

3. In a game of chance, five \$1 bills, four \$5 bills, three \$10 bills, two \$20 bills, and one \$100 bill are placed in a box. A person is charged \$10 to select one bill at random. (34 points)
- a. Construct the probability distribution for this game in table form.
Express all probabilities as decimals or reduced fractions.

X					
$P(X)$					

- b. Find the mean, variance, and standard deviation for this game.

- c. Is this game *fair*? Briefly explain your answer.

Formulas

$$\sigma^2 = \sum X^2 \cdot P(X) - \mu^2$$

$$z = \frac{X - \mu}{\sigma}$$

$$\sigma^2 = npq$$

$$X = \mu + z\sigma$$

$$P(X) = \frac{n!}{(n-X)!X!} p^X q^{n-X}$$

$$\mu = np$$

$$\mu = \sum X \cdot P(X)$$