

# Bags of Marbles



**The Puzzle:** You have three bags, each containing two marbles. Bag A contains two white marbles, Bag B contains two black marbles, and Bag C contains one white marble and one black marble.

You pick a random bag and take out one marble.

It is a white marble.

What is the probability that the remaining marble from the same bag is also white?.

## The Solution . . .

$2/3$  (not  $1/2$ )

You know that you do not have Bag B (two black marbles) so there are three possibilities

You chose Bag A, first white marble. The other marble will be white

You chose Bag A, second white marble. The other marble will be white

You chose Bag C, the white marble. The other marble will be black

So 2 out of 3 possibilities are white.

Why not  $1/2$ ? You are selecting marbles, not bags.