- First we need to use dummy coding of the levels of our experimental factor - which is the default coding in R for factors…

```
> # Set up the Water level as the reference level and check the contrasts
> cond$Condition <- relevel(cond$Condition, ref = 3)
> contrasts(cond$Condition)
                   Double Espresso Single Espresso
Water                            0               0
Double Espresso                  1               0
Single Espresso                  0               1
```

Ability = Intercept + $\beta 1$(Double Espresso) + $\beta 2$(Single Espresso) + ε

The Intercept is our reference category (Water) with coding (0, 0), while the dummy coding for Double Espresso is (1, 0) and for Single Espresso (0, 1)

Ability = Intercept + $\beta 1$(Double Espresso) + $\beta 2$(Single Espresso) + ε

We want to calculate $\beta 1$ and $\beta 2$

```
> lm1 <- lm(Ability ~ Condition, data = cond)
> lm1

Call:
lm(formula = Ability ~ Condition, data = cond)

Coefficients:
            (Intercept)   ConditionDouble Espresso   ConditionSingle Espresso
                  4.817                      4.199                      1.871
```

The intercept is 4.817 (which is the mean of our Water group), $\beta 1$ is 4.2, and $\beta 2$ is 1.87