Each group should, for their group's given pair of compound statements,

(a) make a truth table

(b) determine of their two given compound statements are logically equivalent.

Below is each group's AWW link and the group's pair of compound statements.

(1) §2.1 Group 1 AWW link. Pair of statements: $\sim (P \wedge Q)$ and $(\sim P) \vee (\sim Q)$.

(4) §2.1 Group 4 AWW link. Pair of statements: $P \implies Q$ and $(\sim P) \vee Q$.

(5) §2.1 Group 5 AWW link. Pair of statements: $\sim (P \implies Q)$ and $P \wedge (\sim Q)$?.

(6) §2.1 Group 6 AWW link. Pair of statements: $\sim (P \wedge Q)$ and $P \implies (\sim Q)$.

Link to your group's AWW board, where your group's problem is already uploaded. Do your group work directly on the AWW board and then, when finished, let the professor know so that she can look it over for feedback.

To help you with LaTex (for ER), a LaTex file and a corresponding PDF file for this handout.

Group 1. Consider the two compound statements 2.2HO (1)

$$\sim (P \wedge Q) \qquad \text{and} \qquad (\sim P) \vee (\sim Q)\,.$$

a. Contruct a truth table for the compound statement

$$\sim (P \wedge Q)$$

as well as for the compound statement

$$(\sim P) \vee (\sim Q)\,.$$

You may just make one big truth table instead of 2 separate truth tables.

(a)	(b)	(c)	(d)	(e)	(f)	(g)
P	Q	$\sim P$	$\sim Q$	$P \wedge Q$	$\sim (P \wedge Q)$	$(\sim P) \vee (\sim Q)$
T	T					
T	F					
F	T					
F	F					

b. Is $\sim (P \wedge Q)$ logically equivalent to $(\sim P) \vee (\sim Q)$? I.e., $[\sim (P \wedge Q)] \equiv [(\sim P) \vee (\sim Q)]$? Justify your answer, using complete sentences.

Group 4. Consider the two compound statements 2.2HO (4)

$$P \implies Q \qquad \text{and} \qquad (\sim P) \vee Q.$$

a. Contruct a truth table for the compound statement

$$P \implies Q$$

as well as for the compound statement

$$(\sim P) \vee Q.$$

You may just make one big truth table instead of 2 separate truth tables.

(a)	(b)	(c)	(d)	(e)
P	Q	$\sim P$	$P \implies Q$	$(\sim P) \vee Q$
T	T			
T	F			
F	T			
F	F			

b. Is $P \implies Q$ logically equivalent to $(\sim P) \vee Q$? I.e., $[P \implies Q] \equiv [(\sim P) \vee Q]$?

Justify your answer, using complete sentences.

Group 5. Consider the two compound statements 2.2HO (5)

$$\sim (P \implies Q) \qquad \text{and} \qquad P \wedge (\sim Q)\,.$$

a. Contruct a truth table for the compound statement

$$\sim (P \implies Q)$$

as well as for the compound statement

$$P \wedge (\sim Q)\,.$$

You may just make one big truth table instead of 2 separate truth tables.

(a)	(b)	(c)	(d)	(e)	(f)
P	Q	$\sim Q$	$P \implies Q$	$\sim (P \implies Q)$	$P \wedge (\sim Q)$
T	T				
T	F				
F	T				
F	F				

b. Is $\sim (P \implies Q)$ logically equivalent to $P \wedge (\sim Q)$? I.e., $[\sim (P \implies Q)] \equiv [P \wedge (\sim Q)]$?

Justify your answer, using complete sentences.

Group 6. Consider the two compound statements 2.2HO (6)

$$\sim (P \wedge Q) \qquad \text{and} \qquad P \implies (\sim Q)\,.$$

a. Contruct a truth table for the compound statement

$$\sim (P \wedge Q)$$

as well as for the compound statement

$$P \implies (\sim Q)\,.$$

You may just make one big truth table instead of 2 separate truth tables.

(a)	(b)	(c)	(d)	(e)	(f)
P	Q	$\sim Q$	$P \wedge Q$	$\sim (P \wedge Q)$	$P \implies (\sim Q)$
T	T				
T	F				
F	T				
F	F				

b. Is $\sim (P \wedge Q)$ logically equivalent to $P \implies (\sim Q)$? I.e., $[\sim (P \wedge Q)] \equiv [P \implies (\sim Q)]$?

Justify your answer, using complete sentences.