

Construct a truth table for the compound propositions:

1. $(p \leftrightarrow q) \oplus (\neg p \leftrightarrow q)$

p	q	$\neg p$	$p \leftrightarrow q$	$\neg p \leftrightarrow q$	$(p \leftrightarrow q) \oplus (\neg p \leftrightarrow q)$
T	T				
T	F				
F	T				
F	F				

2. Construct a truth table for $(p \oplus q) \vee (p \oplus \neg q)$

p	q	$\neg q$	$p \oplus q$	$p \oplus \neg q$	$(p \oplus q) \vee (p \oplus \neg q)$
T	T				
T	F				
F	T				
F	F				

3. Construct a truth table for $(p \wedge q) \vee (p \wedge \neg q)$

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

4. Let p be the proposition **Today I will eat lunch.** and q be **Today it is raining.**
Write $(p \wedge q) \vee (p \wedge \neg q)$ in simple English. (hint: 5 words should suffice.)

5. Complete the following truth table:

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

6. Complete the following truth table:

p	q	$\neg p$	$\neg p \vee q$	$p \rightarrow q$
T	T			
T	F			
F	T			
F	F			

7. Complete this one too. It is large but easy.

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