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Lesson 10

Quiz • 20 min **Go to next item**

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Lesson 10

Due Nov 15, 1:59 AM EST **Attempts** 4 every 8 hours

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1. For Questions 1-6, consider the thermometer calibration problem from the quiz in Lesson 6. **1 / 1 point**

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Suppose you are trying to calibrate a thermometer by testing the temperature it reads when water begins to boil. Because of natural variation, you take n independent measurements (experiments) to estimate θ, the mean temperature reading for this thermometer at the boiling point. Assume a normal likelihood for these data, with mean θ and known variance $\sigma^2 = 0.25$ (which corresponds to a standard deviation of 0.5 degrees Celsius).

Suppose your prior for θ is (conveniently) the conjugate normal. You know that at sea level, water should boil at 100 degrees Celsius, so you set the prior mean at $m_0 = 100$.

- If you specify a prior variance s_0^2 for θ, which of the following accurately describes the model for your measurements Y_i, $i = 1, \ldots, n$?

- $Y_i \mid \theta, \sigma^2 \overset{\text{iid}}{\sim} \text{N}(\theta, \sigma^2)\,; \sigma^2 \sim \text{Inverse-Gamma}(100, s_0^2)$