

Introduction to probability

MULTIPLE CHOICE

1. Each individual outcome of an experiment is called
- the sample space
 - a sample point
 - an experiment
 - an individual

ANS: B

PTS: 1

TOP: Probability Concepts

2. A graphical method of representing the sample points of an experiment is
- a frequency polygon
 - a histogram
 - an ogive
 - a tree diagram

ANS: D

PTS: 1

TOP: Probability Concepts

3. Any process that generates well-defined outcomes is
- an event
 - an experiment
 - a sample point
 - a sample space

ANS: B

PTS: 1

TOP: Probability Concepts

4. In statistical experiments, each time the experiment is repeated
- the same outcome must occur
 - the same outcome can not occur again
 - a different outcome may occur
 - a different out come must occur

ANS: C

PTS: 1

TOP: Probability Concepts

5. The counting rule that is used for counting the number of experimental outcomes when n objects are selected from a set of N objects where *order of selection* is **not** important is called
- permutation
 - combination
 - multiple step experiment
 - None of these alternatives is correct.

ANS: B

PTS: 1

TOP: Probability Concepts

6. From a group of six people, two individuals are to be selected at random. How many possible selections are there?
- 12
 - 36
 - 15
 - 8

ANS: C

PTS: 1

TOP: Probability Concepts

7. A method of assigning probabilities based upon judgment is referred to as the
- relative method
 - probability method
 - classical method
 - subjective method

ANS: D

PTS: 1

TOP: Probability Concepts

8. A graphical device used for enumerating sample points in a multiple-step experiment is a
- bar chart
 - pie chart
 - histogram
 - None of these alternatives is correct.

ANS: D

PTS: 1

TOP: Probability Concepts

9. The set of all possible outcomes of an experiment is
- an experiment
 - an event
 - the population
 - the sample space

ANS: D

PTS: 1

TOP: Probability Concepts

10. If a dime is tossed four times and comes up tails all four times, the probability of heads on the fifth trial is
- smaller than the probability of tails
 - larger than the probability of tails
 - $1/2$
 - $1/32$

ANS: C

PTS: 1

TOP: Probability Concepts

11. Of five letters (A, B, C, D, and E), two letters are to be selected at random. How many possible selections are there?
- 20
 - 7
 - $5!$
 - 10

ANS: D

PTS: 1

TOP: Probability Concepts

12. Assume your favorite football team has 2 games left to finish the season. The outcome of each game can be win, lose or tie. The number of possible outcomes is
- 2
 - 4
 - 6
 - 9

ANS: D

PTS: 1

TOP: Probability Concepts

13. An experiment consists of tossing 4 coins successively. The number of sample points in this experiment is
- 16
 - 8
 - 4
 - 2

ANS: A

PTS: 1

TOP: Probability Concepts

14. Since the sun **must** rise tomorrow, then the probability of the sun rising tomorrow is
- much larger than one
 - zero
 - infinity
 - None of these alternatives is correct.

ANS: D

PTS: 1

TOP: Probability Concepts

15. If a coin is tossed three times, the likelihood of obtaining three heads in a row is
- zero
 - 0.500
 - 0.875
 - 0.125

ANS: D

PTS: 1

TOP: Probability Concepts

16. Of the last 100 customers entering a computer shop, 25 have purchased a computer. If the classical method for computing probability is used, the probability that the next customer will purchase a computer is
- 0.25
 - 0.50
 - 1.00
 - 0.75

ANS: B

PTS: 1

TOP: Probability Concepts

17. A six-sided die is tossed 3 times. The probability of observing three ones in a row is
- $\frac{1}{3}$
 - $\frac{1}{6}$
 - $\frac{1}{27}$
 - $\frac{1}{216}$

ANS: D

PTS: 1

TOP: Probability Concepts

18. A perfectly balanced coin is tossed 6 times and tails appears on all six tosses. Then, on the seventh trial
- tails can not appear
 - heads has a larger chance of appearing than tails
 - tails has a better chance of appearing than heads
 - None of these alternatives is correct.

ANS: D

PTS: 1

TOP: Probability Concepts

19. A method of assigning probabilities which assumes that the experimental outcomes are equally likely is referred to as the
- objective method
 - classical method
 - subjective method
 - experimental method

ANS: B

PTS: 1

TOP: Probability Concepts

20. The probability assigned to each experimental outcome must be
- any value larger than zero
 - smaller than zero
 - at least one
 - between zero and one

ANS: D

PTS: 1

TOP: Probability Concepts

21. Some of the CDs produced by a manufacturer are defective. From the production line, 5 CDs are selected and inspected. How many sample points exist in this experiment?
- 10
 - 25
 - 30
 - 32

ANS: D

PTS: 1

TOP: Probability Concepts

22. Assume your favorite football team has 3 games left to finish the season. The outcome of each game can be win, lose, or tie. How many possible outcomes exist?
- 7
 - 27
 - 36
 - 64

ANS: B

PTS: 1

TOP: Probability Concepts

23. From nine cards numbered 1 through 9, two cards are drawn. Consider the selection and classification of the cards as odd or even as an experiment. How many sample points are there for this experiment?
- 2
 - 3
 - 4
 - 9

ANS: C

PTS: 1

TOP: Probability Concepts

24. If a six sided die is tossed two times, the probability of obtaining two "4s" in a row is
- $\frac{1}{6}$
 - $\frac{1}{36}$
 - $\frac{1}{96}$
 - $\frac{1}{216}$

