Financial Mathematics

Basics of measures

1600-1. Let $Y := \{H,T\}^2 = \{H,T\} \times \{H,T\}$
$= \{(H,H),(H,T),(T,H),(T,T)\}$.

Let $\mathcal{B}$ be the discrete σ-algebra on Y.

Let μ be the measure on $(Y_0, \mathcal{B})$ s.t.

$$\mu(\{(H,H)\}) = 0.04$$
$$\mu(\{(H,T)\}) = \mu(\{(T,H)\}) = 0.16$$
$$\mu(\{(T,T)\}) = 0.64.$$

Compute $\mu(\{(H,H),(T,T)\})$.

Note: The measure space $(Y, \mathcal{B}, \mu)$ models two flips of a biased coin that comes up heads 20% of the time. You are being asked to compute the probability that the two flips come up the same.