

UNIVERSITY OF TEXAS AT AUSTIN

Quiz # 3

The binomial distribution.

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

Problem 3.1. (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 3.2. (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.