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| --- |
| 1. A bank of America employee records the amount of time that customers spend using the ATM machine at her branch. This method of gathering data is known as\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 1. observationX |
| 1. experiments |
| 1. retrospective |
| 1. None of the other choices is correct |

|  |
| --- |
| 1. points in E. |
| 1. 1, 3, 5, 7, 9 |
| 1. 5 |
| 1. 2, 4, 6, 8, 10X |
| 1. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 |
| 1. None of the other choices is correct |

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| --- |
| 1. A large basket of fruit contains 3 oranges, 2 apples and 5 bananas. If a piece of fruit is chosen at random, what is the probability of getting an orange or a banana? |
| None of the other choices is correct |
| 1. 7/10 |
| 1. 4/5X |
| 1. 1/2 |
| 1. 3/5 |

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| 4. According to the U.S. census, in 2005, 21% of homicide victims were known to be female, 9.7% were known to be under the age of 18 and 2.8% were known to be female under the age of 18. What is the probability that a murder victim was known to be female or under the age of 18 based on these 2005 estimates? |
| A. 0.961 |
| B. 0.021 |
| C. 0.279X |
| D. 0.307 |

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| 5. You are dealt three cards successively (without replacement) from a shuffled deck of 52 playing cards. Find the probability that all cards are black. |
| A. 0.118 |
| B. 0.245 |
| C. 0.500 |
| D. 0.725 |
| E. None of the other choices is correctX |

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| 6. (See picture)  [file:7975.jpg] |
| A. 0.06 |
| B. 0.07 |
| C. 0.05 |
| D. 0.04 |
| E. None of the other choices is correct. |

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| 7. Bag A contains 15 white and 10 black balls while another Bag B contains 10 white and 15 black balls. One ball is drawn at random from one of the bags and it is found to be white. Find the probability that it was drawn from Bag B. |
| 0.4X |
| 0.5 |
| 0.6 |
| 0.7 |

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| 8. Identify the given variable as being discrete or continuous.    X = The amount of sugar in an apple. |
| ContinuousX |
| Discrete |

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| 9. Samples of 20 parts from a metal punching process are selected every hour. Typically, 1% of the parts require rework. Let X denote the number of parts in a sample of 20 that require rework. The possible values of X are: |
| A. 0,1,…,20 X |
| B. 0,1,2 |
| C. 1,2,…,20 |
| D. 3,4,…,20 |
| E. None of the other choices is correct |

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| 10. (See picture)  [file:13599.jpg] |
| 1. f(0)=1/3; f(1)=1/6; f(2)=1/2 |
| 1. f(0)=1/9; f(1)=1/36; f(2)=1/4 |
| 1. f(0)=1/3; f(1)=1/6; f(4)=1/2 |
| 1. f(0)=1/3; f(1)=1/6; f(4)=1/4 |
| 1. None of the other choices is correct |

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| 11. A basketball player is asked to shot free throws in sets of four. The player shoots 100 sets of 4 free throws. The probability distribution for making a particular number of free throws is given below. Determine the standard deviation for this discrete probability distribution.  X P(X)  0 0.02  1 0.07  2 0.22  3 0.27  4 0.42 |
| 0.28 |
| 1.10 |
| 1.21 |
| 1.05 X |

|  |
| --- |
| 12. If the probability of a newborn child being female is 0.5, find the probability that in 10 births, 2 or more will be female. |
| 0.989 X |
| 0.913 |
| 0.870 |
| 0.752 |
| None of the other choices is correct |

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| --- |
| 13. On a 10-question multiple choice test , each question has four possible answers, one of which is correct. For students who guess at all answers, find the mean for the random variable X, the number of correct answers. |
| A. 1.9 |
| B. 3.3 |
| C. 5 |
| D. 2.5 X |
| E. None of the other choices is correct |

|  |
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| 14. Suppose that you interview job applicants in succession until you find a person that satisfies the job description. Suppose that, at each interview, the probability of finding the right person is 0.3.  What is the probability that you appoint the third person that you interview? |
| 0.147 X |
| 0.221 |
| 0.347 |
| 0.739 |
| None of the other choices is correct |

Test 1

Q1: A T.V. show’s executives raised the fee for commercials following a report that the show received a “ No.1” rating in a survey of viewers. What type of the description is?

Select one:

a. Experiment

b. Observation study X

c. Retrospective study

Q2: Flip a coin twice, create the sample space of possible outcomes (H: Head, T: Tail).

Select one:

a. HT TH

b. HH HT TT

c. HH HT TH TT X

d. HH TT HT HT

Q3: The probability that a house in an urban area will be burglarized is 3%. If 30 houses are randomly selected, what is the probability that none of the houses will be burglarized?

