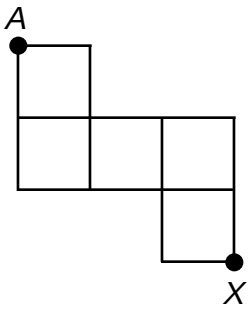
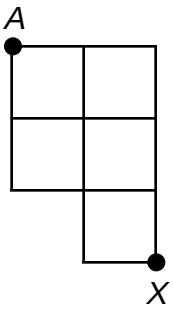
Puzzling Pentomino Paths

Problem-of-the-Week

The Problem

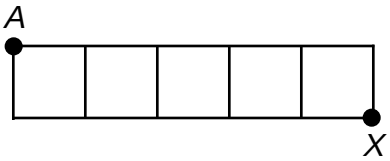
A pentomino is an arrangement of 5 squares placed together so that each square shares at least one side with another square. In this problem, pretend that ants always crawl to the right and down as they go from point *A* to point *X*. If each ant must take a different path, determine which pentomino shape below will permit the most ants to arrive at point *X*.

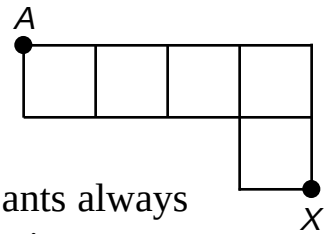




Strategies and Hints

1. Be certain that you understand the conditions of the problem. Which two directions can ants travel? Which directions can they not travel?
2. Try solving the problem using "easier" pentominoes such as these.





3. Simplify the original problem by having the ants always begin by following paths for which the beginning two moves are down.
4. Number the corners as you go from 1 to the end with the number of ways it is possible to get to each corner. Many of the outside points will have the number 1.