

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

- 1) A survey asked 32,901 homeowners how many pets they owned. The results were as followed: 1) _____

Number of Pets	Number of Homeowners
0	6316
1	9709
2	9627
3	6618
4 or more	631
Total	32,901

Assume this is a simple random sample of homeowners. Use the Empirical Method to estimate the probability that a homeowner has at least one pet.

- A) 0.238 B) 0.192 C) 0.808 D) 0.762
- 2) A single card is drawn from a deck. Find the probability of selecting a heart or a 8. 2) _____
- A) $\frac{4}{13}$ B) $\frac{1}{4}$ C) $\frac{2}{13}$ D) $\frac{17}{52}$

- 3) An apartment building has the following distribution of apartments: 3) _____

	<u>1 bedroom</u>	<u>2 bedroom</u>	<u>3 bedroom</u>
1st floor	3	1	1
2nd floor	0	4	2
3rd floor	1	4	1

If an apartment is selected at random, what is the probability that it is not a 2 bedroom apartment on the 2nd floor?

- A) $\frac{13}{17}$ B) $\frac{4}{13}$ C) $\frac{4}{9}$ D) $\frac{11}{13}$
- 4) If $P(A) = 0.38$, $P(B) = 0.33$, and $P(A \text{ and } B) = 0.24$, find $P(A \text{ or } B)$. 4) _____
- A) 0.47 B) 0.12 C) 0.355 D) 0.24
- 5) Let A and B be events with $P(A) = 0.7$, $P(B) = 0.3$, and $P(B|A) = 0.2$. Find $P(A \text{ and } B)$. 5) _____
- A) 0.06 B) 0.21 C) 0.14 D) 0.29

- 6) Let A , B and C be independent events with $P(A) = 0.1$, $P(B) = 0.7$, and $P(C) = 0.9$. Find $P(A \text{ and } B \text{ and } C)$. 6) _____
 A) 0.037 B) 0.07 C) 0.063 D) 0.078

- 7) The Gift Basket Store had the following premade gift baskets containing the following combinations in stock. 7) _____

	Cookies	Mugs	Candy
coffee	5	14	10
Tea	16	13	11

Choose 1 basket at random. Find the probability that it contains tea given that it contains mugs.

- A) ≈ 0.929 B) ≈ 0.188 C) ≈ 0.519 D) ≈ 0.481
- 8) A group of 10 male and 8 female students is talking about going out for pizza. If 50% of the male students actually go and 25% of the female students actually go, find the probability that a random student who goes out for pizza is female. 8) _____
 A) $\frac{2}{7}$ B) $\frac{1}{18}$ C) $\frac{1}{8}$ D) $\frac{4}{5}$

- 9) There are 3 blue balls, 5 red balls, and 2 white balls in a bag of balls. If a person selects two of the balls, what is the probability that the second one is blue given that the first one was white? 9) _____
 A) $\frac{1}{2}$ B) $\frac{3}{10}$ C) $\frac{1}{3}$ D) $\frac{2}{9}$

- 10) On a TV game show, a contestant is shown 8 products from a grocery store and is asked to choose the three least-expensive items in the set, and then correctly arrange these three items in order of price. In how many ways can the contestant choose the three items? 10) _____
 A) 336 B) 6720 C) 6 D) 56

- 11) On a TV game show, a contestant is shown 8 products from a grocery store and is asked to choose the three least-expensive items in the set. The three chosen items need not be in any particular order. In how many ways can the contestant choose the three items? 11) _____
 A) 6720 B) 6 C) 336 D) 56

- 12) Three statistics professors and seven chemistry professors are available to be advisors to a student organization. The student organization needs two of the professors to be advisors. If each professor has an equal chance of being selected, what is the probability that both professors are chemistry professors? 12) _____

A) 0.100 B) 0.233 C) 0.467 D) 0.111

- 13) A committee consist of 8 women and 11 men. Three members are chosen as officers. What is the probability that all three officers are women? 13) _____

A) 0.01243 B) 0.0746 C) 0.0578 D) 0.1703

- 14) In a company there are 8 executives: 5 women and 3 men. 3 are selected to attend a management seminar. Find the probability that 2 men and 1 woman will be selected. 14) _____

