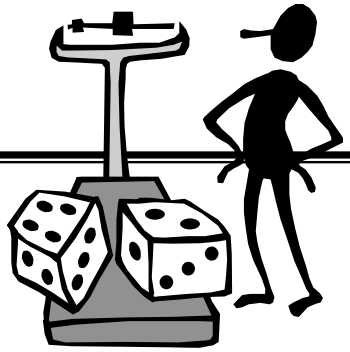
Chapter 16: Random Variables



Key Vocabulary:

- random variable
- discrete random variable
- continuous random variable
- standard deviation
- expected value
- E(*X*)
- V(*X*)

Calculator Skills:

- 1-VarStats L_1, L_2

1. What is meant by a random variable?

2. Explain the difference between a discrete random variable and a continuous random variable.

3. What information does a probability model give?

4. What is the expected value of a random variable?

5. How do you calculate the expected value of a random variable?

6. Explain the difference between the notations $\overline{x}$ and μ_X.

7. Suppose $\mu_X = 5$ and $\mu_Y = 10$. According to the rules for means, what is μ_{X+Y}?

8. Suppose $\mu_X = 2$. According to the rules for means, what is μ_{3+4X}?

9. Explain how to calculate the variance of a discrete random variable X using the formula $\sigma_X^2 = \sum (x_i - \mu_X)^2 p_i$.

10. Given the variance of a random variable, explain how to calculate the standard deviation.

11. Suppose $\sigma_X^2 = 2$ and $\sigma_Y^2 = 3$ and X and Y are independent random variables. According to the rules for variances, what is σ_{X+Y}^2? What is σ_{X+Y}?

12. Suppose $\sigma_X^2 = 4$. According to the rules for variances, what is σ_{3+2X}^2? What is σ_{3+2X}?