

Algebra II Pre-AP -- Serpent Eye Problem

In the video game Final Fantasy XII, the Serpent Eye is an essential ingredient in building the Tournesol, the most powerful sword in the game. Serpent Eyes can only be obtained by defeating Basilisk enemies, who then might or might not drop Serpent Eyes.

There are 2 different types of drops -- Monograph drops and Chain drops. These two types of drops are independent of each other, and a given battle with a Basilisk can result in exactly one Serpent Eye from a Monograph drop, exactly one Serpent Eye from a Chain drop, both, or neither.

Let's define the probability of a Monograph drop to be m , and the probability of a Chain drop to be c , where $0 < c < m < 1$.

If the probability of getting exactly 1 Serpent Eye from a given battle is 0.192, and the probability of getting exactly 2 Serpent Eyes from a given battle is 0.009, find the values of m and c .