Select one:

a. 0.001

b. 0.4010 X

c. 0.020

d. 0.557

Q4: If two balanced die are rolled, the possible outcomes can be represented as follows.

(1, 1) (2, 1) (3, 1) (4, 1) (5, 1) (6, 1)

(1, 2) (2, 2) (3, 2) (4, 2) (5, 2) (6, 2)

(1, 3) (2, 3) (3, 3) (4, 3) (5, 3) (6, 3)

(1, 4) (2, 4) (3, 4) (4, 4) (5, 4) (6, 4)

(1, 5) (2, 5) (3, 5) (4, 5) (5, 5) (6, 5)

(1, 6) (2, 6) (3, 6) (4, 6) (5, 6) (6, 6)

Determine the probability that the sum of the dice is 4 or 12.

Select one:

a. 7/36

b. 1/2

c. 1/9 X

d. 5/9

Q5: According to a survey of American households, the probability that the residents own 2 cars if annual household income is over $35,000 is 70%. Of the households surveyed, 50% had incomes over $35,000 and 80% had 2 cars. The probability that the residents of a household do not own 2 cars and have an income over $35,000 a year is:

Select one:

a. 0.45 X

b. 0.15

c. 0.48

d. 0.18

Q6: The probability is 2% that an electrical connector that is kept dry fails during the warranty period of a portable computer. If the connector is ever wet, the probability of a failure during the warranty period is 10%. If 80% of the connectors are kept dry and 20% are wet, what proportion of connectors fail during the warranty period?

Select one:

a. 0.6

b. 0.08

c. 0.036 X

d. 0.014

Q7: Given events C and D with probabilities P(C) = 0.3, P(D) = 0.2, and P(C and D) = 0.1, are C and D independent?

Select one:

a. cannot be determined

b. no X

c. yes

Q8: According to a survey of American households, the probability that the residents own 3 cars if annual household income is over $25,500 is 63%. Of the households surveyed, 62% had incomes over $25,500 and 44% had 3 cars. The probability that annual household income is over $25,500 if the residents of a household own 3 cars is:

Select one:

a. 0.89 X

b. 0.42

c. 0.69

d. 0.50

Q9: A test consists of 10 true/false questions. To pass the test a student must answer at least 4 questions correctly. If a student guesses on each question, what is the probability that the student will pass the test?

Select one:

a. 0.8281 X

b. 0.172

c. 0.117

d. 0.945

Q10: The accompanying table shows the probability distribution for X, the number that shows up when a loaded die is rolled. Find the variance for the probability distribution.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| X | 1 | 2 | 3 | 4 | 5 | 6 |
| P(X) | 0.16 | 0.19 | 0.22 | 0.21 | 0.12 | 0.10 |

Select one:

a. 2.41

b. 2.03

c. 2.36

d. 9.62

Q11: Product codes of 3, 4 or 5 letters are equally likely. What is the mean of the number of letters in 20 codes?

Select one:

a. 80 X

b. 4

c. 40

d. 8

Q12: Find the mean for the binomial distribution which has the stated values of n = 20 and p = 3/5. Round answer to the nearest tenth.

Select one:

a. 12.3

b. 12.0 B

c. 12.7

d. 11.5

Q13: A batch contains 36 bacteria cells, in which 12 are not capable of cellular replication. Suppose you examine 7 bacteria cells selected at random, without replacement. What is the probability that exactly 3 of them are capable of cellular replication?

Select one:

a. 0.72

b. 0.28 B

c. 0.88

d. 0.12

Q14: In one city, the probability that a person will pass his or her driving test on the first attempt is 0.59. 23 people are selected at random from among those taking their driving test for the first time. What is the probability that among these 23 people, the number passing the test is between 15 and 18 inclusive?

Select one:

a. 0.0308

b. 0.0345 B

c. 0.0299

d. 0.3362

Q15: The manager of a movie theater has determined that the distribution of customers arriving at the concession stand is Poisson distributed with a standard deviation equal to 2 people per 10 minutes. If the servers can accommodate 3 customers in a 10-minute period, what is the probability that the servers will be idle for an entire ten minute period?

Select one:

a. 0.9807

b. 0.1353

c. 0.0183 X

d. 0.2135

Q16: The probability of a successful optical alignment in

the assembly of an optical data storage product is 0.7. Assume

the trials are independent. What is the probability that the first successful alignment requires exactly 4 trials?

Select one:

a. 0.072 A

b. 0.103

c. 0.019

d. 0.006

Test 2

Q1: An employee at the local ice cream parlor asks three customers if they like chocolate ice cream. What is the population?

