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| **Chapter:** | 5 |

**Maximum 2 pages! Do not delete the page number in the footer.**

**(a)**

quality.df <- read.table("P:\\ST2053\\Previous Exam Datasets\\18-19\\Q5 Quality Means.txt", header = TRUE)

attach(quality.df)

quality.lm <- lm(MeanWeight ~ Week, data = quality.df, weights= n)

summary(quality.lm)

Weighted regression is required because the weight of the item is a mean based on differing ni.

If the ith response yi(Weight of item) is an average of ni equally variable observations, then

Var(yi) = [σ](https://en.wiktionary.org/wiki/%CF%83)^2/ni = [σ](https://en.wiktionary.org/wiki/%CF%83)^2/wi,

then wi = ni

The estimate of coefficient β1 in this model is 1.0804.

This means an increase in Week of 1 is associated with an increase in Weight of 1.0804.

**(b)**

Rss = 294.6

N = add