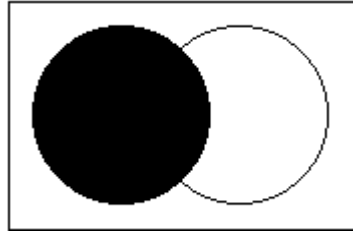


# The 16 Things You Can Say About A and B



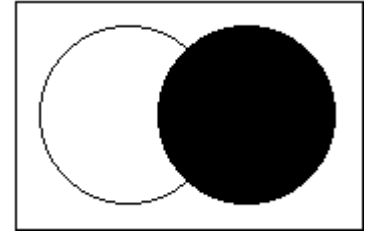
A  
A



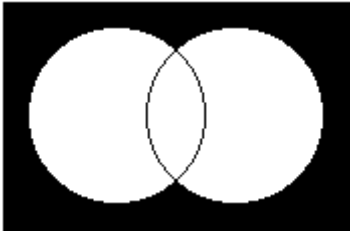
not A  
 $A^c$



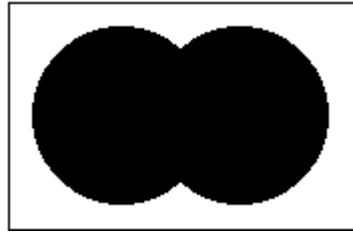
B  
B



not B  
 $B^c$



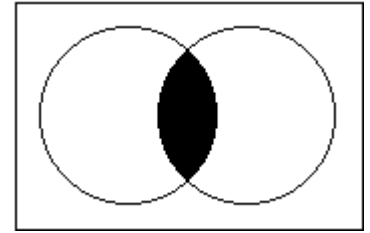
A or B  
 $A \cup B$



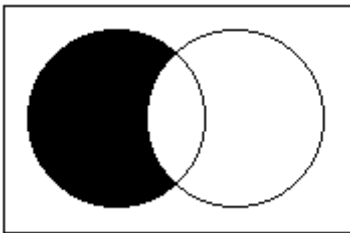
not A and not B  
 $(A \cup B)^c$



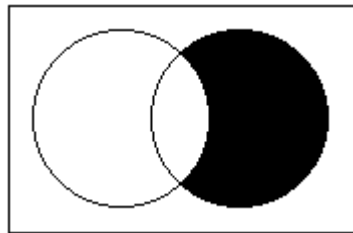
A and B  
 $A \cap B$



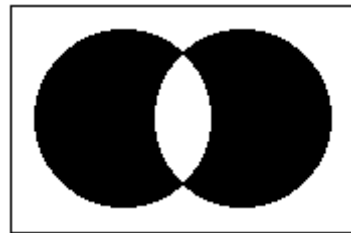
not (A and B)  
 $(A \cap B)^c$



if A then B  
 $A \supset B$



if B then A  
 $B \supset A$



A iff B  
 $A \equiv B$



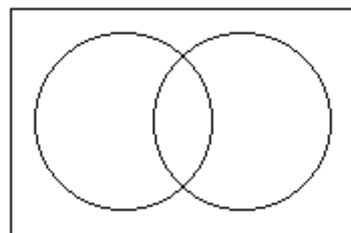
A iff not B  
 $A \equiv \neg B$



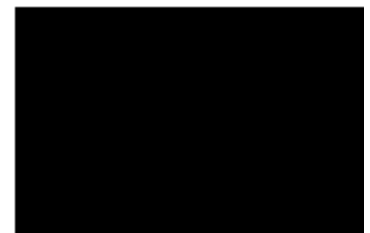
A and not B  
 $A \oplus B$



B and not A  
 $B \oplus A$



True  
U



False  
 $\emptyset$

*Complementary Laws:*

$$A \cap A^c = \emptyset$$

$$A \cup A^c = U$$

*Associative Laws:*

$$A \cap (B \cap C) = (A \cap B) \cap C$$

$$A \cup (B \cup C) = (A \cup B) \cup C$$

*Commutative Laws:*

$$A \cap B = B \cap A$$

$$A \cup B = B \cup A$$

*Distributive Laws:*

$$A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$$

$$A \cup (B \cap C) = (A \cup B) \cap (A \cup C)$$

*DeMorgan's Laws:*

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

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