

1) A discrete random variable  $X$  can take the values  $1, 2, \dots, 7$ . For these values the cumulative distribution function is defined by:  $F(x) = P(X \leq x) = \frac{x^2 + k}{95}$ ;  $x = 1, 2, \dots, 7$ . Find the value of  $k$ .

No, the answer is incorrect.

Score: 0

Accepted Answers:

(Type: Numeric) 46

1 point

2) An organization in Texas organizes lucky draw this month. 3 thousand tickets are sold for 2\$ each. Each has an equal chance of winning. 1 tickets will win 698\$, 3 tickets will win 353\$ and 4 tickets will win 63\$. Let, the random variable  $X$  denote the net gain from purchase of one ticket. What is the probability that  $X$  takes the value less than 353? (Enter the answer correct to 4 decimal place)

No, the answer is incorrect.

Score: 0

Accepted Answers:

(Type: Range) 0.9992,1.0000

1 point

3) In a group of 204 people, 29 are photographers and 175 are journalists. 12 people are randomly picked from a group of these 204 people. Let,  $Y$  be a random variable which represents the number of photographers. How many possible values can the random variable  $Y$  take?

No, the answer is incorrect.

Score: 0

Accepted Answers:

(Type: Numeric) 13

1 point

4) Which of the following is/are discrete random variables?

1 point

- Number of tires produced in an automotive tire factory every 30 minutes.
- The number of kernels(pieces) of popcorn in a 1 kg container.
- The time between customers entering a checkout lane at a retail store.
- The amount of rain recorded at an airport one day.
- The amount of liquid in a 2 litres bottle of soft drink.
- The number of no-shows for every 1000 reservations made with a commercial airline.

No, the answer is incorrect.

Score: 0

Accepted Answers:

Number of tires produced in an automotive tire factory every 30 minutes.  
The number of kernels(pieces) of popcorn in a 1 kg container.  
The number of no-shows for every 1000 reservations made with a commercial airline.

5) A biased coin with probability of heads 0.75 is tossed three times. Let  $X$  be a random variable that represents the number of head runs, a head run being defined as a consecutive occurrence of at least two heads. Then the probability mass function of  $X$  is given by: **1 point**

$P(X = x) = \begin{cases} 0.375 & \text{for } x = 0 \\ 0.625 & \text{for } x = 1 \end{cases}$

$P(X = x) = \begin{cases} 0.297 & \text{for } x = 0 \\ 0.703 & \text{for } x = 1 \end{cases}$

$P(X = x) = \begin{cases} 0.016 & \text{for } x = 0 \\ 0.140 & \text{for } x = 1 \\ 0.422 & \text{for } x = 2 \\ 0.422 & \text{for } x = 3 \end{cases}$

$P(X = x) = \begin{cases} 0.016 & \text{for } x = 0 \\ 0.844 & \text{for } x = 1 \\ 0.140 & \text{for } x = 2 \end{cases}$

No, the answer is incorrect.

Score: 0

Accepted Answers:

$P(X = x) = \begin{cases} 0.297 & \text{for } x = 0 \\ 0.703 & \text{for } x = 1 \end{cases}$

6) Nina has 6 music sessions in a week. She attends the sessions 6 days a week 59% of the time, 5 days 13% of the time, one day 7% of the time, and no days 21% of the time. Let,  $X$  be a discrete random variable representing the number of sessions she attends in a week. Suppose one week is randomly selected, what is the probability that the random variable  $X$  take the value at most 5?(Enter the answer correct to 2 decimal places)

No, the answer is incorrect.

Score: 0

Accepted Answers:

(Type: Range) 0.38,0.44

1 point

7) Find the value of  $k$  for which  $k\left(\frac{4}{7}\right)^x$  ( $x = 0, 1, 2, \dots$ ) is a pmf. (Enter the answer correct up to 2 decimal places)

No, the answer is incorrect.

Score: 0

Accepted Answers:

(Type: Range) 0.4,0.46

1 point

8) Using the information in previous question, calculate  $P(X = 2)$ . (Enter the answer correct up to 2 decimal places)

No, the answer is incorrect.

Score: 0

Accepted Answers:

(Type: Range) 0.11,0.17

1 point

9) From a box  $A$  containing 3 white and 6 black balls, 5 balls are transferred into an empty box  $B$ . Let  $X$  be a random variable that represents the number of white balls which are transferred from  $A$  to  $B$ . What value of random variable will have the least probability?

No, the answer is incorrect.

Score: 0

Accepted Answers:

(Type: Numeric) 0

1 point

10) The probability mass function of a random variable  $X$  is given by:

$$P(X = x) = \begin{cases} 3k^2 - 3k & \text{for } x = 0 \\ 2k^2 - 1 & \text{for } x = 1 \\ 0 & \text{otherwise} \end{cases}$$

Determine the value of  $k$  given  $k > 0$ .

No, the answer is incorrect.

Score: 0

Accepted Answers:

(Type: Numeric) 1

1 point