

Maths With Zombies

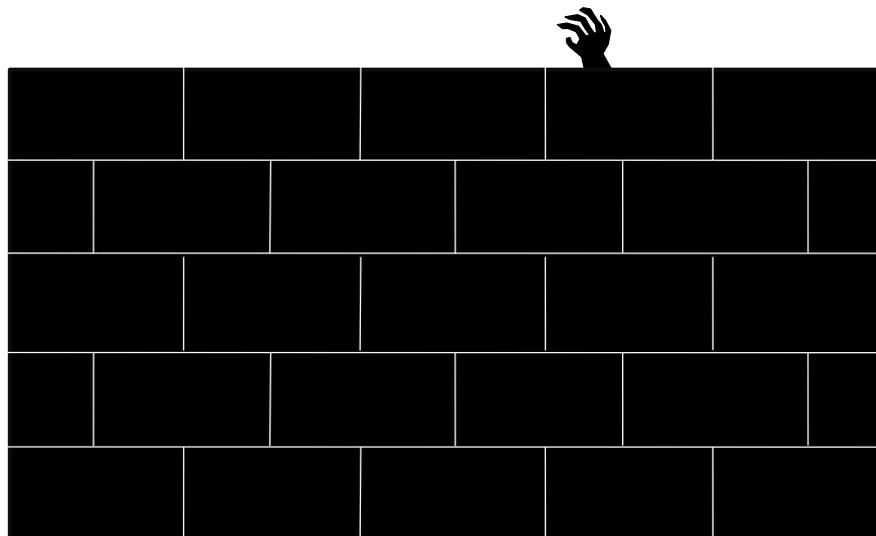
...because everything's better with zombies!

<http://MathsWithZombies.wordpress.com>

16. The Wall Problem

There's been an outbreak of the zombie disease in Glasgow and Scotland is being over-run. The latest surveillance mission spotted a horde of zombies heading south. They're currently 125 miles away and are moving at a speed of 3 miles per hour. Scotland is lost and the best way to protect the rest of Britain is to build a defensive barricade on the ruins of the ancient Roman wall which was last used over 1,600 years ago. 750 people can build a one mile long section of ten foot high wall in a day but the wall will need to stretch the entire 73 miles from one side of Britain to the other along the border between Scotland and England if it's going to keep the zombies out. What's the minimum number of people you will need to recruit to ensure the wall's completed before the zombie horde gets to it?

- A. 7,884
- B. 15,768
- C. 31,536
- D. 54,750



What answer did you get?

- A:** With 7,884 people, you'll only get 18 and a quarter miles of wall built in time and that will hardly keep the zombies out, will it?
- B:** With 15,793 people, you'll only get half the wall built before the zombies get there, and half a wall is little better than no wall at all.
- C:** That's right. with 31,536 people you'll just get the last brick in place as the zombies reach the wall.
- D:** With 54,750, you'll get the wall built with plenty of time to spare, but maybe all those extra people could have been doing something else instead.

How to work it out: The first thing you need to work out is how long it will take the zombies to reach you. If you divide the distance they have to travel (125 miles) by the speed they are moving at (3 miles an hour), you'll find it will take the zombie horde 41.67 hours to reach you. This means you have to have the wall finished in 41.67 hours, or (if we divide this by the number of hours in a day - 24) 1.74 days. Next, you need to work out how many people you would need to finish the wall in this time. 750 people can build one mile of wall in a day, but the wall needs to be 73 miles long. If you multiply these two numbers together, you'll find that 54,650 people could build the whole wall in one day. Except you have 1.74 days and not just one day, so you need to divide this number by 1.74 to get the number you need to complete the wall before the zombies get there, and this is 31,536 people. That's a lot of people, so you'd better start recruiting them right away!