13.

Assume that you have an urn containing 10 balls of the following description:

4 are white (W) and lettered (L)

2 are white (W) and numbered (N)

3 are yellow (Y) and lettered (L)

1 is yellow (Y) and numbered (N)

If you draw a numbered ball (N), the probability that this ball is white (W) is 0.667.

(Points : 1)

- True
- False

14.

Outcome	Value of Random Variable	Probability
A	1	.4
B	2	.3
C	3	.2
D	4	.1

(Points : 1)

- True
- False

15. The *expected value* of a binomial distribution is expressed as *np*, where *n* equals the number of trials and *p* equals the probability of success of any individual trial.
(Points : 1)

- True
- False

16. Assume you have a normal distribution representing the likelihood of completion times. The mean of this distribution is 12, and the standard deviation is 5. The probability of completing the project in 8 or fewer days is the same as the probability of completing the project in 18 days or more. (Points : 1)

- True
- False

17. In a normal distribution the *Z* value represents the number of standard deviations from a value *X* to the mean. (Points : 1)

- True

25. The variance of a binomial distribution is expressed as $np/(1-p)$, where n equals the number of trials and p equals the probability of success of any individual trial. (Points : 1)

- True
- False

26.

The classical method of determining probability is

(Points : 1)

- A) subjective probability
- B) marginal probability.
- C) objective probability.
- D) joint probability.
- E) conditional probability.

27.

Subjective probability assessments depend on

(Points : 1)

- A) the total number of trials.
- B) the relative frequency of occurrence.
- C) the number of occurrences of the event.
- D) experience and judgment.
- E) None of the above

28.

The equation $P(A|B) = P(AB)/P(B)$ is

(Points : 1)

- A) the marginal probability.
- B) the formula for a conditional probability.
- C) the formula for a joint probability.
- D) only relevant when events A and B are collectively exhaustive.
- E) None of the above

29.

If the sale of ice cream and pizza are independent, then as ice cream sales decrease by 60 percent during the winter months, pizza sales will

(Points : 1)

- A) increase by 60 percent.

B) increase by 40 percent.
C) decrease by 60 percent.
D) decrease by 40 percent.
E) be unrelated.

30.

Suppose that 10 dart throwers enter a tournament at a local tavern and that their respective skill levels are approximately the same. Six of the entrants are female and two of those are older than 40 years old. Three of the men are older than 40 years old. What is the probability that the winner will be a female who is older than 40 years old?

(Points : 1)

A) 0.000
B) 1.100
C) 0.198
D) 0.200
E) 0.900

31.

When does $P(A|B) = P(A)$?

(Points : 1)

A) when *A* and *B* are mutually exclusive
B) when *A* and *B* are statistically independent
C) when *A* and *B* are statistically dependent
D) when *A* and *B* are collectively exhaustive
E) when $P(B) = 0$

32.

A law firm has received 2 Stanley Cup playoff tickets from one of its clients. To be fair, the law firm is randomly selecting two different employee names to "win" the tickets. There are 6 secretaries, 5 consultants and 4 partners in the firm. Which of the following statements is not true?

(Points : 1)

A) The probability of a secretary winning a ticket on the first draw is 6/15.
B) The probability of a secretary winning a ticket on the second draw given that a consultant won a ticket on the first draw is 6/15.
C) The probability of a consultant winning a ticket on the first draw is 1/3.
D) The probability of two secretaries winning both tickets is 1/7.
E) The probability of a partner winning a ticket on the second draw given that a secretary won a ticket on the first draw is 4/14.

33.

There are 1,000 Psychology majors at PSY U., there are 200 psychology students enrolled in an introductory statistics course. Of these 200 students, 50 are also enrolled in an introductory to psychology course. There are an additional 250 psychology students enrolled in introduction to psychology but not enrolled in statistics. If a psychology student is selected at random, what is the probability that the student is either enrolled in introduction to psychology or statistics, but not both?

(Points : 1)

- A) 0.45
- B) 0.50
- C) 0.40
- D) 0.05
- E) None of the above

34. A production process is known to produce a particular item in such a way that 5 percent of these are defective. If two items are randomly selected as they come off the production line, what is the probability that both are defective (assuming that they are independent)?

(Points : 1)

- A) 0.0100
- B) 0.1000
- C) 0.2000
- D) 0.0025
- E) 0.0250

35.

The expected value of a probability distribution is

(Points : 1)

- A) the measure of the spread of the distribution.
- B) the variance of the distribution.
- C) the average value of the distribution.
- D) the probability density function.
- E) the range of continuous values from point A to point B, inclusive.

36.

Which of the following is <u>not</u> true for discrete random variables?

(Points : 1)

- A) The expected value is the weighted average of the values.
- B) They can assume only a countable number of values.
- C) The probability of each value of the random variable must be 0.
- D) The probability values always sum up to 1.
- E) A binomial random variable is considered discrete.

37.

A discrete random variable has a mean of 200 and a variance of 49. What is the standard deviation?

(Points : 1)

- A) 99
- B) 7
- C) 49
- D) 200
- E) None of the above

38.

Which of the following is not true about continuous random variables?

