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## Useful Facts about Unbiased Estimators - Quiz

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### Question 1

1.0/1.0 point (graded)

Which of the following estimators for the population mean and population variance are unbiased for an i.i.d. sample? (Select all that apply.)

☐ a. Population mean:  $\frac{n}{2} \sum_{i=1}^n X_i$

☐ b. Population mean:  $\frac{1}{2} \max\{X_1, X_2, \dots, X_n\}$

☐ c. Population variance:  $\frac{1}{n} \sum (X_i - \bar{X}_n)^2$

☒ d. Population variance:  $\frac{1}{n-1} \sum (X_i - \bar{X}_n)^2$




### Explanation


In this lecture segment, we learnt that the sample mean and sample variance are unbiased estimators of the population mean and population variance, respectively, for an i.i.d. sample. Neither (a) nor (b) are the correct formulas for sample mean. Out of (c) and (d), (d) is the correct formula for the unbiased

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### **Confidence Intervals and Hypothesis Testing**

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sample variance.

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