ANS: B

PTS: 1

TOP: Probability Concepts

25. The intersection of two mutually exclusive events
- can be any value between 0 to 1
 - must always be equal to 1
 - must always be equal to 0
 - can be any positive value

ANS: C

PTS: 1

TOP: Probability Concepts

26. The range of probability is
- any value larger than zero
 - any value between minus infinity to plus infinity
 - zero to one
 - any value between -1 to 1

ANS: C

PTS: 1

TOP: Probability Concepts

27. Two events, A and B, are mutually exclusive and each have a nonzero probability. If event A is known to occur, the probability of the occurrence of event B is
- one
 - any positive value
 - zero
 - any value between 0 to 1

ANS: C

PTS: 1

TOP: Probability Concepts

28. The sum of the probabilities of two complementary events is
- Zero
 - 0.5
 - 0.57
 - 1.0

ANS: D

PTS: 1

TOP: Probability Concepts

29. One of the basic requirements of probability is
- for each experimental outcome E_i , we must have $P(E_i) \geq 1$
 - $P(A) = P(A^c) - 1$
 - if there are k experimental outcomes, then $\sum P(E_i) = 1$
 - $\sum P(E_i) \geq 1$

ANS: C

PTS: 1

TOP: Probability Concepts

30. The symbol \cup shows the
- union of events
 - intersection of two events
 - sum of the probabilities of events
 - sample space

ANS: A

PTS: 1

TOP: Probability Concepts

31. The union of events A and B is the event containing
- all the sample points belonging to B or A
 - all the sample points belonging to A or B
 - all the sample points belonging to A or B or both
 - all the sample points belonging to A or B, but not both

ANS: C

PTS: 1

TOP: Probability Concepts

32. If A and B are mutually exclusive events with $P(A) = 0.3$ and $P(B) = 0.5$, then $P(A \cap B) =$
- 0.30
 - 0.15
 - 0.00
 - 0.20

ANS: C

PTS: 1

TOP: Probability Concepts

33. Events A and B are mutually exclusive with $P(A) = 0.3$ and $P(B) = 0.2$. Then, $P(B^c) =$
- 0.00
 - 0.06
 - 0.7
 - 0.8

ANS: D

PTS: 1

TOP: Probability Concepts

34. In an experiment, events A and B are mutually exclusive. If $P(A) = 0.6$, then the probability of B
- cannot be larger than 0.4
 - can be any value greater than 0.6
 - can be any value between 0 to 1
 - cannot be determined with the information given

ANS: A

PTS: 1

TOP: Probability Concepts

35. If $P(A) = 0.62$, $P(B) = 0.47$, and $P(A \cup B) = 0.88$, then $P(A \cap B) =$
- 0.2914
 - 1.9700
 - 0.6700
 - 0.2100

ANS: D

PTS: 1

TOP: Probability Concepts

36. If $P(A) = 0.7$, $P(B) = 0.6$, $P(A \cap B) = 0$, then events A and B are
- not mutually exclusive
 - mutually exclusive
 - independent events
 - complements of each other

ANS: B

PTS: 1

TOP: Probability Concepts

37. Two events with nonzero probabilities
- can be both mutually exclusive and independent
 - can not be both mutually exclusive and independent
 - are always mutually exclusive
 - are always independent

ANS: B

PTS: 1

TOP: Probability Concepts

38. If A and B are independent events with $P(A) = 0.65$ and $P(A \cap B) = 0.26$, then, $P(B) =$
- 0.400
 - 0.169
 - 0.390
 - 0.650

ANS: A

PTS: 1

TOP: Probability Concepts

39. If two events are independent, then
- they must be mutually exclusive
 - the sum of their probabilities must be equal to one
 - their intersection must be zero
 - None of these alternatives is correct.

ANS: D

PTS: 1

TOP: Probability Concepts

40. The multiplication law is potentially helpful when we are interested in computing the probability of
- mutually exclusive events
 - the intersection of two events
 - the union of two events
 - conditional events

ANS: B

PTS: 1

TOP: Probability Concepts

41. If A and B are independent events with $P(A) = 0.4$ and $P(B) = 0.6$, then $P(A \cap B) =$
- 0.76
 - 1.00
 - 0.24
 - 0.20

ANS: C

PTS: 1

TOP: Probability Concepts

42. If A and B are independent events with $P(A) = 0.05$ and $P(B) = 0.65$, then $P(A \mid B) =$
- 0.05
 - 0.0325
 - 0.65
 - 0.8

ANS: A

PTS: 1

TOP: Probability Concepts

43. If A and B are independent events with $P(A) = 0.4$ and $P(B) = 0.25$, then $P(A \cup B) =$
- a. 0.65
 - b. 0.55
 - c. 0.10
 - d. 0.75

ANS: B

PTS: 1

TOP: Probability Concepts

44. If A and B are independent events with $P(A) = 0.38$ and $P(B) = 0.55$, then $P(A \mid B) =$
- a. 0.209
 - b. 0.000
 - c. 0.550
 - d. 0.38

ANS: D

PTS: 1

TOP: Probability Concepts

45. If A and B are independent events with $P(A) = 0.35$ and $P(B) = 0.20$, then, $P(A \cup B) =$
- a. 0.07
 - b. 0.62
 - c. 0.55
 - d. 0.48

ANS: D

PTS: 1

TOP: Probability Concepts