



Maths With Zombies

...because everything's better with zombies!

<http://MathsWithZombies.wordpress.com>

10. The Disappearing Zombies Problem

The apocalypse has come and, with the exception of a few small, scattered groups of survivors, the entire population of the world has been turned into zombies. That means there's 7 billion undead walking around, looking for human flesh to feast on. You're lucky enough to be holed up in an old military bunker you stumbled upon while escaping from the city. You know that zombies, being re-animated dead bodies, will eventually rot away, making it safe for you to go outside again. You work out that zombies have a half life of 28 days. This means that every 28 days the number of zombies will decrease by 50%. How long will be before all the zombies are gone and it's safe for you to go outside again?

- A. 364 days.
- B. 756 days.
- C. 924 days.
- D. 1120 days.



What answer did you get?

- A:** Something went wrong with your maths there. There will still be more than a million zombies left and you'll probably get eaten!
- B:** That's a bit too soon. You might get away with it, but there will still be a few zombies wandering around out there
- C:** Spot on! The last of the zombies will have rotted away just as you step through the door into the outside world.
- D:** You've got that wrong. You'll still be huddled in your bunker as all the other survivors are out there staking their claims and re-building civilisation.

How to work it out: The starting point here is 7 billion (the number of zombies in the world when you enter the bunker). To work out how many zombies there'll be after 28 days, you divide this number by 2. This is 3.5 billion (which is still a lot). After another 28 days, this number will be halved again (giving 1.75 billion). You then repeat this until you get a number that's less than 1. You will need to do this a total of 33 times. This means that it'll take 924 days ($28 * 33$) before the last zombie will have disappeared. That's 2 years, 6 months, and 13 days (I hope you brought a good book with you!).