

# Pishro-Nik Probabilities

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## Problem 31-1

*Problems in form of images...*

**Solution**

**Problem a:**

a.

$$P(X_2 = 4) = \frac{1}{6} = 0.1667$$

b.

$$P(X_1 + X_2 = 7) = \frac{6}{36} \text{ (six out of thirty six total outcomes)} = 0.1667$$

c.

$$P(X_1 \neq 2 \text{ and } X_2 \geq 4) = P(X_1 \neq 2) \cdot P(X_2 \geq 4) = \frac{5}{6} \cdot \frac{3}{6} = \frac{15}{36} = 0.4167$$

**Problem b:**

a.

$$P(A \cap B) = P(A) + P(B) - P(A \cup B) = 0.4 + 0.7 - 0.9 = 0.2$$

b.

$$P(A^c \cap B) = P(B) - P(A \cap B) = 0.7 - 0.2 = 0.5$$

c.

$$P(A - B) = P(A) - P(A \cap B) = 0.4 - 0.2 = 0.2$$

