University of Texas at Austin

Quiz # 4

The binomial distribution.

Provide your *final answer only* to the following problem:

Problem 4.1. (5 pts) Let X denote the number of $1's$ in 100 throws of a fair die. Find $\mathbb{E}[X^2]$.

(a) 125/9
(b) 50/3
(c) 875/3
(d) 1585/9
(e) None of the above

Provide your **complete solution** to the following problem:

Problem 4.2. (10 points) *Source: Problem 2.1.5. from Pitman.*
Given that there are 12 heads in 20 independent tosses, find the probability that at least two of the first five tosses landed heads.
Note: It is OK to leave binomial coefficients in your answer; simplify the remainder of your expression as much as you can.