1.

For weight vs mpg the graph is linearly decreasing

For mpg vs displacement it is linearly decreasing. Similar acc vs mpg and horse power vs horse power vs acceleration

For displacement vs weight it is linearly increasing. Similar can be observed for horse power vs weight and mpg vs acceleration

2.

a.) we will find the Multiple regression for mpg and rest of the data set of “Auto” using the lm function.

The variable “name” is deleted from the regression as it doesnot have any effect on mpg

And then the summary of that function is taken out.

From the summary of the significant model:

displacement, weight, year, origin appear to have a significant relationship to the response.

b.)

coefficient variable for “year” suggests that it is directly proportional to mpg, since it is positive (+0.750773)

which also states that mpg value increases with each year that passes

c.)

find the summary of different models using the lm function using different combinations of \* and :

from the summary of all the four models, it is observed that model4 has significant values for the coefficients

4.

a.)for scatter plots use the function pairs(Boston) and get a scattered plot for each of them.

some graphs appear to have a dense plots, which specifies that there may be a relation between them

for eg: istat vs medv it can be observed they are inversely related. similar for nox vs dis and indus vs dis

indus vs medv, nox vs medv

Also it can be observed that rm vs medv are directly related. similar for nox vs rad and indus vs rad

b.)use the multiple regression using crime as predictive data and the rest of the data as explanatory data

zn, dis, rad, black, medv has a significant relationship to the response.

following points can be observed from the graph for crim VS:

it is constant for chas, age and zn

it is slightly increasing for indus, nox, rad, tax, ptratio, istat

it is slightly decreasing for rm, dis, black, medv

c.)plot the histograms for crimerate vs suburbs, taxrates vs suburbs and Pupil-teacher ratio vs suburbs and the histograms are then analyzed accordingly

the following observations are made:

10.6% has crime rate greater than 10

0.7% has crime rate greater than 50

72.9 % has taxes less than 500

27.07% has taxes greater than 500

39.7% has PT ratio less than 20

60.27% has PT ratio greater than 20

d.) There are 64 suburbs with more than 7 rooms per dwelling

There are 13 suburbs with more than 8 rooms per dwelling