# Week 3 Practice Quiz

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**4/4** points earned (100%)

Excellent!

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1 / 1 points

1.
Fill in the blank: Under a **0/1 loss function**, the summary statistic that minimizes the posterior expected loss is the _____ of the posterior.

- Mean
- Median
- Mode

**Correct**
Correct Answer. The mode is the summary statistic that minimizes the posterior expected loss under the 0/1 loss function.

This question refers to the following learning objective(s):

- Understand the concept of loss functions and how they relate to Bayesian decision making.

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1 / 1 points

2.

True or False: If the posterior distribution is normally distributed, the estimate that minimizes posterior expected loss is the same, regardless of whether the loss function is 0/1, linear, or quadratic.

- [x] True

**Correct**
For a normal distribution centered at $\mu$, the mean, median, and mode are all equal to $\mu$. Hence, under all three loss functions, the optimal estimate remains the same.

This question refers to the following learning objective(s):

- Make optimal decisions given a posterior distribution and a loss function.

- [ ] False

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1 / 1 points

3.
Which of the following statements is **false**?

- [x] A Bayes factor of less than .01 suggests that the evidence in favor of one of the hypotheses is barely worth mentioning.

**Correct**
Correct Answer. A Bayes factor of less than .01 will yield strong evidence in favor of one of the hypotheses.

This question refers to the following learning objective(s):

- Compare multiple hypotheses using Bayes Factors.

- [ ] The Bayes factor is not sensitive to the choice of prior distribution on hypotheses.

- [ ] The Bayes factor represents the ratio of the marginal likelihoods of observing the data under the two hypotheses.

- [ ]

A Bayes factor of greater than 100 suggests strong evidence in favor of one of the hypotheses.

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1 / 1 points

4.

Let's revisit the snack example introduced in video "Comparing two independent means". Recall that 44 volunteers were assigned to a treatment and control group, with 22 in each group. Consumption of cookies (in g) after lunch was measured for each of the volunteers. In the treatment group, mean consumption was 52.1 with standard deviation 45.1. In the control group, mean consumption was 27.1 with standard deviation 26.4.

Which of the following assumptions used in the analysis of the data is most questionable?

- Cookie consumption is independent within groups.
- The variance differs between groups.
- Cookie consumption is normally distributed.

**Correct**

This question refers to the following learning objective(s):

- Identify assumptions relating to a statistical inference.

- Cookie consumption is independent between groups.

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