**Quiz 1**
**Econ 526 - Introduction to Econometrics**

**Name:**

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SECTION B - TRUE OR FALSE

1. Let $X$ be a random variable. Among the measures of central tendency of the distribution of $X$ we have $E(X)$ and $Med(X)$.
   ○ True    ○ False

2. Let $X$ be a random variable with $E[X] = 4$ and $Var[X] = 1$. Then $E[X^2] = 16$.
   ○ True    ○ False

3. Let $X$ and $Y$ be two independent random variables, such that $E[X] = 4$, $E[Y] = 5$, $Var[X] = 1$ and $Var[Y] = 2$. Then $Cov(X, Y) = 0$.
   ○ True    ○ False

4. Let $X$ and $Y$ be two random variables. Then $Var(X + Y) = Var(X) + Var(Y)$. *Notice that the question does NOT provide any information if $X$ and $Y$ are independent. Don't assume anything not provided!*
   ○ True    ○ False

5. Let $X$ and $Y$ be two random variables. If $Cov(X, Y) = 0$, then $X$ and $Y$ are independent.
   ○ True    ○ False

SECTION C - SHORT ANSWER

1. Let $X$ be a random variable and

$$\bar{X} = \sum_{i=1}^{n} \frac{X_i}{n}$$

be its sample average. Show that the sum of the deviations from the sample average is always equal to 0, which means that $\sum_{i=1}^{n}(X_i - \bar{X}) = 0$.