A) ≈ 0.2344 B) ≈ 0.3750 C) ≈ 0.0667 D) 0.2679

- 15) The following table presents the probability distribution of the number of vacations X taken last year for a randomly chosen family. Find the probability that a family took at least 3 vacations last year. 15) _____

x	0	1	2	3	4
$P(x)$	0.05	0.69	0.17	0.07	0.02

A) 0.09 B) 0.91 C) 0.26 D) 0.07

- 16) Find the mean of the distribution shown below. 16) _____

X	2	5	6	7
$P(X)$	0.12	0.64	0.18	0.06

A) 0.25 B) 4.94 C) 20 D) 1

- 17) Compute the standard deviation of the random variable with the given discrete probability distribution. 17) _____

x	$P(x)$
0	0.2
5	0.45
15	0.05
25	0.3

A) 99.8 B) 10.0 C) 10.5 D) 11.25

- 18) A student takes a 18-question, multiple-choice exam with four choices for each question and guesses on each question. Find the probability of guessing exactly 7 out of 18 correctly. 18) _____
 A) 0.250 B) 0.918 C) 0.389 D) 0.082
- 19) A coin is tossed 72 times. Find the standard deviation for the number of heads that will be tossed. 19) _____
 A) 18 B) 6.78 C) 36 D) 4.24
- 20) It is estimated that 30% of households own a riding lawn mower. A sample of 12 households is studied. What is the probability that no more than 3 of these own a riding lawn mower? 20) _____
 A) 0.7472 B) 0.5075 C) 0.4925 D) 0.2528
- 21) In the instructor's answer book for a mathematics text, 8% of the answers are incorrect. Use the Poisson approximation to express the probability that there are exactly 2 incorrect answers for a homework set with 50 problems. 21) _____
 A) $\frac{e^{-8}2^8}{8!}$ B) $\frac{e^{-4}4^2}{2!}$ C) $\frac{e^{-4}2^4}{4!}$ D) $\frac{e^{-8}8^2}{2!}$
- 22) The probability that a person will have 0, 1, or 2 dental checkups per year is 0.3, 0.6, and 0.1, respectively. If seven people are picked at random, what is the probability that two will have no checkups, four will have one checkup, and one will have two checkups in the next year? 22) _____
 A) 0.012 B) 0.588 C) 0.122 D) 0.018
- 23) A certain type of battery has a 0.5% failure rate. Find the probability that a shipment of 1,000 batteries has more than two defective batteries. 23) _____
 A) 0.600 B) 0.875 C) 0.125 D) 0.175
- 24) Find the area under the standard normal curve to the left of $z = 1.5$. 24) _____
 A) 0.4666 B) 0.9332 C) 0.0668 D) 0.4332
- 25) Find the area under the standard normal curve to the right of $z = 2$. 25) _____
 A) 0.0114 B) 0.0228 C) 0.9772 D) 0.4772
- 26) Find the area under the standard normal curve that lies between $z = -1.9$ and $z = 2.2$. 26) _____
 A) 0.5139 B) 0.9574 C) 0.0426 D) 0.4861

- 27) In a standard normal distribution, what z value corresponds to 17% of the data between the mean and the z value? 27) _____
 A) 0.44 B) 0.52 C) 2.10 D) 1.25
- 28) A normal population has a mean $\mu = 28$ and standard deviation $\sigma = 5$. What proportion of the population is less than 23? 28) _____
 A) 0.7389 B) 1.0000 C) 0.8413 D) 0.1587
- 29) A certain car model has a mean gas mileage of 34 miles per gallon (mpg) with a standard deviation 5 mpg. A pizza delivery company buys 43 of these cars. What is the probability that the average mileage of the fleet is greater than 33.5 mpg? 29) _____
 A) 0.8554 B) 0.7454 C) 0.5636 D) 0.1446
- 30) If a baseball player's batting average is 0.340 (i.e., the probability of getting a hit each time at bat is 0.340), find the probability that the player will have a bad season and get at most 60 hits in 200 times at bat? 30) _____
 A) 13.1% B) 36.9% C) 11.7% D) 38.3%
- 31) A magazine reported that 6% of American drivers admit to reading the newspaper while driving. If 500 drivers are selected at random, find the probability that exactly 40 will admit to reading the newspaper while driving. 31) _____
 A) 1.3% B) 0.6% C) 4.7% D) 2.0%
- 32) A biologist estimates that 70% of the deer in a region carry a certain type of tick. For a sample of 300 deer selected at random, what is the chance that 216 or fewer deer have this tick? 32) _____
 A) 0.794 B) 0.588 C) 0.206 D) 0.864

Answer Key

Testname: UNTITLED1

- 1) C
- 2) A
- 3) A
- 4) A
- 5) C
- 6) C
- 7) D
- 8) A
- 9) C
- 10) A
- 11) D
- 12) C
- 13) C
- 14) D
- 15) A
- 16) B
- 17) B
- 18) D
- 19) D
- 20) C
- 21) B
- 22) C
- 23) B
- 24) B
- 25) B
- 26) B
- 27) A
- 28) D
- 29) B
- 30) A
- 31) A
- 32) A