(Points : 1)

- A) They have an infinite set of values.
- B) The area under each of the curves represents probabilities.
- C) The entire area under each of the curves equals 1.
- D) Some may be described by uniform distributions or exponential distributions.
- E) They can only be integer values.

39.

Which of the following characteristics is true for a normal probability distribution?

(Points : 1)

- A) The area under the curve is 1.
- B) It is symmetrical.
- C) The midpoint is also the mean.
- D) Sixty eight percent of the area under the curve lies within one standard deviation of the mean.
- E) All of the above are true.

40.

The number of cell phone minutes used by stay at home mothers follows a normal distribution with a mean of 500 and a standard deviation of 50. What is the probability that a stay at home mother uses fewer than 600 minutes?

(Points : 1)

- A) 0
- B) 0.023
- C) 0.841
- D) 0.977
- E) None of the above

41.

Data for a certain housing area near downtown Dallas indicate that the average price per square foot for a home is $100 with a standard deviation of $5 (normally distributed). What is the probability that the average price per square foot for a home is greater than $110?

(Points : 1)

- A) 0
- B) 0.023
- C) 0.841
- D) 0.977
- E) None of the above

42. The time required to complete a project is normally distributed with a mean of 80 weeks and a standard deviation of 10 weeks. The construction company must pay a penalty if the project is not finished by the due date in the contract. If a construction company bidding on this contract wishes to be 90 percent sure of finishing by the due date, what due date (project week #) should be negotiated?

(Points : 1)

- A) 92.8
- B) 81.28
- C) 81.82
- D) 0.81954
- E) None of the above

43.

The ability to examine the variability of a solution due to changes in the formulation of a problem is an important part of the analysis of the results. This type of analysis is called _____ analysis.

(Points : 1)

- A) sensitivity
- B) implicit
- C) normal
- D) scale
- E) objective

44.

Operations Research is known as

(Points : 1)

- A) the science of numerical analysis.
- B) the science of sensitivity analysis.
- C) the science of better.
- D) the science of modeling.

E) None of A-D
F) All of A-D

45.

Trying various approaches and picking the one that results in the best decision is called

(Points : 1)

A) the trial
B) incomplete enumeration.
C) complete enumeration.
D) algorithmic approximation.
E) sensitivity analysis.

46.

As one attempts to develop a model, which of the following problems might she encounter?

(Points : 1)

A) The problem may not fit a textbook approach.
B) There will be no data available to test the model.
C) Not everyone will understand the problem in the same way.
D) All of the above
E) None of the above

47. Data collected by a major cell phone provider indicate that only 20% of cell phone customers are willing to switch cell phone providers. If a binomial process is assumed, then in a sample of 20 cell phone customers find the following probabilities:

Place the correct number **only** corresponding to the correct answer in the Box (for example 2)

(Points : 5)

Potential Matches:

1 : 0.4110
2 : 0.9994
3 : 0.1234
4 : 0.0001
5 : 0.6826
6 : 0.0115
7 : 0.3678

Answer

[ ] : What is the probability that no more than 3 customers would be willing to switch their cell phone provider?

[ ] : What is the probability that 12 or more will be switching their cell phone provider?

[ ] : What is the probability that between 5 and 9 (including 5 and 9) will be switching their cell phone

provider?

[ ] : What is the probability that no one will be switching their cell phone provider?

[ ] : What is the probability that 10 or fewer will be switching their cell phone provider?

48.

A market research study is being conducted to determine if a product modification will be well received by the public. A total of 1,000 consumers are questioned regarding this product.

The table below provides information regarding this sample.

	Positive Reaction	Neutral Reaction	Negative Reaction	Total
Male	240	60	100	400
Female	260	220	120	600
Total	500	280	220	1000

Place the correct number **only** corresponding to the correct answer in the Box (for example 2)

(Points : 5)

Potential Matches:

1 : 0.25
2 : 0.2346
3 : 0.600
4 : 0.1459
5 : 0.060 .
6 : 0.4545
7 : 0.260

Answer

[ ] : If it is known that a person had a negative reaction to the study, what is the probability that the person is male?

[ ] : What is the probability that a randomly selected person would be a female who had a positive reaction?

[ ] : What is the probability that a randomly selected male would find this change unfavorable (negative)?

[ ] : What is the probability that a male is selected with a neutral reaction?

[ ] : What is the probability that a female is selected?

49. Place the correct number **only** corresponding to the correct answer in the blank (for example 2)

(Points : 5)

Potential Matches:

1 : complete enumeration
2 : Probabilistic
3 : decision
4 : Deterministic
5 : garbage in, garbage out
6 : Mutually Exclusive
7 : qualitative
8 : sensitivity

Answer

: _____ models are synonymous with stochastic models.

: Once we have a solution, we should then perform _____ analysis.

: Inaccurate model input data leads to inaccurate model solutions. This phenomenon is commonly referred to as _____.

: A controllable variable is also called a _____ variable.

: The solution process of _____ implies that we look at all possible solutions.

50. What is implementation and why is it important? In your response please cite an example of a successful implementation strategy. (Points : 10)

Spellchecker

51. Please explain what is the expected value and the variance is and what do they measure. What is the difference in finding the variance for a data set and a discrete probability distribution? (Points : 10)

Spellchecker

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