Can the ants cross each other?

There is an equilateral triangle and there is an ant present at each end. What is the probability that these ants don't cross each other?

CASE TYPE
Unconventional

COMPANY NAME
Bain Capability Network

DIFFICULTY LEVEL
★ ★ ★

Can the ants cross each other?

A game of probabilities

Case Type	Company Name	Round	Difficulty Level
Unconventional/Brain Teaser	Bain Capability Network	Director	▬ ▬ ▬ ▭ ▭

Problem Statement

There is an equilateral triangle and there is an ant present at each end. What is the probability that these ants don't cross each other?

I am having difficulty structuring my approach, could you please give me more context?

Try to think logically, in how many ways can each ant move?

Each ant has two options, either to move clockwise or anti-clockwise. However, the outcome might depend on the speed of each ant.

You can assume the speed of each ant to be the same.

Okay, then the probability would be the number of favorable outcomes divided by the total number of outcomes.

Right, so what would be the total number of favourable outcomes?

The ants won't cross each other when all three of them move in the same direction. It can be either clockwise or anti-clockwise. So that would be two favorable outcomes

And what would be the total number of outcomes?

Since each ant has two choices (clockwise or anti-clockwise), the total number of outcomes would be 2*2*2=8

Alright, so what will be the probability then?

The probability would be 2/8=0.25

That is the correct answer.

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CASE FLOW

CASE FACTS

1. 3 ants are moving in an equilateral triangle
2. We need to decide when they will meet
3. Directional probability is the key to solve this question.