Quiz 2 (Probability)

Due 3 Nov at 23:10 **Points** 32 **Questions** 16
Available 3 Nov at 22:30 - 3 Nov at 23:10 40 minutes **Time limit** 38 Minutes

Instructions

This will be the second quiz on probability.

This quiz was locked 3 Nov at 23:10.

Attempt history

	Attempt	Time	Score
LATEST	Attempt 1	38 minutes	30 out of 32

Correct answers are hidden.

Score for this quiz: **30** out of 32
Submitted 3 Nov at 23:08
This attempt took 38 minutes.

Question 1

2 / 2 pts

Let X be a random variable which can take the value 1 with probability 1/3 and the value 2 with probability 2/3. What is the expectation of X?

- 1/2
- 5/3
- 4/3
- 7/4

Question 2

2 / 2 pts

Let X be a random variable which can take the value 1 with probability 1/3 and the value 2 with probability 2/3. What is the variance of X?

- 3
- 2/9
- 1/3
- 25/9

Question 3

2 / 2 pts

Let X be a random variable such that EX = 10 and Var X = 5. Let Y be a random variable defined as Y = 2X - 2. What is EY?

18

Question 4

2 / 2 pts

Let X be a random variable such that EX = 10 and Var X = 5. Let Y be a random variable defined as Y = 2X - 2. What is Var Y?

20

Question 5

2 / 2 pts

Suppose we toss a biased coin 9 times. The coin falls heads with probability 1/3 and tails with probability 2/3. Each toss is an independent trial. Let X denote the number of heads that turn up in the 9 tosses. What is the variance of X?

2

Question 6

2 / 2 pts

Let X, Y be two independent random variables. X takes the value 1 with probability 1/2 and the value 3 with probability 1/2. Y takes the value 0 with probability 1/3 and 2 with probability 2/3. What is the probability that X is greater than Y?

- 1/2
- 1/3
- 2/3
- 1/6

Question 7

2 / 2 pts

Suppose X and Y are two random variables. EX = 10 and Var X = 5. EY = 15 and Var Y = 10. What is E(X + Y)?

- 150

- 15
- Cannot be determined from the information given.
- 25

Question 8

2 / 2 pts

Suppose X and Y are two random variables. EX = 10 and Var X = 5. EY = 15 and Var Y = 10. What is Var (X + Y)?

- 15
- 150
- Cannot be determined from the information given.
- 12.5

Question 9

2 / 2 pts

Let X be a continuous random variable. The density function for X is given by: $f_X(x) = Cx$ when $0 \leq x \leq 2$ and $f_X(x) = 0$ everywhere else. What is the value of C for which $f_X(x)$ is a valid density function?

- 1/2
- 2
- 1
- 3/2

Question 10

2 / 2 pts

Let X be a continuous random variable. The density function for X is given by: $f_X(x) = Cx$ when $0 \leq x \leq 2$ and $f_X(x) = 0$ everywhere else. Let C be chosen such that $f_X(x)$ is a valid density function. What is EX?

- 2/3
- 3/2
- 1/2
- 1
- 4/3

Incorrect

Question 11

0 / 2 pts

Let X be a continuous random variable. The density function for X is given by: $f_X(x) = Cx$ when $0 \leq x \leq 2$ and $f_X(x) = 0$ everywhere else. Let C be chosen such that $f_X(x)$ is a valid density function. What is the probability that X is greater than EX?

- 2/9
- 5/9
- 4/3
- 2/3

Question 12

2 / 2 pts

Let X be a random variable that follows the Gaussian distribution and F(x) be the corresponding cdf (distribution function). Which of the following statements about F(x) is **not** true?

- F(x) is nondecreasing.
- F(x) is continuous.
- F(x) is nonnegative for all x.
- F(x) is maximised at the mean of X

Question 13

2 / 2 pts

Suppose we have a continuous random variable Y. The density function of y is given as follows: $f_Y(y) = C$, when $10 \leq y \leq 20$, and $f_Y(y) = 0$, for all other values of y. What is the variance of Y?

- 25
- 10
- 25/3
- 5/6
- 5

Question 14

2 / 2 pts

Suppose you are waiting for a bus at a bus stop. The waiting time for the bus follows an exponential distribution with expectation of 30

minutes. What is the probability that you will wait for at least 30 minutes?

- 1-e/30
- e/30
- 1/e
- 1- (1/e)

Question 15

2 / 2 pts

Suppose you are waiting for a bus at a bus stop. The waiting time for the bus follows an exponential distribution with expectation of 30 minutes. What is the probability that you will wait for at least 60 minutes? In the options below, e^2 denotes e^2.

- 1/(2e)
- 1- 1/(2e)
- 1- (1/e^2)
- e^2/30
- 1/(e^2)

Question 16

2 / 2 pts

Suppose you are waiting for a bus at a bus stop. The waiting time for the bus follows an exponential distribution with expectation of 30 minutes. Suppose you have waited for 30 minutes and the bus has not arrived so far. Given that you have already waited for 30 minutes, what

is the probability that the overall waiting time is at least 60 minutes? In the options below, e^2 denotes e^2.

- (●) 1/e
- ( ) e^2/30
- ( ) 1/(e^2)
- ( ) 1/(2e)
- ( ) e/30

Quiz score: **30** out of 32