

Problem 100

$$P(X=0; Y=0) = \frac{1}{6}$$

$$P(X=1; Y=0) = \frac{1}{12}$$

$$P(X=2; Y=0) = \frac{1}{12}$$

$$P(X=1; Y=1) = \frac{1}{6}$$

$$P(X=2; Y=1) = \frac{1}{3}$$

$$P(X=2; Y=2) = \frac{1}{6}$$

$$E(X) = \sum_{i=0}^2 X_i \cdot P(X_i)$$

$$= 0\left(\frac{1}{6}\right) + 1\left(\frac{1}{12} + \frac{1}{6}\right) + 2\left(\frac{1}{12} + \frac{1}{3} + \frac{1}{6}\right)$$

$$= \frac{17}{12}$$

$$E(X^2) = \sum_{i=0}^2 X_i^2 \cdot P(X_i)$$

$$= 0^2\left(\frac{1}{6}\right) + 1^2\left(\frac{1}{12} + \frac{1}{6}\right) + 2^2\left(\frac{1}{12} + \frac{1}{3} + \frac{1}{6}\right)$$

$$= \frac{31}{12}$$

$$V(X) = \frac{31}{12} - \left(\frac{17}{12}\right)^2$$

$$= .58$$

B