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## Properties of Expectations - Quiz

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### Question 1

1/1 point (graded)

True or False: The expectation of a sum of random variables is equal to the sum of the expectations of each of those random variables.

☒ True ✓

☐ False

### Explanation


This is true. Given that  $Y$  is represented as a sum of several random variables,  $X_1, X_2, \dots, X_n$ , then the expectation of  $Y$  is given by the sum of the expectations of  $X_1, X_2, \dots, X_n$ . For example, if  $Y = X_1 + X_2 + X_3$ , then  $E[Y] = E[X_1] + E[X_2] + E[X_3]$ . This is one of the useful properties of expectation given in class.

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▼ **Module 5: Moments of a Random Variable, Applications to Auctions, & Intro to Regression**


**Moments of a Distribution and Auctions**

Finger Exercises due Oct 31, 2016 at 05:00 IST 

**Expectation, Variance, and an Introduction to Regression**

Finger Exercises due Oct 31, 2016 at 05:00 IST 

**Module 5: Homework**

Homework due Oct 24, 2016 at 05:00 IST 

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✓ Correct (1/1 point)

## Question 2

1/1 point (graded)

Suppose that you have a function,  $Y = 6X_1 + 3X_2 + 2X_3$  and you know that  $E[X_1] = 3$ ,  $E[X_2] = 4$  and  $E[X_3] = 1$ . Using what you know about the properties of expectation, what is the expectation of Y?

✓ Answer: 32

## Explanation

The expectation of Y can be calculated as follows:

$$E[Y] = 6 * E[X_1] + 3 * E[X_2] + 2 * E[X_3] = 6 * 3 + 3 * 4 + 2 * 1 = 32.$$

You have used 1 of 2 attempts

✓ Correct (1/1 point)

## Question 3

1/1 point (graded)

True or False: If  $Y = X_1 * X_2$ , then it is always true that  $E[Y] = E[X_1] * E[X_2]$ .

☐ a. True

☒ b. False 

### Explanation

This is only true in cases where  $X_1$  and  $X_2$  are independent.

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