

Let's check - the following are the adjusted means output by the ANCOVA model:

Water Group = 7.33

Double Espresso Group = 6.32

Single Espresso Group = 6.87

Difference between the Water and Double Espresso Group is 1.01 and the difference between the Water and Single Espresso Group is 0.46...

We can work out the mean of our reference group (Water) by plugging in the values to our equation - note that Gaming is not a factor and we need to enter the mean of this variable (which is 12.62296). So,...

$$\text{Ability} = \text{Intercept} + \beta_1(\text{Gaming}) + \beta_2(\text{Double Espresso}) + \beta_3(\text{Single Espresso}) + \varepsilon$$

$$\text{Ability} = -3.4498 + 0.8538(12.62296) + (-1.0085)(0) + (-0.4563)(0) + \varepsilon$$

$$\text{Ability} = -3.4498 + 10.777 + \varepsilon$$

$$\text{Ability} = 7.33 + \varepsilon$$

7.33 is the adjusted mean for the Water group...which is what we had from calling the `emmeans` function following the ANCOVA...