun control laws and are Republicans

Find the indicated probability.

- 6) Applicants for a job first submit a written application. Based on the written applications, 40% of the applicants are invited for a first interview. Of those that have a first interview, 58% are rejected after the interview. What is the probability that a randomly selected applicant receives a first interview and is rejected after the interview? 6) _____
 A) 0.168 B) 0.748 C) 0.58 D) 0.98 E) 0.232
- 7) A study conducted at a certain college shows that 61% of the school's graduates find a job in their chosen field within a year after graduation. Find the probability that 9 randomly selected graduates all find jobs in their chosen field within a year of graduating. 7) _____
 A) 0.019 B) 0.148 C) 5.490 D) 0.012
- 8) Find the probability that 4 randomly selected people all have the same birthday. Ignore leap years. 8) _____
 A) 0.25 B) 0.0000002 C) 0 D) 0.011
- 9) You are dealt a hand of three cards, one at a time. Find the probability that your cards are all diamonds. 9) _____
 A) 0.750 B) 0.013 C) 0.016 D) 0.231 E) 0.705

Provide a written description of the complement of the given event.

- 10) Of the thirteen different women Calvin asks for a date, at least one of them accepts. 10) _____
 A) All but one woman accepts Calvin's offer.
 B) None of the women accept Calvin's offer.
 C) All of the women accept Calvin's offer.

Find the indicated probability.

- 11) In a batch of 8,000 clock radios 8% are defective. A sample of 12 clock radios is randomly selected without replacement from the 8,000 and tested. The entire batch will be rejected if at least one of those tested is defective. What is the probability that the entire batch will be rejected? 11) _____
- A) 0.0833 B) 0.632 C) 0.0800 D) 0.368

Identify the given random variable as being discrete or continuous.

- 12) The number of field goals kicked in a football game 12) _____
- A) Discrete B) Continuous
- 13) The number of freshmen in the required course, English 101 13) _____
- A) Continuous B) Discrete

Solve the problem.

- 14) 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? 14) _____
- A) \$2.00 B) -\$0.67 C) \$4.00 D) -\$2.00

Find the expected value of the random variable.

- 15) The probability model below describes the number of thunderstorms that a certain town may experience during the month of August. 15) _____

Number of storms	0	1	2	3
Probability	0.1	0.2	0.5	0.2

How many storms can the town expect each August?

- A) 1.5 B) 2.0 C) 1.9 D) 1.8 E) 2.3
- 16) You pick a card from a deck. If you get a face card, you win \$10. If you get an ace, you win \$25 plus an extra \$40 for the ace of hearts. For any other card you win nothing. Find the expected amount you will win. 16) _____
- A) \$5.48 B) \$5.00 C) \$3.46 D) \$5.77 E) \$4.52

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

- 17) The probability that Z lies between -2.41 and 0 17) _____
- A) 0.4920 B) 0.0948 C) 0.4910 D) 0.5080
- 18) The probability that Z lies between -1.10 and -0.36 18) _____
- A) -0.2237 B) 0.2237 C) 0.4951 D) 0.2239
- 19) $P(Z > 0.59)$ 19) _____
- A) 0.2224 B) 0.2776 C) 0.7224 D) 0.2190
- 20) $P(Z < 0.97)$ 20) _____
- A) 0.8315 B) 0.1660 C) 0.8078 D) 0.8340

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.

21) Find P_{40} , the 40th percentile. 21) _____

- A) 0.57° B) 0.25° C) -0.25° D) -0.57°

22) If 7% 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. 22) _____

- A) -1.26° B) -1.39° C) -1.53° D) -1.48°

23) If 9% of the thermometers are rejected because they have readings that are too high, but all other thermometers are acceptable, find the temperature that separates the rejected thermometers from the others. 23) _____

- A) 1.26° B) 1.34° C) 1.39° D) 1.45°

Solve the problem.

24) For a standard normal distribution, find the percentage of data that are between 3 standard deviations below the mean and 1 standard deviation above the mean. 24) _____

- A) 15.74% B) 16.00% C) 99.74% D) 84.00%

25) 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. 25) _____

- A) 1.76 B) 0.61 C) -0.10 D) 0.1772

Answer Key

Testname: SAMPLE TEST 2

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