

## *Stat 134: Section 9*

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### *Conceptual Review*

- a. What does a Geometric ( $p$ ) random variable on  $\{1, 2, 3, \dots\}$  represent? What if it is instead distributed on  $\{0, 1, 2, \dots\}$ ?
- b. How do we calculate the expected value of a Geometric ( $p$ ) random variable?

### *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 time.

- 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?)
- b. 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. Find the distribution of  $V_n$ .

*Ex 3.4.14 in Pitman's Probability*