

Sta301 Quiz 2 Fall 2022

Lecture 16 to 21

ORANGE MONKEY TEAM

With Mid handouts, Junaid, Moaz

1. Which of the following best expresses the general addition rule?

$$P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B) \dots \text{confirm}$$

Which of the following best expresses the General Addition Rule?

Your Answer: None of the above.

Correct Answer: $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$

2. If $A = \{10, 11\}$ then which of the following is power set of A?

$$\{\{\}, \{10\}, \{11\}, \{10, 11\}\} \dots \text{confirm}$$

3. If $P(A) = 0.45$, $P(B) = 0.35$ and $P(A \text{ and } B) = 0.25$ then $P(A|B)$ is

$$0.714 \dots \text{confirm}$$

$$P(A|B) = P(A \cap B) / P(B) = 0.25 / 0.35 = 0.7142$$

4. $0!$ Is equal to

$$1 \dots \text{confirm}$$

5. Order the power set of a set of order n is

$$2^n \dots \text{confirm}$$

6. Consider a set $A = \{1, 2, 3\}$. What is the number of subsets of A?

$$2^3 = 8 \dots \text{confirm}$$

So, total number of subset = $2^3 = 8$

7. Consider a set A {4,6,8,10}. What is the number of subsets of A?

$2^4=16$confirm

8. In how many ways a committee, consisting of 5 men and 2 women can be formed from 7 men and 3 women

63.....confirm

Out of 7 men and 3 women , a group of 5 men and 2 women can be made by ${}^7C_5 \times {}^3C_2 = 63$

9. In how many ways a committee, consisting of 5 men and 6 women can be formed from 8 men and 10 women

11760.....confirm

Answer (Detailed Solution Below)

Option 4 : 11760

10.If we have three events A,B and C then for exhaustive events $P(A \cup B \cup C)$ will be equal to

$P(S)$confirm

11.For the independent events C and D if $P(C) = 0.25$ and $P(D) = 0.40$ then $P(C \text{ and } D) = ?$

$0.25 \times 0.40 = 0.1$,,,confirm

$$0.25 \times 0.4 =$$

$$0.1$$

12.If we roll a die four times then possible outcomes of the sample space are

$$6 \times 6 \times 6 \times 6 = 1296 \dots \text{confirm}$$

$$216 \times 6 =$$

$$1,296$$

13.The probability of drawing zero white ball from a bag containing 4 red, 8 black and 3 white balls is

$$0/15 = 0$$

14.In a coin tossing example we have only two possible outcomes a head or a tail this is an example of

Both of these

15.Complement of the event B will be

$$P(B^c) = 1 - P(B) \dots \text{confirm}$$

tion: The probability of the complement of an event is one minus the probability of the event.

$$\text{Complement: } P(A^c) = 1 - P(A)$$

16.If one card is selected at random from a deck of 52 playing cards. What is the probability that the card is a club or a force card or both

22/52confirm

of cards in a deck = 52
of clubs = 13
of face cards = 12
of face cards that are clubs = 3
Thus the total number of cards you are looking for is $13 + 12 - 3 = 22$.
Probability = number you are looking for divided by the total number.
 $= 22/52$ or $11/26$ which you can change to a decimal (or percentage) if you like.

Upvote · 4

17. Let A and B are two independent events If $P(A \cap B) = 0.12$ and $P(A) = 0.3$ then find $P(B)$.

$0.3 \times 0.4 = 0.12$ so $P(B) = 0.4$confirm

18. Probability of an impossible event is always

0....confirm

The probability of an impossible event is always 0.

19. A set which is the sub-set of every set is

Empty set or NULL set..both are confirm

Null set is the subset of all given sets.

20. The probability of a sure event is

1....confirm

The sure event is defined as an event which always happens. Hence, the probability of a sure event is always 1.

21. If a coin is tossed 3 times then probability that three tails appear simultaneously is equal to

1/8....confirm

Explanation:

Let us mark H for Heads and T for Tails.

