Congratulations! You passed!
TO PASS 75% or higher

Keep Learning

GRADE
100%

Lesson 3.1

LATEST SUBMISSION GRADE
100%

1. When using random variable notation, big X denotes _____. 1 / 1 point

- (•) a random variable
- ( ) a conditional probability
- ( ) distributed as
- ( ) a realization of a random variable
- ( ) the expectation of a random variable
- ( ) approximately equal to

✓ **Correct**

2. When using random variable notation, little x denotes _____. 1 / 1 point

- ( ) a random variable
- ( ) a conditional probability
- ( ) distributed as
- (•) a realization of a random variable
- ( ) the expectation of a random variable
- ( ) approximately equal to

✓ **Correct**
It is a possible value the random variable can take

3. When using random variable notation, X ~ denotes _____. 1 / 1 point

- ( ) a random variable
- ( ) a conditional probability
- (•) distributed as
- ( ) a realization of a random variable
- ( ) the expectation of a random variable
- ( ) approximately equal to

✓ **Correct**

4. What is the value of $f(x) = -5I_{\{x>2\}}(x) + xI_{\{x<-1\}}(x)$ when $x = 3$? 1 / 1 point

-5

✓ **Correct**
Only the first term is evaluated as non-zero.

5. What is the value of $f(x) = -5I_{\{x>2\}}(x) + xI_{\{x<-1\}}(x)$ when $x = 0$? 1 / 1 point

0

Correct
All indicator functions evaluate to zero.

6. Which of the following scenarios could we appropriately model using a Bernoulli random variable? **1 / 1 point**

- Predicting the number of goals scored in a hockey match
- Predicting the weight of a typical hockey player
- Predicting whether your hockey team wins its next game (tie counts as a loss)
- Predicting the number of wins in a series of three games against a single opponent (ties count as losses)

Correct
Whether they win is a binary outcome which can only take on values $\{0, 1\}$.

7. Calculate the expected value of the following random variable: X takes on values $\{0, 1, 2, 3\}$ with corresponding probabilities $\{0.5, 0.2, 0.2, 0.1\}$. Round your answer to one decimal place. **1 / 1 point**

0.9

Correct
This is $0(.5) + 1(.2) + 2(.2) + 3(.1)$.

8. Which of the following scenarios could we appropriately model using a binomial random variable (with n > 1)? **1 / 1 point**

- Predicting whether your hockey team wins its next game (tie counts as a loss)
- Predicting the weight of a typical hockey player
- Predicting the number of goals scored in a hockey match
- Predicting the number of wins in a series of three games against a single opponent (ties count as losses)

Correct
The binomial model assumes a fixed number of independent trials, each with the same probability of success.

9. Suppose $X \sim \text{Binomial}(3, 0.2)$. Calculate $P(X = 0)$. Round your answer to two decimal places. **1 / 1 point**

0.51

Correct
This is $P(X = 0) = \binom{3}{0} 0.2^0 0.8^3$.

10. Suppose $X \sim \text{Binomial}(3, 0.2)$. Calculate $P(X \leq 2)$. Round your answer to two decimal places. **1 / 1 point**

0.99

Correct
This is $P(X = 0) + P(X = 1) + P(X = 2)$

$$= \binom{3}{0} 0.2^0 0.8^3 + \binom{3}{1} 0.2^1 0.8^2 + \binom{3}{2} 0.2^2 0.8^1$$

$$= 1 - P(X = 3)$$