Creating a Scatter Diagram with the Regression Line Plotted Using R

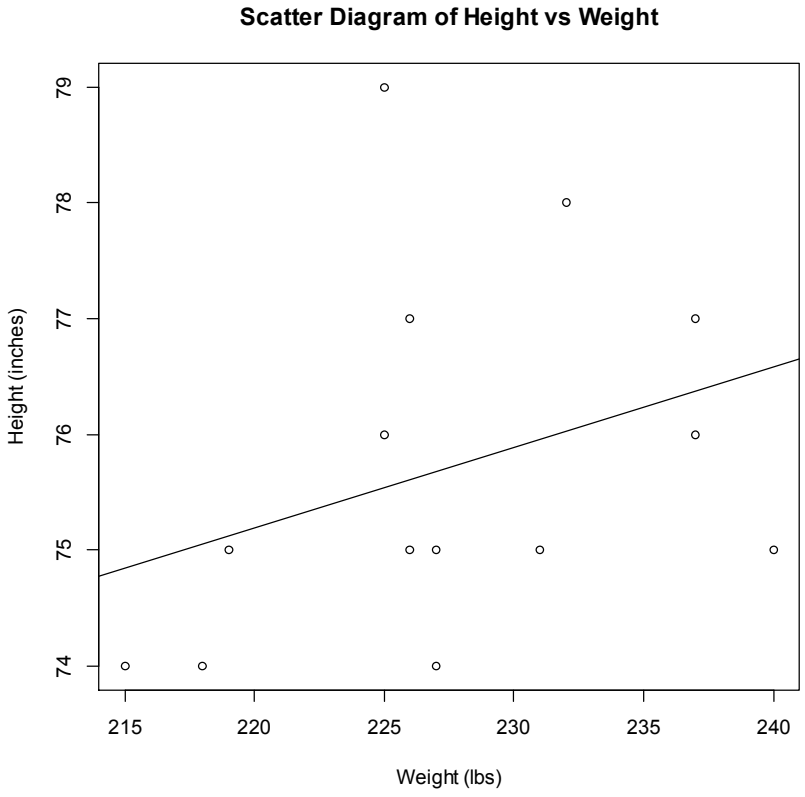
The data here are heights in inches and weights in pounds for NFL quarterback prospects from Navidi and Monk, *Elementary Statistics*, 2nd edition, McGraw-Hill Education 2016, page 162.

Height	75	78	75	79	75	76	77	77	74	75	74	76	75	74
Weight	227	232	231	225	240	225	226	237	227	219	218	237	226	215

Open the R program and type in the following. The first greater than sign (**>**) appears automatically. If you have written a complete command, R will run the command and then a greater than sign will appear on the next line when the "ENTER" key is pressed. If the command is not complete, a plus sign (**+**) will appear when the "ENTER" key is pressed.

```
> hgt <- c(75, 78, 75, 79, 75, 76, 77, 77, 74, 75, 74, 76, 75, 74)
> wgt <- c(227, 232, 231, 225, 240, 225, 226, 237, 227, 219, 218, 237, 226, 215)
> result <- lm(hgt ~ wgt)
> plot(wgt, hgt, type="p", main="Scatter Diagram of Height vs Weight",
+ xlab="Weight (lbs)", ylab="Height (inches)")
> abline(result)
> result
```

When you press "ENTER" after the last line, the dot plot will appear as shown below.



Right click on the graph and choose “Copy as Metafile”. Then paste the graph into a Microsoft Word document. If you right click on the pasted graph, and then choose “Text Wrapping” and “Behind Text”, you will be able to move the pasted graph around behind the text on the page.

The last line of code, “> result”, shows you the least squares regression line for the two variables. For this example, the least squares regression line is given by the following.

```
Call:
lm(formula = hgt ~ wgt)

Coefficients:
(Intercept)         wgt
59.91344      0.06945
```

So the equation of the least squares regression line would be

height = 0.06945 x weight + 59.91344

or

$$y = 0.06945x + 59.91344$$

The equation of the least squares regression line will be useful to know later in the course when we test for significant linear correlation.