Maths With Zombies

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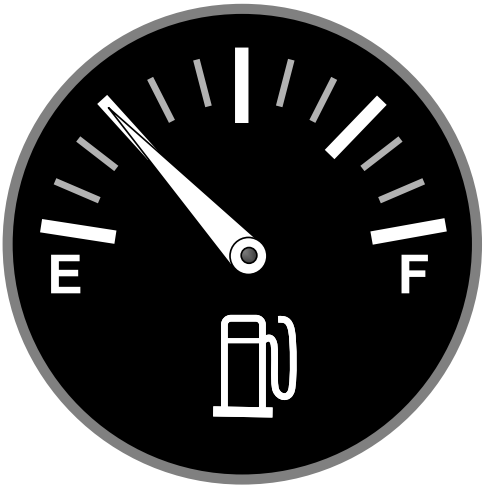
3. The Fuel Crisis Problem

You hear the first reports on the news that the dead have started to rise and attack the living. You knew this was going to happen and you're ready. You grab your 'bug out bag' and a baseball bat before leaping into your car. The safe house you've been carefully preparing and provisioning for the last year is 74 miles away and if you drive fast enough you'll be there in an hour at the most; then you'll be safe. As you start your engine you glance at the fuel gauge and realise your room mate's not only borrowed your car yet again without asking, but he's also not topped up the tank so it's only a quarter full. You know your tank holds 11 gallons when it's full and your car does 27 miles to the gallon. What do you do?

A. I've got enough fuel to get there, so I'm leaving the city while I still can.

B. There's not enough fuel left in the tank. I'll need to get some more before I head off. It'll be risky but at least I won't end up stranded in the middle of nowhere when I run out.



What answer did you get?

A. Well done, you made the right decision. You must have correctly worked out you have enough fuel to go 74.25 miles before you run out and that's just enough to get you to your safe house.

B. Oooh, poor choice. You have enough fuel so you should leave immediately. Enjoy fighting off the zombie horde as you waste time trying to find more fuel.

How to work it out: You first need to work out how much fuel you have left in the tank. This is the size of the tank (11 gallons) divided by how much is left in it (1/4) and is 2.75 gallons. Next you need to work out how far you can go on this much fuel. This is done by multiplying the number of miles your car can do per gallon (27) by the amount of fuel you have left (2.75 gallons). This gives you 74.25 miles. Finally, subtract the miles you have to travel from this distance (74.25 – 74). If this number is positive (as in this case where it's 0.25), you've got enough fuel to get you there. If it's negative, you haven't. This would be the case if the miles per gallon was only 0.5 lower: (2.75 * 26.5) – 74 = -1.125, so you'd run out of fuel just over a mile from your safe house. If that were the case, you'd be better selecting option B.