

THIS ISSUE'S PUZZLE

**F**IVE ANTS ARE ON THE CORNERS of an equilateral pentagon. At the same time each ant begins to move toward the ant next to him, in a clockwise

direction. Each moves at the same speed. As they move the positions of the ants continue to mark the corners of an equilateral pentagon, decreasing in size. The sides of the initial pentagon are of length 1. What is the dis-



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tance each ant moves before they meet in the center? The answer only is sufficient; no solution is required for credit.

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ANSWER TO LAST ISSUE'S PUZZLE

Consider an infinite number of parallel lines, spaced one inch apart from each other. If you dropped a one-inch match on this set of lines at random then what is the probability the match would cross a line?

THE ANSWER IS:  $2/\pi = -0.63662$ . Let the parallel lines run vertically. Let  $x$  be the distance from the left most end of the match to the next line on the right. Define the probability that the match touches the line on the right as  $p(x)=2*\cos^{-1}(x)$ . The answer is the integral from 0 to 1 of  $p(x)/\pi$ . You can look up the integral of  $\cos^{-1}(x)$  as  $x*\cos^{-1}(x)-(1-x^2)^{1/2}$ . Solutions to this and the previous ferryboat problem can be found at [www.contingencies.org/puzzles.html](http://www.contingencies.org/puzzles.html).

SOLVERS (JULY/AUGUST):

- R. Allen, D. Bailey, D. Botteli, W. Carrol, M. Chartier, D. Chung, N. Clark, J. Coffin, M. Danburg-Wyld, A. Dean, J. Dinius, D. Elia, B. Feldman, R. Giambo, F. Hacker, L. Helfgott, J. Herder, J. Hickman, H.G. Ingraham, D. Kidwell, B. Koch, J. Krull, M. Lynch, H. Mahler, B. Maron, L. Péntek, S. Philbrick, S.D. Promislow, B. Roush, S. Shadwick, R. Shapland, J. Sitrin, D. Soderquist, D. Sondergeld, A. Spooner, D. Thaller, K. Trapp, J. Walsh, M. Whinston, K. Whitmarsh, R. Wilton, W. Worley.

Please mail all answers and any suggestions for future puzzles to Michael Shackelford, 2600 South Town Center Drive, #1158, Las Vegas, NV 89135 or e-mail to [wizardofodds@lvcm.com](mailto:wizardofodds@lvcm.com). The names of those who send correct solutions will be acknowledged in a future issue of *Contingencies*.