1. What is a factor?

A factor is any variable used to predict or explain the response variable.

A factor is a discrete, categorical variable used to predict or explain the response variable.

A factor is a continuous variable used to predict or explain the response variable.

A factor is a fixed constant in an ANOVA model that is estimated from experimental data.

2. An ANCOVA model includes additional variables over and above ANOVA. These additional variables are sometimes referred to as:

Predictors

Explanatory variables

Features

Covariates

3. The means model for one-way ANOVA is given as:

$$Y_{i,j} = \mu_j + \varepsilon_{i,j}, \text{ where } \varepsilon_{i,j} \overset{iid}{\sim} N(0, \sigma^2),$$

In this model, μ_j can be interpreted as the mean of the response over all units in the sample.

True

False

4. The effects model for one-way ANOVA is given as:

$$Y_{i,j} = \mu + \tau_j + \varepsilon_{i,j}, \text{ where } \varepsilon_{i,j} \overset{iid}{\sim} N(0, \sigma^2).$$

In this model, μ can be interpreted as the mean response limited to the units in j^{th} level of the factor, τ_j.

True

False

5. In a 2014 paper titled "Involving Children in Meal Preparation," published in the journal *Appetite*, researchers hoped to determine the effect of child participation in meal preparation (factor with two levels) on caloric intake (response). In one group, children participated in the preparation of a meal. In a second group, children did not participate.

Which of the following is a correct interpretation of μ in the one-way ANOVA effects model?

μ is the population mean of caloric intake in the group where children helped prepare meals.

μ is the sample mean of caloric intake, across both meal preparation groups.

μ is the population mean of caloric intake in the group where children did not help prepare meals.

μ is the population mean of caloric intake, across both meal preparation groups.

6. In a 2014 paper titled "Involving Children in Meal Preparation," published in the journal *Appetite*, researchers hoped to determine the effect of child participation in meal preparation (factor with two levels) on caloric intake (response). In group one, children participated in the preparation of a meal. In group two, children did not participate.

Which of the following is a correct interpretation of μ_2 in the one-way ANOVA means model?

μ_2 is the mean of the caloric intake in the meal preparation group where children did not participate.

μ_2 is the mean of the meal preparation variable where children did not participate.

μ_2 is the mean of the caloric intake in the meal preparation group where children did participate.

None of the above are correct.