• 3.14 (d) check whether $\sum_{y=1}^{5} p(y) = 1$

• 3.37 $P(X = k) = p(k) = 1/6$, where $k = 1, 2, \ldots, 6$. Calculate $E(1/X)$. If it’s bigger than $(1/3.5)$, gamble; otherwise, accept the guaranteed amount.

• 3.48 Let $X =$ number of drivers who will come to a complete stop among 20 randomly chosen drivers, then $X \sim Bin(20, 0.25)$
   (a) $P(X \leq 6)$;
   (b) $P(X = 6)$;
   (c) $P(X \geq 6)$;
   (d) $E(X)$

• 3.52 Let $X =$ number of students who received special accommodation among the randomly chosen 25 students. $X$ has a binomial distribution $Bin(25, 0.02)$.
   (a) $P(X = 1)$;
   (b) $P(X \geq 1) = 1 - P(X = 0)$;
   (c) $1 - P(X \leq 1)$
   (d) $P(|X - \mu| \leq 2\sigma) = P(X \leq \mu + 2\sigma) - P(X < \mu - 2\sigma)$, where $\mu$ denotes the mean and $\sigma$ denotes the standard deviation.
   (e) $E(3 + 1.5X/n)$, where $n = 25$.

• 3.55 (a) $P(X \leq 15$ when $p = 0.8)$;
   (b) $P(X > 15$ when $p = 0.7$);
   (c) increases the error probability of (a) and decreases the error probability of (b)

• 3.71 (a) Geometric distribution for $X = x$ with $p = 0.5$;
   (b) $P(X = 3)$;
   (d) $E(X), E(X + 1)$

• 3.99 Let $Y$ denote the number of individuals having the disease among the $n$ individuals. $Y$ has binomial distribution. Let $X$ denote the number of tests using this procedure.

$$X = \begin{cases} 
1, & \text{with prob } P(Y = 0) \\
(n + 1), & \text{with prob } P(Y > 0) 
\end{cases}$$

Calculate $E(X)$.

• 3.100 $X$ is distributed as binomial($n,p$) with $p = 1 - p_1 + p_1p_2$. 