

Math Diversion 961

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Our greatest weakness lies in giving up. The most certain way to
succeed is always to try just one more time.
—Thomas Edison

Source: <https://www.algebra.com/algebra>
Title: Question 10885: A Mixed-Rate Problem
Presenter: Patrick

1 Problem

A car gets 28 mpg on highway, 22 mpg in city. If the total trip is 627 miles using 24 gallons of gas, how many miles were driven in city?

2 Solution

Another easy problem once we identify the totals and their parts. To use the information that the total gasoline consumed on the trip was 24 gallons, we need to write the rates above the rectangles as gallons per mile.

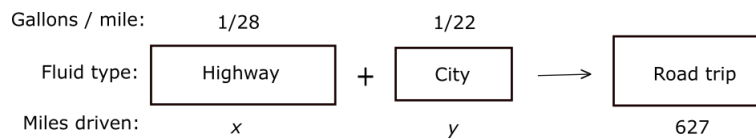


Figure 1. We've inverted miles per gallon to get the more useful conversion rate of gallons per mile.

For the total miles driven (on highway + in city) we get

$$x + y = 627. \tag{1}$$

For the total gallons of gasoline consumed, we get:

$$\frac{1}{28}x + \frac{1}{22}y = 24. \tag{2}$$

These last two equations have solutions $x = 462$ miles and $y = 165$ miles, the latter being the miles driven in city.