Select one:

a. all custormers

b. three selected custermers

c. all men custormers

d. all women custormers X

Q2:

An experiment consists of randomly choosing a number between 1 and 10. Let E be the event that the number chosen is odd. List the sample points in E.

Select one:

a. {2, 4, 6, 8, 10}

b. {5}

c. {1, 3, 5, 7, 9} X

d. {1, 2, 3, 4, 5, 6, 7, 8, 9, 10}

Q3: A committee of three people is to be formed. The three people will be selected from a list of six possible committee members. A simple random sample of three people is taken, without replacement, from the group of six people. Using the letters A, B, C, D, E, F to represent the six people, list the possible samples of size three and use your list to determine the probability that B is included in the sample.

(Hint: There are 20 possible samples.)

Select one:

a. 1/5

b. 7/10 X

c. 2/5

d. 3/5

e. 1/2

Q4:

If two balanced die are rolled, the possible outcomes can be represented as follows.

(1, 1) (2, 1) (3, 1) (4, 1) (5, 1) (6, 1)

(1, 2) (2, 2) (3, 2) (4, 2) (5, 2) (6, 2)

(1, 3) (2, 3) (3, 3) (4, 3) (5, 3) (6, 3)

(1, 4) (2, 4) (3, 4) (4, 4) (5, 4) (6, 4)

(1, 5) (2, 5) (3, 5) (4, 5) (5, 5) (6, 5)

(1, 6) (2, 6) (3, 6) (4, 6) (5, 6) (6, 6)

Determine the probability that the sum of the dice is 4 or 12.

Select one:

a. 7/36

b. 5/9

c. 1/9

d. 1/2

Q5: The breakdown of workers in a particular state according to their political affiliation and type of job held is shown here. Suppose a worker is selected at random within the state and the worker's political affiliation and type of job are noted.

Political Affiliation



Given the worker is a Democrat, what is the probability that the worker is in a white collar job.

Select one:

a. 0.526

b. 0.417

c. 0.303

d. 0.576

Q6: The probability is 5% that an electrical connector that is kept dry fails during the warranty period of a portable computer. If the connector is ever wet, the probability of a failure during the warranty period is 20%. If 90% of the connectors are kept dry and 10% are wet, what proportion of connectors fail during the warranty period?

Select one:

a. 0.065

b. 0.036

c. 0.086

d. 0.625

Q7: Assume that P(C) = 0.5 and P(D) = 0.3. If C and D are independent, find P(C and D).

Select one:

a. 0.15

b. 0.3

c. 0.5

d. 1.5

Q8: According to a survey of American households, the probability that the residents own 3 cars if annual household income is over $25,500 is 83%. Of the households surveyed, 62% had incomes over $25,500 and 84% had 3 cars. The probability that annual household income is over $25,500 if the residents of a household own 3 cars is:

Select one:

a. 0.42

b. 0.50

c. 0.69

d. 0.61

Q9: The on-line access computer service industry is growing at an extraordinary rate. Current estimates suggest that 10% of people with home-based computers have access to on-line services. Suppose that 8 people with home-based computers were randomly and independently sampled. What is the probability that at least 1 of those sampled have access to on-line services at home?

Select one:

a. 0.9648

b. 0.5695

c. 0.0352

d. 0.8329

Q10: What is the standard deviation of the following probability distribution?

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| X | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| P(X) | 0.30 | 0.25 | 0.2 | 0.12 | 0.07 | 0.04 | 0.02 |

Select one:

a. 2.23

b. 1.16

c. 1.54

d. 1.82

Q11: Product codes of 1, 2 or 3 letters are equally likely. What is the mean of the number of letters in 50 codes?

Select one:

a. 80

b. 2

c. 100

d. 20

Q12: Find the mean for the binomial distribution which has the values of n = 33 and p = 0.2. Round answer to the nearest tenth.

Select one:

a. 7.3

b. 6.9

c. 6.1

d. 6.6

Q13: A batch contains 36 bacteria cells, in which 12 are not capable of cellular replication. Suppose you examine 7 bacteria cells selected at random, without replacement. What is the probability that exactly 3 of them are not capable of cellular replication?

Select one:

a. 0.83

b. 0.28

c. 0.17

d. 0.72

Q14: Assume that a procedure yields a binomial distribution with a trial repeated 4 times. Use the binomial probability formula to find the probability of 3 successes given the probability 1/6 of success on a single trial.

Select one:

a. 0.0231

b. 0.0154

c. 0.0116

d. 0.0039

Q15: The number of customers that arrive at a fast-food business during a one-hour period is known to be Poisson distributed with a mean equal to 8.60. What is the probability that exactly 8 customers will arrive in a one-hour period?

