

# Maths With Zombies

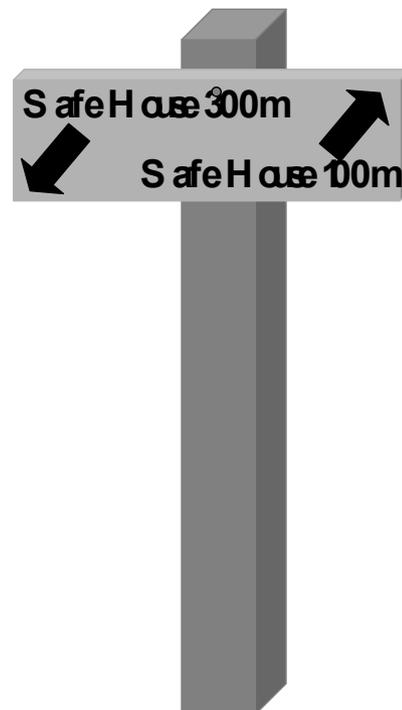
*...because everything's better with zombies!*

<http://MathsWithZombies.wordpress.com>

## ***11. The Fork In The Road Problem***

You've been caught out in the open while you were foraging for food. You are at a fork in the road, with the zombies coming from the south and they are 100 yards away from you. You have two options both of which lead to a safe house. On the road to the northeast, the safe house is only a 100 yards away but it's up a steep hill. To the northwest, the safe house is further away (some 300 yards) but it's all downhill. You know you can run at 11.25 miles an hour downhill but only 7.5 miles an hour uphill. The zombies are relentless and can move at 15 miles an hour regardless of whether it's uphill or downhill. Which way should you go? (**Hint:** There's 1,760 yards in a mile).

- A. I'd go northwest, it's further but I can run faster down hill so I'd get there quicker.
- B. I'd go northeast. The safe house is nearer so even though I can run slower up hill, I'd get there quicker.
- C. It doesn't matter which way I go, I'll always make it to a safe house first as long as I don't waste time trying to work out which way I should go.
- D. It doesn't matter which way I go, given how fast the zombies can run they'll always get me before I reach a safe house.
- E. It will be a dead heat. We'll all reach the door at the same time but that doesn't matter because I'll still end up dead – in the case of a draw, the zombies will always win!



## What answer did you get?

- A:** Unlucky, the zombies will arrive at the northwest safe house at the same time you did, and this meant they'll eat you before you get inside.
- B:** Unlucky, the zombies will arrive at the northeast safe house at the same time you did, and this meant they'll eat you before you get inside.
- C:** Something went wrong with your maths there, you can't make it to either safe house before the zombies get to you.
- D:** You're right that it doesn't matter which safe house you head for, but your maths seems to have gone wrong because you'll reach the safe house at the same time as the zombies
- E:** Spot on! You got the maths right, but that's not going to be much consolation to you. Since you'll all arrive at the safe house at the same time, you won't have time to get inside so you'll end up dead despite the fact you got the maths right.

**How to work it out:** You need to work out four things: how long it will take you to each safe house, and then how long it will take the zombies to reach each safe house. In all cases, the maths is the same. First you work out the distance you need to cover and then divide this by the speed. For example, for you to get to the safe house to the northeast, you need to cover 100 yards, but your speed is only 7.5 miles an hour. First convert the speed from miles and hour to yards an a second. This is done by multiplying the speed by the number of yards in mile (1,760) and then dividing it by the number of seconds in an hour (3,600). By doing this, you can work out that 5 miles an hour is the same as 3.67 yards a second. You then divide the distance you need to cover (100 yards in this case) by this number, and you find you'll reach the northeast safe house in 27.27 seconds. When you do this for the other safe house, you'll find it'll also take you 54.55 seconds to reach it. The zombies have to travel further (200 yards to the northeast safe house and 400 yards to the northwest safe house), but they can also move faster. Travelling at 15 miles per hour, it will take then 27.27 to reach the nearer safe house and 54.55 to reach the one that's further away This means that no matter which way you go, you and the zombies will both reach the door of your chosen safe house at the same time. You're pretty much screwed either way!