The coin is flipped three times; the total number of outcomes = $2 \times 2 \times 2 = 8$.

Sample Space ($|\Omega|$) = {(H, H, H), (H, H, T), (H, T, H), (H, T, T), (T, H, H), (T, H, T), (T, T, H), (T, T, T)} = 8

Let X be the probability of getting all tails: $X = \{(T, T, T)\}$

$\Rightarrow |X| = 1$

$P(X) = |X| / |\Omega| = 1/8$.

22. What does an each outcome in the sample space regarded as

Both A and B....confirm

2. What does an each outcome in the sample space regarded as ?

- a. Sample point
- b. Element
- c. Both a & b
- d. None of the above

[View Answer / Hide Answer](#)

ANSWER: c. Both a & b

23. If $P(B|A)=0.25$ and $P(A \text{ and } B)=0.20$ then $P(A)$ is

$0.20/0.25=0.80$confirm

24. If a die is rolled what is the probability of getting an even number greater than 2?

$2/6 \Rightarrow 1/3 \dots \text{confirm}$

25. What is the Cartesian product of $A = \{1,2\}$ and $B = \{a,b\}$?

$\{(1,a),(2,a),(1,b),(2,b)\}$

26. If we roll a die then probability of getting a '2' will be

$1/6 \dots \text{confirm}$

27. If A and B are sets and $A \cup B = A \cap B$ then

$A=B$

28. Symbolically a conditional probability is

$P(A/B)$

29. From a pack of 52 cards two cards are drawn together at random. What is the probability of both the cards being kings

$1/221$

30. Two dice are thrown simultaneously. What is the probability of getting two numbers whose product is even

$1/2$

31. $P(\text{event}) = \text{No. of favorable outcomes} / \text{total no. of outcomes}$ is a definition of

Normal event

32. If a Player well shuffles the pack of 52 playing cards then the probability of a black card from 52 playing cards is

$1/2 \dots \text{confirm}$

33. The probability of a jack card from a well shuffled pack of 52 playing cards will be

$4/52$

34. In a drawer there are 5 black socks and 3 green socks. Two socks are picked randomly one after the other without replacement. What is the possibility that both the socks are black?

5/14....confirm

Number of Black socks = 5

Total socks = 5 + 3 = 8

First we draw one sock

Probability of it being black = $\frac{5}{8}$

Now a second sock is picked

Probability of its being black = $\frac{4}{7}$

Total Probability = $\frac{5}{8} \times \frac{4}{7} = \frac{5}{14}$

35. In a multiplication theorem P(A and B) equals (when events are not independent)

$$P(A) * P(A|B)$$

36. If a box contains six red, three blue and five pink ties then probability of blue ties will be equal to

3/14

37. A coin is tossed and a single 6-sided die is rolled. Find the probability of landing on the head side of the coin and rolling a 3 on the die

1/12

38. Total number of words formed by 2 vowels and 3 consonants taken from 4 vowels and 5 consonants is equal to

60

39. When the union of mutually exclusive events is equal to entire sample space it is called

Exclusive events.....confirm

Exhaustive Events: Events are said to be collectively exhaustive, when the union of mutually exclusive events is equal to the entire sample space S.

40. If $A = \{1, 2, 3, 4\}$ and $B = \{3, 4, 5, 6\}$ then $A \cap B$ will be
 $\{3, 4\}$

41. The classical definition of probability is not applicable when the assumption of _____ does not hold

Equally likely events....confirm

42. The probability of drawing a red jack from well shuffled pack of 52 playing cards is:

$\frac{2}{52} = \frac{1}{26}$confirm

There are 2 red Jacks out of 52 cards.
Therefore the probability = $\frac{2}{52} = \frac{1}{26}$.
28-Oct-2020

There are 2 black aces and 2 red jacks in a deck of 52.

