Homework 00

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CSCI 720 — Big Data Analytics

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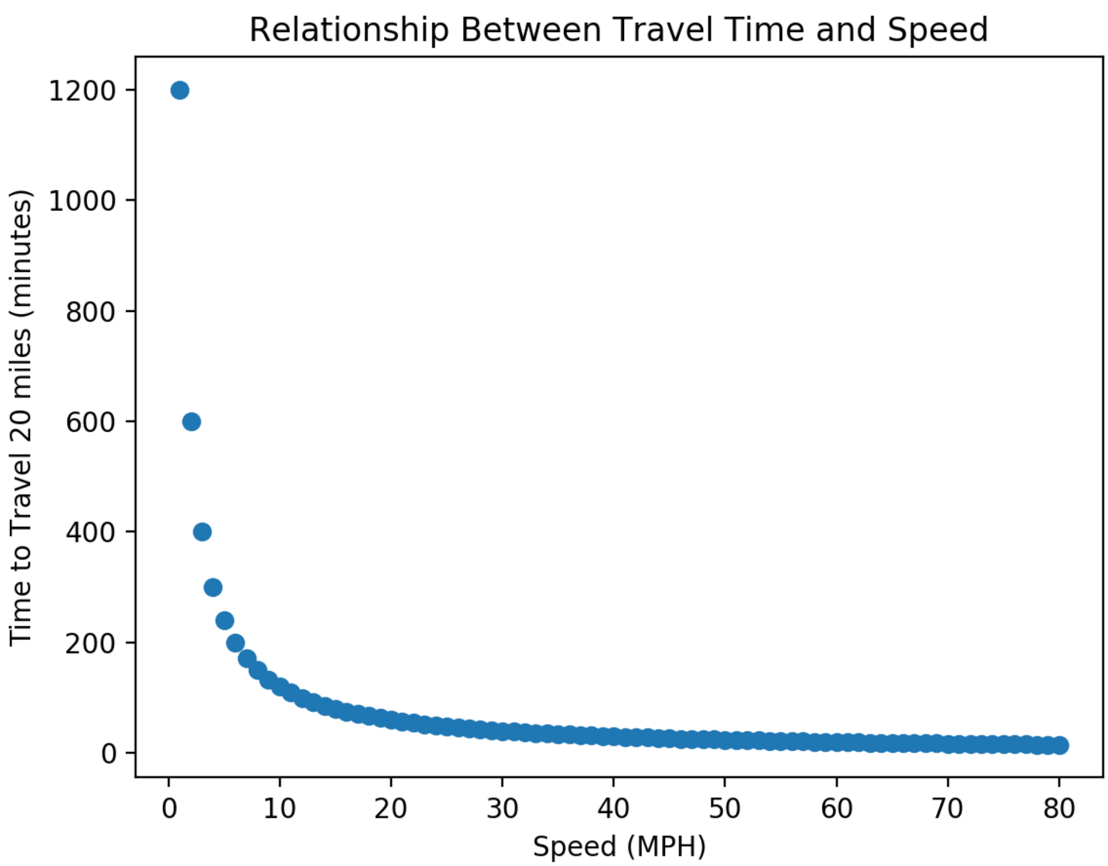
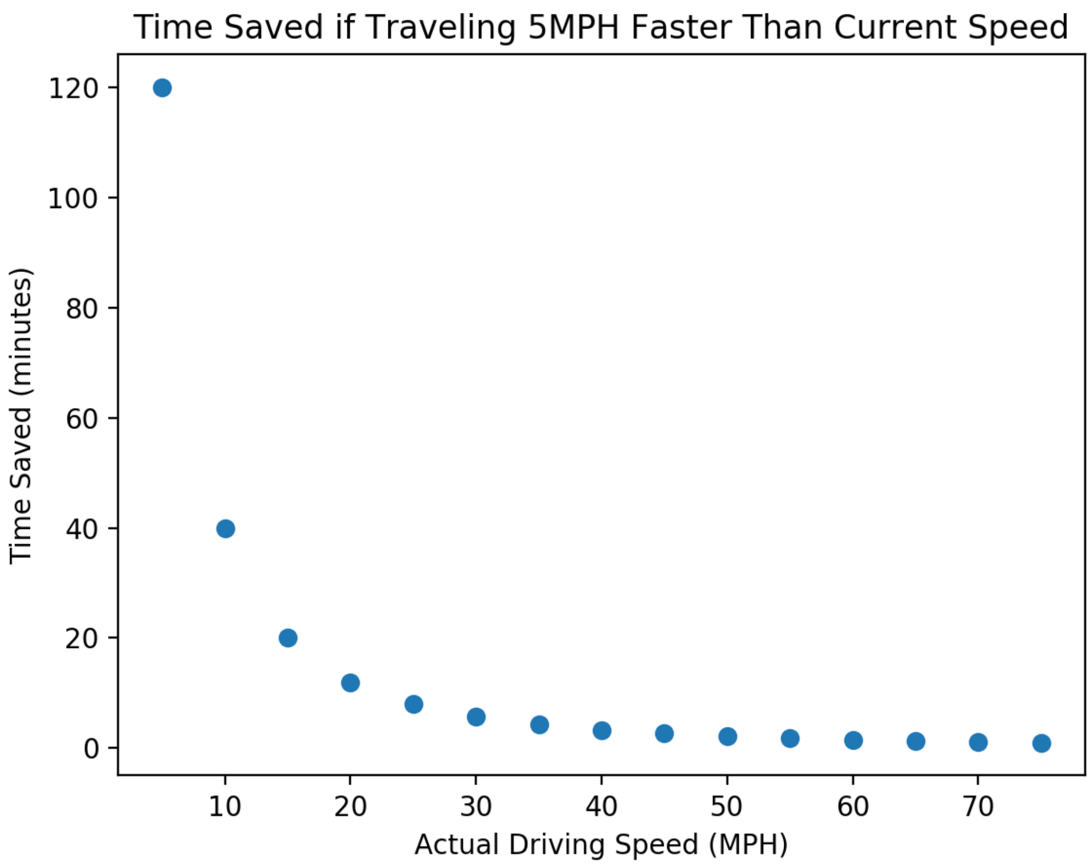
Problem 1

