Math Symposium Paper

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Introduction

In my problem, I talk most about usage of gas while driving and the amount of time it takes on the trip. To make the problem more challenging, I decided to add to it. The problem is about a man who is taking a road trip; and he needs to know exactly how long it is going to take and how much gas he is going to use. At each stop on the trip, the man decides to pick up a clown hitchhiker. Each clown reduces the vehicle's fuel efficiency.. If the man picks up 3 clowns on the trip, how does this affect the gas use during the trip?

This problem relates to the real world based on the use of gas. 75% of Americans are in a car every day. This adds up to all the carbon dioxide in to the air, and uses a lot of peoples money on gas. This problem shows how much gas we use and how it relates to weight in the car and speed of the car. The problem relates to the amount of gas we use and this contributes to global warming. It also shines a spotlight on the growing problem of homeless clowns without transportation.

You have this information: On the trip, three stops are made. On the first stop, the man stops at a coffee shop and orders a coffee and he picks up the 1st clown. From the time he stopped the car to the time he started it was four minutes and thirty seconds. On the second stop, the man stops to use the bathroom at a store, and picks up another clown. This took seven minutes. Until the seconds stop he drove at speed limit 46, and after the second stop he got onto the highway and he drove at speed limit 58.

On the third stop the man got a snack and picked up the last clown. This took Twelve minutes and thirty seconds. The trip was 380 miles, divided by stops at equal distances. The car holds 12 gallons, at 46 mph it will drive at 40 miles to a gallon with just the driver and at 58 mph it will drive at 34 miles to the gallon with just the driver. Every time a clown is added, the car will lose 1 mile/gallon of it's fuel efficiency.

How long does it take to get to the destination? And how much gas will the man have left?

How long will the trip take?

The first half he drives at 46 mph. This is 380/2 = 190 miles at 46 mph. This will take 190/46=4.13 hours

The second half he drives at 58 mph. This will take 190/58= 3.28 hours

Change hours into minutes; 4.13*60= 247.8 minutes

3.28*60= 196.8 minutes

now add the time for the breaks 1st 4.5 minutes

2nd 7 minutes

3rd 12.5 minutes

Total (in minutes) = 468.6 minutes

in hours 468.6/60 = 7.81 hours.

Divide the trip up into 3 parts

Start----------stop1----------stop2----------stop3----------end

section1 section2 section3 section4

Determine the length of each 4 sections;

380/4=95miles

Determine how many miles to the gallon the car uses for each section;

section 1 ; just the driver at 46 mph; 40 miles/gallon

section 2 ; the driver and a clown at 46 mph; 40-1= 39 miles/gallon

section 3 ; the driver and 2 clowns at 58 mph; 34-2=32 miles/gallon

section 4 ; the driver and 3 clowns at 58 mph; 34-3=31 miles/gallon

Now determine how many gallons were used;

section 1 ; 95/40=2.38 gallons

section 2 ; 95/39 =2.44 gallons

section 3 ; 95/32 =2.97 gallons

section4 ; 95/31 =3.06 gallons

total 10.85 gallons

He will have 12-10.85= 1.15 gallons left

Conclusion

From this problem I learned what effects fuel efficiency. These include the following: I learned that with the more weight (clowns) in the car, you use more gas to drive the same distance (compare section 1 and 2), and the faster you drive, the lower your fuel efficiency. Between stop 2 and three, not a little but a lot more gas is being used because a passenger is being added and the speed is going higher. I also know the slower you drive, the more gas you save.

I would like to add more to the problem such as how much CO2 you would release in to the air for each mile and how much less gas you would use if you were driving a Prius C. The advantage of a Prius C is that you can switch to electric mode. To do these, there would have to be more information such as in each gallon of gas, 14 pounds of carbon dioxide is released in to the air.

Some strategies I learned was dividing decimals and converting hours to minutes. And I learned not to confuse mph with mpg. (Miles per hour and miles per gallon)

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