43. The probability of drawing a red queen card from well shuffled pack of 52 playing cards is

$\frac{2}{52} = \frac{1}{26}$confirm

Solution

The correct option is B $\frac{1}{26}$

How many red queens are in a deck of 52 cards?

2

44.If a fair coin is tossed 2 times then probability that two heads appear is equal to

$\frac{1}{4}$confirm

Question

If a coin is tossed twice what is the probability of getting two heads together

[Open in App](#)

Solution

The sample space of two tossed coins is:

S: {(H,H),(H,T),(T,H),(T,T)}

Probability=(No. Of favourable outcomes)/(Total no. Of outcomes)

Here, from the sample space,

P(getting 2 heads when a coin is tossed twice)= $\frac{1}{4}$

45.If A and B are mutually exclusive events and $P(A) = \frac{4}{36}$ and $P(B) = \frac{6}{36}$ then $P(A \cup B)$ will be

$\frac{10}{36}$

46.If two pair dice are thrown the probability of getting a double six is

$\frac{1}{36}$

47.When two coins are tossed the probability of at least one head is

$\frac{3}{4}$

48.When a fair die is rolled then sample space consists of

6 outcomes....confirm

49.If we flip a coin five times then possible outcomes of the sample space are

32

50.The number of ways in which four books can be arranged on a shelf are

24

51.If A,B and C are three events and only one event of them must occur then $P(A) + P(B) + P(C)$.

1

52.A bag contains 10 white, 2 orange and 3 black balls. What is the probability of black balls?

$3/10+2+3 = 3/15$confirm

53.A set that contains all possible outcomes of a system is called as

Universal set....confirm

A set that contains all possible outcomes of a system is known as

▶ Finite Set

▶ Infinite Set

▶ **Universal Set**

▶ No of these

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54.Which of the following is not a possible probability

1.25

55.When two dice are rolled the number of possible sample points are

36

56.The conditional probability of the event A when event B has occurred is denoted by

$P(A/B)$

57. The simultaneous occurrence of two events is called

Joint probability.....confirm

58. The simultaneous occurrence of two events is called

Joint probability....confirm

59. The independent events can never be _____ events

mutually exclusive.....confirm

It is important to note here that mutually exclusive events cannot be independent

60. A letter is chosen at random from the word STATISTICS. The probability of getting a vowel is

$\frac{3}{10}$

61. If $P(A)=0.3$ and $P(B)=0.5$ then find $P(A \cup B)$ where A and B are mutually exclusive events

0.8

62. When two coins are tossed the probability of at least one head is

$\frac{3}{4}$

63. An event that contains only one sample point is called

Simple event

64. Symbolically a conditional probability is:

$P(A/B)$

65. Two mutually exclusive (disjoint) events

Cannot occur together....confirm

In probability theory, two events are said to be mutually exclusive if they cannot occur at the same time or simultaneously. In other words, mutually exclusive events are called

66.If the outcome of one event affects the outcome of another then the events are said to be

Dependent events

67.If a box contains two red and three green balls then probability of red balls will be equal to

$$\frac{2}{2+3} = \frac{2}{5} \dots \text{confirm}$$

68.Let A and B are two independent events. IF $P(A)=0.3$ and $P(B)=0.5$ then what will be probability of A intersection B?

$$0.3 \times 0.5 = 0.15 \dots \text{confirm}$$

69.A coin is tossed 4 times in succession. What is the probability that at least one head occurs?

$$\frac{15}{16}$$

70.If $P(A)=0.7$ and $P(B)=0.2$ then Find $(A \cup B)$ where A and B are mutually exclusive events

$$0.9$$

71.A card is drawn from a pack of 52 cards. The probability of getting a queen of club or a king of heart is

$$\frac{2}{52} = \frac{1}{26} \dots \text{confirm}$$

72.IF $p(A) = 0.75$, $P(B) = 0.35$ and $P(A \text{ and } B) = 0.20$ then $P(A|B)$ is

$$0.57$$

73.IF $p(A) = 0.45$, $P(B) = 0.35$ and $P(A \text{ and } B) = 0.25$ then $P(A|B)$ is

$$0.714$$

74. A standard deck of 52 cards is shuffled. What is the probability of choosing a card which is not a diamond

39/52

75. A set which is the sub-set of every set is

Empty set or NULL set..both are confirm

Null set is the subset of all given sets.

