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## Estimation: An Example - Quiz

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### Question 1

1/1 point (graded)

For the example distribution in lecture:

Suppose  $X \sim U[0, \theta]$

$$f_x(x) = \begin{cases} \frac{1}{\theta}, & 0 < x < \theta \\ 0, & \text{otherwise} \end{cases}$$


What are reasonable ways to estimate  $\theta$ ? (Select all that apply)

- ☐ a. Compute the minimum of the sample
- ☒ b. Compute the maximum ( $n^{\text{th}}$  order statistic) of the sample ✓
- ☐ c. Compute the sample mean and divide by 2


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☒ d. Compute the sample mean and multiply by 2 




#### Explanation

The maximum will be a reasonable estimate, because  $\theta$  is the maximum value that the distribution can take on. Since the expectation of the sample mean in this distribution is  $\frac{\theta}{2}$ , multiplying the sample mean by 2 will yield a reasonable estimate  $\theta$ . The minimum of the sample will be close to zero. Dividing the sample mean by two will give us an expected value of  $\frac{\theta}{4}$ , which would not be a reasonable estimate of  $\theta$ .

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You have used 1 of 2 attempts

 Correct (1/1 point)

#### Discussion

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