

288. The random variable N has a mixed distribution:

- (i) With probability p , N has a binomial distribution with $q = 0.5$ and $m = 2$.
- (ii) With probability $1 - p$, N has a binomial distribution with $q = 0.5$ and $m = 4$.

Which of the following is a correct expression for $\text{Prob}(N = 2)$?

- (A) $0.125p^2$
- (B) $0.375 + 0.125p$
- (C) $0.375 + 0.125p^2$
- (D) $0.375 - 0.125p^2$
- (E) $0.375 - 0.125p$