76. When a coin is tossed then sample space consists of

2 outcomes.....confirm

77. A club consists of four members. How many ways are there of selecting three officers president secretary and treasurer?

24

78. In a probability distributors, the sum of the probabilities is equal to

1

79. An event that contains only one sample points is called

Simple event.....confirm

80. In how many different ways can the letters of the word "LEADING" be arranged in such a way that the vowels always come together

720....confirm

The word 'LEADING' has 7 different letters. When the vowels EAI are always together, they can be supposed to form one letter. Then, we have to arrange the letters LNDG (EAI). Now, $5 (4 + 1 = 5)$ letters can be arranged in $5! = 120$ ways. The vowels (EAI) can be arranged among themselves in $3! = 6$ ways. Required number of ways = $(120 \times 6) = 720$.

81. There are 30 people in a group. If all shake hands with one another how many handshakes are possible

$$1+2+3+4+\dots+28+29= 435\dots\text{confirm}$$

As a result of these discoveries, students should realize that the number of handshakes for 30 people is $1 + 2 + 3 + \dots + 29 = 435$. Value all student suggestions but keep probing to

82. A fair die is rolled. Probability of getting even face given that face is less than 5 is given by

$$1/2$$

83. What is the Cartesian product of $A = \{1,2\}$ and $B=\{a,b\}$?

$$\{(1,a),(2,a),(1,b),(2,b)\}$$

84. The occurrence of sum of 11 when a period of die is thrown is an example of

Compound event

85. Three unbiased coins are tossed. The sample space is $S = \{ TTT, TTH, THT, HTT, THH, HTH, HHT, HHH \}$. What is the probability of getting at most two heads

$$1/2\dots\text{confirm}$$

If we toss three coins....

We will sample space, $S=\{HHH,HHT,HTH,HHT,HTT,THH,THT,TTT\}$

$$n(S)=8$$

$$P(\text{getting 2 heads})=n(\text{getting 2 heads})/n(s)$$

$$P(\text{getting 2 heads})=4/8=1/2$$

Ans is $1/2$

86. What a fair die is rolled then sample space consists of

36 outcomes

87.17 students are present in a class. In how many ways can they be made to stand in 2 circles of 8 and 9 students

17C9*8!*7!...confirm

Answer	Explanation
ANSWER: ${}^{17}C_9 \times 8! \times 7!$	

88. An event that contains only one sample point is called Simple event....confirm

Simple Event

An event that consists of only one sample point is called a simple or elementary event.

Example 5.3.3.

<https://www.sciencedirect.com/topics/mathematics/simple-event>

89. What is probability of drawing two clubs from a well shuffled pack of 52 cards

1/17....confirm

Total cards = 52 cards

Number of club cards = 13 Probability of 1st card being club card = $\frac{13}{52}$

Probability of 2nd card being club card = $\frac{12}{51}$

∴ Total Probability

$$= \frac{13}{52} \times \frac{12}{51}$$

$$= \frac{1}{17}$$

90. The probability of a jack card from a well shuffled pack of 52 playing cards will be

4/52....confirm

Number of possible outcomes

$$P(E) = 4/52 = 1/13$$

Hence the probability of getting a jack is $1/13$.

91. One card is drawn at random from a pack of 52 cards. What is the probability that the card drawn is a face card (look, queen, and king only)

3/13.....confirm

Correct option is A)

there are 52 cards, out of which there are 12 face cards.

$$P(\text{getting a face card}) = 12/52 = 3/13.$$

Answer (A) $3/13$

92. Find the number of subsets of the following set $\{x|x \text{ is a day of the week}\}$

128

93. In how many different ways can the letters of the word CORPORATION be arranged so that the vowels always come together

50400.....confirm

So, the correct answer is " $\Rightarrow 50,400$ ".

