

STAT 217: Handout 12-3

The response is the length of odontoblasts (teeth) in each of 10 guinea pigs at each of three dose levels of Vitamin C (0.5, 1, and 2 mg) with each of two delivery methods (orange juice or pill).

```
data(ToothGrowth)
lm.tooth <- lm(len~supp+dose+supp*dose, data=ToothGrowth)
summary(lm.tooth)

##
## Call:
## lm(formula = len ~ supp + dose + supp * dose, data = ToothGrowth)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -8.23  -2.85   0.05   2.29   7.94
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)    11.55      1.58     7.30 1.1e-09
## suppVC        -8.25      2.24    -3.69 0.00051
## dose           7.81      1.20     6.53 2.0e-08
## suppVC:dose     3.90      1.69     2.31 0.02463
##
## Residual standard error: 4.08 on 56 degrees of freedom
## Multiple R-squared:  0.73, Adjusted R-squared:  0.715
## F-statistic: 50.4 on 3 and 56 DF,  p-value: 6.52e-16
```

```
anova(lm.tooth)

## Analysis of Variance Table
##
## Response: len
##           Df Sum Sq Mean Sq F value    Pr(>F)
## supp       1    205      205    12.32 0.00089
## dose       1   2224     2224   133.42 < 2e-16
## supp:dose   1     89       89     5.33 0.02463
## Residuals 56    934       17
```