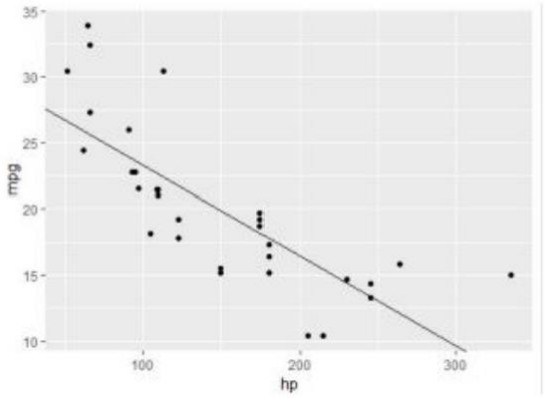
COP2073C Practice Exercise 11

For this exercise you will need to install and load the tidyverse and modelr packages.

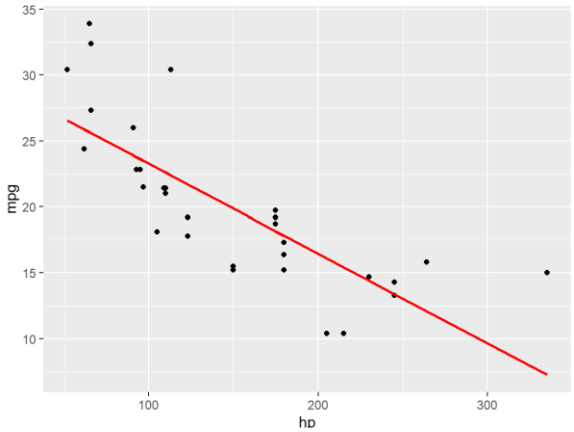
In this exercise we will use the tidyverse, modelr, and base R functions to practice analyzing a linear relationship.

Instructions:

1. Create a tibble using the hp (horsepower) and mpg (miles per gallon) columns of the mtcars dataset.
2. Use the lm function to determine the coefficients of the linear relationship between the two variables (mpg ~ hp).
3. Print the coefficients (hint: use the coef() function).
4. Plot the points and the fitted line as shown here:

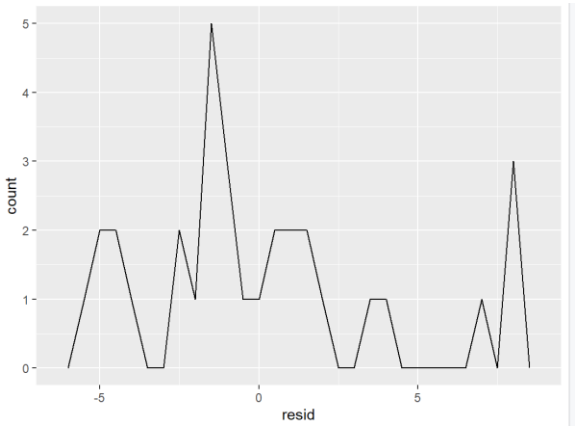


5. Create a data grid from the tibble's horsepower (hp) column, then add predictions using the grid.
6. Plot the resulting values as shown below and compare to the plot created from the lm function coefficients.



7. Calculate the residuals and print them.

8. Plot a frequency polygon for the residuals as shown here:



Expected Output:

```
coef: 30.09886 -0.06822828
[1] "residuals:"
# A tibble: 32 × 3
      hp   mpg  resid
   <dbl> <dbl>  <dbl>
 1   110  21   -1.59
 2   110  21   -1.59
 3    93  22.8 -0.954
 4   110  21.4 -1.19
 5   175  18.7  0.541
 6   105  18.1 -4.83
 7   245  14.3  0.917
 8    62  24.4 -1.47
 9    95  22.8 -0.817
10   123  19.2 -2.51
# 22 more rows
```