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Regulars

Puzzle page



Spies Passing in the Night

The Persian and Greek armies march along a straight road at (different) constant speeds. They spy on each other by sending scouts back and forth on foot or on horseback. The scouts also travel at constant speeds (not necessarily at the same speed as each other). A traveller is walking at constant speed along the road between the two armies.



The Greek army sends out two scouts simultaneously, one on horseback, the other on foot. The Persian army does the same, at a different time. The Greek horseman reaches the Persian army, and immediately turns around to return to the Greek army; the Persian horsemen behaves similarly when he reaches the Greek army. The Greek footscout arrives at the Persian army at the same time as the returning Persian horseman, and the Persian footscout arrives at the Greek army at the same time as the returning Greek horseman.

On both their outward and return journeys, the two horsemen pass each other at the same time as they pass the traveller. Prove that, on their outward journey, the two footscouts also pass each other at the same time as they pass the traveller.

You may want to use [Pappus' Theorem](#).

You can send your solution by e-mail to <plus@maths.cam.ac.uk>.

For some challenging mathematical puzzles, see the NRICH puzzles from this month or last month.

We have not yet received a correct solution to the PLUS issue 12 puzzle. This one is proving to be difficult to crack!



Plus is part of the family of activities in the Millennium Mathematics Project, which also includes the NRICH and MOTIVATE sites.