94. Which of the following pairs of A and B events are mutually exclusive?

A: the numbers above 100; B: the numbers less than -200

95. Symbolically a conditional probability is

$$P(A/B)$$

96. In how many ways a team of 11 players can be chosen from a total of 16 players

4368.....confirm

Solution

No of players = 16

No. of players to be selected = 11

$\therefore$ No of combination = ${}^{16}C_{11}$

$$= \frac{16!}{11!5!} = \frac{16 \times 15 \times 14 \times 13 \times 12}{5 \times 4 \times 3 \times 2} = 4368$$

97. In which approach to probability the outcomes are equally likely to occur.

Classical Probability....confirm

Classical probability assumes that all outcomes in the sample space are equally likely to occur.

98. If we flip a coin three times then the possible outcomes of the sample space are

HHH, HHT HTH HTT THH THT TTH TTT....confirm

The sample space of a sequence of three fair coin flips is all 23 possible sequences of outcomes: {HHH, HHT, HTH, HTT, THH, THT, TTH, TTT}.

99. A bag contains 12 red balls and 12 blue balls. A ball is drawn at random. The probability ball drawn is red is ?

$$12/12+12 = 12/24 = \frac{1}{2} \dots \text{confirm}$$

100. If two events a and B are not mutually exclusive then

$$P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$$

101. In a Venn diagram the overlap between two circles represents

The intersection of two sets

102. Given $P(A) = 0.4$, $P(B) = 0.5$ and $P(A \cup B) = 0.9$ then

A and B are mutually exclusive events

103. If a roll a die then probability of an even number will be

$\frac{3}{6}$

104. If one event is not affected by the outcome of the other event the two events are said to be

Independent.....confirm

Two events A and B are said to be independent if the fact that one event has occurred does not affect the probability that the other event will occur.

105. If $A = \{H, T\}$ then which of the following is power set of A?

$\{\}, \{H\}, \{T\}, \{H, T\}\}$confirm

The class of ALL subsets of a set A is called the **Power Set** of A and is denoted by $P(A)$. For example, if $A = \{H, T\}$, then $P(A) = \{\phi, \{H\}, \{T\}, \{H, T\}\}$.

106. The probability of an event always lies between

0 and 1.....confirm

About 21,000,000 results (0.57 seconds)

Probability as a number lies between 0 and 1 .

107. $P(A \text{ intersection } B)$ is equal to

$P(A) - P(B)$confirm

108. $P(A \text{ union } B)$ is equal to

$P(A) + P(B)$confirm

109. If a probability distribution the sum of the probabilities is equal to

1.....confirm

The sum of all probabilities for all possible values must equal 1. Furthermore, the probability for a particular value or range of values must be between 0 and 1. Probability distributions describe the dispersion of the values of a random variable.

110. If A and B are mutually exclusive events with $P(A)=0.25$ and $P(B)=0.50$ then $P(A \text{ or } B)=$

$$0.25+0.50 = 0.75.....confirm$$

111. A fair coin is tossed three times. What is the probability that at least one head appears?

$$8-1/8 = 7/8.....confirm$$

The probability of at least one head is 1 - probability of all tails. The probability of all 3 tails these being independent events - is $1/2 \times 1/2 \times 1/2 = 1/8$. Therefore, the probability of at least one head is $1 - 1/8 = 7/8$.

112. The number of ways in which four books can be arranged on a shelf are

24.....confirm

There are 24 ways to arrange the 4 items on a bookshelf.

