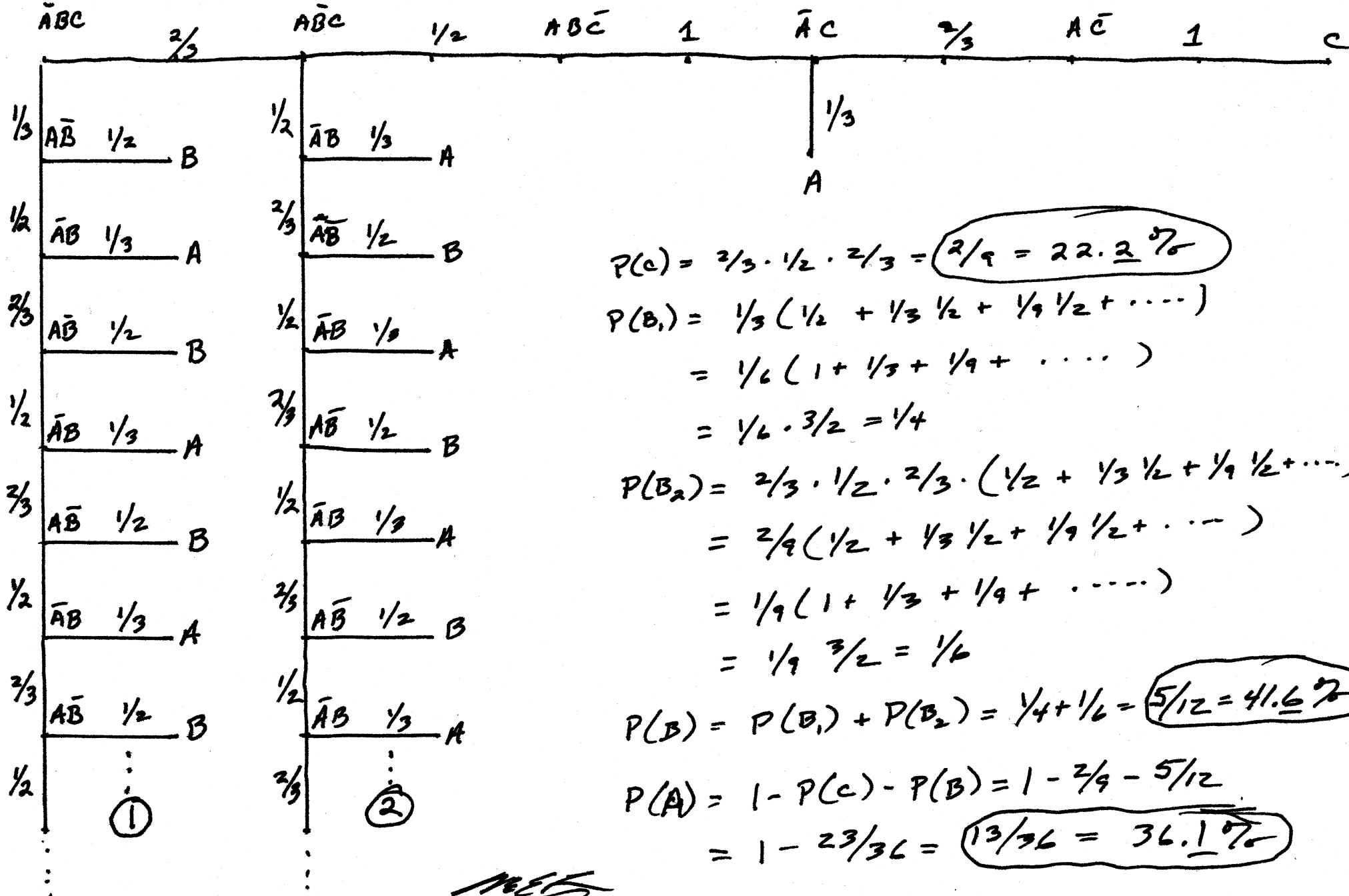
Shoot-Out Problem

Compare Calculations to Simulation



$P(C) = 2/3 \cdot 1/2 \cdot 2/3 = \boxed{2/9 = 22.2\%}$

$P(B_1) = 1/3\,(1/2 + 1/3\,1/2 + 1/9\,1/2 + \cdots)$

$= 1/6\,(1 + 1/3 + 1/9 + \cdots)$

$= 1/6 \cdot 3/2 = 1/4$

$P(B_2) = 2/3 \cdot 1/2 \cdot 2/3 \cdot (1/2 + 1/3\,1/2 + 1/9\,1/2 + \cdots)$

$= 2/9\,(1/2 + 1/3\,1/2 + 1/9\,1/2 + \cdots)$

$= 1/9\,(1 + 1/3 + 1/9 + \cdots)$

$= 1/9\,\,3/2 = 1/6$

$P(B) = P(B_1) + P(B_2) = 1/4 + 1/6 = \boxed{5/12 = 41.6\%}$

$P(A) = 1 - P(C) - P(B) = 1 - 2/9 - 5/12$

$= 1 - 23/36 = \boxed{13/36 = 36.1\%}$