

## *Stat 134: Section 10*

*Brett Kolesnik*

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### ***Conceptual Review***

Please discuss these short questions with those around you in section. These problems are intended to highlight concepts from lecture that will be relevant for today's problems.

- a. If  $X \sim \text{Geom}(p)$  on  $\{1, 2, \dots\}$ , what is  $P(X = x)$ ?
- b. What is the way to specify a distribution?

### *Problem 1*

Bill, Mary, and Tom have coins with respective probabilities  $p_1, p_2, p_3$  of turning up heads. They toss their coins independently at the same times.

- a. What is the probability that the first person to get a head has to toss more than  $n$  times? (What distribution does this follow?)
- a. What is the probability that neither Bill nor Tom gets a head before Mary?

*Ex 3.4.5 in Pitman's Probability*

*Problem 2*

In Bernoulli ( $p$ ) trials, let  $V_n$  be the number of trials required to produce either  $n$  successes or  $n$  failures, whichever comes first.

- a Write down the range of possible values of  $V_n$ .
- a Find the distribution of  $V_n$ .

*Ex 3.4.14 in Pitman's Probability*