

Random Variables and Probability Distributions

1. Are each of these variables discrete or continuous?

(Discrete, Continuous)

- The number of right answers in your statistics exam – (-----)
- Distance between your house and the nearest school – (-----)
- Number of stocks owned – (-----)
- Time taken to get to work in the morning – (-----)

2. Are the following statements true or false?

- The probability distribution for a discrete random variable X gives the probability that X takes a value less than or equal to the value x – (True/False)
- The following is a valid probability distribution for X is – (True/False)

X	$P(X)$
1	0.2
2	0.3
3	0.2
4	0.4

- The probability distribution of a discrete random variable can be expressed as a graph. – (True/False)
- The CDF of a discrete random variable is a list of probabilities. – (True/False)

3. Let X be the value obtained from rolling a die. (X takes values 1,2,3,4,5 or 6 with equal probability.) The mean and variance of X are, respectively,

- 3, 2.9
- 3.5, 2.9
- 3.5, 1.7
- 3.5, 2.7

4. Which of the following are binomial random variables?

- You roll 6 dice. X is the number of dice taking values greater than 4. - (True/False)
- A die is rolled until a 6 comes up. Let X be the random variable denoting the number of times you have to roll the die. - (True/False)
- The number of defective computers from 500 randomly selected computers where the defective rate is 1% - (True/False)

5. If a life insurance salesman sells on average 3 life insurance policies per week, assuming that there are 5 working days per week, the probability that in a given day he will sell one policy is:

- Not enough information to compute
- 0.33
- 0.1
- 0.15