The dataset is in the `Stats2Data` package and is named `Perch`. (For datasets in this package, you need to use the `data` function to load them and make them accessible.)

```r
> data(Perch)
> head(Perch)

    Obs Weight Length Width
1    104   5.9    8.8   1.4
2    105  32.0   14.7   2.0
3    106  40.0   16.0   2.4
4    107  51.5   17.2   2.6
5    108  70.0   18.5   2.9
6    109 100.0   19.2   3.3
```

How does the weight of a perch depend on its length and width?
Comparing two models: If one model, `modsmall`, is nested in another, `modlarge`, we would like to decide whether the additional variables in the larger model are useful in explaining variation. There is an $F$-statistic to test this.

$n$ number of cases
$p$ number of terms in larger model
$q$ number of terms in smaller model
$\text{SSE}_{\text{small}}$ sums of squares of residuals of smaller model
$\text{SSE}_{\text{large}}$ sum of squares of residuals of larger model

$$F = \frac{(\text{SSE}_{\text{small}} - \text{SSE}_{\text{large}}) / (p - q)}{\text{SSE}_{\text{large}} / (n - p)}$$

$F$ is approximately 1 if the additional terms in the larger model are not useful in explaining the variation in the response.

```r
> anova(modsmall, modlarge)

Analysis of Variance Table

Model 1: y ~ z
Model 2: y ~ x + z

 Res.Df RSS Df Sum of Sq F Pr(>F)     
1    17 13.5
2    14 12.3 3  1.21 0.46 0.72
```

Homework for Friday, April 19

The dataset `FirstYearGPA` in the `Stat2Data` package (remember use `data(FirstYearGPA)`) has data on the first year GPA of a number of students at a certain college. There are a number of variables that can be used to make a predictive model for first year GPA. Consider various models, choose one, and defend your choice.