

**Week in Review #1**

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1. (a) not a statement  
 (b) a statement(truth value is false)  
 (c) a statement(truth value is true)
2. (a) i. the car is new and it is not blue.  
 Alternate answer: The new car is not blue.  
 ii. The car is a saturn or the car is blue.
- (b) i.  $n \wedge s \wedge \sim b$   
 ii.  $s \wedge (b \vee \sim n)$

3. (a) truth table

p	q	$\sim p$	$p \wedge q$	$\sim p \vee (p \wedge q)$
T	T	F	T	T
T	F	F	F	F
F	T	T	F	T
F	F	T	F	T

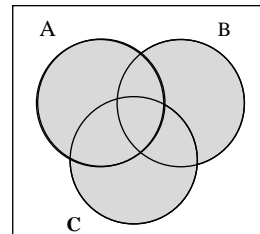
(b) truth table

p	q	r	$\sim q$	$\sim q \vee r$	$p \wedge (\sim q \vee r)$
T	T	T	F	T	T
T	T	F	F	F	F
T	F	T	T	F	F
T	F	F	T	T	T
F	T	T	F	T	F
F	T	F	F	F	F
F	F	T	T	F	F
F	F	F	T	T	F

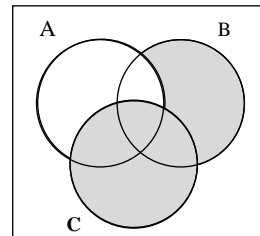
4. (a) False  
 (b) True  
 (c) True
5. {E, N, C, Y, L, O, P, D, I, A}
6. (a)  $n(A) = 4$   
 (b)  $A \cup B = \{0, 2, 3, 4, 6, 8, 9\}$   
 (c)  $C^C = \{0, 2, 4, 6, 8\}$   
 $A \cap C^C = \{2, 6\}$   
 (d)  $A \cap B \cap C = \phi$   
 (e)  $A \cap C = \{3, 9\}$   
 $(A \cap C)^C = \{0, 1, 2, 4, 5, 6, 7, 8\}$   
 $(A \cap C)^C \cap B = \{0, 2, 4, 6, 8\}$   
 (f)  $2^5 = 32$   
 (g)  $2^5 - 1 = 31$   
 (h) no, they have 0 and 6 in common.

- (i) yes
- (j) answers may vary.  
 $J = \{0, 2\}, K = \{4, 6\}$

7. (a)  $A \cup B \cup C$



(b)  $(A^C \cap B) \cup C$



8. (a) Regions: 1 and 8  
 (b) Regions: 2, 3, and 6
9. (a) i. The A&M students that drink sprite or do not drink coffee.  
 ii. The male students at A&M that drink Dr. Pepper or Sprite.
- (b) i.  $F \cap S \cap C^C$   
 ii.  $C \cup D^C$