Statistics – Gamalie

STUDY GUIDE – Chapter 5

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

Identify the given random variable as being discrete or continuous.

1) The number of phone calls between New York and California on Thanksgiving day.

A) Discrete
B) Continuous

2) The height of a randomly selected student

A) Continuous
B) Discrete

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Determine whether the following is a probability distribution. If not, identify the requirement that is not satisfied.

3)

x	P(x)
1	0.037
2	0.200
3	0.444
4	0.296

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

Find the mean of the given probability distribution.

4) The number of golf balls ordered by customers of a pro shop has the following probability distribution.

x	3	6	9	12	15
p(x)	0.14	0.36	0.36	0.04	0.10

A) 9.72
B) 7.8

C) 9
D) 5.13

Solve the problem.

5) In a certain town, 30% of adults have a college degree. The accompanying table describes the probability distribution for the number of adults (among 4 randomly selected adults) who have a college degree. Find the standard deviation for the probability distribution.

x	P(x)
0	0.2401
1	0.4116
2	0.2646
3	0.0756
4	0.0081

A) 1.06
B) 0.92
C) 0.84
D) 1.51

6) In a game, you have a 1/23 probability of winning $96 and a 22/23 probability of losing $10. What is your expected value?

A) -$5.39
B) $13.74
C) $4.17
D) -$9.57

Assume that a researcher randomly selects 14 newborn babies and counts the number of girls selected, x. The probabilities corresponding to the 14 possible values of x are summarized in the given table. Answer the question using the table.

Probabilities of Girls

x(girls)	P(x)	x(girls)	P(x)	x(girls)	P(x)
0	0.000	5	0.122	10	0.061
1	0.001	6	0.183	11	0.022
2	0.006	7	0.209	12	0.006
3	0.022	8	0.183	13	0.001
4	0.061	9	0.122	14	0.000

7) Find the probability of selecting exactly 8 girls.

A) 0.000
B) 0.022
C) 0.122
D) 0.183

8) Find the probability of selecting exactly 5 girls.

A) 0.122
B) 0.001
C) 0.061
D) 0.022

9) Find the probability of selecting 12 or more girls.

A) 0.007
B) 0.006
C) 0.022
D) 0.001

Answer the question.

10) Assume that there is a 0.15 probability that a basketball playoff series will last four games, a 0.30 probability that it will last five games, a 0.25 probability that it will last six games, and a 0.30 probability that it will last seven games. Is it unusual for a team to win a series in 6 games?

A) No
B) Yes

11) Focus groups of 12 people are randomly selected to discuss products of the Yummy Company. It is determined that the mean number (per group) who recognize the Yummy brand name is 9.5, and the standard deviation is 0.69. Would it be unusual to randomly select 12 people and find that fewer than 6 recognize the Yummy brand name?

A) No
B) Yes

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

12) Rolling a single die 34 times, keeping track of the numbers that are rolled.

A) Not binomial: there are too many trials.
B) Procedure results in a binomial distribution.
C) Not binomial: there are more than two outcomes for each trial.
D) Not binomial: the trials are not independent.

13) Rolling a single die 43 times, keeping track of the "fives" rolled.

A) Not binomial: there are too many trials.
B) Procedure results in a binomial distribution.
C) Not binomial: there are more than two outcomes for each trial.
D) Not binomial: the trials are not independent.

14) 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.

A) Not binomial: there are more than two outcomes for each trial.
B) Not binomial: there are too many trials.
C) Not binomial: the trials are not independent.
D) Procedure results in a binomial distribution.

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.

15) n = 6, x = 3, p = 1/6

A) 0.0154
B) 0.0286
C) 0.0536
D) 0.0322

16) n =12, x = 5, p = 0.25

A) 0.103
B) 0.082
C) 0.091
D) 0.027

Find the indicated probability.

17) In a certain college, 33% of the physics majors belong to ethnic minorities. If 10 students are selected at random from the physics majors, that is the probability that no more than 6 belong to an ethnic minority?

A) 0.913
B) 0.0547
C) 0.9846
D) 0.9815

18) In a study, 45% of adults questioned reported that their health was excellent. A researcher wishes to study the health of people living close to a nuclear power plant. Among 11 adults randomly selected from this area, only 3 reported that their health was excellent. Find the probability that when 11 adults are randomly selected, 3 or fewer are in excellent health.

A) 0.0652
B) 0.1268
C) 0.1911
D) 0.1259

Find the mean, μ, for the binomial distribution which has the stated values of n and p. Round answer to the nearest tenth.

19) n = 45; p = 3/5

A) **μ** = 27.0
B) **μ** = 27.7
C) **μ** = 27.3
D) **μ** = 26.5

Find the standard □, for the binomial distribution which has the stated values of n and p. Round your answer to the nearest hundredth.
20) n = 2815; p = .63

A) □ = 25.62
B) □ = 29.74
C) □ = 28.89
D) □ = 23.21

Use the given values of n and p to find the minimum usual value μ - 2□ and the maximum usual value μ + 2□.
21) n = 1083, p = 0.82

A) Minimum: 862.77; maximum: 913.35
B) Minimum: 913.35; maximum: 862.77
C) Minimum: 870.18; maximum: 905.94
D) Minimum: 875.42; maximum: 900.7

Solve the problem.
22) According to a college survey, 22% of all students work full time. Find the mean for the number of students who work full time in samples of size 16.

A) 4.00
B) 2.75
C) 3.52
D) 0.22

23) The probability that a radish seed will germinate is 0.7. A gardener plants seeds in batches of 4. Find the standard deviation for the number of seeds germinating in each batch.

A) 0.906
B) 0.794
C) 0.784
D) 0.917

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 μ - 2□ or greater than μ + 2□.

24) A survey for brand recognition is done and it is determined that 68% of consumers have heard of Dull Computer Company. A survey of 800 randomly selected consumers is to be conducted. For such groups of 800, would it be unusual to get 666 consumers who recognize the Dull Computer Company name?

A) Yes
B) No

Use the Poisson Distribution to find the indicated probability.

25) If the random variable x has a Poisson Distribution with mean μ = 8 find the probability that x = 4.

A) 0.07157
B) 0.01145
C) 0.05725
D) 0.15563