1. Consider a linear regression model with one three-level categorical predictor variable and a continuous outcome variable. Choose the most appropriate equation(s) to represent this model:

a. Yi = β\_0 + β\_1X\_i1

b. Yi = β\_0 + β\_1X\_i1 + β\_2X\_i2

c. Yi = β\_0 + β\_1Xi\_1 + β\_2X\_i2 + β\_3X\_i3

d. Yi = β\_1Xi\_1 + β\_2X\_i2 + β\_3X\_i3

2. Consider the model in problem 1b. If X\_i1 = 1 when the ith observation is a member of “group 1” and X\_i2 = 1 when the ith observation is a member of “group 2”, which parameter or linear combination of parameters represents the “expected value of Y for group 3”?

a. β\_0

b. β\_1

b. β\_2

c. β\_0 + β\_2

d. β\_1 + β\_2

3. Consider the model in problem 1b. If X\_i1 = 1 when the ith observation is a member of “group 1” and X\_i2 = 1 when the ith observation is a member of “group 2”, which parameter or linear combination of parameters represents the “expected value of Y for group 2”?

a. β\_0

b. β\_1

b. β\_2

c. β\_0 + β\_2

d. β\_1 + β\_2

4. T/F If collinearity is present it may generate bias in our estimates of the betas, but it will not impact the uncertainty in our beta estimates.