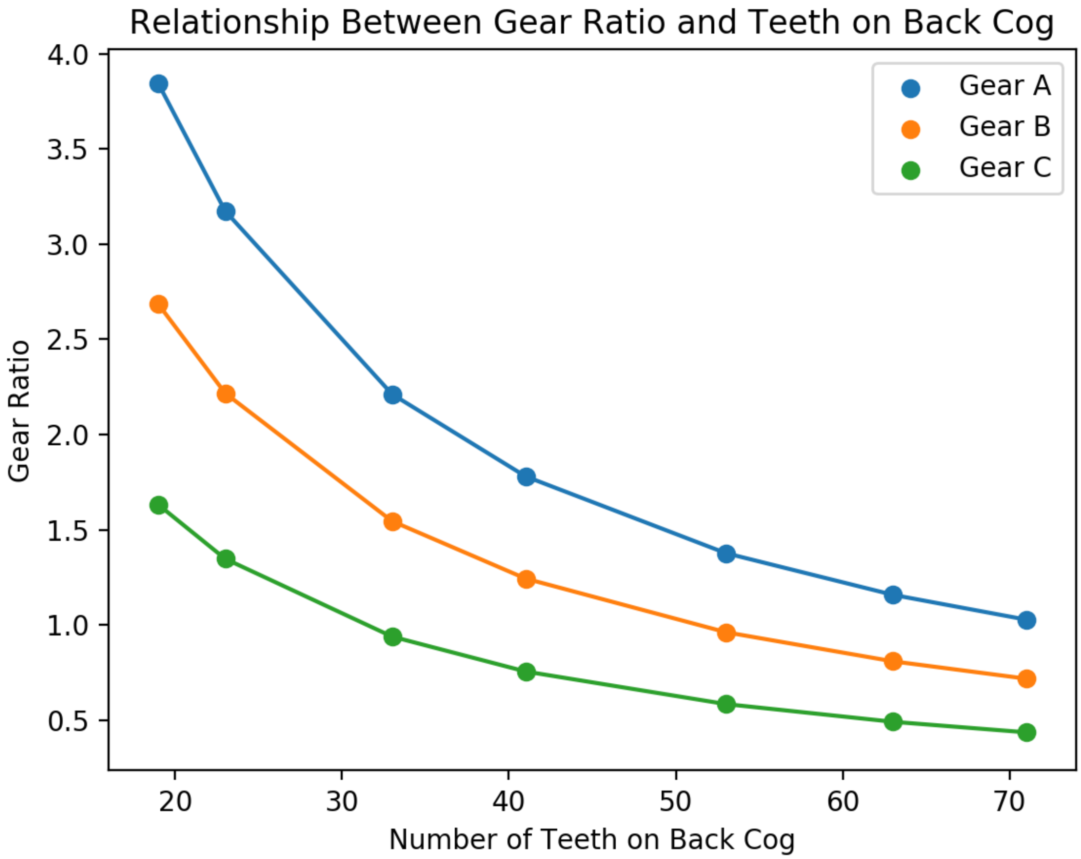


Problem 2



Time Saved if Traveling 5MPH Faster Than Current Speed
Time Saved (minutes)
120
100
80
60
40
20
0
10
20
30
40
50
60
70
Actual Driving Speed (MPH)

Problem 3



Problem 4

In the first graph, it was interesting to see an inversely proportional relationship between speed and travel time. It's striking to see how long it would take to travel at 1 MPH. This relationship makes sense because travel time is inversely proportional to speed. The equation for travel time is $Time = \frac{Distance}{Speed}$. Specifically for traveling 20 miles, this works out to be $y = \frac{20}{x}$, where y is travel time in hours and x is vehicle speed.

In the second graph, we get a more refined look at the previous question: how much time you would save by going 5PMH faster. After about 30 MPH, there is hardly any benefit to increasing your speed by another 5 minutes.

Finally, in the gear ratio problem, we see that each front gear has a similar slope to all the other gears. This makes sense because it allows a similar feel between all the back gears, but just at a constant notch above or below the current front gear.