

1. Consider a data set that includes soybean yield (in kg) and the amount of light the plants received (in hours) over a period of time:

```
#Yield = c(14, 16, 22, 18, 22, 24, 28, 32, 36, 40)
```

```
#Light = c(4, 5, 6, 7, 8, 9, 10, 11, 12, 13)
```

- a) Fit a simple linear regression model.
- b) Calculate the model coefficients.
- c) Visualize the regression fit on the scatterplot.
- d) Evaluate the quality of the model fit, e.g., by calculating the coefficient of determination (R-squared) and plotting residuals.

2. Consider a fictitious data set that relates plant growth (cm) to the amount of nitrogen (in g) over a period of time:

```
#nitrog <- c(150, 180, 150, 200, 250, 300)
```

```
#plant_growth <- c(15, 25, 30, 45, 50, 70)
```

- a) Create a data frame with the data
- b) Fit a linear regression model using the `lm()` function
- c) Summary of the regression model
- d) Plot the data points and the regression line
- e) ANOVA for model significance