Select one:

a. 0.0065

b. 0.7832

c. 0.2073

d. 0.1366

Q16: The probability of a successful optical alignment in

the assembly of an optical data storage product is 0.7. Assume

the trials are independent. What is the probability that the first successful alignment requires exactly 4 trials?

Select one:

a. 0.072

b. 0.006

c. 0.019

d. 0.103

Test 3

Q1: Those methods involving the collection, presentation, and characterization of a set of data in order to properly describe the various features of that set of data are called

Select one:

a. sampling.

b. descriptive statistics.

c. the scientific method.

d. statistical inference.

Q2: The outcome of an experiment is the number of resulting heads when a nickel and a dime are flipped simultaneously. What is the sample space for this experiment?

Select one:

a. {nickel, dime}

b. {HH, HT, TH, TT}

c. {HH, HT, TT}

d. {0, 1, 2}

Q3: Sixty percent of the people that get mail-order catalogs order something. Find the probability that only three of 8 people getting these catalogs will order something.

Select one:

a. 0.300

b. 0.001

c. 0.124

d. 0.117

Q4:The age distribution of students at a community college is given below.



A student from the community college is selected at random. Find the probability that the student is under 37 years old. Give your answer as a decimal rounded to three decimal places.

Select one:

a. 0.960

b. 0.903

c. 0.097

d. 0.040

Q5: A group of volunteers for a clinical trial consists of 123 women and 178 men. 54 of the women and 46 of the men have high blood pressure. If one of the volunteers is selected at random find the probability that the person is a man given that they have high blood pressure.

Select one:

a. 0.512

b. 0.460

c. 0.256

d. 0.488

Q6: The probability is 5% that an electrical connector that is kept dry fails during the warranty period of a portable computer. If the connector is ever wet, the probability of a failure during the warranty period is 20%. If 90% of the connectors are kept dry and 10% are wet, what proportion of connectors fail during the warranty period?

Select one:

a. 0.036

b. 0.086

c. 0.065

d. 0.625

Q7: Assume that P(E) = 0.15 and P(F) = 0.48. If E and F are independent, find P(E and F).

Select one:

a. 0.072

b. 0.558

c. 0.630

d. 0.15

Q8: According to a survey of American households, the probability that the residents own 3 cars if annual household income is over $25,500 is 63%. Of the households surveyed, 62% had incomes over $25,500 and 44% had 3 cars. The probability that annual household income is over $25,500 if the residents of a household own 3 cars is:

Select one:

a. 0.69

b. 0.89

c. 0.50

d. 0.42

Q9: Samples of 10 parts from a metal punching process are selected every hour. Let X denote the number of parts in the sample of 10 that require rework. If the percentage of parts that require rework at 3%, what is the probability that X exceeds 2?

Select one:

a. 0.0159

b. 0.3152

c. 0.0028

d. 0.4114

Q10: The following table is the probability distribution of the number of golf balls ordered by customers



Find the mean of the this probability distribution.

Select one:

a. 6.63

b. 9.39

c. 9.3

d. 8.22

Q11: Let the random variable X have a discrete uniform distribution on the integers 1 \le X \le 10. Determine P(X < 6).

Select one:

a. 0.5

b. 0.7

c. 0.6

d. 0.4

Q 12: Find the mean for the binomial distribution which has the values of n = 33 and p = 0.2. Round answer to the nearest tenth.

Select one:

a. 6.6

b. 6.9

c. 6.1

d. 7.3

Q13: A batch contains 36 bacteria cells, in which 12 are not capable of cellular replication. Suppose you examine 7 bacteria cells selected at random, without replacement. What is the probability that exactly 3 of them are capable of cellular replication?

Select one:

a. 0.72

b. 0.28

c. 0.12

d. 0.88

Q14: A salesperson knows that 20% of her presentations result in sales. Find the probabilities that in the next 60 presentations at least 9 result in sales.

Select one:

a. 0.8732

b. 0.6421

c. 0.8189

d. 0.1241

Q15: The number of visible defects on a product container is thought to be Poisson distributed with a mean equal to 4.3. Based on this, the probability that 2 containers will contain less than 2 defects is:

Select one:

a. 0.1359

b. 0.1850

c. 0.0018

d. 0.0073

Q16: The probability of a successful optical alignment in

the assembly of an optical data storage product is 0.7. Assume

the trials are independent. What is the probability that the first successful alignment requires exactly 4 trials?

Select one:

a. 0.103

b. 0.006

c. 0.072

d. 0.019