<https://www.windham-schools.org/userfiles/Classes/PDF>

113. If $A = \{1,2,3,4\}$ and $B=\{3,4,5,6\}$ then $A-B$ will be

$\{1,2\}$confirm

114. Which of the following best expresses the general addition rule?

$$P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B).....confirm$$

What best expresses the general addition rule?

$$P(A \text{ or } B)=P(A)+P(B)-P(A \text{ and } B)$$

115. If a box contains two red and three yellow balloons then probability of yellow balloons will be equal to

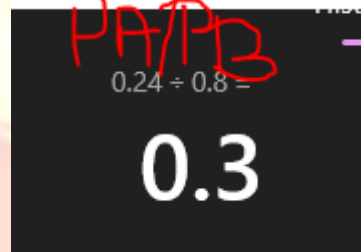
$$\frac{3}{5}$$

116. If a box contains two red and three green balls then probability of red balls will be equal to

$$\frac{2}{5}$$

117. If $P(A|B) - 0.3P(A|B) = 0.3$ and $P(B) = 0.8$ $P(b) = 0.8$ then

$$P(A) = 0.24 \dots \text{confirm}$$



Handwritten calculation: $P(A|B) = \frac{0.24}{0.8} = 0.3$

118. When an event is as likely to occur as other it is called

Equally likely event

119. In how many ways can a group of 5 men and 2 women be made out of a total of 7 men and 3 women?

$$63$$

120. Let A and b are two independent events if $P(A) = 0.3$ and $P(B) = 0.5$ then what will be the probability of A intersection B ?

$$0.3 * 0.5 = 0.15$$

121. A bag contains 3 red balls 4 green balls and 5 blue balls. One ball is take n from the bag and then replaced. Another ball is taken from the ball. What is the probability that the first ball is red and the second ball is blue?

$$\frac{5}{48}$$

122. A group consists of three persons A,B & C. How many ways are there of selecting a group of two persons out of these

$${}^3C_2 = 3 \dots \text{confirm}$$

No of ways of selecting 1 man and 2 woman = ${}^2C_1 \times {}^3C_2 = 2 \times 3 = 6$.

123. Among 18 articles six having minor defects and these have major defects. Determine the probability that an article selected at random has major defect.

$$1/6 \dots \text{confirm}$$

95. Among 18 articles, six having minor Defects and three have major defects. Determine the probability that an article selected at random has major defect.

a. $1/6$

124. In how many different ways can the letters of the word OPTICAL be arranged so that the vowels always come together?

$$720 \dots \text{confirm}$$

Question

In how many different ways can the letters of the word 'OPTICAL' be arranged so that the vowels always come together?

☐ A 120

☒ B 720

Correct Answer

☐ C 4320

Your Answer

☐ D 2160

☐ E None of these

125. What does the set comprising all possible outcomes of an experiment known as

Sure event.....confirm

1. What does the set comprising all possible outcomes of an experiment known as ?

- a. Null event
- b. Sure event
- c. Elementary event
- d. None of the above

[View Answer / Hide Answer](#)

ANSWER: b. Sure event

126. An urn contains 10 articles 2 having minor defects and three have major defects. Determine the probability that an article selected at random has minor defect

$$\frac{1}{2}$$

127. A graphical device used to list all possibilities of a sequence of outcomes in systematic way is called

Tree diagram.....confirm

MCQ 6.8

A graphical device used to list all possibilities of a sequence of outcomes in systematic way is called:

- (a) Probability histogram (b) Venn diagram (c) Pie diagram (d) Tree diagram

128. If $A = \{1,2,3,4\}$ and $B = \{3,4,5,6\}$ then $A \cup B$ will be

$\{1,2,3,4,5,6\}$confirm

129. Total number of words formed by 2 vowels and 3 consonants taken from 4 vowels and 5 consonants is equal to

$$720$$

130. When A and B are two non-empty and mutually exclusive events then

$$P(A \cup B) = P(A) + P(B)$$

131. For two mutually exclusive events A and B, $P(A)=0.2$ and $P(B)=0.4$ then $P(A \cup B)$ is

$$0.2+0.4= 0.6.....\text{confirm}$$

129. When a fair coin is tossed, what is the probability of getting head

$\frac{1}{2}.....\text{confirm}$

