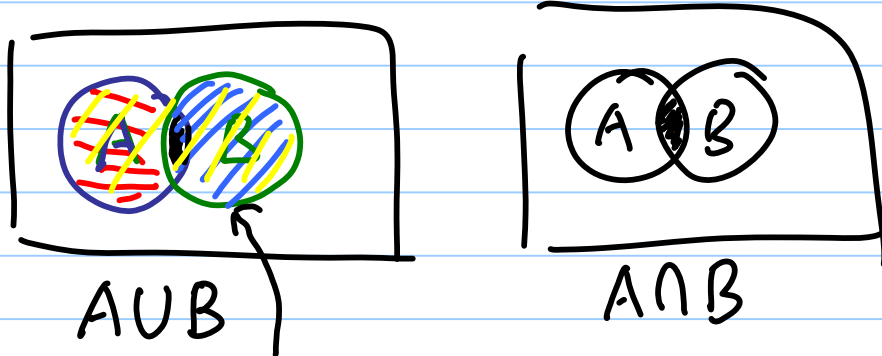


CDA 6530

Note Title

8/21/2012



$$\square P(A \cup B) = P(A) + P(B)$$

$$\square P(A \cup B) = P(A) + P(B) - P(A \cap B)$$

$$P(A \cup B) = P(B \cup (B^c \cap A)) = P(B) + P(B^c \cap A)$$

$$P(B^c \cap A) \stackrel{?}{=} P(A) - P(A \cap B)$$

$$P(A) = P(B^c \cap A) + P(A \cap B) = P(A)$$

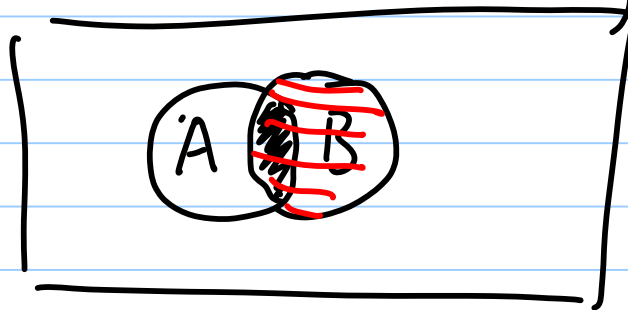
throw two dices to count number.

$B: \{ \text{two dices show identical \#} \}$

$A: \{ \text{total \# is 6} \} \rightarrow$

$S = \{ [1,1], [1,2], [1,3], [1,4], \dots, [1,6] \}$

$$P(A|B) = \frac{1}{6}$$



$$1000 \times 0.1 + 4000 \times 0.05 = 300 \leftarrow B$$

$$P(B) = \frac{300}{5000} = 6\%$$

$$P(A) = \frac{1000}{5000} = 20\%$$

$$P(A|B) = \frac{1000 \times 0.1}{300} = 2\%$$

$$P(A|B) = \frac{100}{300} = \frac{1}{3}$$

$$P(A|B) = \frac{P(A \cap B)}{P(B)} = \frac{2\%}{6\%} = \frac{1}{3}$$

$$P(A|B) = P(A)$$

$$P(B|A) = P(B)$$

$$\subseteq P(A \cap B) / P(B)$$

$$P(A) = P(A \cap B) / P(B) \Rightarrow P(A) \cdot P(B) = P(A \cap B)$$