Name: _____ Period _____ Logic and Computation

Checking Validity of Arguments with Truth Tables

Directions: Identify the premises and conclusion in each paragraph argument. Translate them into symbolic form and check the validity of the argument with a truth table. The first has been done as an example.

1. Your picture will be on a box of Wheaties if you win a gold medal at the Olympics. Since you did win a

gold medal at the Olympics, your picture will be on a box of Wheaties!

Premise 1: If you win a gold medal at the Olympics, then your picture will be on a box of Wheaties. (G → W)

Premise 2: You won a gold medal at the Olympics. (G)

Conclusion: Your picture will be on a box of Wheaties. (W)

G	W	G → W (premise)	G (premise)	W (conclusion)	
1	1	1	1	1	<-- valid
1	0	0	1	0	
0	1	1	0	1	
0	0	1	0	0	

2. You are a fool or you are deliberately causing trouble. You're no fool, so you must be deliberately

causing trouble.

3. A person cannot be very healthy when they do not have a good diet. But you do have a good diet. You must be very healthy.

4. You don't have a peg leg. As everybody knows, all pirates have peg legs. Therefore, you are not a pirate.

5. If an angle is not right, then it is acute or obtuse. This angle is not acute and it is not obtuse, therefore it is a right angle.

6. If you are in Arizona, then if you dig up a saguaro cactus, you are breaking the law. But it is not the case that you are breaking the law if you dig up a saguaro cactus. Therefore, you are not in Arizona.

7. Complete the truth table to determine whether the argument below is valid:

$(P \lor Q) \to R$
$\neg(P \lor Q)$
_____
$\neg R$

P	Q	R	
1	1	1	
1	1	0	
1	0	1	
1	0	0	
0	1	1	
0	1	0	
0	0	1	
0	0	0	

8. Complete the truth table to determine whether the argument below is valid:

$(P \lor Q) \land R$
$R \to \neg Q$
_____
P

P	Q	R	
1	1	1	
1	1	0	
1	0	1	
1	0	0	
0	1	1	
0	1	0	
0	0	1	
0	0	0	