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## Criteria for Assessing Estimation - Quiz

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### Question 1

1/1 point (graded)

An estimator is unbiased if:

- ☐ a.  $\hat{\theta}$  has a normal distribution
- ☒ b.  $E(\hat{\theta}) = \theta$  for all  $\theta$  ✓
- ☐ c.  $E(\hat{\theta}) = \mu$  for all  $\theta$
- ☐ d.  $\hat{\theta}$  has a uniform distribution


### Explanation

As shown in the lecture slides, the expected value of the estimates from an unbiased estimator must be equal to the parameter of interest. The shape of the distribution of these estimates is irrelevant, so a. and d. are incorrect. Having the expected value of the estimates be equal to  $\mu$  will make the estimator biased when estimating a parameter other than  $\mu$ , so c. is incorrect.


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✓ Correct (1/1 point)

## Question 2

1 point possible (graded)

True or False: If you are estimating the mean of a normal distribution from an i.i.d. sample, having  $R$  randomly generate a number from this distribution is an unbiased estimator.

☒ a. True ✓

☐ b. False ✗

## Explanation

While this method is unlikely to be accurate, the expected value of randomly drawing a number from a normal distribution would be the mean of that distribution, so  $E(\hat{\theta}) = \theta$ .

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✗ Incorrect (0/1 point)

## Discussion

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