



## At the back Puzzles

# iq

### ARE YOU A MATHS & LOGIC MAESTRO?

If you have a mind for maths, logical reasoning, cryptic clues and other conundrums, why not send them to us and we will publish the most difficult in these very pages.

If you are interested, contact [social@theactuary.com](mailto:social@theactuary.com)

### On the run Member puzzle 01

A column of soldiers 3 miles long marches at a constant speed for 4 miles. At the same time a runner runs at a constant speed from the back of the column to the front and back again to the back of the column.

**How far does the runner run?**



Puzzle supplied by Dennis Lister of Norwich

**Member answer 01:** 8 miles. **Solution:** Let the distance be  $x$  miles and the time taken  $t$ . So the speed of the column is  $4/t$  and that of the runner  $x/t$ . While the runner is running to the front of the column their speed, relative to the column, is  $(x/t - 4/t)$  and the time taken is  $3/(x/t - 4/t)$ . While the runner is running from the front of the column to the back, their relative speed is  $(x/t + 4/t)$  and the time taken is  $3/(x/t + 4/t)$ . The total time is  $t$ , so  $3/(x/t - 4/t) + 3/(x/t + 4/t) = t$ . Solving this equation gives  $x = 8$  miles.

### Seeking shelter Mensa puzzle 792

Replace each set of dashes in the following sentence with an eight-letter word. The same eight letters must be used for both words.

**What are the words?**

**The lifeguards warned holidaymakers against \_\_\_\_\_ outside the flagged area of the beach because \_\_\_\_\_ fish were present in the sea.**



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